Water Resources Data for Minnesota

Volume 2. Upper Mississippi and Missouri River Basins

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MN-80-2

WATER YEAR 1980

Prepared in cooperation with the Minnesota Department of Natural Resources, Division of Waters; the Minnesota Department of Transportation; and with other State, municipal, and Federal agencies

CALENDAR FOR WATER YEAR 1980

1979

OCTOBER

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1980

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AUGUST

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SEPTEMBER

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21	22	23	24	25	26	27
28	29	30				

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UNITED STATES DEPARTMENT OF THE INTERIOR

JAMES G. WATT, Secretary

GEOLOGICAL SURVEY

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1981

PREFACE

This report was prepared by personnel of the Minnesota district of the Water Resources Division of the U.S. Geological Survey under the supervision of D. R. Albin, District Chief, and J. E. Biesecker, Regional Hydrologist, Northeastern Region. It was done in cooperation with the State of Minnesota and with other agencies.

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

Data for Minnesota are in two volumes as follows:

Volume 1. Great Lakes and Souris-Red-Rainy River Basins

Volume 2. Upper Mississippi and Missouri River Basins

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16. Abstract (Limit: 200 words)

Water-resources data for the 1980 water year for Minnesota consist of records of stage, discharge, water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality in wells and springs. This volume contains discharge records for 66 gaging stations; stage and contents for 8 lakes and reservoirs; water quality for 35 stream stations, 3 partial-record stream stations, 1 partial-record lake station, and 67 wells; and water levels for 255 observation wells. Also included are 112 high-flow partial record stations and 181 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, together with the data in Volume 1, represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Minnesota.

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ILLUSTRATIONS

Letter after station name designates type of data: (d) discharge; (e) gage height, elevation, or contents; (c) chemical, radio-chemical, or pesticides; (b) biological or micro-biological; (p) physical (water temperature, sediment, or specific conductance)

GROUND-WATER WELLS, BY COUNTY, FOR WHICH RECORDS ARE PUBLISHED

WATER RESOURCES DATA FOR MINNESOTA, 1980

INTRODUCTION

Water resources data for the 1980 water year for Minnesota consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground water. This volume contains discharge records for 66 gaging stations; stage and contents for 8 lakes and reservoirs; water quality for 35 stream stations, 3 partial-record stream stations, 1 partial-record lake station, and 67 wells; and water levels for 255 observation wells. Also included are 112 high-flow partial-record stations and 181 low-flow partial-record stations. Additional water data were collected at various sites, not involved in the systematic data collection program, and are published as miscellaneous measurements. These data, together with the data in Volume 1, represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Minnesota.

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 titled "Surface Water Supply of the United States." Through September 30, 1960, these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water supply papers titled "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 titled "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, 1200 South Eads Street, Arlington, VA 22202.

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 MN-80-1." Water-Data reports are for sale by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the district chief at the address given on the back of the title page or by telephone (612) 725-7841.

COOPERATION

The U.S. Geological Survey and organizations of the State of Minnesota have had cooperative agreements for the systematic collection of streamflow records since 1909, for ground-water levels since 1948, and for water-quality records since 1952. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

Minnesota Department of Natural Resources, Division of Waters, Larry Seymour, director.

Minnesota Department of Transportation, Richard P. Braum, commissioner.

Minnesota Department of Health, George R. Petterson, commissioner.

Metropolitan Waste Control Commission of the Twin Cities Area, by B. L. Lukermann, chairwoman.

Metropolitan Council of the Twin Cities Area, Charles R. Weaver, chairman.

Coon Creek Watershed District, Harold G. Israelson, district engineer.

Elm Creek Conservation Commission, Gerald E. Butcher, chairman.

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting records for 44 gaging stations and 14 water-quality stations published in this report.

Twelve gaging stations in the Hudson Bay and St. Lawrence River basins were maintained by funds appropriated to the United States Department of State. Nine of these, on waters adjacent to the international boundary, are maintained by the United States (or Canada) under agreement with Canada (or the United States), and the records are obtained and compiled in a manner equally acceptable in both countries. These stations are designated herein as "International gaging stations."

Some records for the Red River of the North, which border the State on the west, were obtained at the request of other Federal agencies as a part of the program of the U.S. Department of the Interior for development of the Missouri River basin.

ACKNOWLEDGMENT

Minnesota district personnel who contributed significantly to the collection and preparation of water-resources data for publication in this report were:

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HYDROLOGIC CONDITIONS

Annual streamflow was in the median to excessive range in the central and southern parts of the State for the 1980 water year.

Excessive streamflows prevailed in the south at the beginning of the 1980 water year, and continued at this level through the fall, winter, and spring seasons before returning to normal. Record or near record monthly flows occurred in the Des Moines River at Jackson each month during this period. Rain and ice jams caused flooding in the Root River basin in January 1980, and a crest-stage gage site on a tributary to the Root River near Whalan recorded the highest peak in 21 years of record during a storm in May. Streamflow in the Minnesota River near Jordan was in or near the excessive range for the first 6 months of the water year and in the median range for the remainder.

Precipitation in the central and southern parts of the State was above normal during the fall, but decreased during the succeeding months so that total annual rainfall for the 1980 water year was from 1 to 3 inches below normal except for the extreme southeast which was 5 inches above normal.

Extremely intense rainfall on September 20-21 in southeastern Minnesota raised the September mean flow in the South Fork Root River near Houston to the highest in 27 years of record. High peak flows with recurrence intervals greater than 100 years occurred in small tributaries to the Mississippi River between Winona and LaCrescent causing an estimated 2 million dollars in damage to public and private property.

The combined storage in the six Mississippi River Headwater Reservoirs (Winnibigoshish, Leech, Pokegama, Pine, Sandy, and Gull) was 1,291,451 acre-feet at the end of the water year, a decrease of 146,755 acre-feet from the corresponding date a year ago.

Monthly and annual mean discharge is compared with median discharge for the period 1941-70 at four representative gaging stations in figure 1.

At the end of the 1980 water year, 58 percent of ground-water levels in observation wells were within a foot of average for the period of record; 13 percent were above average, and 29 percent were below average. During the drought of the 1970's, wells in central Minnesota declined starting about 1972. The decline in water levels in southern Minnesota and northern Minnesota generally began later, about 1975. Most wells reached a low point in 1976-77 and started to recover during 1977 to reach a high point in 1979. Since 1979, there has been a general decline in water levels to normal predrought conditions. Water levels at the end of the 1980 water year were near average or above in 70 percent of the observation wells.

In the Paleozoic bedrock aquifers in the metropolitan area and southeast Minnesota, 80 percent of the wells observed showed declining water levels during 1980; although, at the end of the year 60 percent of the water levels were still within a foot of average or above average. A Hydrograph of water levels in a long-term representative network observation well, 1949-80, is shown in figure 2.

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 inch-pound units to International System of units (SI) 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.

Adenosine triphosphate (ATP) is the primary energy donor in cellular life process. Its central role in living cells makes it an excellent indicator of the presence of living material in water. A measure of ATP, therefore, provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter of the original water sample.

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

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample.

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 with a golden-green metallic sheet within 24 hours when incubated at 35°C ± 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

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

Fecal streptococcal bacteria are bacteria found also in the intestine of warmblooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C ± 1.0°C on M-FC 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 quantitiy 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 weight 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.

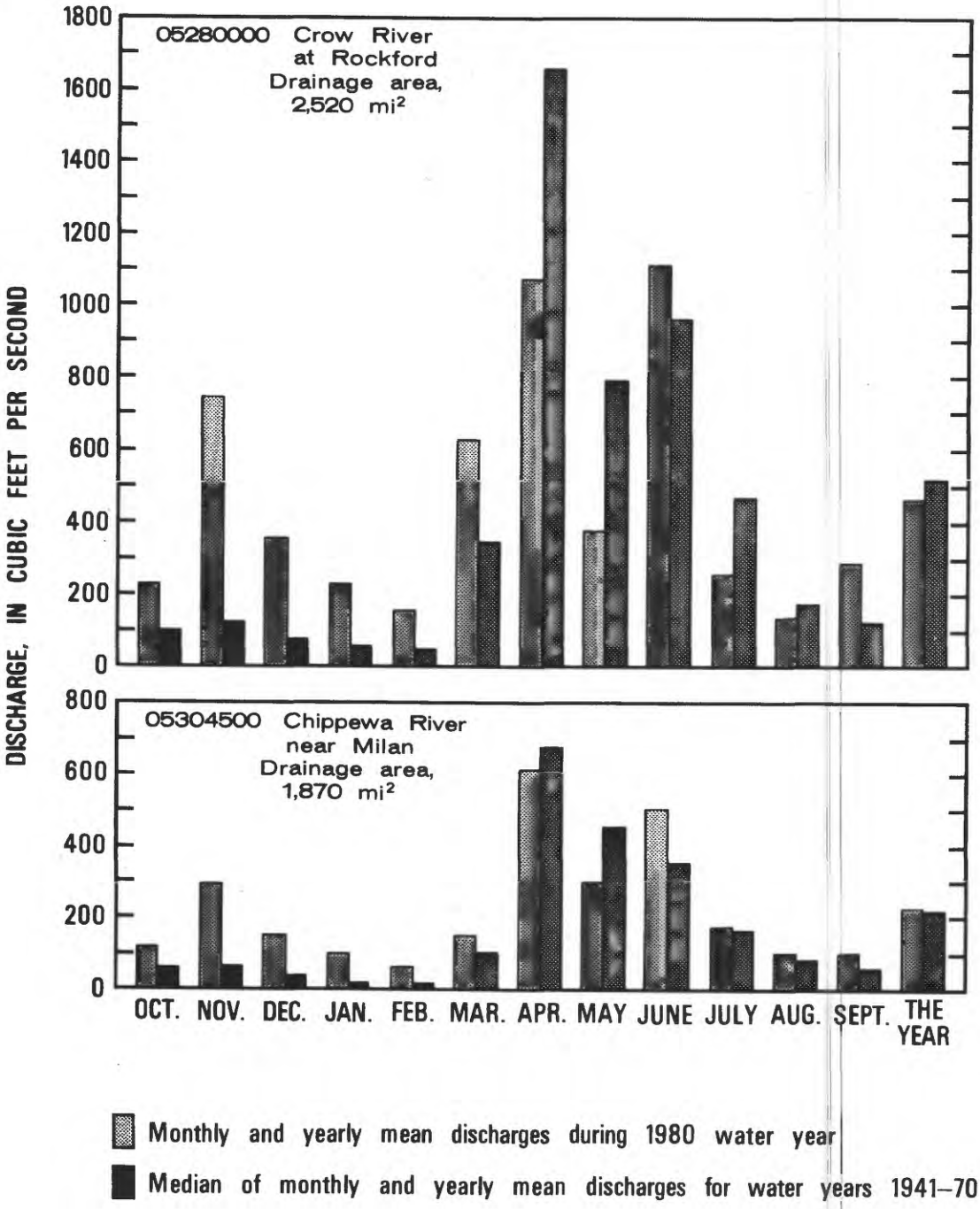
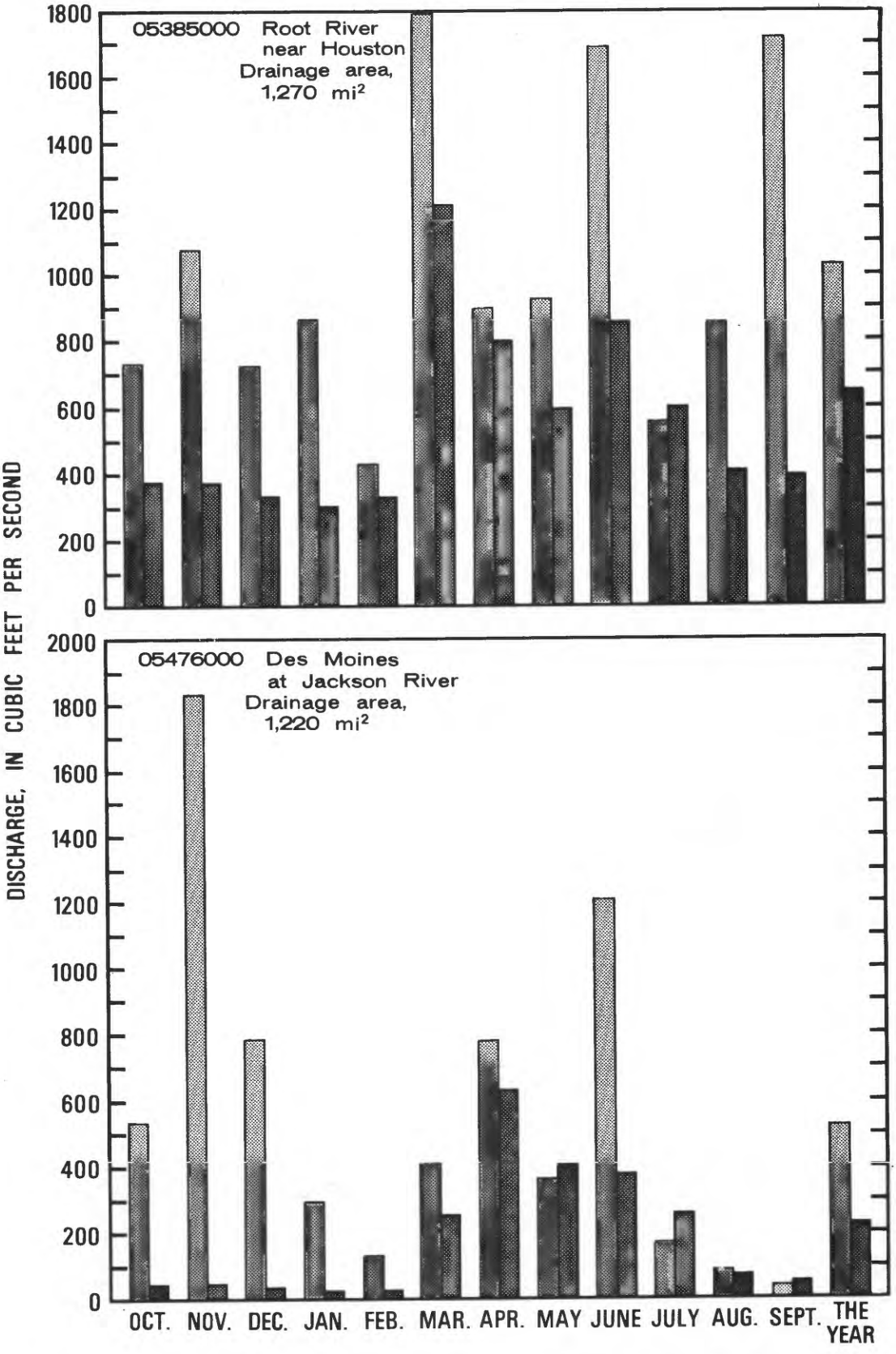


Figure 1.--Comparison of discharge at four long—term representative water years 1941—70



gaging stations for the current year with median discharge for

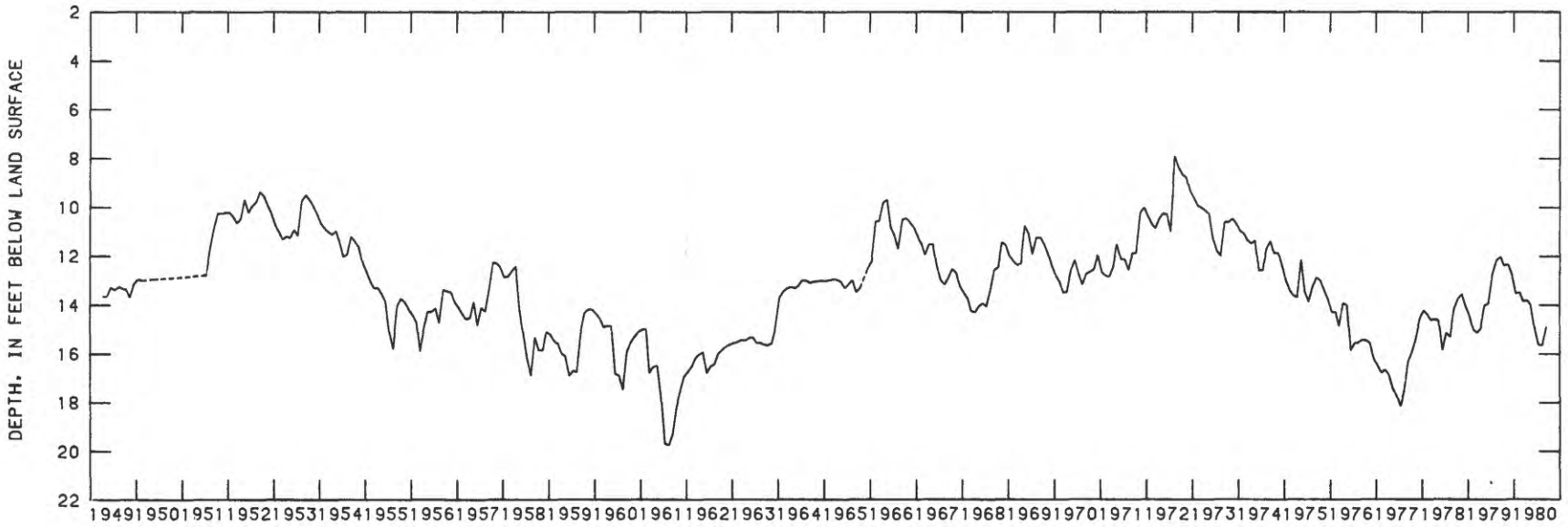


Figure 2.--Hydrograph showing long-term trends of water level for period in well 130N29W08DCC01, Morrison County

Cells/volume refers to the number of cells or 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 a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, or about 646,000 gallons or 2,447 cubic meters.

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

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

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

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

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

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

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

Discharge is the volume of water (or more broadly, volume of 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 substance present in true chemical solution. In practice, however, the term includes all forms of substance that will pass through a 0.45 micrometer memmbrane 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_i is the number of individuals per taxon, n is the total number of individuals, and s is the total number of taxa in the sample of the community. Diversity index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the river 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.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This developmental process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

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

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

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

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

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

Organism is any living entity, such as an insect, 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 (m^2), acres, or hectares. Periphyton benthic organisms, and macrophytes are expressed in these terms.

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

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

Parameter code numbers are unique five-digit code numbers assigned to each parameter placed into storage. These codes are assigned by the Environmental Protection Agency and are also used to identify data exchanged among agencies.

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 distilled water (chemically dispersed).

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.

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

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

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

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

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

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

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

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells/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/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 [mg C/(m^2·time) for periphyton and macrophytes and mg C/(m^3·time)] for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method, and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [mg O_2/(m^2·time) for periphyton and macrophytes and mg O_2/(m^3·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.

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of only readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

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 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.

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 appoximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

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

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

Substrate is the physical surface upon which an organism lived.

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

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and miltiplate 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 USGS 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.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45 um membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45 um membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent

determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

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	Insects
Order	Ephemeroptera
Family	Ephemeridae
Genus	Hexagenia
Species	Hexagenia limbata

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 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 substance in solution or suspension that passes a stream section during a 24-hour day.

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determines all of the constituent in the sample.)

Total in bottom material is the total amount of a given constituent in a representative sample of bottom material. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total in bottom material."

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.

Total recoverable refers to the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent percent in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

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 discharge. 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 before that station. A station on a tributary that enters between

two main-stream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary on which a station is situated with respect to the stream to which it is immediately tributary is indicated by an indention in a list of stations in the front of the report. Each indention represents one rank. This downstream order and system of indention show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

As an added means of identification, 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 03041000, which appears just to the left of the station name, includes the 2-digit part number "03" plus the 6-digit downstream order number "041000".

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

The 8-digit downstream order station numbers are not assigned to wells and miscellaneous sites where only random water-quality samples or discharge measurements are taken.

The well and miscellaneous site numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote degrees, minutes, and seconds of longitude, and the last 2 digits (assigned sequentially) identify the wells or other sites within a 1-second grid. See figure 4 below. Each well site is also identified by a local well number which consists of township, range, and section numbers, three letters designating 1/4, 1/4, 1/4 section location, and a two digit sequential number.

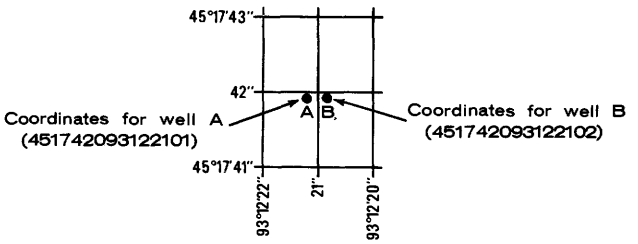


Figure 3.--Example of system for numbering wells and miscellaneous sites

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 into 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 streamflow and 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 radiosotopes. 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 base line information on the occurrence of tritium in the Nation'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 RECORDS

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 discharges 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 hydrologists 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 the 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 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 station 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 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 bveen 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 herein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision, the fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

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

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 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 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 discharge 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 indefinte 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 and contents. For some reservoirs a table showing daily contents or stage is given. A skeleton table of capacity at given stages is published for all reservoirs for which records are published on a daily basis, but is not published for reservoirs for which only monthly data are given.

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 field data and computed results

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 interpretations 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 ft^3/s; to tenths between 1.0 and 10 ft^3/s; to whole numbers between 10 and 1,000 ft^3/s; and to 3 significant figures above 1,000 ft^3/s. 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

The National Water Data Exchange, Water Resources Division, U.S. Geological Survey, National Center, Reston, VA 22092, maintains an index of all discharge measurement sites in the State. 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.

For ground-water records, no descriptive statements are given; however, the well number, depth of well, date of sampling and (or) other pertinent data are given in the table containing the chemical analyses of the ground water.

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. 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 discharges.

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-intergrating 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 concentraiton, 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 were 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 were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, 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 the 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 network of observation wells are published herein. This basic network contains observation wells so located that the most significant data are obtained from the fewest wells in the 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 figure 3.

Measurements are made in many types of wells, under varying conditions of access and at 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 ensure that measurements at each well are consistent.

Water-level measurements in this report are given in feet with reference to either NGVD of 1929 or land-surface datum (lsd). NGVD of 1929 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 in NGVD of 1929 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 in 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.

Hydrographs showing water-level fluctuations are included for 15 representative wells; 5 bedrock, 5 surficial-sand, and 5 buried-sand wells.

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

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

1-D1. *Water temperature--influential factors, field measurement, and data presentation*, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.
1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.
2-D1. *Application of surface geophysics to ground-water investigations*, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.
2-E1. *Application of borehole geophysics to water-resources investigations*, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.
3-A1. *General field and office procedures for indirect discharge measurements*, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.
3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.
3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.
3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.
3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.
3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.
3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.
3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.
3-A11. *Measurement of discharge by moving-boat method*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.
3-B1. *Aquifer-test design, observation, and data analysis*, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.
3-B2. *Introduction to ground-water hydraulics, a programed text for self-instruction*, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.
3-C1. *Fluvial sediment concepts*, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.
3-C2. *Field methods for measurement of fluvial sediment*, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.
3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.
4-A1. *Some statistical tools in hydrology*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 pages.
4-A2. *Frequency curves*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages.
4-B1. *Low-flow investigations*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.
4-B2. *Storage analyses for water supply*, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.
4-B3. *Regional analyses of streamflow characteristics*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages.
4-D1. *Computation of rate and volume of stream depletion by wells*, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages.
5-A1. *Methods for determination of inorganic substances in water and fluvial sediments*, by M. W. Skougstad and others, editors: USGS--TWRI Book 5, Chapter A1. 1979. 626 pages.
5-A2. *Determination of minor elements in water by emission spectroscopy*, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages.
5-A3. *Methods for analysis of organic substances in water*, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages.
5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*, edited by P. E. Greeson, T. A. Ehlke, G. A. Irwin, B. W. Lium, and K. V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 pages.
5-A5. *Methods for determination of radioactive substances in water and fluvial sediments*, by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.
5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.
7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.
7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.
8-A1. *Methods of measuring water levels in deep wells*, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages.
8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.

Red River of the North
Rainy River
Upper Red Lake
Lower Red Lake
Bemidji
Grand Rapids
International Falls
Mille Lacs Lake
DULUTH
SUPERIOR LAKE
Moorhead
5102500
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5106000
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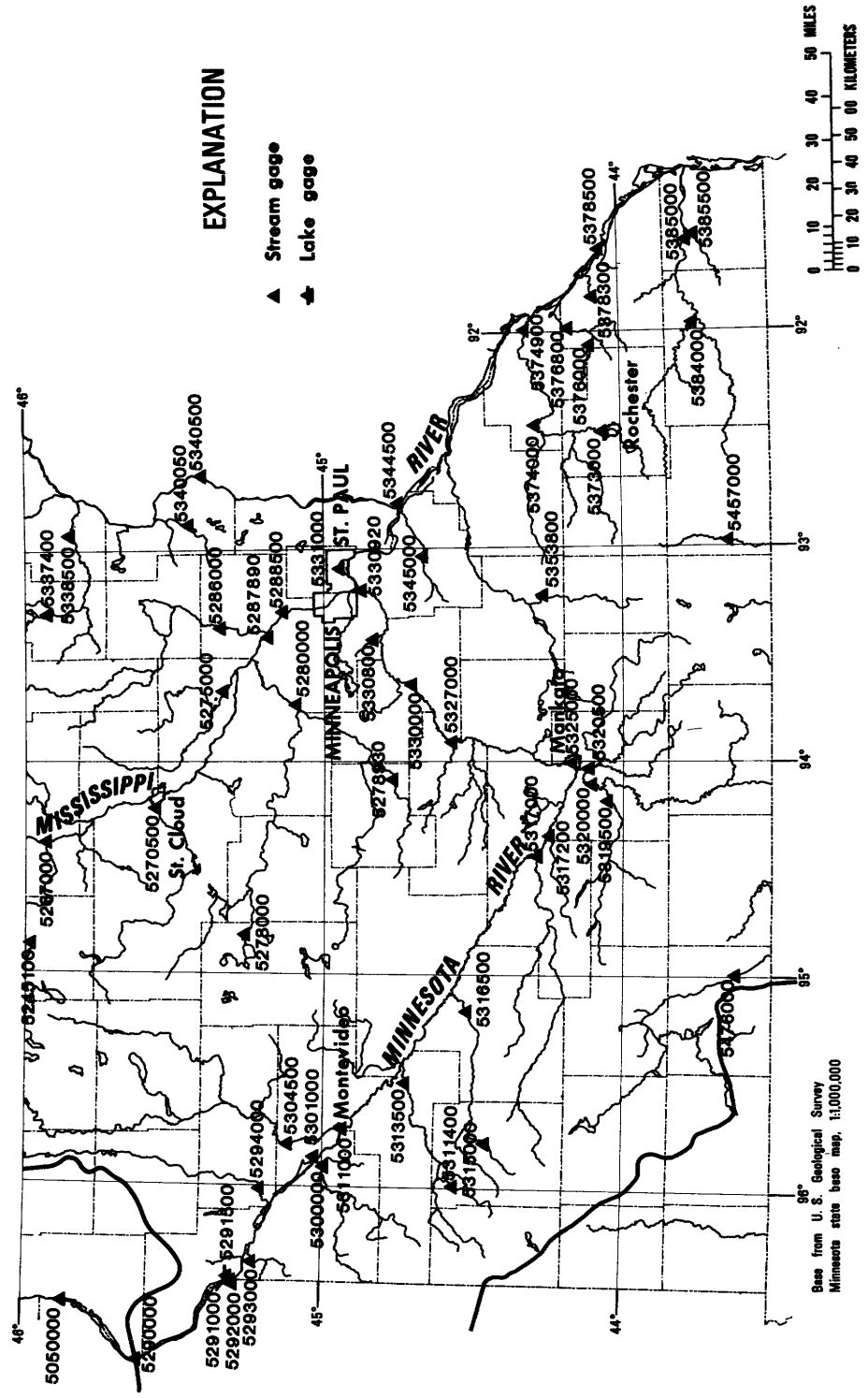
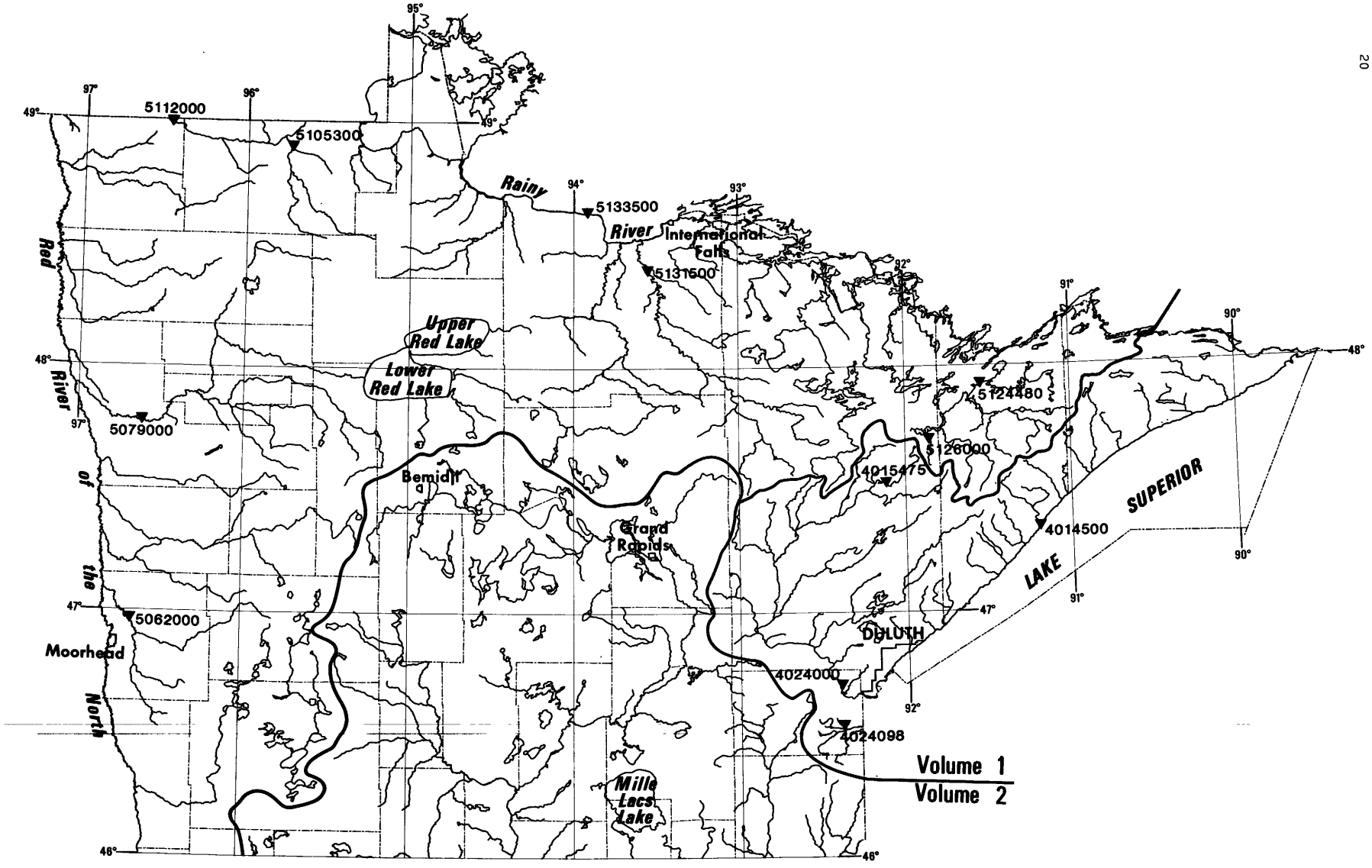


Figure 4.--Location of water-discharge station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Mille Lacs Lake
Volume 1
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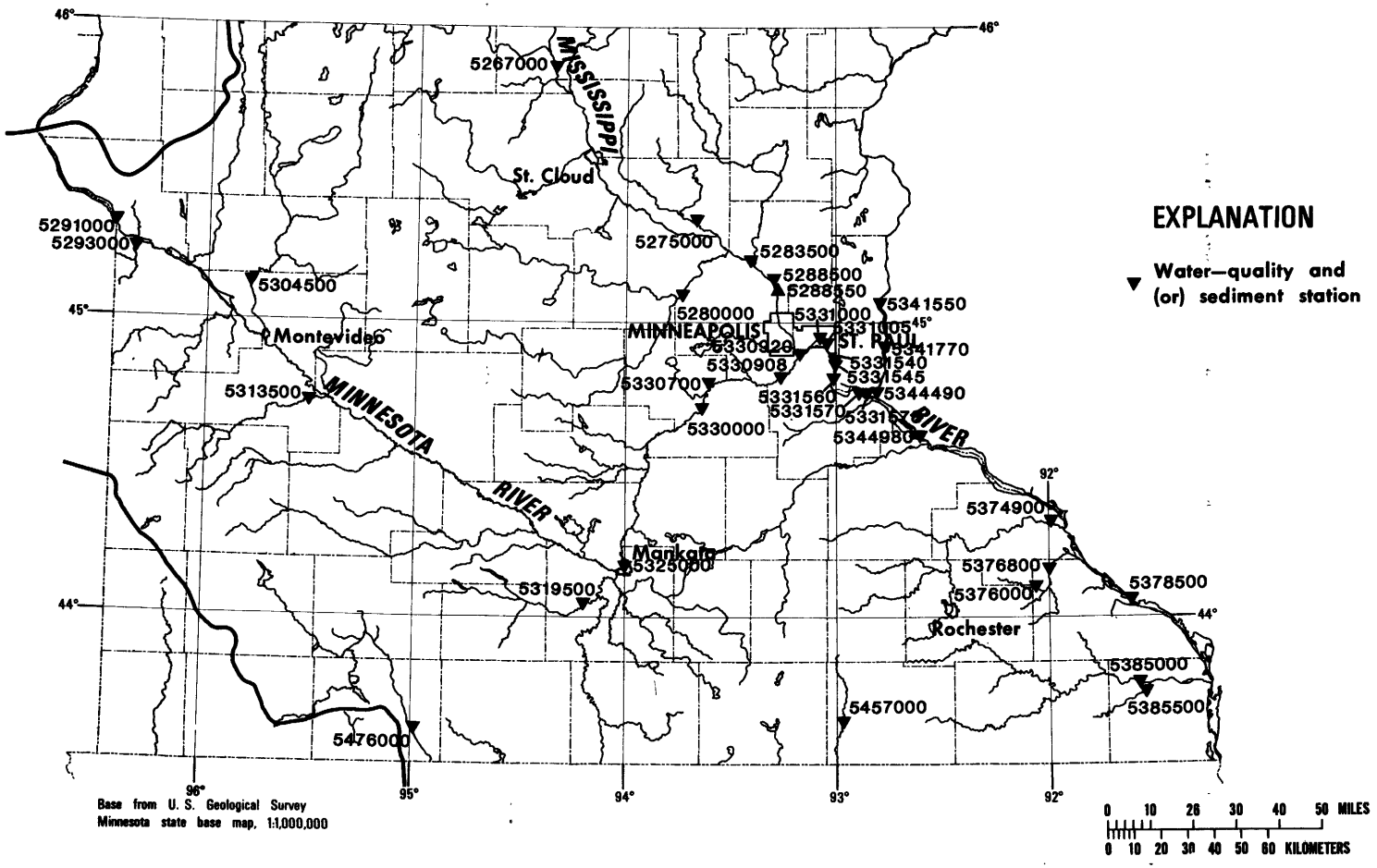
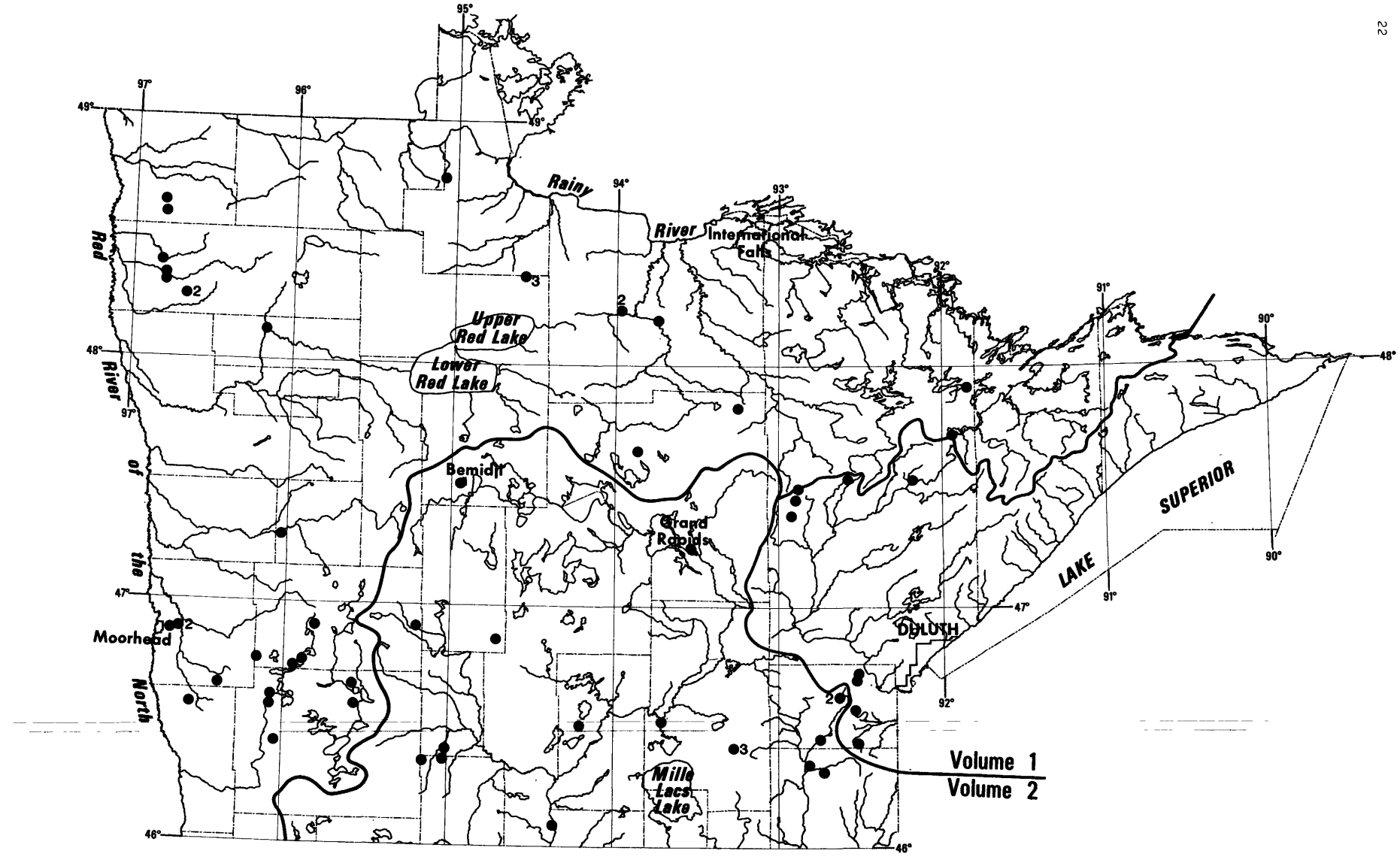


Figure 5.--Location of water—quality stations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Bemidji
Grand Rapids
Moorhead
DULUTH
SUPERIOR
LAKE
Mille Lacs Lake
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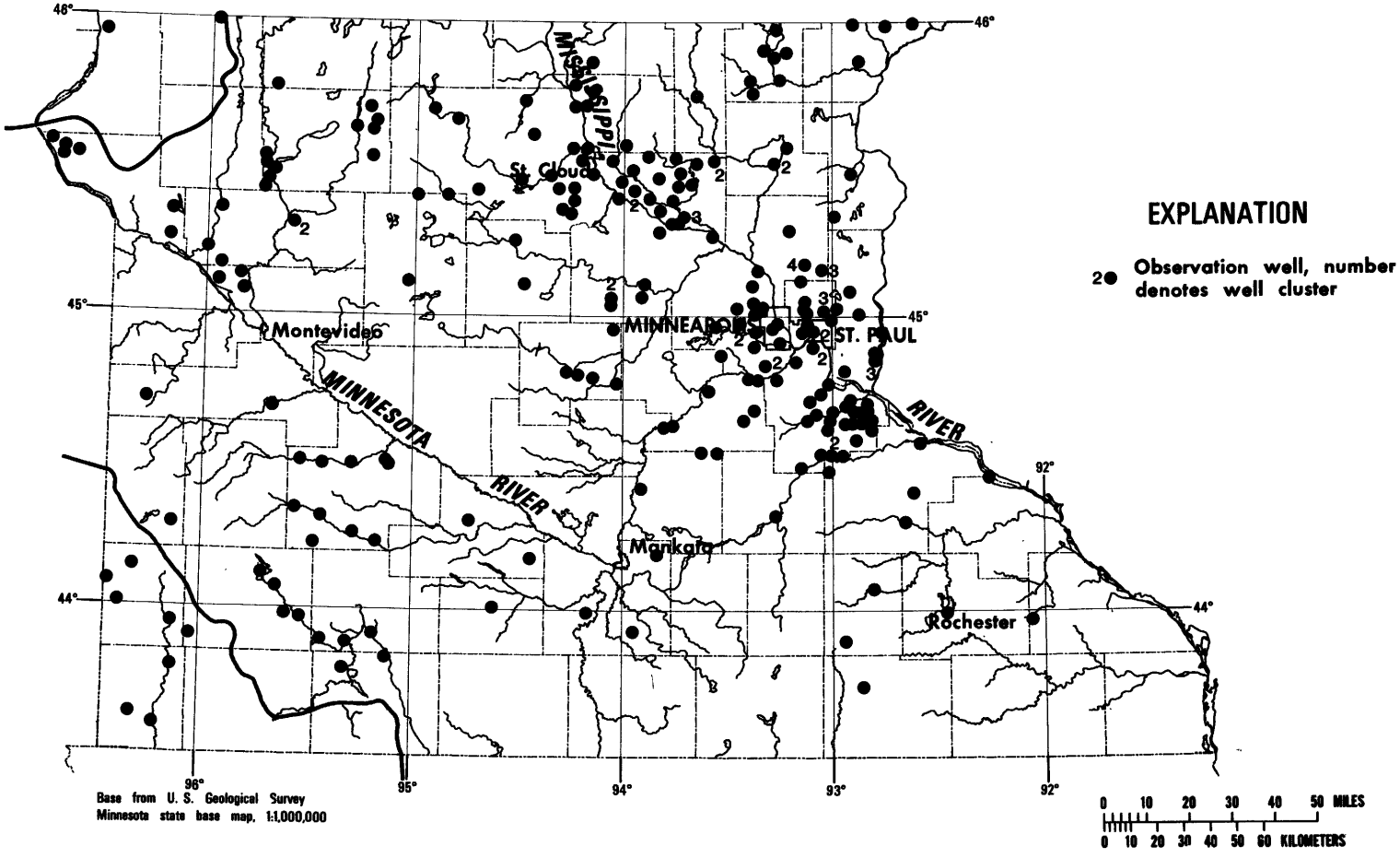
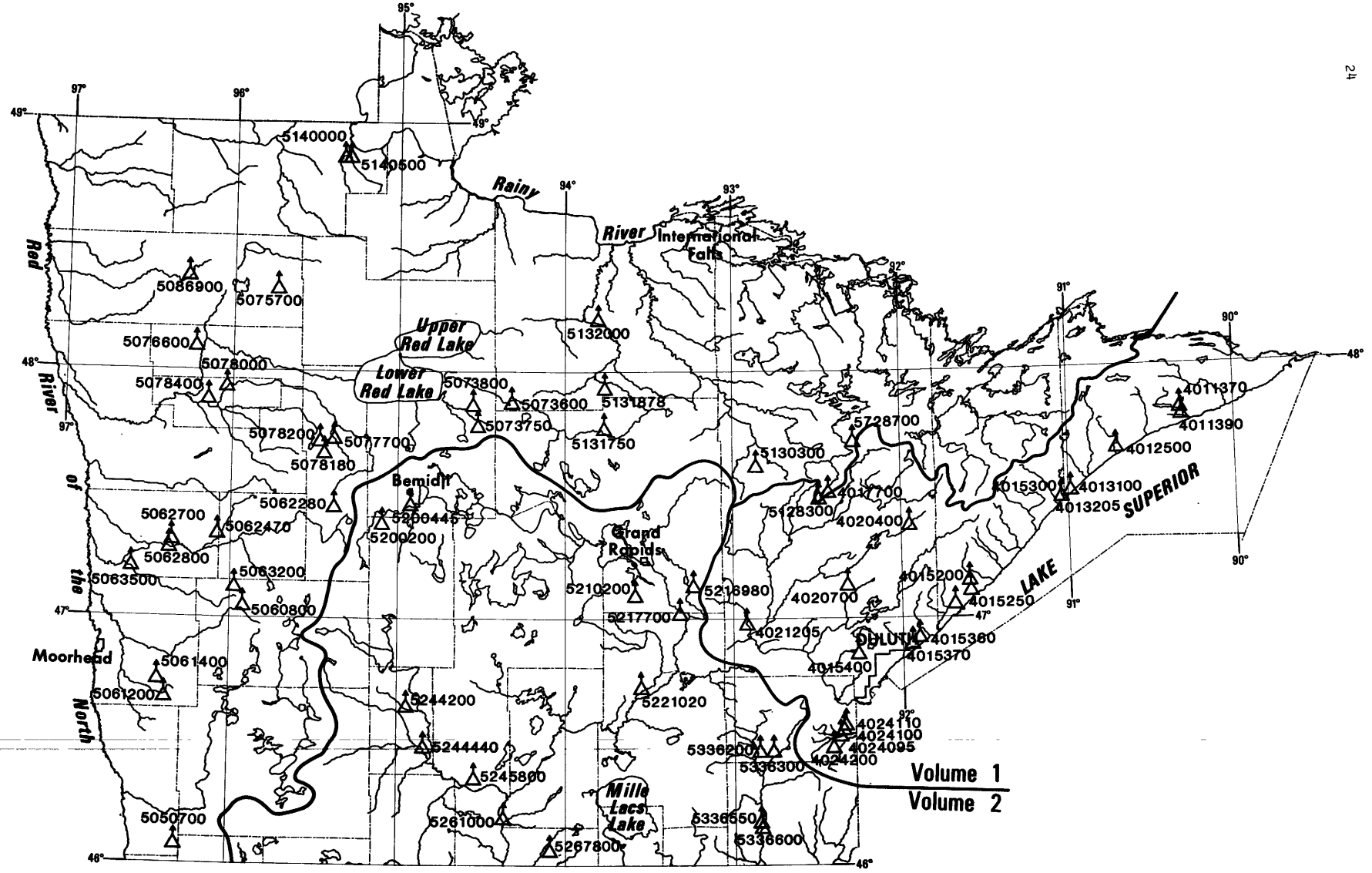


Figure 6.--Location of ground—water wells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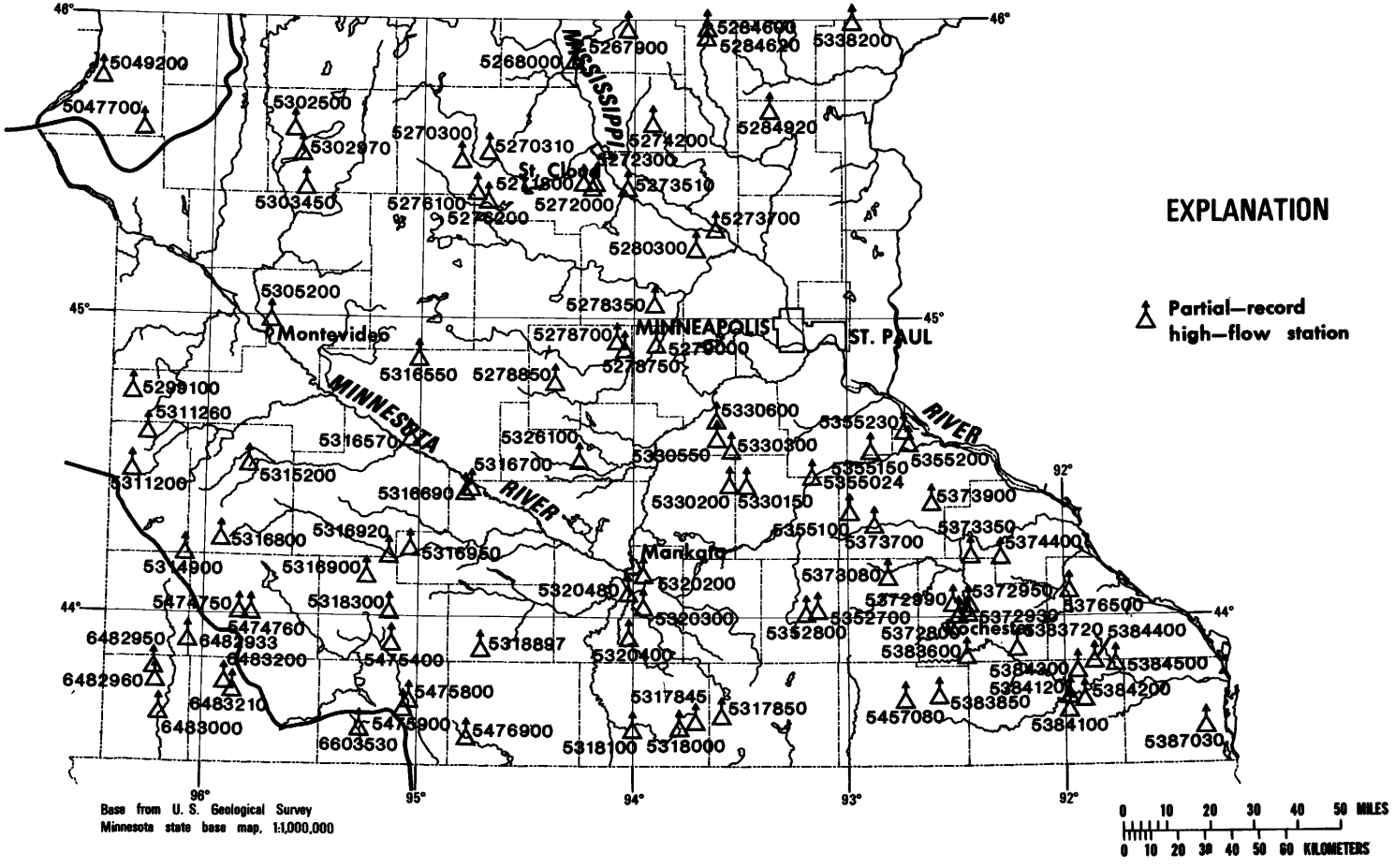


Figure 7.--Location of high—flow partial—record stations

The following continuous-record streamflow or stage stations in Minnesota have been discontinued or converted to partial-record stations. Daily streamflow or stage records were collected and published for the period of record shown for each station

Station number	Station name	Drainage area (mi^2)	Period of record
	Upper Mississippi River basin		
05210000	Mississippi River near Deer River, MN	a3,190	1945-50
*05213000	Prairie River near Grand Rapids, MN	485	1909†, 1925-49
05216800	O'Brien Creek near Pengilly, MN	-	1963-68
05217000	Swan River near Warba, MN	254	1954-69
05217500	Swan River near Swan River, MN	a290	1929
05218000	Mississippi River above Sandy River near Libby (above Sandy River), MN	4,560	1895-1915, 1925-29
05221000	Willow River near Palisade, MN	442	1929
05226200	Ripple (Mud) River near Wealthwood, MN	-	1937-39
05232000	Pelican Brook (Long Lake) near Pequot Lakes, MN	-	1938-42, 1943-47
05241500	Rabbit River near Crosby, MN	8.38	1945-63
05242700	Little Sand Lake outlet (Sand Lake outlet) near Dorset, MN	a74	1930-41
05244500	Crow Wing River at Motley, MN	a2,140	1909†, 1913-17, 1930-31
05244980	Diversion from Long Prairie River near Osakis, MN	-	1939-47
05244980	Long Prairie River near Osakis, MN	-	1949-54
05245500	Long Prairie River near Motley, MN	973	1909-17, 1930-31
05246000	Crow Wing River at Pillager	a3,230	1903†, 1909-13, 1925-50
*05261000	Mississippi River near Fort Ripley, MN	a11,010	1906, 1909-10, 1929
05261500	Nokasippi River near Fort Ripley, MN	210	1929
*05268000	Platte (Platt) River at Royalton, MN	338	1929-36
05269000	Mississippi River near Sauk Rapids, MN	a12,400	1903-06
05270000	Mississippi River at Sartell, MN	a12,450	1929, 1943-47†
05273500	Clearwater River at Clearwater, MN	-	1937, 1940-42
05274500	Elk River above St. Francis River near Big Lake, MN	384	1929
05274700	St. Francis River at Santiago, MN	-	1965-70
05274900	St. Francis River near Big Lake, MN	-	1965-70
05275500	Mississippi River at Elk River, MN	a14,500	1915-56
05276000	North Fork Crow River near Regal, MN	215	1943-54
05277000	Middle Fork Crow River at New London, MN	-	1939-42, 1943-47
05277500	Middle Fork Crow River (Calhoun Lake Diversion) near Spicer, MN	-	1939, 1940-46
05278400	North Fork Crow River near Rockford, MN	-	1909-10
05278500	South Fork Crow River at Cosmos, MN	221	1945-64
*05279000	South Fork Crow River near Mayer, MN	a1,170	1934-79
05279500	South Fork Crow River near Rockford, MN	a1,250	1909-12
05283500	Mississippi River at Anoka, MN	a17,100	1897, 1905-13

"See footnotes at end of table."

Station number	Station name	Drainage area (mi^2)	Period of record
	Upper Mississippi River basin--Continued		
05284500	Rum River at Onamia, MN	414	1910-12
05284750	Rum River at Spencer Brook, MN	-	1960-64
05285000	Rum River at Cambridge, MN	a1,160	1909-14
05285500	Rum River at St. Francis, MN	-	1903
05286500	Rum River near Anoka, MN	1,430	1905-06, 1909
05289000	Minnetonka Lake (head of Minnehaha Creek) near Wayzata (at Excelsior), MN	-	1938-64
05289500	Minnehaha Creek at Minnetonka Mills, MN	130	1953-64
	Minnesota River basin		
05292500	Minnesota River near Odessa, MN	a1,340	1909-12, 1944-63
05293500	Pomme de Terre River near Morris, MN	-	1937-39, 1940-47
05299500	Canby Creek at Canby, MN	-	1938-39, 1940-46
05300500	Ten Mile Creek near Boyd, MN	82.8	1949-51
05302000	Little Chippewa River near Lowry, MN	a54	1941
*05302500	Little Chippewa River near Starbuck, MN	111	1938-39
05303000	Chippewa River at diversion dam near Hancock, MN	-	1930-39, 1940-46
05303500	Chippewa River at Benson, MN	a1,270	1949-51
05304000	Shakopee Creek near Benson, MN	352	1949-54
05305000	Chippewa River near Watson, MN	a2,050	1910-17, 1931-36
05311500	Yellow Medicine River near Cottonwood, MN	465	1945-46
05312000	Spring Creek near Clarkfield, MN	a89	1945-46
05312500	Spring Creek near Hazel Run, MN	101	1945-48
05313000	Yellow Medicine River near Hanley Falls, MN	606	1945-47
05313521	Hawk Creek at outlet of Eagle Lake near Willmar, MN	-	1972-73
05313560	Eagle Lake tributary No. 7 near Willmar, MN	-	1972-73
05313570	Eagle Lake tibutary No. 8 near Willmar, MN	-	1972-73
05314000	Chetomba Creek near Maynard, MN	a200	1949-51
*05314500	Hawk Creek near Maynard, MN	474	1949-54
*05315200	Prairie Ravine near Marshall, MN	5.63	1959-64
05315500	Redwood River near Green Valley, MN	436	1945-57
05316000	Redwood River near Seaforth, MN	573	1945-46
05316770	Minnesota River at New Ulm, MN	9,536	1968-76
05317500	Minnesota River at Judson, MN	a11,200	1938-50
*05318000	East Branch (East Fork) Blue Earth River near Bricelyn, MN	132	1951-70
05319000	South Fork Watonwan River at diversion dam near St. James, MN	-	1939, 1940-46
05319500	Watonwan River near Garden City, MN	812	1940-45
05321000	Blue Earth River at Mankato, MN	a3,550	1938-39, 1940-42
05330400	Sand Creek at diversion dam near Jordan, MN	-	1938-39, 1940-46
05330900	Nine Mile Creek at Bloomington, MN	-	1963-73

"See footnotes at end of table."

DISCONTINUED GAGING STATIONS

Station number	Station name	Drainage area (mi^2)	Period of record
	St. Croix River basin		
*05336200	Glaisby Brook near Kettle River, MN	24.2	1959-70
05336500	Kettle River near Sandstone, MN	825	1908-16
05337000	Grindstone River at Hickley, MN	-	1940-47
05337500	Snake River at Mora, MN	422	1909-13
05338000	Snake River at Sanatorium Bridge near Pine City, MN	-	1937-38
05339500	St. Croix River near Rush City, MN	a5,120	1923-61
05340000	Sunrise River near Stacy, MN	167	1949-65
	Lower Mississippi River basin		
05345500	Vermillion River at Empire (Empire City), MN	124	1942-44
05346000	Vermillion River at Hastings, MN	195	1942-47
*05355200	Cannon River at Welch, MN	a1,320	1909-14, 1930-71
05371500	Mississippi River at Wabasha, MN	a56,600	1934
05373500	Zumbro River (South Branch) near Zumbro Falls, MN	821	1911-17
05374500	Zumbro River at Theilman, MN	a1,320	1938-56
*05376500	South Fork Whitewater River near Altura, MN	76.8	1939-71
05377000	Beaver Creek at Beaver, MN	15.4	1939-40
05377500	Whitewater River at Beaver, MN	288	1936-38†, 1939-56
05379000	Gilmore Creek at Winona, MN	8.95	1939-63
05380500	Mississippi River at Lamoile, MN	a60,000	1930-31
05383500	Mississippi River at LaCrosse, WI	-	1929-55
05383600	North Branch Root River tributary near Stewartville, MN	0.73	1959-64
*05384500	Rush Creek near Rushford, MN	129	1942-79
05386000	Root River below South Fork near Houston, MN	a1,560	1938-61
05456500	Turtle Creek near Austin, MN	144	1947-51
05475000	Heron Lake outlet near Heron Lake, MN	-	1930-43
	Big Sioux River basin		
*06483000	Rock River at Luverne, MN	440	1911-14
06603000	Little Sioux River near Lakefield, MN	17.1	1948-63
06603500	Jackson County ditch No. 11 near Lakefield, MN	7.69	1948-61

* Presently operated as a high-flow partial-record station.
† Stage records only.
a Approximately.

MISSISSIPPI RIVER MAIN STEM

05201000 WINNIBIGOSHISH LAKE NEAR DEER RIVER, MN

LOCATION.--Lat 47°25'42", long 94°03'00", in sec.25, T.146 N., R.27 W., Itasca County, Hydrologic Unit 07010101, on Leech Lake Indian Reservation, at dam on Mississippi River, 1 mi (1.6 km) northwest of Little Winnibigoshish Lake, 14 mi (23 km) northwest of town of Deer River, and at mile 1,248 (2,008 km) upstream from Ohio River.

DRAINAGE AREA.--1,442 mi^2 (3,735 km^2).

PERIOD OF RECORD.--April 1884 to current year. Prior to October 1941 monthend contents only, published in WSP 1308. Published as Winnibigoshish Reservoir near Deer River October 1941 to September 1956.

REVISED RECORDS.--WSP 1308: 1905(M).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to July 8, 1949, nonrecording gage at same site, and July 9, 1949, to July 10, 1973, water-stage recorder at same site and at datum of 1,288.94 ft (392.869 m) National Geodetic Vertical Datum of 1929.

REMARKS (Revised).--Reservoir is formed by Winnibigoshish Lake and several other natural lakes controlled by a concrete and timber dam, completed in 1884; storage began in 1884. Capacity between elevations 1,294.94 ft (394.700 m) and 1,303.14 ft (397.200 m) (maximum allowable range) is 668,737 acre-ft (825 hm^3) of which 439,636 acre-ft (542 hm^3) is controlled storage between elevations 1,294.94 ft (394.700 m) and 1,300.94 ft (396.530 m) (normal operating range). Contents shown herein are contents above elevation 1,286.00 ft (391.973 m). Prior to September 1978, published contents as contents above elevation 1,288.94 ft (392.869 m). Water is used to benefit navigation on Mississippi River below Minneapolis.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 996,500 acre-ft (1,230 hm^3) capacity table then in use, July 30, 1905, elevation, 1,303.39 ft (397.273 m); minimum observed, 33,680 acre-ft (41.5 hm^3) below zero of capacity table then in use, Oct. 20, 1931, elevation, 1,288.25 ft (392.659 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 644,400 acre-ft (795 hm^3) Nov. 1, elevation, 1,298.13 ft (395.670 m); minimum, 565,600 acre-ft (697 hm^3) Mar. 11, elevation, 1,296.91 ft (395.298 m).

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1297.98	634500	
Oct. 31	1297.91	629800	-4700
Nov. 30	1297.70	616100	-13700
Dec. 31	1297.54	605700	-10400
CAL YR 1979			+8400
Jan. 31	1297.28	589000	-16700
Feb. 29	1297.00	571300	-17700
Mar. 31	1297.20	583900	+12600
Apr. 30	1297.59	608900	+25000
May 31	1297.59	608900	0
June 30	1297.58	608300	-600
July 31	1297.36	594100	-14200
Aug. 31	1297.40	596700	+2600
Sept. 30	1297.51	603800	+7100
WTR YR 1980			-30700

05201500 MISSISSIPPI RIVER AT WINNIBIGOSHISH DAM NEAR DEER RIVER, MN

LOCATION.--Lat 47°25'42", long 94°03'00", in SW¼ sec.25, T.146 N., R.27 W., Itasca County, Hydrologic Unit 07010101, on Leech Lake Indian Reservation, at dam 1 mi (2 km) northwest of Little Winnibigoshish Lake, 14 mi (23 km) northwest of town of Deer River, and at mile 1,248 (2,008 km) upstream from Ohio River.

DRAINAGE AREA.--1,442 mi^2 (3,735 km^2).

PERIOD OF RECORD.--May 1884 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder on headwater and nonrecording gage on tailwater. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to June 30, 1973, gages at same sites with datum at 1,289.47 ft (393.030 m) adjustment of 1912. Prior to July 8, 1949, nonrecording headwater gage at same site and datum in use.

REMARKS.--Daily discharge is computed on the basis of modified weir formula and corrected to conform with discharge measurements, the head being determined from readings of headwater and tailwater gages. Flow completely regulated by Winnibigoshish Lake (station 05201000).

COOPERATION.--Daily discharge computed by Corps of Engineers.

AVERAGE DISCHARGE (unadjusted).--96 years, 515 ft^3/s (14.58 m^3/s), 4.85 in/yr (123 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 4,370 ft^3/s (124 m^3/s) Aug. 6, 1905; no flow at times in several years.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 923 ft^3/s (26.1 m^3/s) Jan. 19; minimum daily, 100 ft^3/s (2.83 m^3/s) Mar. 22 to Apr. 23, July 11 to July 18, July 23 to Sept. 8, Sept. 11-15, Sept. 18, 19, 21, 28, 29.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	379	741	853	736	918	751	100	101	101	101	100	100
2	379	850	853	736	918	752	100	101	101	101	100	100
3	379	858	853	736	918	752	100	101	101	101	100	100
4	379	856	665	736	918	753	100	101	101	101	100	100
5	379	856	665	807	918	658	100	101	101	101	100	100
6	379	856	666	807	918	658	100	101	101	101	100	100
7	379	856	666	807	918	659	100	101	101	101	100	100
8	379	856	666	807	918	563	100	101	101	101	100	100
9	379	854	666	807	917	563	100	101	101	101	100	101
10	379	854	666	807	917	565	100	101	101	101	100	101
11	379	854	667	807	918	563	100	101	101	100	100	100
12	379	854	667	806	917	468	100	101	101	100	100	100
13	379	854	667	806	917	469	100	101	101	100	100	100
14	378	854	667	806	917	469	100	101	101	100	100	100
15	378	854	739	806	917	397	100	101	101	100	100	100
16	452	854	739	806	829	398	100	101	101	100	100	101
17	452	854	738	806	829	398	100	101	101	100	100	101
18	597	854	738	806	829	398	100	101	101	100	100	100
19	597	854	738	923	829	279	100	101	101	101	100	100
20	597	854	736	921	823	280	100	101	101	101	100	101
21	598	854	736	920	823	210	100	101	101	101	100	100
22	597	854	736	920	823	100	100	101	101	101	100	101
23	597	853	736	920	823	100	100	101	101	100	100	101
24	596	853	736	920	823	100	101	101	101	100	100	101
25	595	853	736	920	823	100	101	101	101	100	100	101
26	596	853	736	918	823	100	101	101	101	100	100	101
27	595	854	736	918	823	100	101	101	101	100	100	101
28	595	854	736	918	823	100	101	101	101	100	100	100
29	595	854	736	918	822	100	101	101	101	100	100	100
30	595	853	736	918	---	100	101	101	101	100	100	101
31	595	---	736	918	---	100	---	101	---	100	100	---
TOTAL	14932	25512	22411	26187	25309	12003	3007	3131	3030	3114	3100	3012
MEAN	482	850	723	845	873	387	100	101	101	100	100	100
MAX	598	858	853	923	918	753	101	101	101	101	100	101
MIN	378	741	665	736	822	100	100	101	101	100	100	100
CFSM	.33	.59	.50	.59	.61	.27	.07	.07	.07	.07	.07	.07
IN.	.39	.66	.58	.68	.65	.31	.08	.08	.08	.08	.08	.08

CAL YR 1979 TOTAL 271125 MEAN 743 MAX 1110 MIN 105 CFSM .52 IN 6.99
WTR YR 1980 TOTAL 144748 MEAN 395 MAX 923 MIN 100 CFSM .27 IN 3.73

465724094402601 WILLIAMS LAKE NEAR AKELEY, MN

LOCATION.--Lat 46°57'24", long 94°40'26", in SE¼NW¼ sec.12, T.140 N., R.32 W., Hubbard County, Hydrologic Unit 07010102. Samples are collected near center of lake at the deepest point.

DRAINAGE AREA.--0.875 mi^2 (21.27 km^2).

PERIOD OF RECORD.--Water years 1977 to current year.

REMARKS.--There are various meteorologic instruments at the station, and data from these instruments are available in the District office. Letter E indicates estimated value.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	SAMPLING DEPTH (FT) (00003)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	TRANSPARENCY (SECCHI DISK) (M) (00078)	OXYGEN, DISSOLVED (MG/L) (00300)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)
OCT										
19...	1300	3.3	165	8.2	9.6	2.6	9.8	84	4	22
19...	1400	24.8	165	8.1	9.6	--	8.9	85	2	22
DEC										
29...	1300	3.3	162	8.1	2.5	6.1	--	90	0	24
29...	1305	23.0	165	7.9	3.8	--	8.8	93	--	25
APR										
09...	1010	3.3	173	7.5	3.7	6.8	--	86	4	23
09...	1015	23.1	187	7.0	4.5	--	3.2	96	3	26
MAY										
01...	1215	3.3	171	8.0	14.2	4.3	10.0	92	1	25
01...	1220	23.1	165	7.6	8.0	--	9.1	92	3	25
19...	1302	3.3	165	8.2	16.0	8.0	--	89	0	24
19...	1330	23.0	178	8.4	10.0	--	--	92	0	25
JUN										
06...	1000	3.2	172	8.2	19.7	5.0	--	87	0	23
06...	1035	26.0	175	7.4	11.4	--	9.1	92	1	25
16...	1000	3.2	150	8.5	20.0	5.0	--	--	--	E25
16...	1005	26.2	175	7.4	11.4	--	9.1	--	--	E24
30...	1000	3.3	--	9.0	20.6	4.3	--	--	--	--
JUL										
14...	1300	3.2	167	8.9	25.4	4.6	--	--	--	--
14...	1310	26.2	179	8.2	14.7	--	--	--	--	--
31...	2010	3.2	--	--	--	--	--	--	--	--
31...	2011	26.2	--	7.2	15.1	--	--	--	--	--
AUG										
12...	1505	3.3	146	8.2	23.0	--	8.4	78	0	19
12...	1550	26.2	183	6.6	14.6	--	2.2	98	1	27
29...	0900	3.3	148	8.4	21.2	--	8.2	82	3	20
29...	0915	23.1	155	7.6	20.3	--	6.0	87	7	22
SEP										
11...	1005	3.3	146	8.4	19.7	4.0	8.2	83	7	20
11...	1010	26.4	160	6.6	18.0	--	2.4	86	3	21
23...	1122	3.3	156	7.3	14.9	3.5	--	83	6	21

465724094402601 WILLIAMS LAKE NEAR AKELEY, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY (MG/L AS CACO3) (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
OCT									
19...	7.1	1.3	3	1.0	80	1.0	2.3	.1	.4
19...	7.3	1.3	3	1.0	83	1.2	3.1	.1	.5
DEC									
29...	7.3	1.4	3	1.1	90	.5	.6	.1	.2
29...	7.4	1.4	3	1.1	94	.6	.6	.1	.4
APR									
09...	6.9	1.3	3	1.1	82	.5	.5	.1	.5
09...	7.5	1.4	3	1.3	93	.5	.8	.1	1.2
MAY									
01...	7.2	1.4	3	1.2	91	.2	.7	.1	.5
01...	7.1	1.2	3	1.1	89	.0	.7	.1	.7
19...	7.0	1.2	3	1.0	94	.1	.7	.1	.2
19...	7.1	1.2	3	1.0	95	.6	.9	.1	.3
JUN									
06...	7.1	1.6	4	1.1	89	.8	1.1	.1	.4
06...	7.1	1.7	4	1.1	91	1.4	.7	.1	.3
16...	7.1	1.3	0	1.1	92	2.0	.6	.2	.4
16...	7.1	2.0	0	1.3	93	1.0	.6	.1	.4
30...	7.3	1.3	0	1.1	--	.9	.4	1.0	.7
JUL									
14...	7.1	1.4	0	1.1	--	2.6	1.1	.1	.7
14...	6.8	1.4	0	1.1	--	.8	.5	.1	--
31...	7.4	1.3	0	1.1	--	.2	1.0	.1	1.1
31...	7.4	1.3	0	1.2	--	.7	1.0	.2	.9
AUG									
12...	7.4	1.3	3	1.1	82	.4	.7	.1	1.3
12...	7.5	1.3	3	1.2	97	.8	.6	.1	1.6
29...	7.7	1.2	3	.8	79	1.8	.6	.1	1.4
29...	7.7	1.1	3	.8	80	.3	.4	.1	1.6
SEP									
11...	8.0	1.4	4	1.0	76	1.7	.5	--	1.4
11...	8.1	1.4	3	1.1	83	.0	.5	--	1.7
23...	7.4	1.3	3	1.0	77	1.2	.6	--	1.5

DATE	TIME	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954)
OCT							
19...	1200	--	--	--	--	5.58	.000
DEC							
29...	1205	--	--	--	--	2.70	.000
APR							
09...	1105	.20	.38	.58	.008	1.42	.000
MAY							
01...	1300	.07	.53	.60	--	4.36	.000
19...	1340	.00	.25	.26	.017	.490	.000
JUN							
06...	1040	.01	.26	.27	.017	1.75	.000
16...	1030	.44	.54	.98	--	5.91	.000
30...	1035	.02	.46	.48	.010	4.16	.000
JUL							
14...	1330	.21	.46	.67	.012	.000	.000
31...	2017	.00	.22	.22	.009	--	--
AUG							
12...	1600	.08	.43	.51	.013	5.14	.000
29...	1020	.01	.28	.29	.011	5.28	.000
SEP							
11...	1200	.00	.39	.39	.000	3.31	.000
23...	1155	.03	1.3	1.3	.026	3.20	.000

465724094402601 WILLIAMS LAKE NEAR AKELEY, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	SAMP-LING DEPTH (FT) (00003)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)
APR			
09...	1019	1.0	.007
09...	1022	6.6	.010
09...	1025	13.2	.009
09...	1029	19.8	.018
09...	1035	26.4	.049
MAY			
01...	1223	1.0	.012
01...	1225	6.6	.009
01...	1229	13.2	.011
01...	1234	19.8	.010
01...	1240	26.4	.023
19...	1300	1.0	.008
19...	1305	6.6	.012
19...	1310	13.1	.020
19...	1320	19.7	.016
19...	1335	26.2	.017
JUN			
06...	1010	1.0	.005
06...	1014	6.5	.009
06...	1020	13.1	.014
06...	1025	19.6	.015
06...	1035	26.0	.015
16...	0920	1.0	.005
16...	0925	6.6	.006
16...	0930	13.1	.006
16...	0935	19.7	.008
16...	0940	26.2	.010
30...	0920	1.0	.017
30...	0925	6.6	.010
30...	0930	13.1	.006
30...	0935	19.7	.009
30...	0940	26.2	.015
JUL			
14...	0920	1.0	.005
14...	0925	6.6	.008
14...	0930	13.1	.014
14...	0935	19.7	.018
14...	0940	26.2	.029
31...	2012	1.0	.010
31...	2013	6.5	.018
31...	2014	13.1	.009
31...	2015	19.6	.009
31...	2016	26.2	.011
AUG			
12...	1500	1.0	.006
12...	1510	6.5	.014
12...	1520	13.1	.017
12...	1535	19.6	.010
12...	1545	26.2	.025
29...	0925	1.0	.043
29...	0935	6.6	.016
29...	0945	13.2	.015
29...	0955	19.8	.016
29...	1000	26.4	.026
SEP			
11...	0930	1.0	.018
11...	0935	6.6	.000
11...	0940	13.0	.000
11...	0945	19.0	.000
11...	0956	26.4	.000
23...	1120	1.0	.025
23...	1125	6.6	.027
23...	1130	13.2	.029
23...	1135	19.8	.029
23...	1140	26.3	.029

465724094402601 WILLIAMS LAKE NEAR AKELEY, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	SAMPLING DEPTH (FT) (00003)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)
OCT						
18...	0901	1.0	165	8.1	9.7	9.6
18...	0902	3.3	165	8.2	9.6	9.8
18...	0903	6.6	160	8.2	9.6	10.0
18...	0904	10.0	160	8.2	9.6	10.0
18...	0905	13.1	160	8.2	9.6	9.6
18...	0906	16.4	160	8.2	9.6	9.4
18...	0907	19.7	160	8.1	9.6	7.6
18...	0908	23.0	165	8.1	9.6	7.6
18...	0909	26.2	162	7.9	9.6	7.6
18...	0911	27.7	--	--	9.7	--
19...	1105	1.0	165	8.1	9.7	9.6
19...	1110	6.6	160	8.2	9.6	10.0
19...	1115	10.0	160	8.2	9.6	10.0
19...	1120	13.2	160	8.2	9.6	9.6
19...	1125	16.4	160	8.2	9.6	9.4
19...	1130	19.7	160	8.1	9.6	7.6
19...	1135	23.0	165	8.1	9.6	7.6
19...	1140	26.2	162	7.9	9.6	7.6
19...	1145	27.6	--	--	9.7	--
DEC						
28...	0901	1.0	155	8.2	2.8	11.6
28...	0902	4.0	162	8.1	2.5	10.6
28...	0903	7.0	155	8.1	3.0	11.8
28...	0904	10.0	160	8.0	3.0	10.4
28...	0906	13.0	155	8.0	3.2	10.4
28...	0907	17.0	160	8.0	3.5	9.8
28...	0908	20.0	160	8.0	3.6	9.0
28...	0909	23.0	165	7.9	3.8	8.8
28...	0911	26.0	165	7.9	4.0	8.0
28...	0912	30.0	--	--	4.0	5.2
APR						
09...	0901	1.0	80	8.2	1.1	12.3
09...	0902	3.0	173	7.5	3.7	9.0
09...	0903	6.0	181	7.4	4.3	7.9
09...	0904	9.0	182	7.4	4.3	8.0
09...	0906	12.0	182	7.3	4.4	6.8
09...	0907	15.0	184	7.2	4.5	5.1
09...	0908	18.0	186	7.1	4.6	3.8
09...	0909	21.0	186	7.0	4.5	3.4
09...	0911	24.0	187	7.0	4.5	3.2
09...	0912	27.0	187	7.0	4.5	3.1
MAY						
01...	1223	1.0	170	8.0	14.7	10.1
01...	1225	6.6	170	8.0	14.3	10.1
01...	1229	13.2	168	8.0	11.2	10.7
01...	1234	19.8	166	8.1	9.2	10.8
01...	1240	26.4	165	7.3	7.7	7.8
19...	0901	1.0	170	8.0	14.7	10.0
19...	0902	3.0	171	8.0	14.5	10.0
19...	0903	6.0	170	8.0	14.3	10.1
19...	0904	9.0	168	8.1	12.0	10.5
19...	0906	12.0	168	8.0	11.2	10.7
19...	0907	15.0	167	8.1	10.3	10.6
19...	0908	18.0	166	8.1	9.2	10.8
19...	0909	21.0	164	8.2	8.2	10.9
19...	0911	24.0	165	7.6	7.9	9.1
19...	0912	27.0	165	7.3	7.7	7.8
JUN						
06...	0901	1.0	170	8.1	20.1	9.6
06...	0902	3.3	172	8.2	20.1	9.7
06...	0903	6.6	172	8.2	20.1	9.7
06...	0904	9.8	172	8.2	20.1	9.7
06...	0906	13.2	173	8.1	19.4	9.5
06...	0907	16.4	175	8.1	15.9	11.3
06...	0908	19.7	172	8.2	14.2	11.7
06...	0909	23.0	173	8.1	12.1	11.4
06...	0911	26.2	175	7.4	11.3	9.1
06...	0912	29.5	176	7.2	10.9	7.1
06...	0913	31.2	--	--	10.7	.6
16...	0901	1.0	--	--	20.8	8.9
16...	0902	3.3	--	--	20.8	8.8
16...	0903	6.6	--	--	20.9	8.8
16...	0904	10.0	--	--	20.6	8.9
16...	0906	13.2	--	--	20.2	9.0
16...	0907	16.4	--	--	19.6	9.4
16...	0908	19.7	--	--	16.9	11.1
16...	0909	23.0	--	--	14.0	10.8
16...	0911	26.3	--	--	12.1	6.6
16...	0912	29.5	--	--	11.0	3.3

465724094402601 WILLIAMS LAKE NEAR AKELEY, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	SAMPLING DEPTH (FT) (00003)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)
JUN						
30...	0901	1.0	--	--	20.7	--
30...	0902	3.3	--	--	20.7	--
30...	0903	6.6	--	--	20.7	--
30...	0904	10.0	--	--	20.6	--
30...	0906	13.2	--	--	20.6	--
30...	0907	16.4	--	--	19.6	--
30...	0908	19.7	--	--	15.2	--
30...	0909	23.0	--	--	12.8	--
30...	0911	26.2	--	--	11.6	--
30...	0912	29.5	--	--	11.6	--
JUL						
14...	0901	1.0	--	--	26.3	8.9
14...	0902	3.3	--	--	25.4	9.5
14...	0903	6.6	--	--	25.1	9.7
14...	0904	10.0	--	--	25.0	9.6
14...	0906	13.2	--	--	24.6	10.0
14...	0907	16.4	--	--	22.6	10.2
14...	0908	19.7	--	--	20.3	9.6
14...	0909	23.0	--	--	17.2	8.1
14...	0911	26.2	--	--	14.6	3.9
14...	0912	29.5	--	--	12.0	2.4
31...	0901	1.0	--	9.0	24.3	8.6
31...	0902	3.3	--	9.0	24.3	8.4
31...	0903	6.6	--	9.1	24.3	8.2
31...	0904	10.0	--	9.1	24.1	8.5
31...	0906	13.2	--	9.0	23.9	8.4
31...	0907	16.4	--	9.0	23.5	8.3
31...	0908	19.7	--	8.8	22.3	8.1
31...	0909	23.0	--	7.9	18.4	6.6
31...	0911	26.2	--	7.2	15.0	2.0
31...	0912	29.5	--	7.8	14.0	1.6
AUG						
12...	0901	1.0	146	8.2	23.0	8.4
12...	0902	3.3	146	8.2	23.0	8.4
12...	0903	6.6	146	8.3	22.7	8.4
12...	0904	10.0	146	8.3	22.6	8.4
12...	0906	13.2	146	8.3	22.6	8.3
12...	0907	16.4	146	8.3	22.5	8.2
12...	0908	19.7	153	8.1	21.9	7.7
12...	0909	23.0	180	6.9	17.6	3.7
12...	0911	26.2	183	6.6	14.6	2.2
12...	0912	29.5	199	6.6	13.2	2.1
28...	0901	1.0	148	8.4	21.2	8.3
28...	0902	3.3	148	8.4	21.2	8.2
28...	0903	6.6	148	8.4	21.2	8.4
28...	0904	10.0	148	8.4	21.2	8.2
28...	0906	13.2	148	8.4	21.2	8.4
28...	0907	16.4	148	8.4	21.2	8.3
28...	0908	19.7	149	8.3	20.9	8.0
28...	0909	23.0	155	7.6	20.3	6.0
28...	0911	26.2	170	6.8	18.0	2.1
28...	0912	29.5	187	6.6	15.5	2.3
29...	0925	1.0	148	8.4	21.2	8.3
29...	0935	6.6	148	8.4	21.2	8.4
29...	0945	13.2	148	8.4	21.1	8.4
29...	0955	19.8	149	8.3	20.9	8.0
29...	1000	26.4	170	6.8	18.0	2.1
SEP						
11...	0901	1.0	146	8.1	19.7	8.7
11...	0902	3.3	146	8.2	19.8	8.4
11...	0903	6.6	146	8.2	19.8	8.4
11...	0904	10.0	146	8.2	19.9	8.4
11...	0906	13.2	146	8.2	19.9	8.5
11...	0907	16.4	146	8.2	19.9	8.5
11...	0908	19.7	147	8.0	19.7	7.8
11...	0909	23.0	148	7.8	19.6	7.2
11...	0911	26.2	153	7.0	19.1	4.1
11...	0912	29.5	169	6.6	17.2	2.2
23...	0901	1.0	156	7.2	14.8	7.8
23...	0902	3.3	156	7.3	14.9	7.7
23...	0903	6.6	156	7.3	14.9	7.8
23...	0904	9.8	156	7.4	14.9	7.8
23...	0906	13.1	156	7.4	14.9	7.7
23...	0907	16.4	156	7.4	14.9	7.8
23...	0908	19.7	156	7.4	14.9	7.6
23...	0909	23.0	156	7.4	14.9	7.6
23...	0911	26.2	156	7.4	14.8	7.2
23...	0912	29.5	156	7.3	14.8	7.1

465724094402601 WILLIAMS LAKE NEAR AKELEY, MN--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1979 TO SEPTEMBER 1980

DATE	OCT 19,79		DEC 29,79		APR 9,80		MAY 1,80		MAY 19,80	
TIME	1200		1200		1110		1200		1330	
TOTAL CELLS/ML	2300		2300		210		2200		410	
DIVERSITY: DIVISION	0.6		0.4		1.9		1.5		0.9	
.CLASS	0.6		0.4		1.9		1.5		0.9	
..ORDER	0.9		0.4		1.9		2.3		1.5	
...FAMILY	0.9		0.5		2.1		2.8		1.9	
....GENUS	1.6		0.5		2.1		3.0		2.0	
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	--	-	120	5	--	-	26	1	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	--	-	--	-	--	-	90	4	13	3
....CHLORELLA	--	-	--	-	--	-	280	13	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	--	-
....OOCYSTIS	26	1	--	-	--	-	64	3	39	9
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
....WESTELLA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....CRUCIGENIA	--	-	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	--	-	--	-	51	2	26	6
..TETRASPORALES										
...COCCOMYXACEAE										
....ELAKATOTHRIX	--	-	--	-	--	-	--	-	--	-
...PALMELLACEAE										
....GLOEOCYSTIS	--	-	--	-	--	-	--	-	--	-
....SPHAEROCYSTIS	--	-	--	-	--	-	90	4	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	--	-	77#	38	--	-	--	-
...VOLVOCACEAE										
....PANDORINA	--	-	--	-	--	-	--	-	210#	50
..ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	--	-	--	-	--	-	--	-	--	-
....COSMARIUM	--	-	--	-	--	-	13	1	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	--	-	*	0	--	-	64	3	--	-
....MELOSIRA	130	6	--	-	--	-	--	-	--	-
..PENNALES										
...FRAGILARIACEAE										
....ASTERIONELLA	1400#	61	--	-	--	-	--	-	--	-
....FRAGILARIA	500#	22	*	0	--	-	130	6	--	-
....SYNEDRA	--	-	--	-	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	--	-	15	1	--	-	150	7	--	-
.CHRYSOPHYCEAE										
..CHRYSOMONADALES										
...OCHROMONADACEAE										
....DINOBRYON	--	-	*	0	--	-	--	-	--	-
....OCHROMONAS	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	--	-	13	6	--	-	90#	22
...CRYPTOMONADACEAE										
....CRYPTOMONAS	--	-	--	-	26	13	--	-	39	9
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	--	-	--	-	--	-
....ANACYSTIS	--	-	--	-	64#	31	730#	34	--	-
....COCCOCHLORIS	--	-	--	-	--	-	--	-	--	-
....GOMPHOSPHAERIA	--	-	--	-	--	-	--	-	--	-
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	260	11	--	-	--	-	370#	17	--	-
....APHANIZOMENON	--	-	--	-	--	-	--	-	--	-
...OSCILLATORIACEAE										
....LYNGBYA	--	-	--	-	--	-	77	4	--	-
....OSCILLATORIA	--	-	2100#	93	--	-	--	-	--	-

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

465724094402601 WILLIAMS LAKE NEAR AKELEY, MN--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1979 TO SEPTEMBER 1980--Continued

DATE	OCT 19,79		DEC 29,79		APR 9,80		MAY 1,80		MAY 19,80	
TIME	1200		1200		1110		1200		1330	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
.DINOPHYCEAE										
..PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	--	-	--	-	26	13	26	1	--	-

DATE	JUN 6,80		JUN 16,80		JUN 30,80		JUL 14,80		JUL 31,80	
TIME	1000		1000		1030		1300		2020	
TOTAL CELLS/ML	90000		3100		37000		140000		10000	
DIVERSITY: DIVISION	0.3		0.7		0.1		0.1		0.6	
.CLASS	0.3		0.7		0.1		0.1		0.6	
..ORDER	0.4		1.4		0.4		0.1		1.5	
...FAMILY	0.4		1.4		0.4		0.1		1.9	
....GENUS	0.4		1.4		0.8		0.3		2.2	
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										
...CHARACIACEAE										
....SCHROEDERIA	--	-	64	2	*	0	*	0	*	0
...OOCYSTACEAE										
....ANKISTRODESMUS	*	0	--	-	*	0	--	-	*	0
....CHLORELLA	--	-	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	480	5
....OOCYSTIS	*	0	52	2	*	0	*	0	110	1
....TETRAEDRON	--	-	--	-	--	-	--	-	--	-
....WESTELLA	--	-	--	-	--	-	--	-	--	-
...SCENEDESMACEAE										
....CRUCIGENIA	--	-	--	-	--	-	--	-	330	3
....SCENEDESMUS	--	-	--	-	--	-	*	0	110	1
..TETRASPORALES										
...COCCOMYXACEAE										
....ELAKATOTHRIX	--	-	--	-	--	-	--	-	*	0
...PALMELLACEAE										
....GLOEOCYSTIS	1000	1	--	-	*	0	--	-	--	-
....SPHAEROCYSTIS	--	-	--	-	*	0	*	0	--	-
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	--	-	39	1	--	-	--	-	*	0
...VOLVOCACEAE										
....PANDORINA	--	-	--	-	--	-	--	-	--	-
..ZYGNEMATALES										
...DESMIDIACEAE										
....CLOSTERIUM	--	-	--	-	--	-	*	0	--	-
....COSMARIUM	--	-	--	-	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	*	0	52	2	--	-	--	-	*	0
....MELOSIRA	--	-	--	-	--	-	--	-	--	-
..PENNALES										
...FRAGILARIACEAE										
....ASTERIONELLA	--	-	--	-	--	-	--	-	--	-
....FRAGILARIA	--	-	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	*	0	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	--	-	--	-	--	-	--	-	--	-
.CHRYSOPHYCEAE										
..CHRYSOMONADALES										
...OCHROMONADACEAE										
....DINOBRYON	2000	2	--	-	--	-	--	-	--	-
....OCHROMONAS	--	-	--	-	--	-	--	-	110	1

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

465724094402601 WILLIAMS LAKE NEAR AKELEY, MN--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1979 TO SEPTEMBER 1980--Contineud

DATE	JUN 6,80		JUN 16,80		JUN 30,80		JUL 14,80		JUL 31,80	
TIME	1000		1000		1030		1300		2020	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	130	4	*	0	--	-	--	-
...CRYPTOMONADACEAE										
....CRYPTOMONAS	*	0	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	--	-	--	-	--	-
....ANACYSTIS	85000#	95	2100#	69	33000#	89	140000#	96	4700#	45
....COCCOCHLORIS	--	-	--	-	--	-	--	-	*	0
....GOMPHOSPHAERIA	--	-	--	-	1900	5	3200	2	410	4
..HORMOGONALES										
...NOSTOCACEAE										
....ANABAENA	750	1	610#	20	360	1	1000	1	2900#	28
....APHANIZOMENON	--	-	--	-	1100	3	*	0	--	-
...OSCILLATORIACEAE										
....LYNGBYA	--	-	--	-	220	1	--	-	--	-
....OSCILLATORIA	--	-	--	-	*	0	--	-	1100	11
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....TRACHELOMONAS	--	-	--	-	--	-	*	0	--	-
PYRRHOPHYTA (FIRE ALGAE)										
.DINOPHYCEAE										
..PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	--	-	--	-	--	-	--	-	--	-

DATE	AUG 12,80		AUG 29,80		SEP 11,80		SEP 23,80	
TIME	1530		1030		1000		1150	
TOTAL CELLS/ML	20000		14000		3100		2800	
DIVERSITY: DIVISION	0.1		0.8		0.4		0.7	
.CLASS	0.1		0.8		0.4		0.7	
..ORDER	0.5		1.4		1.1		1.5	
...FAMILY	0.5		1.5		1.4		2.1	
....GENUS	1.9		1.6		1.8		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								
....SCHROEDERIA	*	0	--	-	--	-	--	-
...OOCYSTACEAE								
....ANKISTRODESMUS	--	-	*	0	29	1	--	-
....CHLORELLA	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	1000	8	--	-	--	-
....OOCYSTIS	120	1	140	1	--	-	58	2
....TETRAEDRON	*	0	*	0	--	-	--	-
....WESTELLA	--	-	*	0	--	-	--	-
...SCENEDESMACEAE								
....CRUCIGENIA	--	-	--	-	--	-	--	-
....SCENEDESMUS	--	-	*	0	29	1	58	2
..TETRASPORALES								
...COCCOMYXACEAE								
....ELAKATOTHRIX	120	1	--	-	29	1	--	-
...PALMELLACEAE								
....GLOEOCYSTIS	*	0	--	-	--	-	--	-
....SPHAEROCYSTIS	--	-	290	2	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	83	1	--	-	--	-
...VOLVOCACEAE								

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

465724094402601 WILLIAMS LAKE NEAR AKELEY, MN--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1979 TO SEPTEMBER 1980--Continued

DATE TIME	AUG 12,80 1530		AUG 29,80 1030		SEP 11,80 1000		SEP 23,80 1150	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
....PANDORINA	--	-	--	-	--	-	--	-
..ZYGNEMATALES								
...DESMIDIACEAE								
....CLOSTERIUM	--	-	--	-	--	-	--	-
....COSMARIUM	--	-	--	-	--	-	--	-
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	--	-	*	0	--	-	--	-
....MELOSIRA	--	-	*	0	--	-	220	8
..PENNALES								
...FRAGILARIACEAE								
....ASTERIONELLA	--	-	--	-	--	-	--	-
....FRAGILARIA	--	-	--	-	--	-	--	-
....SYNEDRA	--	-	*	0	--	-	--	-
...NITZSCHIACEAE								
....NITZSCHIA	--	-	--	-	*	0	--	-
.CHRYSOPHYCEAE								
..CHRYSOMONADALES								
...OCHROMONADACEAE								
....DINOBRYON	--	-	--	-	--	-	--	-
....OCHROMONAS	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
.CRYPTOPHYCEAE								
..CRYPTOMONADALES								
...CRYPTOCHRYSIDACEAE								
....CHROOMONAS	--	-	340	3	--	-	--	-
...CRYPTOMONADACEAE								
....CRYPTOMONAS	--	-	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..CHROOCOCCALES								
...CHROOCOCCACEAE								
....AGMENELLUM	120	1	--	-	--	-	--	-
....ANACYSTIS	7100#	35	9900#	72	550#	18	860#	31
....COCCOCHLORIS	8600#	42	--	-	--	-	--	-
....GOMPHOSPHAERIA	3000	15	--	-	--	-	--	-
..HORMOGONALES								
...NOSTOCACEAE								
....ANABAENA	1100	6	1200	9	1900#	62	820#	29
....APHANIZOMENON	--	-	210	2	290	9	140	5
...OSCILLATORIACEAE								
....LYNGBYA	--	-	--	-	--	-	--	-
....OSCILLATORIA	120	1	210	2	190	6	650#	23
EUGLENOPHYTA (EUGLENOIDS)								
.EUGLENOPHYCEAE								
..EUGLENALES								
...EUGLENACEAE								
....TRACHELOMONAS	*	0	--	-	43	1	14	1
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%

05206000 LEECH LAKE AT FEDERAL DAM, MN

LOCATION.--Lat 47°12'23", long 94°18'31", in lot 2, sec.14, T.143 N., R.29 W., Cass County, Hydrologic Unit 07010102, on Leech Lake Indian Reservation, at head of Leech Lake River on Waboose Bay, 5 mi (8 km) southwest of town of Federal Dam.

DRAINAGE AREA.--1,163 mi^2 (3,012 km^2).

PERIOD OF RECORD.--April 1884 to current year. Monthend contents only for some periods, published in WSP 1308. Prior to October 1956, published as "Leech Lake Reservoir."

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Dec. 31, 1884, nonrecording gage 0.5 mi (0.8 km) north of outlet to Leech Lake River at datum 98.47 ft (30.014 m) higher. Dec. 31, 1884, to May 24, 1931, nonrecording gage 0.5 mi (0.8 m) north of outlet to Leech Lake River and May 25, 1931, to July 10, 1973, water-stage recorder at same site and at datum 92.70 ft (28.255 m) higher.

REMARKS (Revised).--Reservoir is formed by Leech Lake and several other natural lakes controlled by concrete and timber dam; storage began in 1884; original timber structure completed in 1884, replaced by present dam in 1902. Capacity between elevation 1,292.70 ft (394.015 m) and 1,297.94 ft (395.612 m) (maximum allowable range) is 688,985 acre-ft (850 hm^3) of which 352,637 acre-ft (435 hm^3) is controlled storage between elevations 1,292.70 ft (394.015 m) and 1,295.70 ft (394.929 m) (normal operating range). Contents shown herein are contents above elevation 1,290.00 ft (393.192 m). Prior to September 1978, published contents as contents above elevation 1,292.20 ft (393.863 m). Water is used to benefit navigation on Mississippi River below Minneapolis.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 734,300 acre-ft (905 hm 3) capacity table then in use, June 30, 1916, elevation, 1,297.88 ft (395.594 m); minimum, 51,380 acre-ft (63.4 hm^3) capacity table then in use, Dec. 8, 24, 1976, elevation, 1,292.69 ft (394.012 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 529,800 acre-ft (653 hm^3) Nov. 1-2, elevation, 1,294.85 ft (394.670 m); minimum, 385,600 acre-ft (475 hm^3) Aug. 20, elevation, 1,293.60 ft (394.289 m).

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1979 to SEPTEMBER 1980

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1294.61	500400	
Oct. 31	1294.57	495600	-4800
Nov. 30	1294.53	490800	-4800
Dec. 31	1294.22	454500	-36300
CAL YR 1979			-18500
Jan. 31	1294.05	435200	-19300
Feb. 29	1293.83	410800	-24400
Mar. 31	1293.84	411900	+1100
Apr. 30	1294.25	457900	+46000
May 31	1294.07	437400	-20500
June 30	1293.98	427400	-10000
July 31	1293.74	400900	-26500
Aug. 31	1293.74	400900	0
Sept. 30	1293.67	393300	-7600
WTR YR 1980			-107100

05206500 LEECH LAKE RIVER AT FEDERAL DAM, MN

LOCATION.--Lat 47°14'45", long 94°13'12", in sec.29, T.144 N., R.28 W., Cass County, Hydrologic Unit 07010102, on Leech Lake Indian Reservation, on right bank at dam on Leech Lake River at town of Federal Dam, 2 mi (3 km) downstream from natural outlet of Leech Lake.

DRAINAGE AREA.--1,163 mi^2 (3,012 km^2).

PERIOD OF RECORD.--May 1884 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder, headwater gage, and nonrecording tailwater gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to June 30, 1973, gages (nonrecording headwater gage prior to July 3, 1948) at same sites with datum at 1,293.23 ft (394.176 m) adjustment of 1912. May 27 to Nov. 30, 1929, nonrecording gage at site 600 ft (183 m) downstream at different datum.

REMARKS.--Discharge computed on basis of modified weir formula, the head being obtained from readings on tailwater gage and mean gage height from recording headwater gage. Flow completely regulated by Leech Lake (station 05206000).

COOPERATION.--Computations of daily discharge furnished by Corps of Engineers.

AVERAGE DISCHARGE (unadjusted).--96 years, 361 ft^3/s (10.22 m^3/s), 4.22 in/yr (107 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,520 ft^3/s (71.4 m^3/s) June 7, 1957 (result of dam failure); no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 1,050 ft^3/s (29.7 m^3/s) Feb. 7, 8; minimum daily, 98 ft^3/s (2.78 m^3/s) Aug. 16, 20.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	192	686	780	840	998	893	153	110	110	108	104	104
2	192	686	760	820	997	911	153	110	110	108	102	104
3	192	840	780	820	995	911	153	110	110	108	102	104
4	192	840	800	820	992	910	156	110	108	108	102	104
5	192	860	800	956	995	813	156	110	108	106	104	104
6	192	860	820	953	995	812	156	110	110	106	102	104
7	192	860	820	870	1050	832	156	110	112	106	100	102
8	183	840	800	818	1050	760	156	110	118	108	102	104
9	183	840	800	790	1010	760	159	110	112	106	100	102
10	192	840	820	825	1010	760	159	110	110	106	100	102
11	192	840	820	853	1010	656	159	112	110	108	102	102
12	192	840	780	720	1010	690	159	110	112	106	100	100
13	183	840	780	720	1010	609	159	110	108	106	100	102
14	183	840	780	849	1010	609	159	110	108	108	102	102
15	183	840	800	849	1010	559	159	110	108	108	100	102
16	305	860	760	867	1000	559	159	110	110	106	98	106
17	305	840	760	1030	981	559	159	110	110	106	100	102
18	552	840	780	1020	1000	450	159	110	108	106	100	102
19	564	840	800	1040	998	450	108	110	110	106	100	100
20	563	840	800	1040	999	353	108	110	110	106	98	102
21	563	840	800	1040	996	245	108	110	110	106	108	102
22	552	840	820	1010	1010	153	110	110	110	106	104	102
23	552	840	820	882	1020	153	110	110	110	106	102	102
24	552	840	820	968	1020	153	110	110	110	106	104	102
25	552	840	820	952	985	153	110	106	110	104	104	102
26	552	840	820	919	969	153	110	110	110	104	104	102
27	552	840	820	967	970	153	110	110	110	104	104	102
28	552	820	820	983	990	153	110	110	110	104	102	102
29	552	820	840	980	960	153	110	110	110	104	102	102
30	552	800	820	1000	---	153	110	108	108	102	104	102
31	563	---	820	998	---	153	---	110	---	102	102	---
TOTAL	11218	24892	24860	28199	29040	15631	4143	3406	3300	3284	3158	3074
MEAN	362	830	802	910	1001	504	138	110	110	106	102	102
MAX	564	860	840	1040	1050	911	159	112	118	108	108	106
MIN	183	686	760	720	960	153	108	106	108	102	98	100
CFSM	.31	.71	.69	.78	.86	.43	.12	.10	.10	.09	.09	.09
IN.	.36	.80	.80	.90	.93	.50	.13	.11	.11	.11	.10	.10

CAL YR 1979 TOTAL 219220 MEAN 601 MAX 980 MIN 99 CFSM .52 IN 7.01
WTR YR 1980 TOTAL 154205 MEAN 421 MAX 1050 MIN 98 CFSM .36 IN 4.93

05210500 POKEGAMA LAKE NEAR GRAND RAPIDS, MN

LOCATION.--Lat 47°10'00", long 93°33'20", in NW¼ sec.17, T.54 N., R.25 W., Itásca County, Hydrologic Unit 07010101, at narrows on U.S. Highway 169, 4 mi (6 km) south of Grand Rapids and at mile 1,184 (1,905 km) upstream from Ohio River.

DRAINAGE AREA.--3,265 mi^2 (8,456 km^2).

PERIOD OF RECORD.--April 1884 to current year. Prior to October 1941 monthend contents only, published in WSP 1308. Published as Pokegama Reservoir near Grand Rapids October 1941 to September 1956.

REVISED RECORDS.--WSP 1914: 1897(M).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to May 30, 1949, nonrecording gage at Pooles Arm of Pokegama Lake 5 mi (8 km) northwest and May 31, 1949 to July 12, 1973, water-stage recorder at same site and at datum 64.42 ft (19.635 m) higher.

REMARKS (Revised).--Reservoir is formed by Pokegama Lake and several other natural lakes controlled by concrete dam; storage began in 1884; original timber dam completed in 1884, replaced by present structure in 1888-89. Capacity between elevation 1,270.42 ft (387.224 m) and 1,276.42 ft (389.053 m) (maximum allowable range) is 80,126 acre-ft (98.8 hm^3) of which 52,483 acre-ft (64.7 hm^3) is controlled storage between elevations 1,270.42 ft (387.224 m) and 1,274.42 ft (388.443 m) (normal operating range). Contents shown herein are contents above elevation 1,267.00 ft (386.182 m). Prior to September 1978, published contents as contents above elevation 1,268.92 ft (386.767 m). Water is used to benefit navigation on Mississippi River below Minneapolis.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 124,100 acre-ft (153 hm^3) Apr. 30, 1979, elevation, 1,276.85 ft (389.184 m); maximum elevation, 1,277.92 ft (389.510 m) May 8, 1897; minimum contents observed, 4,520 acre -ft (5.57 hm^3) below zero of capacity table then in use, Sept. 30, 1934, ele vation, 1,268.54 ft (386.651 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 80,890 acre-ft (99.7 hm^3) June 9, elevation, 1,273.72 ft (388.230 m); minimum, 46,370 acre-ft (57.2 hm^3) Apr. 4, elevation, 1,271.10 ft (387.431 m).

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1273.26	74640	
Oct. 31	1272.79	68300	-6340
Nov. 30	1272.47	64030	-4270
Dec. 31	1271.93	56960	-7070
CAL YR 1979			+2580
Jan. 31	1271.61	52840	-4120
Feb. 29	1271.67	53610	+770
Mar. 31	1271.21	47760	-5850
Apr. 30	1272.87	69370	+21610
May 31	1273.49	77760	+8390
June 30	1273.47	77490	-270
July 31	1273.18	73550	-3940
Aug. 31	1273.46	77350	+3800
Sept. 30	1273.22	74090	-3260
WTR YR 1980			-550

05211000 MISSISSIPPI RIVER AT GRAND RAPIDS, MN

LOCATION.--Lat 47°13'56", long 93°31'48", in SW¼NW¼ sec.21, T.55 N., R.25 W., Itasca County, Hydrologic Unit 07010103, on left bank, in super-calendar room of Blandin Paper Mill in Grand Rapids, 400 ft (122 m) downstream from Blandin Dam, 400 ft (122 m) upstream from bridge on U.S. Highway 169, 2.5 mi (4.0 km) upstream from Prairie River, and at mile 1,182 (1,902 km) upstream from Ohio River.

DRAINAGE AREA.--3,370 mi^2 (8,730 km^2), approximately.

PERIOD OF RECORD.--October 1883 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as "at Pokegama Dam near Grand Rapids" 1942-44.

GAGE.--Water-stage recorder. Datum of gage is 1,242.03 ft (378.571 m) National Geodetic Vertical Datum of 1929. See WSP 1914 for history of changes prior to Jan. 17, 1951.

REMARKS.--Records fair. Flow regulated by Winnibigoshish Lake (station 05201000), Leech Lake (station 05206000), Pokegama Lake (station 05210500) and occasionally at low flow by powerplant at Blandin Dam. Backwater from Prairie River occurs at times in most years.

AVERAGE DISCHARGE.--97 years, 1,169 ft^3/s (33.11 m^3/s); median of yearly mean discharges, 1,040 ft^3/s (29.5 m^3/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,500 ft^3/s (354 m^3/s) Sept. 3, 1948, gage height, 15.2 ft (4.633 m), from floodmark, caused by dam failure at gage, from rating curve extended above 4,500 ft^3/s (127 m^3/s); maximum daily, 5,250 ft^3/s (149 m^3/s) Sept. 5, 8, 1905; no flow at times in several years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,380 ft^3/s (67.4 m^3/s) Nov. 3, gage height, 7.03 ft (2.143 m); maximum gage height, 7.63 ft (2.326 m) Jan. 14 (backwater from ice); minimum daily discharge, 154 ft^3/s (4.36 m^3/s) Aug. 5; minimum gage height, 1.97 ft (0.600 m) Sept. 11.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1070	1650	1680	1730	1700	1740	1240	416	277	223	217	251
2	1040	1910	1750	1720	1700	1740	1160	319	298	180	197	229
3	1020	2280	1940	1700	1700	1740	1010	214	333	229	211	225
4	928	2280	1870	1680	1700	1740	1000	220	356	270	264	244
5	933	2280	1880	1650	1700	1740	966	220	356	229	154	187
6	922	2200	1820	1600	1700	1740	1160	199	367	238	232	250
7	916	2040	1800	1590	1700	1730	1120	229	371	217	199	210
8	928	2230	1850	1600	1700	1730	1140	211	360	226	235	259
9	916	2160	1890	1620	1700	1730	1140	205	379	245	174	218
10	890	2170	1850	1680	1700	1730	1140	205	555	214	217	428
11	585	2190	1800	1710	1710	1730	1140	216	605	220	214	395
12	546	2080	1800	1730	1710	1720	1160	242	600	235	188	403
13	735	2080	1790	1750	1710	1720	1140	321	560	199	251	464
14	680	2070	1780	1740	1710	1720	1060	293	496	226	232	341
15	705	2070	1770	1730	1710	1720	922	330	500	238	172	475
16	700	2000	1750	1720	1710	1720	750	312	356	270	261	427
17	750	2120	1740	1710	1720	1720	715	379	267	241	199	422
18	710	2010	1730	1710	1720	1710	660	367	274	199	211	387
19	765	2000	1720	1710	1720	1700	735	315	287	202	211	384
20	720	2010	1710	1710	1720	1660	750	379	257	245	274	382
21	705	2010	1690	1710	1730	1550	770	352	257	235	191	358
22	840	2000	1690	1710	1730	1490	790	352	270	232	235	353
23	1000	2010	1680	1710	1730	1460	780	356	277	235	229	377
24	1150	2020	1680	1710	1730	1400	725	356	287	248	267	376
25	1210	1990	1690	1710	1730	1360	865	360	223	235	180	391
26	1240	2000	1690	1700	1740	1260	730	356	235	226	236	391
27	1210	2000	1700	1700	1740	1200	745	319	277	226	246	389
28	1210	1960	1680	1700	1740	1220	545	205	284	235	207	368
29	1240	1900	1700	1700	1740	1200	428	211	226	257	246	374
30	1220	1790	1730	1700	---	1240	420	229	229	211	244	387
31	1490	---	1740	1700	---	1210	---	229	---	238	205	---
TOTAL	28974	61510	54590	52540	49750	49070	26906	8917	10419	7124	6799	10345
MEAN	935	2050	1761	1695	1716	1583	897	288	347	230	219	345
MAX	1490	2280	1940	1750	1740	1740	1240	416	605	270	274	475
MIN	546	1650	1680	1590	1700	1200	420	199	223	180	154	187

CAL YR 1979 TOTAL 701397 MEAN 1922 MAX 3410 MIN 230
WTR YR 1980 TOTAL 366944 MEAN 1003 MAX 2280 MIN 154

05212700 PRAIRIE RIVER NEAR TACONITE, MN

LOCATION.--Lat 47°23'20", long 93°22'50", in NW¼SW¼ sec.27, T.57 N., R.24 W., Itasca County, Hydrologic Unit 07010103, on left bank 125 ft (38 m) upstream from bridge on County Highway 7, 1.5 mi (2.4 km) downstream from outlet of Lawrence Lake and 5 mi (8 km) north of Taconite.

DRAINAGE AREA.--360 mi^2 (932 km^2), approximately.

PERIOD OF RECORD.--April 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,294.81 ft (394.658 m) National Geodetic Vertical Datum of 1929. Prior to Aug. 31, 1967, nonrecording gage at site 125 ft (38 m) downstream at same datum.

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

AVERAGE DISCHARGE.--13 years, 227 ft^3/s (6.429 m^3/s), 8.56 in/yr (217 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,250 ft^3/s (92.0 m^3/s) Apr. 17, 1969, gage height, 11.81 ft (3.600 m); minimum, 7.0 ft^3/s (0.20 m^3/s) Oct. 5, 1970; minimum gage height, 1.34 ft (0.408 m) Nov. 7, 1976, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 550 ft^3/s (15.6 m^3/s) Apr. 24, gage height, 6.01 ft (1.832 m); minimum, 25 ft^3/s (0.708 m^3/s) Oct. 8-10, gage height, 1.79 ft (0.546 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	185	147	75	71	72	83	410	55	81	35	242
2	32	197	144	74	71	72	85	390	63	82	35	227
3	33	234	142	73	71	72	87	359	61	80	33	214
4	32	276	138	72	71	72	92	327	58	79	32	206
5	28	309	135	72	71	72	100	298	59	81	31	195
6	27	325	132	72	71	72	130	271	66	81	31	183
7	26	332	131	71	71	72	210	245	81	83	32	174
8	25	336	128	71	71	72	276	222	82	84	30	168
9	25	329	124	70	71	72	317	201	80	82	28	170
10	25	314	120	70	71	72	353	191	79	77	28	157
11	28	295	119	70	71	72	374	182	77	74	33	148
12	31	277	116	70	71	72	386	174	74	71	35	149
13	29	264	114	70	71	72	389	164	74	65	53	162
14	28	249	112	70	71	72	384	158	75	62	55	162
15	28	236	110	70	71	72	391	152	75	57	55	157
16	31	220	107	70	71	72	399	146	72	55	54	160
17	32	211	106	70	71	72	420	139	72	53	58	160
18	32	200	104	70	71	72	444	133	76	55	61	169
19	40	194	101	70	71	72	473	125	78	54	61	171
20	45	192	98	70	71	73	495	116	78	54	86	178
21	49	188	96	70	72	73	515	108	77	50	152	181
22	54	182	94	70	72	74	536	102	71	52	180	189
23	58	180	92	70	72	74	547	95	64	49	217	196
24	57	175	90	70	72	75	548	89	59	46	267	213
25	57	169	87	70	72	76	548	81	55	46	299	221
26	57	166	85	70	72	77	542	72	53	43	332	224
27	59	162	83	70	72	78	523	68	52	41	328	231
28	61	159	81	70	72	78	498	62	72	43	315	236
29	63	155	79	70	72	79	470	58	76	42	293	240
30	70	149	78	70	---	80	440	55	77	40	277	241
31	133	---	77	71	---	81	---	49	---	38	258	---
TOTAL	1327	6860	3370	2191	2068	2286	11055	5242	2091	1900	3784	5724
MEAN	42.8	229	109	70.7	71.3	73.7	369	169	69.7	61.3	122	191
MAX	133	336	147	75	72	81	548	410	82	84	332	242
MIN	25	149	77	70	71	72	83	49	52	38	28	148
CFSM	.12	.64	.30	.20	.20	.21	1.03	.47	.19	.17	.34	.53
IN.	.14	.71	.35	.23	.21	.24	1.14	.54	.22	.20	.39	.59

CAL YR 1979	TOTAL	101162	MEAN 277	MAX	3200	MIN 25	CFSM .77	IN 10.45	
WTR YR 1980	TOTAL	47898	MEAN 131	MAX	548	MIN 25	CFSM .36	IN 4.95	

05216860 SWAN RIVER NEAR CALUMET, MN

LOCATION.--Lat 47°17'20", long 93°13'54", in NW¼SW¼ sec.35, T.56 N., R.23 W., Itasca County, Hydrologic Unit 07010103, on left bank 1.0 mi (1.6 km) downstream from Snowball Creek, 2.1 mi (3.4 km) downstream from bridge on U.S. Highway 65 at outlet of Swan Lake and 3.1 mi (5.0 km) southeast of Calumet.

DRAINAGE AREA.--114 mi^2 (295 km^2).

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,331.19 ft (405.747 m) National Geodetic Vertical Datum of 1929. Prior to June 5, 1964, reference point at present site and datum.

REMARKS.--Records fair. Natural flow of stream affected by continually changing iron-mining activities that include diversions for iron-ore processing, storage in tailing ponds and Swan Lake, and mine pit dewatering.

AVERAGE DISCHARGE.--16 years, 65.6 ft^3/s (1.858 m^3/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 773 ft^3/s (21.9 m^3/s) Apr. 15, 1969, gage height, 5.83 ft (1.777 m); maximum gage height, 5.96 ft (1.817 m) Apr. 23, 1979; minimum discharge, 0.38 ft^3/s (0.011 m^3/s) Oct. 14, 1976, gage height, 4.16 ft (1.268 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 117 ft^3/s (3.31 m^3/s) Aug. 26, gage height, 4.99 ft (1.521 m); minimum daily, 2.9 ft^3/s (0.082 m^3/s) Oct. 8.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	45	31	16	20	16	15	71	16	8.8	7.2	102
2	4.4	50	31	16	20	16	16	73	24	8.8	7.2	94
3	4.2	54	30	16	20	16	18	70	24	8.2	7.7	94
4	4.0	59	30	15	20	16	22	60	26	8.2	8.8	98
5	3.7	65	30	15	20	16	31	55	22	8.8	7.7	98
6	3.3	62	29	19	20	16	43	49	20	8.5	8.2	94
7	3.7	59	29	22	19	16	65	48	25	7.6	9.4	87
8	2.9	54	29	21	17	16	84	45	21	7.5	10	84
9	3.3	52	28	20	16	15	91	43	18	7.2	10	94
10	3.3	51	28	20	17	14	91	42	18	6.7	11	91
11	3.3	47	28	20	17	14	91	40	16	7.4	14	87
12	4.1	45	27	20	16	14	91	43	15	6.4	15	94
13	4.1	43	27	20	16	15	84	41	14	6.4	22	86
14	4.5	42	27	20	16	20	84	38	16	7.6	24	83
15	5.4	41	26	26	16	20	81	36	15	8.2	24	78
16	6.2	38	26	26	16	22	79	36	13	8.5	24	69
17	6.7	38	26	25	16	24	79	36	10	8.6	26	71
18	7.2	38	25	24	16	24	81	34	11	10	24	71
19	9.4	36	24	23	16	22	84	31	11	11	24	70
20	11	38	23	22	16	20	87	26	11	12	38	67
21	12	37	22	22	16	20	91	22	11	11	57	66
22	12	36	21	21	17	16	84	22	11	10	65	58
23	13	35	22	20	17	16	87	22	10	9.6	73	63
24	12	35	22	23	17	16	89	20	10	8.7	81	69
25	12	34	21	22	16	14	87	20	9.7	8.7	84	68
26	12	34	20	22	16	14	85	16	9.4	8.1	113	67
27	12	33	19	21	16	15	84	14	9.4	7.3	113	66
28	13	33	18	20	16	15	82	12	8.8	6.7	109	66
29	13	32	18	20	16	15	78	12	9.4	6.7	106	65
30	14	32	17	20	---	15	75	14	10	7.2	102	67
31	25	---	16	20	---	14	---	12	---	7.2	102	---
TOTAL	249.4	1298	770	637	497	522	2159	1103	444.7	257.6	1327.2	2367
MEAN	8.05	43.3	24.8	20.5	17.1	16.8	72.0	35.6	14.8	8.31	42.8	78.9
MAX	25	65	31	26	20	24	91	73	26	12	113	102
MIN	2.9	32	16	15	16	14	15	12	8.8	6.4	7.2	58

CAL YR 1979 TOTAL 30280.9 MEAN 83.0 MAX 670 MIN 2.9
WTR YR 1980 TOTAL 11631.9 MEAN 31.8 MAX 113 MIN 2.9

05218500 SANDY LAKE AT LIBBY, MN

LOCATION.--Lat 46°47'20", long 93°19'10", in sec.25, T.50 N., R.24 W., Aitkin County, Hydrologic Unit 07010103, on dam on Sandy River at Libby, 1.2 mi (1.9 km) upstream from mouth, and 14 mi (23 m) north of McGregor.

DRAINAGE AREA.--421 mi^2 (1,090 km^2).

PERIOD OF RECORD.--July to December 1893, October to December 1894, July 1895 to current year. Monthend contents only for some periods, published in WSP 1308. Published as Sandy Lake Reservoir at Libby October 1941 to September 1956.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Sept. 23, 1949, nonrecording gage and Sept. 24, 1949, to Nov. 28, 1962, water-stage recorder at site 1 mi (1.6 km) upstream at datum 1,207.71 ft (368.110 m) adjustment of 1912. Nov. 29, 1962, to June 30, 1973, water-stage recorder at present site at datum 1,207.71 ft (368.110 m) adjustment of 1912.

REMARKS (Revised).--Lake is formed by concrete dam which controls Sandy, Flowage, Snake, and Aitkin Lakes. Storage began in 1893; original timber crib dam completed in 1895, replaced by present structure in 1911. Capacity between elevation 1,214.31 ft (370.122 m) and 1,221.31 ft (372.255 m) (top of structure) is 73,037 acre-ft (90.0 hm^3), of which 37,539 acre-ft (46.3 hm^3) is controlled storage between elevations 1,214.31 ft (370.122 m) and 1,218.31 ft (371.341 m) (normal operating range). Contents shown herein are contents above elevation 1,207.00 ft (367.894 m). Prior to September 1978, published contents as contents above elevation 1,207.00 ft (367.894 m). Prior to September 1978, published contents as contents above elevation 1,209.03 ft (368.512 m). Water is used to benefit navigation on Mississippi River below Minneapolis.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 167,200 acre-ft (206 hm^3) capacity table then in use, May 19, 1950, elevation, 1,224.82 ft (373.325 m); minimum observed, 5,950 acre-ft (7.34 hm^2) below zero of capacity table then in use, Jan. 20, 1921, elevation, 1,207.96 ft (368.186 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents 65,940 acre-ft (81.3 hm^3) May 4, elevation, 1,216.58 ft (370.814 m); minimum, 45,440 acre-ft (56.0 hm^3) Mar. 11, elevation, 1,214.26 ft (370.106 m).

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1216.35	63760	
Oct. 31	1216.09	61330	-2430
Nov. 30	1215.20	53350	-7980
Dec. 31	1215.10	52480	-870
CAL YR 1979			+1030
Jan. 31	1214.79	49830	-2650
Feb. 29	1214.35	46170	-3660
Mar. 31	1214.30	45760	-410
Apr. 30	1216.55	65650	+19890
May 31	1216.36	63850	-1800
June 30	1216.30	63290	-560
July 31	1216.17	62070	-1220
Aug. 31	1216.10	61420	-650
Sept. 30	1216.17	62070	+650
WTR YR 1980			-1690

05219000 SANDY RIVER AT SANDY LAKE DAM, AT LIBBY, MN

LOCATION.--Lat 46°47'20", long 93°19'10", in sec.25, T.50 N., R.24 W., Aitkin County, Hydrologic Unit 07010103, at dam at outlet of Sandy Lake, at Libby, 1.2 mi (1.9 km) above mouth, and 14 mi (23 km) north of McGregor.

DRAINAGE AREA.--421 mi^2 (1,090 km^2).

PERIOD OF RECORD.--July 1893 to March 1894, July 1894, November 1894 to March 1895, August 1895 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as "below Sandy Lake Reservoir" 1893-1916.

GAGE.--Water-stage recorders on headwater and tailwater. Datum of gages is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to June 30, 1973, gages (nonrecording gages prior to June 20, 1949) at same site with datum at 1,207.71 ft (368.110 m) adjustment of 1912.

REMARKS.--Discharge computed on basis of head over dam, using modified weir formula, head being obtained from headwater and tailwater recorder records. Flow completely regulated by Sandy Lake (station 05218500).

COOPERATION.--Computations of daily discharge furnished by Corps of Engineers; discharge measurement made and records reviewed by Geological Survey.

AVERAGE DISCHARGE (unadjusted).--85 years (water years 1896-1980), 215 ft^3/s (6.089 m^3/s), 6.94 in/yr (176 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 3,740 ft^3/s (106 m^3/s) July 12, 1897; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 1,180 ft^3/s (33.4 m^3/s) Sept. 23; minimum daily, 17 ft^3/s (0.48 m^3/s) July 12-14, Aug. 2 to Sept. 7.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	140	145	65	112	59	50	131	18	47	18	17
2	64	258	153	65	112	61	50	133	18	47	17	17
3	64	616	160	66	112	61	50	136	18	47	17	17
4	64	576	96	66	110	61	51	138	18	18	17	17
5	65	544	93	67	110	61	54	143	18	18	17	17
6	65	528	89	68	108	61	51	150	18	18	17	17
7	66	528	83	68	108	62	54	179	47	18	17	17
8	65	520	81	68	106	62	55	181	47	18	17	18
9	65	528	81	122	106	62	55	181	47	18	17	18
10	66	536	84	121	104	61	58	181	47	18	17	18
11	66	560	90	119	104	62	61	182	47	18	17	75
12	66	568	90	115	104	45	63	184	47	17	17	74
13	66	536	90	115	101	46	64	187	47	17	17	167
14	67	512	93	117	101	46	64	184	47	17	17	165
15	67	520	96	114	101	45	64	184	47	18	17	167
16	67	536	98	117	101	45	65	184	47	18	17	200
17	68	536	96	115	101	45	66	184	47	18	17	200
18	167	536	95	113	101	45	67	182	47	18	17	250
19	165	528	63	113	101	45	70	182	47	18	17	250
20	164	402	62	113	101	44	72	182	47	18	17	396
21	164	280	62	113	99	44	72	182	47	18	17	394
22	161	284	62	113	99	43	71	182	47	18	17	394
23	161	284	62	113	99	44	71	182	47	18	17	1180
24	161	284	62	113	97	45	71	93	47	18	17	1080
25	156	284	63	113	97	45	72	94	47	18	17	355
26	152	288	63	133	97	46	73	94	47	18	17	371
27	149	289	63	113	97	46	74	94	47	18	17	374
28	146	180	64	115	97	47	74	18	47	18	17	374
29	146	183	65	115	97	47	76	18	47	18	17	374
30	140	170	65	113	---	48	78	18	47	18	17	374
31	146	---	65	113	---	49	---	18	---	18	17	---
TOTAL	3294	12534	2634	3194	2983	1583	1916	4381	1236	642	528	7387
MEAN	106	418	85.0	103	103	51.1	63.9	141	41.2	20.7	17.0	246
MAX	167	616	160	133	112	62	78	187	47	47	18	1180
MIN	64	140	62	65	97	43	50	18	18	17	17	17
CFSM	.25	.99	.20	.25	.25	.12	.15	.34	.10	.05	.04	.58
IN.	.29	1.11	.23	.28	.26	.14	.17	.39	.11	.06	.05	.65

CAL YR 1979 TOTAL 112061.00 MEAN 307 MAX 2270 MIN .00 CFSM .73 IN 9.90
WTR YR 1980 TOTAL 42312.00 MEAN 116 MAX 1180 MIN 17 CFSM .28 IN 3.74

05220500 MISSISSIPPI RIVER BELOW SANDY RIVER, NEAR LIBBY, MN

LOCATION.--Lat 46°47'23", long 93°19'43", in SE¼NE¼ sec.25, T.50 N., R.24 W., Aitkin County, Hydrologic Unit 07010103, on right bank 600 ft (183 m) downstream from Sandy River, 0.8 mi (1.3 km) northwest of Libby, and at mile 1,106 (1,780 km) upstream from Ohio River.

DRAINAGE AREA.--5,060 mi^2 (13,110 km^2), approximately.

PERIOD OF RECORD.--April 1930 to current year.

REVISED RECORDS.--WSP 1914: 1958.

GAGE.--Water-stage recorder. Datum of gage is 1,204.06 ft (366.997 m) National Geodetic Vertical Datum of 1929. Prior to July 28, 1931, nonrecording gage at site 600 ft (183 m) upstream at datum 3.16 ft (0.96 m) higher.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by Winnibigoshish Lake (station 05201000), Leech Lake (station 05206000), Pokegama Lake (station 05210500), and Sandy Lake (station 05218500).

AVERAGE DISCHARGE.--50 years, 2,028 ft^3/s (57.43 m^3/s), 5.44 in/yr (138 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,000 ft^3/s (453 m^3/s) May 17, 1950, gage height, 20.02 ft (6.102 m); minimum, 83 ft^3/s (2.35 m^3/s) Nov. 16, 1936, gage height, 1.44 ft (0.439 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,520 ft^3/s (99.7 m^3/s) Nov. 6, gage height, 8.35 ft (2.545 m); maximum gage height, 8.67 ft (2.643 m) Nov. 30 (backwater from ice); minimum daily discharge, 367 ft^3/s (10.4 m^3/s) Aug. 2.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1370	2250	2500	2050	1950	1910	2170	1780	597	581	383	935
2	1380	2760	2450	2040	1950	1920	2180	1700	687	576	367	869
3	1370	3130	2400	2040	1950	1920	2190	1600	822	529	375	837
4	1340	3310	2350	2030	1940	1920	2200	1390	839	480	383	814
5	1260	3460	2300	2020	1940	1930	2210	1210	788	474	419	832
6	1210	3500	2290	2020	1940	1930	2240	1130	779	505	440	874
7	1250	3500	2280	2010	1940	1940	2300	1120	801	504	391	818
8	1230	3450	2270	2010	1940	1940	2350	1130	825	498	415	795
9	1180	3420	2250	2000	1930	1950	2400	1110	823	486	371	818
10	1160	3400	2230	2000	1930	1960	2400	1040	782	485	375	1010
11	1160	3400	2210	2000	1930	1960	2440	1000	773	496	399	1050
12	1180	3400	2200	1990	1930	1960	2470	949	883	476	419	1210
13	1060	3420	2190	1990	1930	1970	2540	952	923	456	399	1290
14	978	3340	2170	1990	1920	1970	2610	982	893	470	428	1290
15	1060	3180	2160	1980	1920	1980	2620	988	831	457	499	1280
16	1020	3100	2150	1980	1920	1980	2600	969	770	467	529	1260
17	1040	3060	2140	1980	1920	1990	2510	970	756	474	529	1240
18	1060	3040	2130	1980	1920	2000	2330	973	689	522	551	1210
19	1090	3020	2120	1980	1910	2000	2240	1010	611	522	478	1180
20	1170	2880	2110	1970	1910	2000	2260	981	569	465	461	1180
21	1210	2780	2100	1970	1910	2000	2290	926	551	428	555	1180
22	1190	2760	2100	1970	1910	2010	2360	935	523	453	722	1440
23	1190	2750	2100	1970	1910	2020	2380	895	530	466	795	1780
24	1320	2740	2090	1970	1910	2030	2370	852	543	475	888	1520
25	1470	2720	2090	1960	1910	2040	2310	797	549	461	916	1200
26	1610	2700	2080	1960	1910	2050	2280	713	535	448	968	1260
27	1680	2690	2080	1960	1910	2060	2270	692	451	439	959	1320
28	1690	2650	2070	1960	1910	2070	2160	670	458	436	959	1280
29	1680	2620	2070	1960	1910	2080	2020	638	544	436	983	1250
30	1680	2560	2060	1950	---	2100	1870	567	601	440	997	1170
31	1870	---	2050	1950	---	2130	---	562	---	432	987	---
TOTAL	40158	90990	67790	61640	55810	61720	69570	31231	20726	14837	18340	34192
MEAN	1295	3033	2187	1988	1924	1991	2319	1007	691	479	592	1140
MAX	1870	3500	2500	2050	1950	2130	2620	1780	923	581	997	1780
MIN	978	2250	2050	1950	1910	1910	1870	562	451	428	367	795
CFSM	.26	.60	.43	.39	.38	.39	.46	.20	.14	.10	.12	.23
IN.	.30	.67	.50	.45	.41	.45	.51	.23	.15	.11	.13	.25

CAL YR 1979 TOTAL 1085988 MEAN 2975 MAX 8210 MIN 978 CFSM .59 IN 7.98
WTR YR 1980 TOTAL 567004 MEAN 1549 MAX 3500 MIN 367 CFSM .31 IN 4.17

05227500 MISSISSIPPI RIVER AT AITKIN, MN

LOCATION.--Lat 46°32'26", long 93°42'26", in SW¼NW¼ sec.24, T.47 N., R.27 W., Aitkin County, Hydrologic Unit 07010104, on right bank upstream side of highway bridge at north edge of Aitkin, 1 mi (1.6 km) downstream from Ripple River and at mile 1,055.9 (1,698.9 km) upstream from Ohio River.

DRAINAGE AREA.--6,140 mi^2 (15,900 km^2), approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,182.41 ft (360.40 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Mar. 1, 1945, to Mar. 14, 1961, nonrecording gage, and Mar. 15, 1961, to Sept. 30, 1967, water-stage recorder at same site at datum 3.0 ft (0.9 m) higher. Diversion channel: Nonrecording gage. Datum of gage is 1,182.02 ft (360.28 m) National Geodetic Vertical Datum of 1929. Apr. 9, 1955, to Apr. 10, 1956, nonrecording gage at site 4 mi (6 km) downstream at different datum. Apr. 11, 1956, to Sept. 30, 1967, nonrecording gage at same site at datum 3.0 ft (0.9 m) higher.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Winnibigoshish Lake (see sta 05201000), Leech Lake (see sta 05206000), Pokegama Lake (see sta 05210500), and Sandy Lake (see sta 05218500). Water diverted at medium and high stages into Aitkin diversion channel 6.5 mi (10.5 km) above station, bypasses station and returns to river 15.5 mi (24.9 km) below station. Diversion began Apr. 2, 1955. These records include flow in diversion channel.

AVERAGE DISCHARGE.--35 years, 2,907 ft^3/s (82.33 m^3/s), 6.43 in/yr (163 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft^3/s (566 m^3/s) May 20, 1950, gage height, 22.49 ft (6.855 m), present datum; minimum, 151 ft^3/s (4.28 m^3/s) Sept. 1, 1961, gage height, 0.60 ft (0.183 m).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 4,340 ft^3/s (123 m^3/s) Nov. 7; minimum daily, 404 ft^3/s (11.4 m^3/s) Aug. 11. River gage: Maximum discharge, 3,520 ft^3/s (99.7 m^3/s) Apr. 15, gage height, 8.77 ft (2.673 m); minimum daily, 404 ft^3/s (11.4 m^3/s) Aug. 11; minimum gage height, 1.43 ft (0.436 m) Aug. 3, 11. Diversion gage: Maximum discharge, 858 ft^3/s (24.3 m^3/s) Apr. 15, gage height, 7.08 ft (2.158 m), from graph based on gage readings; maximum gage height observed, 9.54 ft (2.908 m) Apr. 11, (backwater from ice); no flow on many days.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1370	2380	2510	2040	1990	2000	2040	2530	726	624	489	1060
2	1370	2770	2460	2040	1990	2000	2100	2390	779	656	464	1030
3	1390	3360	2410	2040	1980	2010	2180	2240	864	642	416	1140
4	1390	3720	2410	2040	1980	2010	2320	2100	1010	618	415	1310
5	1360	4130	2360	2040	1980	2010	2470	1910	1090	570	410	1410
6	1320	4300	2370	2020	1990	2010	2640	1690	1080	520	423	1450
7	1250	4340	2390	2020	1990	2000	2920	1540	1050	506	462	1470
8	1250	4310	2370	2020	1980	1990	3300	1460	1040	516	458	1450
9	1250	4230	2390	2020	1980	1990	3660	1420	1040	509	443	1450
10	1220	4090	2350	2020	1980	1980	3900	1400	1040	498	423	1490
11	1200	3730	2350	2010	1990	1980	4020	1370	992	481	404	1650
12	1180	3700	2300	2010	1990	1980	4130	1320	940	478	415	1820
13	1180	3660	2300	2000	1990	1980	4240	1270	991	481	438	1960
14	1120	3740	2250	2000	1980	1980	4290	1240	1040	548	448	2030
15	1030	3770	2240	2000	1980	1980	4280	1250	1030	537	445	2010
16	1040	3790	2240	2010	1980	1980	4000	1240	977	521	490	1950
17	1050	3710	2220	2000	1990	1980	3800	1210	918	513	561	1880
18	1060	3610	2200	2000	1990	1980	3680	1200	901	589	587	1810
19	1110	3610	2190	2000	1990	1980	3530	1190	898	645	612	1740
20	1130	3610	2180	2000	1990	1980	3390	1200	824	701	603	1680
21	1190	3440	2160	2000	1990	1980	3330	1180	758	699	575	1630
22	1250	3290	2150	2000	1990	1980	3330	1120	720	637	586	1590
23	1260	3150	2140	2000	1990	1980	3340	1090	680	611	716	1700
24	1260	3030	2130	2000	1990	1980	3300	1060	646	603	844	1950
25	1320	2900	2120	2000	2000	1980	3260	1010	642	609	929	1870
26	1450	2870	2100	2000	2000	1990	3180	946	630	596	981	1590
27	1600	2770	2090	1990	2000	2000	3140	867	618	559	1030	1530
28	1700	2700	2080	1990	2000	1990	3030	815	593	533	1040	1540
29	1740	2660	2070	2000	2000	2000	2900	787	544	514	1040	1530
30	1770	2560	2060	2000	---	2000	2720	778	544	502	1050	1500
31	2070	---	2040	2000	---	2010	---	740	---	497	1060	---
TOTAL	40880	103930	69630	62310	57670	61690	98420	41563	25605	17513	19257	48220
MEAN	1319	3464	2246	2010	1989	1990	3281	1341	854	565	621	1607
MAX	2070	4340	2510	2040	2000	2010	4290	2530	1090	701	1060	2030
MIN	1030	2380	2040	1990	1980	1980	2040	740	544	478	404	1030
CFSM	.22	.56	.37	.33	.32	.32	.53	.22	.14	.09	.10	.26
IN.	.25	.63	.42	.38	.35	.37	.60	.25	.16	.11	.12	.29

CAL YR 1979 TOTAL 1326570 MEAN 3634 MAX 13300 MIN 1030 CFSM .59 IN 8.04
WTR YR 1980 TOTAL 646688 MEAN 1767 MAX 4340 MIN 404 CFSM .29 IN 3.92

05230500 PINE RIVER RESERVOIR AT CROSS LAKE, MN

LOCATION.--Lat 46°40'09", long 94°06'44", in SW¼NW¼ sec.21, T.137 N., R.27 W., Crow Wing County, Hydrologic Unit 07010105, at dam on Pine River, at outlet of Cross Lake at village of Cross Lake.

DRAINAGE AREA.--562 mi^2 (1,456 km^2).

PERIOD OF RECORD.--March 1886 to current year. Monthend contents only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to May 3, 1949, nonrecording gage at same site and datum.

REMARKS (Revised).--Reservoir is formed by Trout, Whitefish, Rush, and Cross Lakes and several other natural lakes controlled by timber crib dams; storage began in 1886; dam completed in 1886. Capacity between elevations 1,226.32 ft (373.782 m) and 1,234.82 ft (376.373 m) (maximum allowable range) is 118,703 acre-ft (146 hm^3) of which 53,272 acre-ft (65.7 hm^3) is controlled storage between elevations 1,226.32 ft (373.782 m) and 1,230.32 ft (375.002 m) (normal operating range). Contents shown herein are contents above an elevation 1,216.00 ft (340.157 m). Prior to September 1978, published contents as contents above elevation 1,218.67 ft (371.451 m). Water is used to benefit navigation on Mississippi River below Minneapolis.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 173,600 acre-ft (214 hm^3) capacity table then in use, July 10, 1916, elevation, 1,234.56 ft (376.294 m); minimum observed, 1,310 acre-ft (1.62 hm^3) below zero of capacity table then in use, Aug. 20, 1918, elevation, 1,217.67 ft (371.146 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 103,300 acre-ft (127 hm^3) Sept. 4, elevation, 1,229.55 ft (374.767 m); minimum, 73,700 acre-ft (90.9 hm 3) Mar. 11, elevation, 1,227.33 ft (374.090 m).

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1229.20	98570	
Oct. 31	1229.04	96400	-2170
Nov. 30	1228.20	85140	-11260
Dec. 31	1227.86	80640	-4500
CAL YR 1979			+1970
Jan. 31	1227.59	77090	-3550
Feb. 29	1227.37	74220	-2870
Mar. 31	1227.54	76440	+2220
Apr. 30	1228.93	94920	+18480
May 31	1229.25	99250	+4330
June 30	1229.23	98980	-270
July 31	1229.33	100300	+1320
Aug. 31	1229.35	100600	+300
Sept. 30	1229.20	98570	-2030
WTR YR 1980			0

05231000 PINE RIVER AT CROSS LAKE DAM, AT CROSS LAKE, MN

LOCATION.--Lat 46°40'09", long 94°06'44", in SW¼NW¼ sec.21, T.137 N., R.27 W., Crow Wing County, Hydrologic Unit 07010105, at dam at outlet of Cross Lake at Village of Cross Lake.

DRAINAGE AREA.--562 mi^2 (1,456 km^2).

PERIOD OF RECORD.--April 1886 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as "below Pine River Reservoir" 1895-1916, 1929, and as "at Pine River Dam, at Cross Lake" 1941-56.

GAGE.--Water-stage recorder, headwater gage, and nonrecording tailwater gage. Datum of gages is 1,216.32 ft (370.734 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Mar. 26, 1886, to May 31, 1929, nonrecording gages on headwater and tail water at same sites and datum. June 1 to Nov. 30, 1929, non recording gage in tailwater at datum 1.60 ft (0.49 m) lower. Dec. 1, 1929, to May 2, 1949, nonrecording gage on headwater and Dec. 1, 1929, to August 1949, nonrecording gage on tailwater at present sites and datum.

REMARKS.--Discharge computed principally on basis of modified weir formula, the head being obtained from twice-daily readings on tailwater gage and from headwater recorder. Flow completely regulated by Pine River Reservoir (station 05230500).

COOPERATION.--Computations of daily discharge furnished by Corps of Engineers.

AVERAGE DISCHARGE (unadjusted).--94 years, 217 ft^3/s (6.145 m^3/s), 5.24 in/yr (133 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,250 ft^3/s (63.7 m^3/s) in June 1896 (does not include flow bypassing dam through crevasse); no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 500 ft^3/s (14.2 m^3/s) Nov. 2-27; minimum daily, 30 ft^3/s (0.85 m^3/s) Apr 20 to June 6, July 8 to Aug. 29.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	450	279	230	230	170	125	30	30	50	30	60
2	100	500	250	230	230	170	125	30	30	50	30	60
3	100	500	250	230	230	170	125	30	30	50	30	60
4	100	500	250	230	230	170	125	30	30	50	30	140
5	100	500	250	230	230	170	125	30	30	50	30	210
6	100	500	250	230	230	170	125	30	30	50	30	210
7	100	500	250	230	230	170	125	30	45	50	30	210
8	100	500	250	230	230	170	125	30	50	30	30	210
9	100	500	250	230	230	170	56	30	50	30	30	265
10	100	500	250	230	230	170	50	30	92	30	30	280
11	100	500	250	230	230	170	50	30	100	30	30	280
12	100	500	250	230	230	128	50	30	100	30	30	280
13	100	500	250	230	230	125	50	30	100	30	30	340
14	100	500	250	230	230	125	50	30	148	30	30	340
15	100	500	210	230	230	125	50	30	150	30	30	340
16	100	500	200	230	200	125	50	30	150	30	30	340
17	100	500	200	230	200	125	50	30	150	30	30	340
18	188	500	200	230	200	125	50	30	150	30	30	203
19	200	500	200	230	200	125	33	30	150	30	30	175
20	200	500	200	230	200	125	30	30	150	30	30	150
21	200	500	200	230	200	125	30	30	150	30	30	150
22	200	500	225	230	200	125	30	30	150	30	30	150
23	200	500	230	230	200	125	30	30	150	30	30	100
24	200	500	230	230	200	125	30	30	150	30	30	100
25	200	500	230	230	200	125	30	30	100	30	30	100
26	200	500	230	230	200	125	30	30	100	30	30	100
27	200	500	230	230	173	125	30	30	100	30	30	100
28	200	398	230	230	170	125	30	30	100	30	30	100
29	200	360	230	230	170	125	30	30	100	30	30	100
30	242	360	230	230	---	125	30	30	100	30	60	100
31	250	---	230	230	---	125	---	30	---	30	60	---
TOTAL	4580	14568	7234	7130	6163	4373	1869	930	2965	1070	990	5593
MEAN	148	486	233	230	213	141	62.3	30.0	98.8	34.5	31.9	186
MAX	250	500	279	230	230	170	125	30	150	50	60	340
MIN	100	360	200	230	170	125	30	30	30	30	30	60
CFSM	.26	.87	.42	.41	.38	.25	.11	.05	.18	.06	.06	.33
IN.	.30	.96	.48	.47	.41	.29	.12	.06	.20	.07	.07	.37

CAL YR 1979 TOTAL 114329 MEAN 313 MAX 1000 MIN 70 CFSM .56 IN 7.57
WTR YR 1980 TOTAL 57465 MEAN 157 MAX 500 MIN 30 CFSM .28 IN 3.80

05244000 CROW WING RIVER AT NIMROD, MN

LOCATION.--Lat 46°38'25", long 94°52'44", in SE¼NW¼ sec.32, T.137 N., R.33 W., Wadena County, Hydrologic Unit 07010106, on right bank 200 ft (61 m) upstream from highway bridge, 0.2 mi (0.3 km) north of Nimrod, and 0.7 mi (1.1 km) upstream from Cat River.

DRAINAGE AREA.--1,010 mi^2 (2,620 km^2), approximately.

PERIOD OF RECORD.--April 1910 to September 1914, July 1930 to current year (winter records incomplete prior to 1940).

REVISED RECORDS.--WSP 1508: 1910-11, 1913-14, 1937, 1942(M), 1944(M).

GAGE.--Water-stage recorder. Datum of gage is 1,313.27 ft (400.285 m) National Geodetic Vertical datum of 1929 (levels by Wadena County Highway Department from Minnesota Department of Transportation bench mark). Apr. 15, 1910, to Sept. 30, 1914, nonrecording gage at same site, at datum 2.2 ft (0.671 m) lower. July 28, 1930, to Nov. 4, 1949, nonrecord ing gages at same site and datum.

REMARKS.--Records good except those for winter period, which are fair. Flow affected by natural storage in many lakes.

AVERAGE DISCHARGE.--41 years (water years 1940-80), 475 ft^3/s (13.45 m^3/s), 6.39 in/yr (162 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,700 ft^3/s (105 m^3/s) Oct. 10, 1973, gage height, 7.35 ft (2.240 m); maximum gage height, 7.64 ft (2.329 m) Apr. 20, 1950 (backwater from ice); minimum discharge observed, 45 ft^3/s (1.27 m^3/s) Aug. 7, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,070 ft^3/s (30.3 m^3/s) Apr. 8, gage height, 3.92 ft (1.195 m); maximum gage height, 6.32 ft (1.926 m) Apr. 7 (backwater from ice); minimum discharge, 177 ft^3/s (5.01 m^3/s) July 17, gage height, 2.55 ft (0.777 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	303	749	350	305	330	350	440	532	336	275	204	248
2	307	787	450	305	330	350	480	520	375	261	204	248
3	310	801	650	300	335	350	560	502	370	248	200	275
4	310	796	600	300	335	350	650	490	342	238	209	290
5	314	785	550	300	335	350	750	478	364	230	213	285
6	309	779	520	300	340	355	850	466	408	221	217	275
7	309	772	490	300	340	355	960	454	402	225	225	261
8	310	780	460	300	340	355	1040	448	402	204	248	252
9	310	762	440	300	340	355	992	436	375	209	217	245
10	310	740	420	305	345	355	977	436	358	196	213	252
11	315	691	410	305	345	355	988	442	336	192	217	258
12	312	736	390	305	345	355	984	424	331	192	209	302
13	310	728	380	310	345	360	962	414	348	180	213	309
14	312	669	375	310	345	360	927	408	358	192	217	309
15	308	601	370	310	345	360	896	397	331	188	213	314
16	307	586	360	310	345	360	852	380	331	184	213	310
17	303	576	355	315	345	365	816	358	315	180	234	310
18	308	568	350	315	345	365	778	342	353	209	234	307
19	349	568	340	315	345	370	749	326	414	204	221	302
20	347	565	335	315	345	370	725	305	397	217	217	302
21	342	558	330	320	345	375	701	300	375	221	238	292
22	347	551	330	320	350	380	683	290	353	221	234	274
23	347	545	325	320	350	385	662	280	336	213	243	270
24	351	578	320	320	350	390	643	275	331	204	256	276
25	345	564	320	320	350	390	629	266	336	213	252	278
26	344	515	315	325	350	395	612	261	320	209	252	279
27	342	460	315	325	350	395	600	256	310	200	252	269
28	334	400	310	325	350	400	587	252	300	217	252	267
29	335	330	310	330	350	400	569	252	295	217	252	264
30	346	335	310	330	---	405	554	270	285	213	248	266
31	555	---	305	330	---	410	---	275	---	213	243	---
TOTAL	10251	18875	12085	9690	9965	11470	22616	11535	10487	6586	7060	8389
MEAN	331	629	390	313	344	370	754	372	350	212	228	280
MAX	555	801	650	330	350	410	1040	532	414	275	256	314
MIN	303	330	305	300	330	350	440	252	285	180	200	245
CFSM	.33	.62	.39	.31	.34	.37	.75	.37	.35	.21	.23	.28
IN.	.38	.70	.45	.36	.37	.42	.83	.42	.39	.24	.26	.31

CAL YR 1979 TOTAL 206966 MEAN 567 MAX 2700 MIN 245 CFSM .56 IN 7.62
WTR YR 1980 TOTAL 139009 MEAN 380 MAX 1040 MIN 180 CFSM .38 IN 5.12

05245100 LONG PRAIRIE RIVER AT LONG PRAIRIE, MN

LOCATION.--Lat 45°58'30", long 94°51'56", in NE¼NW¼ sec.20, T.129 N., R.33 W., Todd County, Hydrologic Unit 07010108, on right bank 90 ft (27 m) upstream from bridge on First Avenue at Long Prairie and 400 ft (122 m) downstream from Venewitz Creek.

DRAINAGE AREA.--432 mi^2 (1,119 km^2).

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

GAGE.--Water-stage recorder. Datum of gage is 1,281.74 ft (390.674 m) National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--9 years, 148 ft^3/s (4.191 m^3/s), 4.65 in/yr (118 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,270 ft^3/s (92.6 m^3/s) July 22, 1972, gage height, 9.37 ft (2.856 m); minimum daily, 0.84 ft^3/s (0.02 m^3/s) Jan. 12-18, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 816 ft^3/s (23.1 m^3/s) Apr. 9, gage height, 5.49 ft (1.673 m); minimum daily, 57 ft^3/s (1.61 m^3/s) Mar. 7-28; minimum gage height, 1.52 ft (0.463 m) Nov. 28.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	106	198	96	88	70	59	210	167	159	151	133	147
2	104	203	98	86	70	59	260	164	196	140	141	144
3	102	239	100	84	69	58	385	163	212	137	138	146
4	102	284	98	81	69	58	490	157	219	133	139	141
5	100	329	101	80	69	58	607	154	243	125	136	138
6	97	353	100	79	68	58	579	149	304	116	136	126
7	95	350	100	78	68	57	665	148	338	112	199	120
8	95	280	99	78	68	57	772	145	383	107	245	117
9	93	195	97	78	67	57	811	139	431	105	237	109
10	91	140	94	77	67	57	775	144	458	102	204	103
11	90	130	96	76	66	57	657	151	447	101	182	122
12	89	155	94	76	66	57	541	151	449	100	166	233
13	87	165	91	75	65	57	455	146	439	98	160	289
14	85	170	88	75	65	57	370	142	431	100	163	313
15	80	165	87	74	64	57	300	136	425	100	166	292
16	76	157	86	74	64	57	287	132	403	103	181	276
17	73	157	86	73	64	57	280	128	383	100	205	283
18	72	159	86	73	63	57	262	125	385	101	209	302
19	75	154	86	72	63	57	244	120	389	102	206	318
20	73	146	88	72	62	57	231	115	369	107	202	325
21	71	141	91	72	62	57	226	108	336	108	196	320
22	74	138	94	72	62	57	223	105	308	107	188	307
23	79	135	94	72	61	57	219	100	280	107	178	284
24	85	105	94	72	61	57	209	95	254	107	170	262
25	89	110	93	72	61	57	205	90	220	108	163	244
26	91	115	92	72	60	57	199	85	199	110	156	224
27	90	96	90	72	60	57	195	82	187	113	150	206
28	89	60	90	72	60	57	187	80	179	169	144	199
29	88	65	89	71	59	65	176	79	167	181	139	192
30	96	85	88	71	---	95	172	104	157	166	155	184
31	177	---	88	70	---	160	---	122	---	147	151	---
TOTAL	2814	5179	2874	2337	1873	1924	11192	3926	9350	3663	5338	6466
MEAN	90.8	173	92.7	75.4	64.6	62.1	373	127	312	118	172	216
MAX	177	353	101	88	70	160	811	167	458	181	245	325
MIN	71	60	86	70	59	57	172	79	157	98	133	103
CFSM	.21	.40	.22	.18	.15	.14	.86	.29	.72	.27	.40	.50
IN.	.24	.45	.25	.20	.16	.17	.96	.34	.81	.32	.46	.56

CAL YR 1979 TOTAL 72975 MEAN 200 MAX 1770 MIN 18 CFSM .46 IN 6.28
WTR YR 1980 TOTAL 56936 MEAN 156 MAX 811 MIN 57 CFSM .36 IN 4.90

05246500 GULL LAKE NEAR BRAINERD, MN

LOCATION.--Lat 46°24'40", long 94°21'26", in N½ sec.20, T.134 N., R.29 W., Cass County, Hydrologic Unit 07010106, in pool of dam on Gull River, 800 ft (244 m) south of outlet of Gull Lake, 0.2 mi (0.3 km) upstream from Gull Lake Dam, and 8 mi (13 km) northwest of Brainerd.

DRAINAGE AREA.--287 mi^2 (743 km^2).

PERIOD OF RECORD.--August 1911 to current year. Prior to October 1941 monthend contents only, published in WSP 1308. Published as Gull Lake Reservoir October 1941 to September 1956.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Aug. 10, 1949, nonrecording gage 800 ft (244 m) north of present site at same datum. Aug. 11, 1949, to June 30, 1973, water-stage recorder at present site and at datum 1,188.14 ft (362.145 m) adjustment of 1912.

REMARKS (Revised).--Reservoir is formed by Gull Lake and several other natural lakes controlled by concrete dam completed in 1913; storage began in 1912. Capacity between elevation 1,192.75 ft (363.550 m) and 1,194.75 ft (364.160 m) (maximum allowable range and normal operating range) is 26,008 acre-ft (32.1 hm^3). Contents shown herein are contents above elevation 1,188.00 ft (362.102 m). Prior to September 1978, published contents as contents above elevation 1,188.75 ft (362.331 m). Water is used to benefit navigation on Mississippi River below Minneapolis.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 74,800 acre-ft (92.2 hm^3) capacity table then in use, June 30, 1914, elevation, 1,195.05 ft (364.251 m); minimum observed, 22,250 acre-ft (27.4 hm^3) capacity table then in use, Mar. 20, 1924, elevation, 1,190.75 ft (362.941 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 63,320 acre-ft (78.1 hm^3) Sept. 12, elevation, 1,194.12 ft (363.968 m); minimum, 49,050 acre-ft (60.5 hm^3) Apr. 2, elevation, 1,193.02 ft (363.632 m).

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1193.88	60200	
Oct. 31	1193.78	58900	-1300
Nov. 30	1193.48	55000	-3900
Dec. 31	1193.54	55780	+780
CAL YR 1979			-520
Jan. 31	1193.48	55000	-780
Feb. 29	1193.28	52410	-2590
Mar. 31	1193.05	49430	-2980
Apr. 30	1193.76	58630	+9200
May 31	1193.87	60060	+1430
June 30	1193.90	60460	+400
July 31	1193.95	61110	+650
Aug. 31	1193.89	60330	-780
Sept. 30	1193.84	59680	-650
WTR YR 1980			-520

05247000 GULL RIVER AT GULL LAKE DAM, NEAR BRAINERD, MN

LOCATION.--Lat 46°24'40", long 94°21'12", in sec.20, T.134 N., R.29 W., Cass County, Hydrologic Unit 07010106, in headwater and tailwater of dam at outlet of Gull Lake, 8 mi (13 km) northwest of Brainerd.

DRAINAGE AREA.--287 mi^2 (743 km^2).

PERIOD OF RECORD.--August 1911 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as "Gull Lake Reservoir" 1929.

GAGE.--Water-stage recorder on headwater and nonrecording gage on tailwater. Datum of gages is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). August 1911 to May 23, 1929, and Dec. 1, 1929, to Aug. 1, 1949, both gages were nonrecording gages at same site and datum in use. May 24 to Nov. 30, 1929, non recording gage 500 ft (152 m) downstream at different datum. Aug. 2, 1949, to June 30, 1973, at present sites with datum of gage at 1,188.14 ft (362.145 m) adjustment of 1912.

REMARKS.--Discharge computed at dam on basis of modified weir formulas, the head being obtained from twice-daily readings on tailwater gage and from headwater recorder. Flow completely regulated by Gull Lake (station 05246500).

COOPERATION.--Computations of daily discharge furnished by Corps of Engineers.

AVERAGE DISCHARGE (unadjusted).--69 years, 107 ft^3/s (3.030 m^3/s), 5.06 in/yr (128 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,120 ft^3/s (31.7 m^3/s) May 15, 1938; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 359 ft^3/s (10.2 m^3/s) Nov. 2-6; minimum daily, 15 ft^3/s (0.42 m^3/s) Oct. 6-17.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	249	48	73	133	133	180	17	17	51	23	23
2	16	359	49	73	133	133	180	17	17	21	23	23
3	16	359	49	73	133	133	180	17	49	21	23	23
4	16	359	49	100	133	133	180	17	49	21	23	23
5	16	359	49	100	133	133	180	17	27	21	23	23
6	15	359	49	100	133	133	180	17	27	21	23	23
7	15	350	50	100	133	133	180	17	27	21	23	23
8	15	350	50	100	133	133	180	17	27	21	23	23
9	15	350	50	100	133	133	119	17	27	21	23	23
10	15	333	50	100	133	125	119	17	27	21	23	23
11	15	333	50	100	133	133	121	17	27	21	23	23
12	15	333	50	138	133	133	85	17	27	21	23	24
13	15	333	50	138	133	133	85	17	27	21	23	165
14	15	333	50	140	133	133	86	17	27	21	23	165
15	15	153	73	140	133	133	50	17	27	21	23	165
16	15	31	73	142	133	133	50	17	27	21	23	165
17	15	31	72	141	~~[illegible]~~33	133	50	17	50	21	23	165
18	130	31	72	141	133	133	50	17	50	21	23	165
19	115	31	73	141	133	133	17	17	102	52	23	165
20	105	31	73	141	133	133	19	17	102	52	23	165
21	105	31	73	141	133	133	18	17	102	52	23	165
22	105	31	73	141	133	133	17	17	102	52	23	165
23	105	31	73	140	133	133	17	17	102	52	23	165
24	115	31	73	140	133	133	17	17	102	50	23	165
25	115	31	73	140	133	133	17	17	51	50	23	52
26	115	31	73	140	133	180	17	17	51	50	23	52
27	115	32	73	138	133	180	17	17	51	50	23	52
28	115	32	73	133	133	180	17	17	51	50	23	52
29	115	114	73	133	125	180	17	17	51	50	23	52
30	115	110	73	133	---	180	17	17	51	23	23	24
31	120	---	73	133	---	180		17	---	23	23	---
TOTAL	1850	5541	1932	3793	3849	4397	2462	527	1474	1014	713	2541
MEAN	59.7	185	62.3	122	133	142	82.1	17.0	49.1	32.7	23.0	84.7
MAX	130	359	73	142	133	180	180	17	102	52	23	165
MIN	15	31	48	73	125	125	17	17	17	21	23	23
CFSM	.21	.65	.22	.43	.46	.50	.29	.06	.17	.11	.08	.30
IN.	.24	.72	.25	.49	.50	.57	.32	.07	.19	.13	.09	.33
AC-FT	3670	10990	3830	7520	7630	8720	4880	1050	2920	2010	1410	5040

CAL YR 1979	TOTAL	52609	MEAN	144	MAX 540	MIN 15	CFSM .50	IN 6.82	AC-FT	104300
WTR YR 1980	TOTAL	30093	MEAN	82.2	MAX 359	MIN 15	CFSM .29	IN 3.90	AC-FT	59690

05247500 CROW WING RIVER NEAR PILLAGER, MN

LOCATION.--Lat°46 18'18", long 94°22'38", in SW¼NE¼ sec.30, T.133 N., R.29 W., Cass County, Hydrologic Unit 07010106, at Sylvan dam powerplant of Minnesota Power & Light Co., 3.6 mi (5.8 km) above mouth and 4.9 mi (7.9 km) southeast of Pillager.

PERIOD OF RECORD.--October 1968 to current year. Records for August 1924 to September 1968 available in files of the Minnesota district office.

REMARKS.--Records fair except those below 1,000 ft^3/s (28.3 m^3/s), which are poor. Discharge computed on basis of powerplant records. Records for Oct. 1, 1968 to Sept. 30, 1975, were adjusted for storage change in the Sylvan dam reservoir. Flow partly regulated by powerplants and Gull Lake (station 05246500).

COOPERATION.--Records collected by Minnesota Power & Light Co. under general supervision of Geological Survey, in connection with a Federal Power Commission project.

AVERAGE DISCHARGE.--12 years, 1,288 ft^3/s (36.48 m^3/s).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 16,600 ft^3/s (470 m^3/s) Apr. 12, 13, 1969; minimum daily, 60 ft^3/s (1.70 m^3/s) Aug. 10, 11, 13, 14, 1976.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum daily discharge since 1924, 18,300 ft^3/s (518 m^3/s) Apr. 14, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 2,390 ft^3/s (67.7 m^3/s) Apr. 8; minimum daily, 260 ft^3/s (7.36 m^3/s) Mar. 29.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	404	1990	677	727	657	886	453	1390	969	582	343	521
2	501	2100	743	621	639	886	1040	1220	976	583	416	468
3	401	2090	598	621	540	886	1280	1120	1080	759	408	512
4	456	2180	932	683	489	542	1330	1120	1340	616	375	896
5	491	2380	944	678	429	684	1350	1170	1330	715	343	476
6	430	2290	944	685	452	571	1360	1110	1140	308	457	537
7	430	2080	943	765	517	560	1570	889	1040	539	517	536
8	411	2240	824	539	604	550	2390	779	1510	495	376	427
9	459	1850	880	430	559	540	2260	1170	1450	394	487	495
10	406	1550	943	461	561	530	2140	1130	1400	367	631	419
11	456	1420	782	467	540	520	1820	942	1400	346	648	463
12	520	1400	643	513	514	507	1330	1050	1400	364	391	854
13	493	1400	401	596	553	580	1330	1050	1230	358	468	933
14	416	1640	613	468	582	593	1360	1060	1440	544	542	934
15	424	1810	590	732	583	459	1350	998	1590	399	468	1230
16	496	1610	525	722	583	570	1340	722	1450	425	443	1030
17	520	1330	431	557	662	508	2150	780	1300	362	559	1030
18	565	1410	488	642	655	428	2090	722	1440	534	530	1150
19	479	1530	553	720	658	428	1440	745	1470	809	516	960
20	651	1400	516	739	600	429	1820	688	1540	933	477	1080
21	948	1350	622	809	544	428	2100	669	1580	879	603	962
22	682	1300	632	762	543	428	2010	729	1690	703	481	1050
23	655	1240	635	750	464	429	1720	662	1500	502	447	928
24	654	1010	653	691	564	514	1640	640	1360	659	538	888
25	654	827	621	733	681	616	1510	555	1150	592	538	887
26	654	1320	666	663	644	1090	1410	465	1260	392	537	783
27	545	863	683	641	542	1380	1430	497	1120	392	510	821
28	683	866	665	564	541	738	1500	497	1210	485	437	795
29	688	522	598	510	541	260	1470	416	818	419	474	870
30	761	475	704	646	---	261	1430	571	752	423	479	673
31	1280	---	624	681	---	262	---	607	---	424	404	---
TOTAL	17613	45473	21073	19816	16441	18063	47423	26163	38935	16302	14843	23608
MEAN	568	1516	680	639	567	583	1581	844	1298	526	479	787
MAX	1280	2380	944	809	681	1380	2390	1390	1690	933	648	1230
MIN	401	475	401	430	429	260	453	416	752	308	343	419

CAL YR 1979 TOTAL 477309 MEAN 1308 MAX 7970 MIN 288
WTR YR 1980 TOTAL 305753 MEAN 835 MAX 2390 MIN 260

05267000 MISSISSIPPI RIVER NEAR ROYALTON, MN

LOCATION.--Lat 45°51'40", long 94°21'30", in lot 2, sec.20, T.39 N., R.32 W., Morrison County, Hydrologic Unit 07010104, at plant of Minnesota Power & Light Co., 4 mi (6.4 km) northwest of Royalton, 4.5 mi (7.2 km) downstream from Swan River, and at mile 956 (1,538 km) upstream from Ohio River.

DRAINAGE AREA.--11,600 mi^2 (30,000 km^2), approximately.

WATER-DISCHARGE RECORDS

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

REMARKS.--Records fair. Discharge computed on basis of powerplant records. Flow partly regulated by powerplants and Winnibigoshish, Leech, Pokegama, Sandy, and Gull Lakes and by Pine River Reservoir (see stations 05201000, 05206000, 05210500, 05218500, 05230500, 05246500).

COOPERATION.--Records collected by Minnsota Power & Light Co. under general supervision of Geological Survey, in connection with a Federal Power Commission project.

AVERAGE DISCHARGE.--56 years, 4,441 ft^3/s (126 m^3/s), 5.20 in/yr (132 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 37,700 ft^3/s (1,070 m^3/s) Apr. 16, 1965; minimum daily, 254 ft^3/s (7.19 m^3/s) Nov. 25, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 14,500 ft^3/s (411 m^3/s) Apr. 9; minimum daily, 1,020 ft^3/s (28.9 m^3/s) Aug. 6.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2640	6130	3020	3400	3110	3200	5110	5410	2000	1720	1290	1870
2	1030	6680	2760	3600	3270	3120	5890	5160	2660	1550	1170	2070
3	2080	7520	2810	3450	3170	3190	7230	4680	2210	1500	1130	2000
4	2000	8220	3370	3380	3080	3120	7930	4200	2650	1720	1230	2500
5	2380	9100	3970	3400	3150	3100	8400	4200	2530	1820	1130	2270
6	2170	9560	4230	3400	3150	3150	10300	3800	3080	1500	1020	2400
7	2280	9720	4060	3130	3200	3150	10800	3340	3310	1160	1630	2660
8	2230	9520	3780	3150	3080	3150	14100	2840	2950	1420	1440	2560
9	2120	9310	3680	2880	3250	3020	14500	2950	3170	1400	1100	2240
10	2250	8290	4620	3350	3300	3080	14100	3270	3200	1260	1390	2300
11	2120	7960	4310	3250	3280	3200	14200	3050	2830	1180	1520	2510
12	2100	7440	2960	3020	3200	3030	12600	1960	2950	1180	1460	3220
13	2100	7060	2750	3230	3200	3000	12700	2820	3000	1120	1080	4220
14	2100	7060	3170	3310	3200	3120	12500	2770	3100	1180	1150	3620
15	2100	8040	3800	3200	3200	3000	11700	2480	3180	1550	1320	3940
16	2100	8410	3280	3480	3250	2930	10500	2770	3230	1310	1330	4260
17	2100	7630	3230	3400	3320	2930	9990	2720	2870	1440	1300	3690
18	2100	7530	3350	3060	3320	2980	9980	2680	3130	1500	1330	4010
19	2290	7060	3350	3400	3250	2940	8130	2420	3280	2000	1420	3860
20	2100	7190	3400	3250	3310	3000	7610	2400	3170	1900	1370	3570
21	2710	7020	3600	3400	3220	2960	7610	2390	2930	1770	1520	3150
22	2740	6390	3600	3400	3440	3000	7870	2160	3000	2190	1410	3220
23	2550	6080	3600	3400	3200	3000	7610	2350	2800	1680	1270	3160
24	2550	5870	3700	3320	3200	3000	7930	2100	2450	1490	1650	2990
25	2550	6000	3700	3400	3150	3100	6780	1980	2320	1630	1660	3150
26	2350	5750	3600	3350	3190	3250	5980	1880	2200	1490	1850	3590
27	2530	5930	3700	3400	3250	3700	5370	1900	2440	1280	1940	2970
28	2640	4450	3630	3320	3220	3940	6030	1770	2160	1450	1750	2770
29	3120	3880	3600	3100	3120	3310	6160	2050	2100	1400	2000	2750
30	3830	2950	3600	3200	---	3740	6160	1850	1470	1400	2040	2920
31	4900	---	3600	3330	---	4460	---	2000	---	1180	1700	---
TOTAL	74860	213750	109830	102360	93280	98870	275770	88350	82370	46370	44600	90440
MEAN	2415	7125	3543	3302	3217	3189	9192	2850	2746	1496	1439	3015
MAX	4900	9720	4620	3600	3440	4460	14500	5410	3310	2190	2040	4260
MIN	1030	2950	2750	2880	3080	2930	5110	1770	1470	1120	1020	1870
CFSM	.21	.61	.31	.29	.28	.28	.79	.25	.24	.13	.12	.26
IN.	.24	.69	.35	.33	.30	.32	.88	.28	.26	.15	.14	.29

CAL YR 1979 TOTAL 2736030 MEAN 7496 MAX 35100 MIN 1030 CFSM .65 IN 8.77
WTR YR 1980 TOTAL 1320850 MEAN 3609 MAX 14500 MIN 1020 CFSM .31 IN 4.24

05267000 MISSISSIPPI RIVER NEAR ROYALTON, MN--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963-66, 1975 to current year.

REMARKS.--Letter K indicates non-ideal colony count. Letters ND indicate none detected.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE, WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)
OCT									
31...	1130	3960	305	8.4	15.0	8.5	3.0	10.4	94
NOV									
20...	1030	7530	300	7.8	5.0	4.0	3.0	11.0	86
DEC									
19...	1200	3910	315	--	8.0	.0	2.0	11.6	83
FEB									
06...	1100	3220	375	8.5	--	.0	1.0	10.7	78
MAR									
18...	1345	3290	322	7.6	5.0	.0	.65	9.4	69
APR									
30...	1445	5510	242	7.8	71.0	16.0	1.5	11.2	117
JUN									
24...	1000	2770	343	8.3	24.5	20.5	.50	7.6	86
JUL									
30...	1315	1400	300	8.4	30.0	30.0	2.0	9.0	127
AUG									
26...	1130	3220	320	8.3	20.0	22.0	1.4	7.4	84
SEP									
16...	1230	3220	260	8.0	14.0	18.0	.40	7.9	85

DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)
OCT									
31...	K18	27	150	1	39	13	7.4	.3	2.0
NOV									
20...	21	23	130	3	35	11	4.8	.2	1.9
DEC									
19...	110	26	160	3	42	14	5.9	.2	1.8
FEB									
06...	20	K14	170	14	45	15	6.3	.2	1.9
MAR									
18...	55	65	170	0	43	15	5.8	.2	1.7
APR									
30...	--	--	130	6	34	10	4.3	.2	2.5
JUN									
24...	22	--	160	1	43	13	5.7	.2	1.5
JUL									
30...	<1	23	160	0	39	14	6.4	.2	1.5
AUG									
26...	4	13	160	12	40	15	7.0	.2	1.8
SEP									
16...	K31	K20	150	16	37	13	5.5	.2	1.9

05267000 MISSISSIPPI RIVER NEAR ROYALTON, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	ALKALINITY (MG/L AS CACO3) (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)
OCT 31...	150	6.4	4.3	.1	5.8	197	169	2110	.16
NOV 20...	130	8.8	3.9	.1	9.1	184	156	3740	.57
DEC 19...	160	7.2	3.8	.1	9.7	202	182	2130	.21
FEB 06...	160	11	10	.1	12	202	198	1750	.19
MAR 18...	170	9.0	3.7	.1	12	205	194	1850	.27
APR 30...	120	8.2	3.4	.1	5.6	166	141	2470	.09
JUN 24...	160	5.9	4.3	.2	10	228	180	1710	.01
JUL 30...	160	7.7	5.0	.2	8.7	211	179	798	.00
AUG 26...	150	9.8	5.5	.2	11	196	181	1700	.05
SEP 16...	130	5.8	4.3	.1	11	170	158	1480	.10

DATE	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
OCT 31...	.08	.030	.020	.98	.65	.030	.010	0	9.1
NOV 20...	.57	.060	.010	.68	.63	.030	.030	0	--
DEC 19...	.21	.060	.060	.57	.57	.020	.010	--	9.4
FEB 06...	.19	.100	.100	.55	.55	.030	.030	0	11
MAR 18...	.27	.060	.060	.53	.52	.040	.020	0	--
APR 30...	.03	.210	.000	.77	.75	.070	.040	0	--
JUN 24...	.01	.040	.020	.78	.54	.060	.030	0	9.8
JUL 30...	.00	.060	.010	.56	.45	.050	.050	0	8.2
AUG 26...	.01	.060	.020	.49	.28	.060	.040	--	10
SEP 16...	.10	.080	.080	.77	.51	.030	.010	--	--

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD) (01027)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOVERABLE (UG/L AS CO) (01037)
NOV 20...	1030	3	2	200	50	0	0	20	10	1
MAR 18...	1345	4	2	100	70	0	0	30	20	0
APR 30...	1445	3	2	<50	50	2	2	30	20	0
SEP 16...	1230	1	1	--	100	--	0	--	10	--

05267000 MISSISSIPPI RIVER NEAR ROYALTON, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)
NOV 20...	1	3	3	480	120	9	0	60	20	.2
MAR 18...	0	2	2	260	90	1	0	60	50	<.1
APR 30...	2	2	2	510	140	0	0	120	20	<.1
SEP 16...	0	--	8	--	150	--	4	--	10	<.1

DATE	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED (MG/L AS C) (00689)
NOV 20...	<.1	3	1	0	0	0	20	20	9.6	.5
MAR 18...	<.1	1	1	0	0	0	20	0	9.4	.2
APR 30...	<.1	0	0	0	0	0	10	10	12	.1
SEP 16...	<.1	--	0	0	0	0	--	20	10	.7

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	ALDRIN, TOTAL (UG/L) (39330)	CHLOR-DANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)	DDT, TOTAL (UG/L) (39370)	DI-AZINON, TOTAL (UG/L) (39570)	DI-ELDRIN TOTAL (UG/L) (39380)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)
AUG 22...	0920	ND	ND	ND	ND	ND	ND	ND	ND	ND

DATE	HEPTA-CHLOR, TOTAL (UG/L) (39410)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L) (39420)	LINDANE TOTAL (UG/L) (39340)	MALA-THION, TOTAL (UG/L) (39530)	METH-OXY-CHLOR, TOTAL (UG/L) (39480)	METHYL PARA-THION, TOTAL (UG/L) (39600)	METHYL TRI-THION, TOTAL (UG/L) (39790)	PARA-THION, TOTAL (UG/L) (39540)	TOX-APHENE, TOTAL (UG/L) (39400)	TOTAL TRI-THION (UG/L) (39786)
AUG 22...	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PCB TOTAL (UG/L) (39516)	ALDRIN, TOTAL (UG/L) (39330)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG) (39333)	CHLOR-DANE, TOTAL (UG/L) (39350)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG) (39351)	DDD, TOTAL (UG/L) (39360)	DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG) (39363)	DDE, TOTAL (UG/L) (39365)	DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG) (39368)	DDT, TOTAL (UG/L) (39370)	DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG) (39373)
OCT 31...	1130	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FEB 06...	1100	--	ND	--	ND	--	ND	--	ND	--	ND	--
APR 30...	1445	ND	ND	--	ND	--	ND	--	ND	--	ND	--
AUG 26...	1030	ND	ND	--	ND	--	ND	--	ND	--	ND	--

05267000 MISSISSIPPI RIVER NEAR ROYALTON, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	DI-AZINON, TOTAL (UG/L) (39570)	DI-AZINON, TOTAL IN BOTTOM MATERIAL (UG/KG) (39571)	DI-ELDRIN TOTAL (UG/L) (39380)	DI-ELDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG) (39383)	ENDRIN, TOTAL (UG/L) (39390)	ENDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG) (39393)	ETHION, TOTAL (UG/L) (39398)	ETHION, TOTAL IN BOTTOM MATERIAL (UG/KG) (39399)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR, TOTAL IN BOTTOM MATERIAL (UG/KG) (39413)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)
OCT 31...	--	ND	ND	ND	ND	ND	--	ND	ND	ND	ND
FEB 06...	ND	--	ND	--	ND	--	ND	--	ND	--	ND
APR 30...	ND	--	ND	--	ND	--	ND	--	ND	--	ND
AUG 26...	ND	--	ND	--	ND	--	ND	--	ND	--	ND

DATE	HEPTACHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG) (39423)	LINDANE TOTAL (UG/L) (39340)	LINDANE TOTAL IN BOTTOM MATERIAL (UG/KG) (39343)	MALATHION, TOTAL (UG/L) (39530)	MALATHION, TOTAL IN BOTTOM MATERIAL (UG/KG) (39531)	METHOXYCHLOR, TOTAL (UG/L) (39480)	METHOXYCHLOR, TOT. IN BOTTOM MATL. (UG/KG) (39481)	METHYL PARATHION, TOTAL (UG/L) (39600)	METHYL PARATHION, TOT. IN BOTTOM MATL. (UG/KG) (39601)	METHYL TRITHION, TOTAL (UG/L) (39790)
OCT 31...	ND	ND	ND	--	ND	ND	ND	--	ND	--
FEB 06...	--	ND	--	ND	--	ND	--	ND	--	ND
APR 30...	--	ND	--	ND	--	ND	--	ND	--	ND
AUG 26...	--	ND	--	ND	--	ND	--	ND	--	ND

DATE	METHYL TRITHION, TOT. IN BOTTOM MATL. (UG/KG) (39791)	PARATHION, TOTAL (UG/L) (39540)	PARATHION, TOTAL IN BOTTOM MATERIAL (UG/KG) (39541)	TOXAPHENE, TOTAL (UG/L) (39400)	TOXAPHENE, TOTAL IN BOTTOM MATERIAL (UG/KG) (39403)	TOTAL TRITHION (UG/L) (39786)	TRITHION, TOTAL IN BOTTOM MATERIAL (UG/KG) (39787)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	SILVEX, TOTAL (UG/L) (39760)
OCT 31...	ND	--	ND	ND	ND	--	ND	ND	ND	ND
FEB 06...	--	ND	--	ND	--	ND	--	--	--	--
APR 30...	--	ND	--	ND	--	ND	--	--	--	--
AUG 26...	--	ND	--	ND	--	ND	--	--	--	--

DATE	TIME	LENGTH OF EXPOSURE (DAYS) (00022)	PERIPHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERIPHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	CHLOR-A PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2) (70958)
OCT 31...	1130	36	25.0	16.5	60.6	.000
AUG 26...	1130	27	9.69	6.61	7.28	2.60

DATE	TIME	STREAMFLOW (CFS) (00060)	TEMPERATURE, WATER (DEG C) (00010)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
OCT 31...	1130	3960	8.5	6	64	--
NOV 20...	1030	7530	4.0	5	102	--
DEC 19...	1200	3910	.0	1	11	--
FEB 06...	1100	3200	.0	1	9.0	--
MAR 18...	1345	3340	.0	2	18	--
APR 30...	1445	5510	16.0	6	89	100
JUN 24...	1000	2770	20.5	5	37	100
JUL 30...	1230	1450	30.0	7	27	--
AUG 26...	1025	1820	22.0	8	39	--
SEP 16...	1105	4770	18.0	8	103	--

05270500 SAUK RIVER NEAR ST. CLOUD, MN

LOCATION.--Lat 45°33'35", long 94°14'00", in SE¼SW¼ sec.8, T.124 N., R.28 W., Stearns County, Hydrologic Unit 07010203, on right bank 0.5 mi (0.8 km) northwest of Waite Park, 3 mi (4.8 km) west of St. Cloud, and 5 mi (8.0 km) upstream from mouth.

DRAINAGE AREA.--925 mi^2 (2,396 km^2).

PERIOD OF RECORD.--July 1909 to December 1912, April to December 1913, May to November 1929, March 1930 to September 1931, April to November 1932, March to November 1933, March 1934 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 895: Drainage area. WSP 1308: 1912(M), 1932(M). WSP 1508: 1937(m).

GAGE.--Water-stage recorder. Datum of gage is 1,034.63 ft (315.355 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 22, 1934, nonrecording gage on highway bridge 1 mi (1.6 km) downstream at datum 6.77 ft (2.06 m) lower.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by powerplants and reservoirs above station.

AVERAGE DISCHARGE.--50 years (water years 1910-12, 1931, 1935-80), 278 ft^3/s (7.873 m^3/s), 4.08 in/yr (104 mm/yr); median of yearly mean discharges, 240 ft^3/s (6.797 m^3/s), 3.52 in/yr (90 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,100 ft^3/s (258 m^3/s) Apr. 13, 1965, gage height, 10.68 ft (3.255 m); minimum, 0.3 ft^3/s (0.008 m^3/s) Nov. 25, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 935 ft^3/s (26.5 m^3/s) Apr. 5, gage height, 3.58 ft (1.091 m); maximum gage height, 4.26 ft (1.298 m) Mar. 29 (backwater from ice); minimum, 62 ft^3/s (1.76 m^3/s) Aug. 27, gage height, 1.06 ft (0.323 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	121	390	270	145	388	386	763	436	158	329	121	225
2	115	405	292	174	388	386	824	422	177	328	124	213
3	114	416	292	210	388	385	862	407	167	318	121	203
4	113	417	292	300	389	385	901	392	164	304	125	197
5	109	423	292	320	389	385	926	373	186	290	122	265
6	108	431	292	324	389	385	925	354	438	258	117	216
7	106	442	270	325	389	384	909	332	438	242	149	210
8	106	442	226	332	389	384	887	319	468	229	276	235
9	105	435	292	335	389	384	903	306	457	213	245	208
10	105	425	292	338	389	384	887	305	427	202	246	162
11	103	415	232	340	388	383	869	313	398	191	243	203
12	102	402	169	341	388	383	850	296	472	189	232	444
13	101	393	289	342	388	383	820	283	533	173	228	449
14	99	385	302	345	388	392	791	280	564	166	223	431
15	96	377	302	347	388	400	773	266	549	161	210	440
16	94	366	223	350	388	405	742	251	553	158	199	562
17	94	364	295	352	388	415	715	243	553	151	222	601
18	100	354	305	354	388	423	692	263	533	140	227	605
19	135	358	320	356	387	433	669	260	517	145	244	619
20	128	350	330	358	387	445	631	251	506	148	257	616
21	135	318	343	359	387	457	613	240	490	149	642	603
22	151	311	337	360	387	560	591	233	464	142	643	552
23	152	327	340	359	387	600	550	219	434	139	429	539
24	151	321	340	374	387	645	522	206	403	141	319	534
25	149	327	335	380	387	690	510	193	387	146	273	538
26	149	295	338	381	387	735	490	179	360	137	101	519
27	149	292	339	382	387	735	487	175	355	132	158	360
28	157	292	334	382	386	735	475	170	381	137	137	354
29	155	292	325	384	386	735	457	166	370	130	150	433
30	170	250	309	385	---	735	447	164	335	123	171	429
31	298	---	180	387	---	690	---	159	---	122	222	---
TOTAL	3970	11015	9097	10421	11246	15227	21481	8456	12237	5833	7176	11965
MEAN	128	367	293	336	388	491	716	273	408	188	231	399
MAX	298	442	343	387	389	735	926	436	564	329	643	619
MIN	94	250	169	145	386	383	447	159	158	122	101	162
CFSM	.14	.40	.32	.36	.42	.53	.77	.30	.44	.20	.25	.43
IN.	.16	.44	.37	.42	.45	.61	.86	.34	.49	.23	.29	.48

CAL YR 1979 TOTAL 218742 MEAN 599 MAX 2980 MIN 94 CFSM .65 IN 8.80
WTR YR 1980 TOTAL 128124 MEAN 350 MAX 926 MIN 94 CFSM .38 IN 5.15

05275000 ELK RIVER NEAR BIG LAKE, MN

LOCATION.--Lat 45°20'02", long 93°40'00", in NE¼SW¼ sec.23, T.33 N., R.27 W., Sherburne County, Hydrologic Unit 07010203, on right bank at upstream side of highway bridge, 4 mi (6 km) east of Big Lake and 4 mi (6 km) downstream from St. Francis River.

DRAINAGE AREA.--615 mi^2 (1,593 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1911 to September 1917, April to September 1931, April to November 1932, March to November 1933, March 1934 to current year.

REVISED RECORDS.--WSP 895: 1939. WSP 1308: 1912(M), 1915-17(M).

GAGE.--Water-stage recorder. Datum of gage is 899.60 ft (274.198 m) National Geodetic Vertical Datum of 1929. April 1911 to Sept. 30, 1917, Apr. 1, 1931, to July 26, 1934, nonrecording gage at same site and datum.

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

AVERAGE DISCHARGE.--52 years (water years 1912-17, 1935-80), 258 ft^3/s (7.31 m^3/s), 5.70 in/yr (145 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,360 ft^3/s (208 m^3/s) Apr. 16, 1965, gage height, 10.86 ft (3.310 m); minimum, 3.6 ft^3/s (0.102 m^3/s) July 31, 1934.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 912 ft^3/s (25.8 m^3/s) Apr. 7, gage height, 3.22 ft (0.981 m); maximum gage height, 3.54 ft (1.079 m) Mar. 31; minimum, 47 ft^3/s (1.33 m^3/s) Aug. 6, 7, gage height, 0.69 ft (0.210 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	149	370	231	181	215	217	644	253	149	165	58	167
2	154	430	235	170	215	217	682	245	205	154	60	169
3	150	480	238	151	215	217	763	238	225	144	59	163
4	143	519	238	170	216	217	830	231	224	134	58	187
5	145	567	240	176	217	217	863	223	257	121	53	229
6	150	587	238	178	217	218	888	212	443	112	49	229
7	157	573	235	174	217	219	909	203	422	106	82	218
8	158	544	232	175	217	220	902	196	388	100	181	205
9	157	517	231	175	217	220	871	189	366	96	198	197
10	154	462	278	175	217	222	806	184	348	92	176	184
11	157	435	263	175	217	230	747	188	322	87	164	188
12	156	412	172	175	217	233	695	186	321	92	151	289
13	153	406	175	175	217	240	641	184	338	94	145	350
14	153	373	180	178	217	248	589	183	322	99	140	378
15	147	349	183	182	217	253	551	180	301	92	127	388
16	145	330	187	190	217	262	514	174	280	94	119	375
17	143	315	191	200	217	269	481	171	262	88	133	353
18	147	303	196	209	217	261	454	193	246	85	132	320
19	196	296	197	211	217	294	432	198	249	84	143	286
20	219	290	198	211	217	368	413	185	241	94	156	268
21	214	289	199	211	217	413	403	175	226	90	179	265
22	218	293	200	210	217	420	386	165	213	85	172	257
23	234	292	199	210	217	400	370	162	204	78	150	247
24	234	283	192	209	217	430	352	152	193	71	144	237
25	226	270	185	209	217	470	333	142	186	76	144	225
26	222	287	183	210	217	543	315	132	176	76	136	224
27	220	261	182	210	217	570	298	125	172	69	129	215
28	216	250	182	212	217	550	283	120	184	72	121	214
29	213	227	181	213	217	580	269	123	172	76	115	226
30	215	225	181	215	---	690	261	134	162	70	135	223
31	275	---	181	215	---	690	---	138	---	66	151	---
TOTAL	5620	11235	6403	5955	6286	10598	16945	5584	7797	2962	3960	7476
MEAN	181	375	207	192	217	342	565	180	260	95.5	128	249
MAX	275	587	278	215	217	690	909	253	443	165	198	388
MIN	143	225	172	151	215	217	261	120	149	66	49	163
CFSM	.29	.61	.34	.31	.35	.56	.92	.29	.42	.16	.21	.41
IN.	.34	.68	.39	.36	.38	.64	1.02	.34	.47	.18	.24	.45

CAL YR 1979	TOTAL	171999	MEAN 471	MAX 2700	MIN 140	CFSM .77	IN 10.40	
WTR YR 1980	TOTAL	90821	MEAN 248	MAX 909	MIN 49	CFSM .40	IN 5.49	

05275000 ELK RIVER NEAR BIG LAKE, MN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-71, 1975 to current year.

SUSPENDED SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE, WATER (DEG C) (00010)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
OCT					
22...	1345	218	12.0	6	3.5
NOV					
19...	1245	300	8.5	14	11
DEC					
27...	1020	182	.5	6	2.9
FEB					
07...	1215	217	.5	5	2.9
MAR					
17...	1200	269	.5	5	3.6
APR					
28...	1150	288	--	18	14
JUN					
23...	1202	210	24.5	43	24
AUG					
04...	1340	59	22.0	11	1.8
11...	1310	166	22.0	40	18
SEP					
04...	1040	181	20.0	45	22

05278000 MIDDLE FORK CROW RIVER NEAR SPICER, MN

LOCATION.--Lat 45°15'45", long 94°48'10", in NE¼ sec.27, T.121 N., R.33 W., Kandiyohi County, Hydrologic Unit 07010204, on right bank 75 ft (23 m) upstream from highway bridge, 1.5 mi (2.4 km) downstream from Lake Calhoun, 3 mi (4.8 km) downstream from Green Lake, and 6.8 mi (10.9 km) northeast of Spicer.

DRAINAGE AREA.--179 mi^2 (464 km^2), approximately.

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

REVISED RECORDS.--WSP 1508: 1949(M), 1950.

GAGE.--Water-stage recorder and concrete and steel sharp-crested V-notch weir. Datum of gage is 1,147.93 ft (349.889 m) National Geodetic Vertical Datum of 1929 (Kandiyohi County Highway Department bench mark). Prior to July 20, 1950, nonrecording gage at bridge 75 ft (23 m) downstream at same datum.

REMARKS.--Records good except those for winter period, which are fair. Flow affected by natural storage and some regulation from lakes above station.

AVERAGE DISCHARGE.--31 years, 52.0 ft^3/s (1.473 m^3/s), 3.95 in/yr (100 mm/yr); median of yearly mean discharges, 38.9 ft^3/s (1.102 m^3/s), 2.95 in/yr (75 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 408 ft^3/s (11.6 m^3/s) June 29, 1953, gage height, 6.52 ft (1.987 m); maximum gage height, 6.67 ft (2.033 m) June 25, 1957; no flow Mar. 15-24, 1949, Feb. 26 to Mar. 26, 1960, Dec. 8, 1963, Feb. 10-21, 1965, Feb. 19-28, 1968, Jan. 11-30, 1975.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 104 ft^3/s (2.945 m^3/s) June 5, gage height, 3.52 ft (1.073 m); maximum gage height, 3.88 ft (1.183 m) Feb. 25 (backwater from ice); minimum, 2.0 ft^3/s (0.057 m^3/s) Oct. 15, 18; minimum gage height, 2.08 ft (0.634 m) Oct. 18.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.8	31	28	33	36	38	48	54	32	59	23	20
2	6.7	30	28	32	36	38	47	52	34	55	23	19
3	6.7	28	29	33	35	38	47	52	33	52	21	21
4	5.7	25	30	33	35	38	47	52	30	50	20	30
5	5.0	25	30	33	35	38	49	51	51	49	19	25
6	4.4	23	32	33	36	38	50	49	100	45	18	22
7	3.6	23	32	33	36	38	48	44	100	44	21	21
8	3.4	23	33	33	36	38	50	42	93	41	21	21
9	3.0	23	33	33	36	38	52	40	88	40	20	20
10	2.6	24	33	33	36	38	52	42	82	38	19	18
11	2.5	25	33	33	37	38	52	41	77	37	19	30
12	2.9	27	33	33	37	38	56	39	81	35	18	38
13	2.4	27	33	34	37	37	55	37	87	33	17	36
14	2.2	28	33	36	37	37	55	36	87	34	17	35
15	2.3	29	33	38	37	37	55	35	83	37	15	31
16	2.4	28	33	39	37	38	55	32	80	31	16	30
17	2.7	29	33	40	37	39	56	31	79	30	18	28
18	3.0	30	33	40	37	39	57	34	78	28	17	26
19	8.2	31	33	40	37	40	58	36	77	27	21	24
20	11	32	33	40	37	41	57	35	74	26	22	25
21	14	30	34	40	37	41	58	35	74	25	23	24
22	15	28	34	40	37	41	61	35	72	23	21	25
23	13	28	35	40	37	41	60	32	70	22	19	23
24	11	28	35	40	37	41	59	30	68	27	18	23
25	9.8	28	35	40	37	42	58	29	68	45	19	23
26	7.5	28	34	39	37	42	58	28	69	37	18	22
27	7.8	28	33	38	37	45	58	29	68	33	15	22
28	8.3	28	33	37	37	46	56	29	71	33	13	25
29	8.4	28	32	36	37	47	55	30	68	30	13	28
30	12	28	32	36	---	48	54	30	63	27	18	29
31	26	---	33	36	---	48	---	29	---	25	18	---
TOTAL	222.3	823	1008	1124	1060	1246	1623	1170	2137	1118	580	764
MEAN	7.17	27.4	32.5	36.3	36.6	40.2	54.1	37.7	71.2	36.1	18.7	25.5
MAX	26	32	35	40	37	48	61	54	100	59	23	38
MIN	2.2	23	28	32	35	37	47	28	30	22	13	18
CFSM	.04	.15	.18	.20	.20	.23	.30	.21	.40	.20	.10	.14
IN.	.05	.17	.21	.23	.22	.26	.34	.24	.44	.23	.12	.16

CAL YR 1979 TOTAL 28333.7 MEAN 77.6 MAX 303 MIN 2.2 CFSM .43 IN 5.89
WTR YR 1980 TOTAL 12875.3 MEAN 35.2 MAX 100 MIN 2.2 CFSM .20 IN 2.68

05278930 BUFFALO CREEK NEAR GLENCOE, MN

LOCATION.--Lat 44°45'50", long 94°05'27", in SW¼SW¼ sec.16, T.115 N., R.27 W., McLeod County, Hydrologic Unit 07010205, on right bank, 20 ft (6 m) downstream from bridge on County Highway 1, 2.6 mi (4.2 km) east of Glencoe.

DRAINAGE AREA.--374 mi^2 (969 km^2).

PERIOD OF RECORD.--Annual maximum, water year 1972, October 1972 to September 1980 (discontinued).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 969.60 ft (295.534 m) National Geodetic Vertical Datum of 1929. October 1, 1971, to September 30, 1972, crest-stage gage at present site and datum.

REMARKS.--Records good except those for winter periods and period of no gage-height record, May 28 to June 9, which are fair.

AVERAGE DISCHARGE.--8 years, 88.1 ft^3/s (2.495 m^3/s), 3.20 in/yr (81 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,590 ft^3/s (73.3 m^3/s) Apr. 5, 1979, gage height, 9.75 ft (2.972 m); maximum gage height, 10.01 ft (3.051 m) May 28, 1972, minimum daily discharge, 0.01 ft^3/s (<0.001 m^3/s) Aug. 28, 29, Sept. 8, 1976; minimum gage height, 0.53 ft (0.162 m) Aug. 28, 29, 1976.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 350 ft^3/s (9.91 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 6	1015	373	10.6	4.13	1.259
Mar. 24	2200	---	---	a*5.97	1.820
June 12	0200	*671	19.0	5.64	1.719

a Backwater from ice

Minimum discharge, 0.41 ft^3/s (0.012 m^3/s) Aug. 4, gage height, 0.64 ft (0.195 m).

PEAK DISCHARGE FOR WATER YEARS 1973 TO 1979.--Peak discharge above base of 350 ft^3/s (9.91 m^3/s) and maximum (*):

Water year	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
1973	Mar. 15, 1973	1745	728	20.6	5.96	1.817
1974	Mar. 11, 1974	1500	386	10.9	4.89	1.490
	Apr. 17, 1974	2015	*514	14.6	5.05	1.539
1975	Apr. 28, 1975	unknown	*2190	62.0	9.49	2.893
	June 24, 1975	1540	2040	57.8	9.36	2.853
1976	Mar. 21-23, 1976	unknown	471	13.3	4.61	1.405
1977	July 23, 1977	2300	352	9.97	4.13	1.259
1978	Mar. 25, 1978	1015	*1410	39.9	8.13	2.478
	Apr. 10 or 11, 1978	unknown	465	13.2	unknown	
	Apr. 23, 1978	2115	483	13.7	4.81	1.466
	May 27, 1978	2215	610	17.3	5.49	1.673
	Sept.12, 1978	1745	589	16.7	5.41	1.649
1979	Apr. 5, 1979	1015	*2590	73.3	9.75	2.972
	May 13, 1979	1330	1480	41.9	8.16	2.487
	June 25, 1979	0600	448	12.7	4.54	1.384

05278930 BUFFALO CREEK NEAR GLENCOE, MN--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	230	108	38	6.4	6.6	236	55	13	42	.63	7.7
2	46	222	106	36	6.2	6.5	206	55	18	38	2.7	3.9
3	46	233	104	34	6.0	6.4	164	54	25	34	1.0	3.7
4	46	272	102	32	5.8	6.4	133	52	20	31	.49	5.2
5	45	342	100	31	5.6	6.3	117	49	30	27	.87	2.6
6	43	371	98	30	5.6	6.3	109	46	50	24	.86	2.4
7	41	349	96	28	5.5	6.2	102	43	82	23	6.0	2.2
8	40	301	94	27	5.4	6.2	98	40	133	21	2.3	2.0
9	38	255	92	25	5.4	6.2	104	37	205	16	1.2	1.8
10	37	217	90	24	5.3	6.1	105	35	335	13	3.0	10
11	32	192	88	23	5.3	6.1	114	34	591	11	5.4	20
12	27	173	86	22	5.2	6.0	136	33	664	8.6	1.2	9.8
13	24	156	84	21	5.2	6.9	121	31	578	6.4	1.2	4.6
14	24	143	81	20	5.3	8.2	102	30	441	6.4	1.1	3.6
15	24	135	79	18	5.4	9.8	88	29	306	7.8	.89	2.9
16	25	129	76	17	5.5	12	78	26	216	13	3.6	7.7
17	23	125	74	16	5.6	15	75	25	176	5.1	3.3	3.7
18	27	121	71	16	5.8	19	72	25	146	5.9	1.1	4.9
19	45	119	69	15	6.1	24	72	25	119	10	1.3	9.2
20	45	115	66	14	6.3	31	69	24	99	11	17	13
21	64	117	64	13	6.5	40	68	23	85	9.2	6.0	14
22	68	121	61	12	6.8	52	68	20	83	7.7	1.8	12
23	72	124	59	12	7.0	69	66	20	73	6.2	1.3	10
24	70	127	56	11	7.0	91	63	17	60	4.0	1.8	8.9
25	70	125	54	10	6.9	107	60	15	54	6.3	2.3	8.5
26	74	118	52	9.2	6.8	121	58	13	50	2.5	3.5	7.3
27	73	112	50	8.8	6.7	138	58	12	44	2.1	4.1	6.5
28	70	108	47	8.2	6.6	156	58	11	41	1.8	1.8	5.7
29	70	111	44	7.5	6.6	175	58	10	38	1.4	1.4	5.7
30	70	110	42	7.2	---	197	55	10	39	1.1	2.7	4.3
31	148	---	40	6.6	---	218	---	12	---	.80	13	---
TOTAL	1577	5373	2333	592.5	173.8	1565.2	2913	911	4814	397.30	94.84	203.8
MEAN	50.9	179	75.3	19.1	5.99	50.5	97.1	29.4	160	12.8	3.06	6.79
MAX	148	371	108	38	7.0	218	236	55	664	42	17	20
MIN	23	108	40	6.6	5.2	6.0	55	10	13	.80	.49	1.8
CFSM	.14	.48	.20	.05	.02	.14	.26	.08	.43	.03	.008	.02
IN.	.16	.53	.23	.06	.02	.16	.29	.09	.48	.04	.01	.02

CAL YR 1979 TOTAL 82978.50 MEAN 227 MAX 2520 MIN 1.2 CFSM .61 IN 8.25
WTR YR 1980 TOTAL 20948.44 MEAN 57.2 MAX 664 MIN .49 CFSM .15 IN 2.08

05280000 CROW RIVER AT ROCKFORD, MN

LOCATION.--Lat 45°05'12", long 93°44'02", in sec.29, T.119 N., R.24 W., Hennepin County, Hydrologic Unit 07010204, on right bank at Rockford, 150 ft (46 m) downstream from bridge on State Highway 55 and 1 mi (1.6 km) downstream from confluence of North and South Forks.

DRAINAGE AREA.--2,520 mi^2 (6,530 km^2), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to July 1906 (published as "near Dayton"), June 1909 to September 1917, April to November 1929, March 1930 to September 1931, April to November 1932, March to November 1933, March 1934 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1115: 1932. WSP 1508: 1933. WDR MN-77-2: 1972 (M)(m).

GAGE.--Water-stage recorder. Datum of gage is 893.08 ft (272.211 m) National Geodetic Vertical Datum of 1929. Apr. 13 to July 21, 1906, nonrecording gage at Berning Mill 14 mi (22.5 km) downstream at different datum. June 4, 1909, to Sept. 30, 1917, nonrecording gage at site 600 ft (183 m) downstream at different datum. Apr. 23, 1929, to Aug. 21, 1934, nonrecording gage at site 600 ft (183 m) downstream at present datum.

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

AVERAGE DISCHARGE.--55 years (water years 1910-17, 1931, 1935-80), 636 ft^3/s (18.01 m^3/s), 3.43 in/yr (87 mm/yr); median of yearly mean discharges, 511 ft^3/s (14.47 m^3/s), 2.75 in/yr (70 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,400 ft^3/s (634 m^3/s) Apr. 16, 1965, gage height, 19.27 ft (5.874 m) from floodmark; minimum, 1.8 ft^3/s (0.051 m^3/s) Nov. 15, 1936, gage height, 1.05 ft (0.320 m), caused by ice jam upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,970 ft^3/s (55.8 m^3/s) June 12, gage height, 5.25 ft (1.600 m); minimum discharge, 106 ft^3/s (3.00 m^3/s) Aug. 7, gage height, 2.01 ft (0.613 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	217	667	420	306	177	154	1500	628	304	559	141	206
2	216	890	425	304	175	155	1580	606	349	514	138	214
3	212	1000	430	303	172	155	1560	574	396	470	131	219
4	226	1040	420	303	170	155	1470	552	425	429	124	224
5	216	1030	415	265	167	156	1380	535	578	401	117	225
6	198	1010	405	255	164	157	1280	510	979	370	111	227
7	188	994	400	250	162	157	1210	485	1220	341	108	251
8	184	974	410	248	160	157	1160	454	1550	314	136	248
9	178	937	395	243	159	158	1160	436	1760	290	143	224
10	171	863	380	240	158	158	1160	422	1840	271	156	201
11	171	799	380	237	158	158	1160	413	1850	253	155	222
12	172	777	380	232	157	158	1190	395	1910	260	147	349
13	167	715	390	229	157	158	1270	386	1940	241	155	452
14	170	704	390	225	156	158	1270	377	1930	225	147	503
15	167	723	370	220	155	158	1170	359	1860	218	134	521
16	164	698	350	218	152	159	1060	346	1710	239	127	486
17	164	680	345	213	150	160	1010	338	1540	224	132	442
18	167	673	340	210	149	180	974	346	1380	217	131	398
19	211	673	330	209	148	200	948	350	1250	204	136	362
20	218	659	328	206	147	711	922	342	1100	190	148	335
21	260	653	320	202	147	910	902	350	983	182	163	317
22	274	678	320	200	148	1100	876	336	907	175	164	308
23	303	701	320	197	148	1200	858	313	855	163	171	287
24	314	699	319	196	149	1300	828	292	841	165	171	267
25	314	620	317	193	150	1400	794	275	815	175	164	256
26	310	560	314	190	150	1500	766	258	765	153	158	248
27	306	500	312	188	150	1560	733	247	702	154	160	235
28	303	460	311	187	151	1610	706	235	646	194	149	230
29	296	433	310	185	153	1680	678	229	598	191	144	224
30	292	425	310	182	---	1820	656	242	592	171	177	221
31	372	---	310	180	---	1930	---	283	---	152	189	---
TOTAL	7121	22235	11166	7016	4539	19772	32231	11914	33575	8105	4527	8902
MEAN	230	741	360	226	157	638	1074	384	1119	261	146	297
MAX	372	1040	430	306	177	1930	1580	628	1940	559	189	521
MIN	164	425	310	180	147	154	656	229	304	152	108	201
CFSM	.09	.29	.14	.09	.06	.25	.43	.15	.44	.10	.06	.12
IN.	.11	.33	.16	.10	.07	.29	.48	.18	.50	.12	.07	.13

CAL YR 1979 TOTAL 478427 MEAN 1311 MAX 7730 MIN 95 CFSM .52 IN 7.06
WTR YR 1980 TOTAL 171103 MEAN 467 MAX 1940 MIN 108 CFSM .19 IN 2.53

05280000 CROW RIVER AT ROCKFORD, MN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964, 1967, 1969 to current year.

REMARKS.--Since August 1975, suspended-sediment samples collected when river stage was at or above 3.5 ft on a daily basis and more frequent during rapidly rising stage.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---		---	2.0	14.0	---	21.0	---	---
2	---	---	---	---		---	2.0	15.0	---	20.0	---	---
3	---	---	---	---		---	4.0	16.0	---	---	---	---
4	---	---	---	.5		---	3.0	18.0	---	---	---	---
5	---	---	---	---		---	5.0	18.0	---	---	---	---
6	---	---	---	---		---	7.0	16.0	20.0	---	---	---
7	---	---	---	---		---	10.0	13.0	21.0	---	---	---
8	---	---	---	---		---	9.0	---	19.0	---	---	---
9	---	---	---	---		---	4.0	---	18.0	---	---	---
10	---	---	---	---		---	4.0	---	18.0	---	---	---
11	---	---	---	---		---	4.0	---	18.0	---	---	---
12	---	---	---	---		---	6.0	---	20.0	---	---	---
13	---	---	---	---		---	5.0	---	21.0	---	---	---
14	---	---	---	---		---	5.0	---	21.0	---	---	---
15	---	---	---	---		---	7.0	---	20.0	---	---	---
16	---	---	---	---		---	9.0	---	19.0	---	---	---
17	---	---	---	.0		---	10.0	---	20.0	---	---	---
18	---	---	---	---		---	11.0	---	20.0	---	---	---
19	---	---	---	---		---	14.0	---	19.0	---	---	---
20	---	---	.0	---		2.0	15.0	---	19.0	---	25.0	---
21	---	4.5	---	---		---	17.0	20.5	20.0	---	---	---
22	---	---	---	---		---	18.0	---	21.0	---	---	---
23	---	---	---	---		---	16.0	---	22.0	23.0	---	14.0
24	10.0	---	---	---		---	13.5	---	24.0	---	---	---
25	---	---	---	---		---	14.0	---	23.0	---	---	---
26	---	---	---	---		---	13.0	---	24.0	---	---	---
27	---	---	---	---		---	14.0	---	21.5	---	---	---
28	---	---	---	---		2.0	13.0	---	22.0	---	---	---
29	---	---	---	---		---	13.0	---	---	---	---	---
30	---	---	---	---		---	14.0	---	20.0	---	---	---
31	---	---	---	---		4.0	---	---	---	---	---	---

DATE	TIME	NUMBER OF SAMPLING POINTS (00063)	STREAMFLOW, INSTANTANEOUS (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)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
SEP 23...	1125	3	288	1	2	8	28	57	73	80	87	100

05280000 CROW RIVER AT ROCKFORD, MN--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	20	16	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	19	17	---	---	48	19	52	100
21	---	---	35	62	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	65	55	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	44	191
29	---	---	---	---	---	---	---	---	---	---	48	218
30	---	---	---	---	---	---	---	---	---	---	52	256
31	---	---	---	---	---	---	---	---	---	---	54	281

DAY	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	59	239	34	58	---	---	105	158	---	---	---	---
2	68	290	33	54	---	---	95	132	---	---	---	---
3	70	295	32	50	---	---	---	---	---	---	---	---
4	69	274	32	48	---	---	---	---	---	---	---	---
5	66	246	34	49	---	---	---	---	---	---	---	---
6	64	221	31	43	215	568	---	---	---	---	---	---
7	66	216	---	---	155	511	---	---	---	---	---	---
8	61	191	---	---	210	879	---	---	---	---	---	---
9	53	166	---	---	197	936	---	---	---	---	---	---
10	45	141	---	---	141	700	---	---	---	---	---	---
11	38	119	---	---	138	689	---	---	---	---	---	---
12	36	116	---	---	130	670	---	---	---	---	---	---
13	33	113	---	---	122	639	---	---	---	---	---	---
14	33	113	---	---	113	589	---	---	---	---	122	166
15	38	120	---	---	113	567	---	---	---	---	113	159
16	44	126	---	---	110	508	---	---	---	---	97	127
17	43	117	---	---	105	437	---	---	---	---	---	---
18	46	121	---	---	103	384	---	---	---	---	---	---
19	54	138	---	---	105	354	---	---	---	---	---	---
20	61	152	---	---	108	321	---	---	68	27	---	---
21	71	173	54	51	110	292	---	---	---	---	---	---
22	76	180	---	---	112	274	---	---	---	---	---	---
23	61	141	---	---	126	291	94	41	---	---	44	34
24	45	101	---	---	150	341	---	---	---	---	---	---
25	36	77	---	---	134	295	---	---	---	---	---	---
26	30	62	---	---	125	258	---	---	---	---	---	---
27	28	55	---	---	118	224	---	---	---	---	---	---
28	29	55	---	---	108	188	---	---	---	---	---	---
29	31	57	---	---	102	165	---	---	---	---	---	---
30	32	57	---	---	107	171	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL		4472										

05283500 MISSISSIPPI RIVER AT ANOKA, MN

LOCATION.--Lat 45°11'30", long 93°23'40", in SE¼NW¼ sec.19, T.120 N., R.22 W., Anoka County, Hydrologic Unit 07010206, at bridge on U.S. Highways 52 and 169 at Anoka, 0.3 mi (0.5 km) upstream from Rum River, and at mile 871.3 (1,402 km) upstream from Ohio River.

DRAINAGE AREA.--17,100 mi^2 (44,300 km^2), approximately.

PERIOD OF RECORD.--Water years 1972 to current year.

REMARKS.--Water discharge estimated on the basis of discharge for Rum River near St. Francis (station 05286000) and Mississippi River near Anoka (station 05288500).

COOPERATION.--Samples collected by the Metropolitan Waste Control Commission, St. Paul, MN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	FLUO-RIDE, TOTAL (MG/L AS F) (00951)
OCT 24...	1050	5070	383	8.5	8.0	11.3	98	.1
DEC 19...	1035	5260	360	7.4	.0	14.5	102	.0
FEB 04...	1055	4060	400	7.9	.0	12.0	85	.0
APR 01...	1115	10700	355	7.7	2.0	13.1	97	.0
JUN 04...	1045	4320	402	8.1	20.5	8.6	98	.5
AUG 08...	1105	2840	385	8.3	25.5	8.0	99	.1

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
OCT 24...	3	100	0	130	0	12	4	180	0
DEC 19...	4	100	20	30	0	10	2	260	0
FEB 04...	1	100	20	50	0	9	2	200	4
APR 01...	3	100	0	60	0	12	4	1400	2
JUN 04...	3	<50	0	70	0	6	4	620	3
AUG 08...	4	<50	0	70	0	15	4	780	2

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
OCT 24...	70	.2	1	1	0	0	0	.00
DEC 19...	30	.1	0	2	0	0	10	.00
FEB 04...	50	<.1	0	2	0	0	10	.00
APR 01...	300	.1	2	1	0	0	20	.00
JUN 04...	20	.1	1	0	0	0	10	.00
AUG 08...	300	<.1	3	1	0	0	60	.00

05283500 - MISSISSIPPI RIVER AT ANOKA, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, DIS-SOLVED (UG/L AS B) (01020)
SEP 16...	1000	6740	350	7.7	16.5	7.4	78	.2	2	100	0	60

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, HEXA-VALENT, DIS. (UG/L AS CR) (01032)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
SEP 16...	0	0	0	4	90	0	0	<.1	0	0	0	20

05284000 MILLE LACS LAKE AT GARRISON, MN

LOCATION.--Lat 46°18'05", long 93°49'05", in SW¼SE¼ sec.12, T.44 N., R.28 W., Crow Wing County, Hydrologic Unit 07010207, at pumphouse of Minnesota Division of Game and Fish, 0.2 mi (0.3 km) southwest of Borden Lake outlet and 0.8 mi (1.3 km) northeast of Garrison.

PERIOD OF RECORD.--June 1931 to current year. Monthend records for the period October 1939 to September 1953 published in WSP 1278 (fragmentary 1940-41). Prior to October 1939, published as "at Wealthwood."

GAGE.--Water-stage recorder. Datum of gage is 1,240.40 ft (378.074 m) National Geodetic Vertical Datum of 1929. Gage readings have been reduced to elevations NGVD. Prior to Oct. 1, 1941, nonrecording gage at Wealthwood, 8.3 mi (13.4 km) northeast of present site, at various datums; gage readings have been reduced to elevations, adjustment of 1912. October 1, 1941, to Sept. 30, 1958, water-stage recorder at datum 1,240.50 ft (378.104 m) adjustment of 1912. To convert these records to National Geodetic Vertical Datum of 1929, subtract 0.10 ft (0.030 m).

REMARKS.--Water level affected by fixed-crest spillway constructed in 1953 at outlet of Ogechie Lake, 2.7 mi (4.3 km) downstream from outlet of Mille Lacs Lake, with crest at elevation 1,250.50 ft (381.152 m). Water level subject to fluctuation caused by change in direction and velocity of wind and by seiches.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 1,253.87 ft (382.180 m) Aug. 14, 1972, affected by wind action and seiche action; maximum daily, 1,253.43 ft (382.045 m) Aug. 22, 1972; minimum observed, 1,245.74 ft (379.702 m) Oct. 16-19, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,252.06 ft (381.628 m) June 5, affected by wind action and seiche action; maximum daily, 1,251.63 ft (381.497 m) Oct. 2; minimum, 1,250.40 ft (381.122 m) Aug. 30, affected by wind action and seiche action; minimum daily, 1,250.92 ft (381.280 m) Sept. 22.

MONTHEND ELEVATION, IN FEET NGVD, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

Oct. 31 ..... 1251.57	Feb. 20 ..... 1251.44	June 30 ..... 1251.40
Nov. 30 ..... 1251.38	Mar. 31 ..... 1251.42	July 31 ..... 1251.23
Dec. 31 ..... 1251.35	Apr. 30 ..... 1251.45	Aug. 31 ..... 1251.05
Jan. 17 ..... 1251.44	May 31 ..... 1251.47	Sept.30 ..... 1251.02

NOTE.--Elevations other than those shown are available.

05286000 RUM RIVER NEAR ST. FRANCIS, MN

LOCATION--Lat 45°19'40", long 93°22'20", in SE¼ sec.19, T.33 N., R.24 W., Anoka County, Hydrologic Unit 07010207, on left bank at upstream side of highway bridge, 4 mi (6.4 km) south of St. Francis and 15.8 mi (25.4 km) upstream from mouth.

DRAINAGE AREA.--1,360 mi^2 (3,520 km^2), approximately.

PERIOD OF RECORD.-- May to November 1929, March 1930 to September 1931, April to November 1932, March 1933 to current year.

REVISED RECORDS.--WSP 1308: 1930(M), 1932(M).

GAGE.--Water-stage recorder. Datum of gage is 860.74 ft (262.354 m) National Geodetic Vertical Datum of 1929 (levels by Anoka County Highway Department). Prior to Nov. 9, 1933, nonrecording gage at site 50 ft (15 m) downstream at same datum.

REMARKS.--Records good except those for winter period, which are fair. Occasional regulation by Ogechie (also controls Mille Lacs Lake) and Onamia Lakes.

AVERAGE DISCHARGE.--48 years (water years 1931, 1934-80), 596 ft^3/s (16.88 m^3/s), 5.95 in/yr (151 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,100 ft^3/s (286 m^3/s) Apr. 20, 1965, Apr. 13, 1969; maximum gage height, 11.63 ft (3.545 m) Apr. 13, 1969; minimum discharge, 29 ft^3/s (0.82 m^3/s) Aug. 18, 1934, gage height, 1.91 ft (0.582 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,210 ft^3/s (62.6 m^3/s) Apr. 5, gage height, 5.25 ft (1.600 m); minimum, 175 ft^3/s (4.96 m^3/s) Aug. 6, gage height, 2.39 ft (0.728 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	407	569	505	370	415	370	906	669	389	361	204	288
2	404	659	500	370	420	360	1110	642	456	345	201	288
3	400	823	500	370	430	340	1450	615	544	336	194	299
4	398	1010	497	370	440	325	1930	592	648	338	188	331
5	404	1160	494	370	440	315	2170	574	762	331	181	375
6	418	1290	500	370	440	300	2160	540	838	310	178	392
7	412	1400	500	367	440	290	2010	509	860	297	243	409
8	404	1410	500	365	440	280	1930	486	863	286	226	423
9	395	1330	500	363	440	270	1830	475	842	282	325	401
10	388	1190	500	360	435	260	1760	474	778	276	357	354
11	381	1040	527	365	435	254	1730	477	722	262	384	347
12	382	898	582	365	435	245	1690	473	665	259	360	410
13	375	844	740	370	430	240	1630	471	599	243	326	435
14	365	776	831	370	430	235	1560	473	559	235	295	480
15	372	729	700	370	430	230	1510	474	537	234	278	598
16	402	698	682	375	430	225	1490	463	546	231	267	740
17	400	687	940	375	425	225	1460	457	564	222	260	782
18	389	663	1070	380	425	220	1400	456	551	216	261	761
19	431	662	940	380	425	220	1330	453	528	222	260	695
20	466	669	694	385	425	220	1240	442	502	225	280	616
21	491	670	523	385	420	220	1170	426	482	216	274	545
22	518	664	552	385	415	220	1110	407	481	216	262	490
23	548	666	494	390	410	220	1050	396	473	229	258	452
24	558	663	466	390	405	250	990	377	452	246	283	417
25	568	646	461	395	415	310	932	364	428	258	298	394
26	573	608	434	395	425	385	878	349	407	251	285	374
27	555	580	408	400	400	465	850	336	392	238	270	365
28	532	553	392	400	385	545	778	328	378	236	271	373
29	516	523	387	405	380	650	736	330	370	223	278	387
30	502	510	382	410	---	834	702	335	362	216	299	391
31	516	---	377	415	---	798	---	352	---	212	295	---
TOTAL	13870	24590	17578	11780	12285	10321	41492	14215	16978	8052	8441	13612
MEAN	447	820	567	380	424	333	1383	459	566	260	272	454
MAX	573	1410	1070	415	440	834	2170	669	863	361	384	782
MIN	365	510	377	360	380	220	702	328	362	212	178	288
CFSM	.33	.60	.42	.28	.31	.25	1.02	.34	.42	.19	.20	.33
IN.	.38	.67	.48	.32	.34	.28	1.13	.39	.46	.22	.23	.37
AC-FT	27510	48770	34870	23370	24370	20470	82300	28200	33680	15970	16740	27000

CAL YR 1979	TOTAL	342978	MEAN 940	MAX 5640	MIN 174	CFSM .69	IN 9.38	AC-FT	680300	
WTR YR 1980	TOTAL	193214	MEAN 528	MAX 2170	MIN 178	CFSM .39	IN 5.28	AC-FT	383200	

05287890 ELM CREEK NEAR CHAMPLIN, MN

LOCATION.--Lat 45°09'48", long 93°26'11", in NE¼NW¼ sec.35, T.120 N., R.22 W., Hennepin County, Hydrologic Unit 07010206, on left bank, 33 ft (10 m) downstream from bridge on Elm Creek Road, 2.5 mi (4.0 km) southwest of Champlin.

DRAINAGE AREA.--84.9 mi^2 (220 km^2).

PERIOD OF RECORD.--October 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 850.71 ft (259.296 m) National Geodetic Vertical Datum of 1929. Prior to March 15, 1979, nonrecording gage at present site and datum.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 307 ft^3/s (8.69 m^3/s) Apr. 4, 1979, gage height, 8.36 ft (2.548 m); minimum, 2.1 ft^3/s (0.06 m^3/s) Feb. 24, 1980, gage height, 2.86 ft (0.872 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 199 ft^3/s (5.64 m^3/s) Mar. 25, gage height, 7.28 ft (2.219 m); minimum, 2.1 ft^3/s (0.06 m^3/s) Feb. 24, gage height, 2.86 ft (0.872 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.2	24	9.2	5.7	9.2	2.4	103	25	9.1	20	4.2	20
2	5.9	24	8.6	5.8	9.3	2.5	96	23	10	19	4.1	18
3	5.6	22	8.1	5.5	9.3	2.5	90	23	9.8	18	4.1	17
4	5.1	20	6.7	5.3	9.3	2.5	83	22	9.0	17	4.0	19
5	5.0	19	6.5	5.2	9.3	2.5	76	20	12	16	3.9	18
6	5.0	18	6.5	5.2	9.2	2.6	71	19	35	15	3.6	17
7	5.0	17	6.7	5.1	9.2	2.6	66	18	40	14	4.2	15
8	5.0	16	6.2	5.0	9.2	2.6	61	17	40	13	8.3	14
9	4.5	15	6.0	5.0	9.2	2.6	59	16	39	12	5.8	13
10	4.4	15	5.8	5.0	9.2	2.6	58	15	38	11	5.2	12
11	4.6	14	6.4	4.9	8.6	2.6	57	15	38	11	5.0	15
12	4.4	13	6.8	4.8	8.2	2.6	61	14	45	10	4.6	46
13	4.2	12	7.1	4.8	7.8	2.7	58	14	60	9.9	4.5	45
14	4.5	11	7.1	4.7	7.2	2.7	56	13	54	9.4	4.0	39
15	4.3	11	8.8	4.6	6.8	2.8	54	13	48	8.9	3.9	35
16	4.2	11	11	4.6	6.7	3.3	51	12	42	10	3.8	31
17	4.1	11	11	4.4	6.6	3.8	49	11	39	8.9	4.7	29
18	4.4	11	11	4.3	6.3	5.0	46	13	36	8.4	4.1	27
19	9.4	12	10	4.3	5.8	23	44	13	37	7.7	3.9	25
20	12	13	7.5	4.0	2.8	90	41	12	34	7.4	4.0	25
21	11	14	7.5	3.8	2.2	116	39	11	33	6.9	4.1	24
22	12	16	7.3	4.4	2.2	137	36	9.8	30	6.3	3.5	23
23	18	17	7.0	4.5	2.2	149	36	9.0	28	5.9	3.2	21
24	18	16	6.9	4.8	2.2	157	33	8.2	26	5.6	4.4	21
25	17	15	6.8	5.2	2.2	179	32	7.6	24	5.8	3.9	20
26	15	14	6.6	6.2	2.4	169	30	7.1	22	5.3	5.0	20
27	14	12	6.4	7.6	2.4	145	30	6.5	22	5.0	8.9	18
28	14	11	6.1	8.2	2.4	138	29	5.9	21	5.1	6.3	17
29	13	10	6.0	8.6	2.4	129	27	6.3	20	5.1	5.8	17
30	12	9.7	5.8	9.0	---	120	26	8.6	20	4.8	11	17
31	15	---	5.7	9.2	---	111	---	8.2	---	4.6	12	---
TOTAL	266.8	443.7	229.1	169.7	179.8	1713.9	1598	416.2	920.9	307.0	158.0	678
MEAN	8.61	14.8	7.39	5.47	6.20	55.3	53.3	13.4	30.7	9.90	5.10	22.6
MAX	18	24	11	9.2	9.3	179	103	25	60	20	12	46
MIN	4.1	9.7	5.7	3.8	2.2	2.4	26	5.9	9.0	4.6	3.2	12

CAL YR 1979 TOTAL 10591.3 MEAN 29.0 MAX 295 MIN 3.0
WTR YR 1980 TOTAL 7081.1 MEAN 19.3 MAX 179 MIN 2.2

05288450 COON CREEK NEAR COON RAPIDS, MN

LOCATION.--Lat 45°14'03", long 93°12'50", in SW¼NE¼ sec.28, T.32 N., R.23 W., Anoka County, Hydrologic Unit 07010206, on left bank at upstream side of Raddison Road, 1.5 mi (2.4 km) south of Ham Lake.

DRAINAGE AREA.--31.9 mi^2 (82.6 km^2).

PERIOD OF RECORD.--April 1979 to current year (discontinued).

REMARKS.--These data will be in an interpretive report to be published later in calendar year 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH FIELD (UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE, WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIOCHEM UNINHIB 5 DAY (MG/L)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV											
01...	1100	18	380	7.8	3.5	6.0	9.6	79	2.4	7.4	261
FEB											
22...	1200	3.2	410	6.2	2.0	3.0	10.5	79	5.9	5.4	275
APR											
17...	0810	24	357	7.5	17.0	7.0	8.6	72	1.5	6.2	244
MAY											
28...	1025	5.8	445	7.5	24.0	21.0	8.4	96	2.3	5.8	298
JUN											
06...	0855	33	325	7.5	21.0	16.0	9.7	100	3.2	6.4	226
JUL											
10...	0900	4.7	428	7.3	23.0	19.3	7.4	82	1.4	5.8	293
16...	0945	11	410	7.7	22.0	22.0	6.8	80	2.1	7.1	292
AUG											
08...	1410	138	140	6.8	26.0	20.0	2.4	27	5.3	4.8	130
SEP											
12...	1030	118	199	6.4	16.0	14.4	5.8	59	5.8	5.4	165

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, DIS-SOLVED (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHOPH OSPHATE DISSOL. (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
NOV											
01...	.48	.230	1.4	2.1	1.6	2.1	.090	.010	2	0	20
FEB											
22...	.17	.630	.47	1.1	1.1	1.3	.040	.000	--	0	30
APR											
17...	.43	.190	1.0	1.2	1.2	1.6	.180	.010	2	0	20
MAY											
28...	.04	.110	.60	1.2	.71	.75	.080	.000	1	0	20
JUN											
06...	.47	.140	1.3	2.2	1.4	1.9	.430	.110	3	0	<10
JUL											
10...	.06	.020	.71	.95	.73	.79	.110	.000	2	0	10
16...	.09	.070	.36	.82	.43	.52	.110	.020	3	0	10
AUG											
08...	1.5	.230	.87	1.8	1.1	2.6	.350	.100	4	1	20
SEP											
12...	1.6	.170	.60	.99	.77	2.4	.210	.110	2	1	30

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
NOV											
01...	2	--	5	280	<.1	1	10	12	1.3	21	1.1
FEB											
22...	1	1600	0	420	--	1	10	18	.5	12	.11
APR											
17...	3	3400	2	220	.1	2	10	11	2.9	31	2.0
MAY											
28...	1	1600	0	340	<.1	1	30	--	.4	13	.21
JUN											
06...	4	6700	7	350	<.1	2	20	18	2.9	82	7.4
JUL											
10...	3	1500	7	220	<.1	4	20	12	.4	5	.07
16...	1	2200	0	240	<.1	3	20	12	2.3	25	.79
AUG											
08...	0	4200	17	200	<.1	2	20	--	--	139	52
SEP											
12...	1	3500	6	190	.2	3	30	8.5	2.1	95	30

05288487 SAND CREEK AT COON RAPIDS, MN

LOCATION.--Lat 45°10'58", long 93°18'14", in SW¼SW¼ sec.11, T.31 N., R.24 W., Anoka County, Hydrologic Unit 07010206, on left bank 100 ft (30 m) upstream of Xeon Street, and 1.0 mi (1.6 km) north of Coon Rapids.

DRAINAGE AREA.--15.7 mi^2 (40.7 km^2).

PERIOD OF RECORD.--April 1979 to current year (discontinued).

REMARKS.--These data will be in an interpretive report to be published later in calendar year 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH FIELD (UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE, WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIOCHEM UNINHIB 5 DAY (MG/L)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV 02...	1130	11	505	7.8	6.5	4.0	12.2	95	1.9	26	332
FEB 21...	1100	2.0	965	7.7	2.0	2.5	11.2	84	4.2	180	602
APR 17...	1100	9.7	560	7.9	18.0	11.0	10.0	92	2.2	23	378
MAY 28...	1420	3.2	563	7.5	27.0	21.2	6.6	7t	2.7	18	386
JUN 05...	0900	28	240	7.6	24.0	17.0	6.4	67	7.1	11	160
JUL 10...	1215	3.3	528	7.5	32.0	21.2	7.8	89	1.1	20	394
16...	1245	7.5	275	7.6	28.0	21.0	6.3	73	3.6	13	192
AUG 08...	0930	51	124	7.1	22.0	20.0	5.3	60	4.0	5.3	91
SEP 11...	1315	13	415	8.0	15.0	14.0	7.6	75	3.6	13	288

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, DIS-SOLVED (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHOPH OSPHATE DISSOL. (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
NOV 02...	.71	.290	1.3	1.8	1.6	2.3	.050	.020	2	0	20
FEB 21...	1.4	.450	.55	1.0	1.0	2.4	.020	.000	--	0	20
APR 17...	.87	.500	.90	1.4	1.4	2.3	.100	.000	1	0	30
MAY 28...	.78	.200	1.1	1.4	1.3	2.1	.110	.000	2	0	20
JUN 05...	.49	.200	1.4	1.8	1.6	2.1	.580	.160	4	1	10
JUL 10...	.78	.020	.98	1.0	1.0	1.8	.070	.010	1	1	10
16...	.54	.180	.36	.84	.54	1.1	.090	.030	2	0	10
AUG 08...	.55	.110	.13	.71	.24	.79	.360	.010	3	1	30
SEP 11...	.68	.100	.44	1.3	.54	1.2	.080	.040	2	0	10

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
NOV 02...	3	--	7	230	<.1	2	20	15	.8	24	.71
FEB 21...	2	480	2	600	--	2	20	11	1.0	16	.09
APR 17...	3	1600	3	300	.1	2	10	17	1.0	14	.37
MAY 28...	2	1600	4	460	<.1	2	20	14	.9	15	.13
JUN 05...	10	5900	45	920	.1	7	50	8.7	2.9	182	14
JUL 10...	2	710	3	110	<.1	3	20	12	.3	3	.03
16...	2	1200	6	220	<.1	3	10	7.6	1.3	21	.43
AUG 08...	5	6900	21	420	<.1	5	50	--	--	202	28
SEP 11...	2	1700	13	260	<.1	3	20	18	1.1	28	1.0

05288490 COON CREEK AT COON RAPIDS, MN

LOCATION.--Lat 45°09'05", long 93°17'48", in NW¼NE¼ sec.26, T.31 N., R.24 W., Anoka County, Hydrologic Unit 07010206, on upstream side of abandoned County Road 1 bridge in Coon Rapids 1.2 mi (1.9 km) above mouth.

DRAINAGE AREA.--96.4 mi^2 (250 km^2).

PERIOD OF RECORD.--April 1979 to current year (discontinued).

REMARKS.--These data will be in an interpretive report to be published later in calendar year 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH FIELD (UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE, WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIOCHEM UNINHIB 5 DAY (MG/L)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV											
02...	1330	51	430	8.0	4.0	5.0	12.0	97	1.3	22	292
FEB											
22...	0930	23	659	6.1	1.0	.0	9.8	69	4.9	100	408
APR											
18...	1130	70	433	7.9	24.5	12.5	10.3	99	1.9	16	297
MAY											
28...	1500	23	467	7.7	27.0	22.8	7.5	88	2.2	14	312
JUN											
06...	1045	77	390	7.7	24.0	17.5	6.8	72	3.3	12	254
JUL											
10...	1330	19	453	7.7	35.0	24.6	8.2	100	2.2	16	322
16...	1415	32	345	7.8	29.0	24.0	7.0	85	2.9	12	228
AUG											
08...	1545	131	237	7.5	27.0	22.0	4.9	53	4.3	7.8	178
SEP											
11...	1030	69	367	7.9	15.0	14.0	7.9	78	3.1	12	303

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, DIS-SOLVED (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHOPH OSPHATE DISSOL. (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
NOV											
02...	.61	.210	1.1	1.3	1.3	1.9	.090	.030	2	0	20
FEB											
22...	.17	.630	.47	1.2	1.1	1.3	.050	.000	--	0	30
APR											
18...	.63	.170	.71	1.0	.88	1.5	.230	.000	3	0	20
MAY											
28...	.25	.170	.63	1.2	.80	1.1	.150	.000	2	0	20
JUN											
06...	.54	.110	1.3	1.9	1.4	1.9	.400	.000	4	0	20
JUL											
10...	.32	.040	.59	.91	.63	.95	.080	.020	2	0	20
16...	.40	.120	.54	.92	.66	1.1	.150	.010	4	0	10
AUG											
08...	1.5	.210	.45	1.9	.66	2.2	.420	.010	3	1	20
SEP											
11...	.47	.120	.98	2.1	1.1	1.6	.190	.080	4	1	10

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
NOV											
02...	2	--	5	240	<.1	1	10	11	--	25	3.5
FEB											
22...	3	1400	15	330	--	2	170	7.3	.6	16	1.0
APR											
18...	2	2500	3	220	.1	1	20	9.2	1.5	35	6.7
MAY											
28...	2	2700	2	380	<.1	0	20	12	3.0	34	2.2
JUN											
06...	7	5800	9	620	<.1	3	20	12	2.5	106	22
JUL											
10...	1	1300	4	210	<.1	2	20	9.2	.9	17	.90
16...	2	2900	8	370	<.1	4	20	6.8	3.1	57	5.1
AUG											
08...	4	6800	14	1100	<.1	4	40	--	--	215	76
SEP											
11...	2	5300	7	420	<.1	4	20	12	3.6	59	11

05288500 MISSISSIPPI RIVER NEAR ANOKA, MN

LOCATION.--Lat 45°07'36", long 93°17'48", in SW¼ sec.12, T.119 N., R.21 W., Hennepin County, Hydrologic Unit 07010206, on right bank 0.4 mi (0.6 km) downstream from Coon Creek, 1.3 mi (2.1 km) downstream from Coon Rapids dam at Coon Rapids, 6.5 mi (10.5 km) downstream from Anoka, and at mile 864.8 (1,391.5 km) upstream from Ohio River.

DRAINAGE AREA.--19,100 mi^2 (49,500 km^2), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1931 to current year. Prior to October 1931 published as "at Coon Rapids, near Anoka."

GAGE.--Water-stage recorder. Datum of gage is 804.53 ft (245.221 m) National Geodetic Vertical Datum of 1929. Prior to June 14, 1932, at site 1.2 mi (1.9 km) upstream at different datum.

REMARKS.--Records good. Flow slightly regulated by six reservoirs on headwaters; total usable capacity, 1,640,600 acre-ft (2.02 km^3). Diurnal regulation caused by dam above station.

AVERAGE DISCHARGE.--49 years, 7,558 ft^3/s (214.0 m^3/s), 5.37 in/yr (136 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 91,000 ft^3/s (2,580 m^3/s) Apr. 17, 1965, gage height, 19.53 ft (5.953 m); minimum, 529 ft^3/s (15.0 m^3/s) Aug. 29, 1976, gage height, 0.04 ft (0.012 m), result of regulation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20,200 ft^3/s (572 m^3/s) Apr. 9, gage height, 7.22 ft (2.201 m); maximum gage height, 7.81 ft (2.380 m) Dec. 13 (backwater from ice); minimum, 1,680 ft^3/s (47.6 m^3/s) Aug. 5, 16, gage height, 1.12 ft (0.341 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4490	7930	5200	5690	4870	4410	12000	8770	4280	4070	2380	3690
2	4520	9510	4320	5380	4690	4350	12700	8400	4520	3810	2300	3650
3	4390	10900	4790	5480	4550	4800	14300	7980	4720	3680	2090	3990
4	4000	11900	5570	4890	4510	5040	15300	8070	5350	3450	2280	4270
5	4070	13400	6140	5050	4990	4450	16100	7520	5940	2930	2110	4550
6	3920	13800	6640	5000	4960	4390	16300	7130	6810	3840	2210	5160
7	3940	14000	7250	3400	4880	4640	17500	6310	7460	3790	2430	4540
8	3940	13500	6060	2810	5020	4820	17500	5870	8370	3160	3650	4800
9	3800	13300	5400	3580	5180	4890	19400	5390	8550	2700	3700	4900
10	3810	12800	6480	4060	4740	4870	19300	5530	7950	2660	3560	4400
11	4010	11600	6780	4480	5120	4690	19000	5890	7980	2600	3730	4470
12	3690	11300	6200	4250	4880	4800	18800	5850	8160	2480	3300	5830
13	3860	10400	5220	4490	5010	4540	18000	5750	8100	2460	3280	7080
14	3670	10000	4420	5570	5030	4830	17600	5210	8400	2890	3100	8440
15	3610	9920	4720	5490	5050	5070	17000	5320	8460	2520	2600	8470
16	3820	10800	5080	5720	4830	5440	16100	4710	7780	2580	2670	7730
17	3600	10900	3820	5630	4180	4850	15000	4800	7230	2890	3040	8600
18	3790	9890	4400	5800	4960	4930	14400	5700	7570	2510	3040	8220
19	4200	9900	5840	5800	5300	5510	14300	5350	7430	2810	2970	7770
20	4360	9730	6090	5170	5480	7140	12500	5030	7120	3080	3100	7090
21	4510	9980	6070	5320	5240	7650	11700	4580	6760	3210	2840	7020
22	4770	9720	6710	5210	5460	7370	11400	4600	6420	2910	3520	6530
23	5410	9610	6480	4360	4990	7300	11800	4290	6340	3250	3550	6220
24	5310	8910	5900	4760	4620	7830	10800	4170	6160	3520	3450	6260
25	5040	8860	5590	5500	4650	7940	11000	4160	5840	2900	3140	6220
26	4750	8870	6050	4670	4220	8540	10500	4080	5220	2800	3310	5870
27	5010	8370	6180	4020	4550	9440	9550	4020	5280	2760	3330	6080
28	4970	8440	6200	4830	4770	9980	9200	3690	4950	2850	3500	5680
29	5720	6930	6110	4870	4520	10200	8950	3430	5100	2750	3860	5480
30	5370	6090	5900	4960	---	10600	9040	3300	4950	2490	3850	5720
31	6060	---	5780	5110	---	10600	---	3790	---	2520	3550	---
TOTAL	136410	311260	177390	151350	141250	195910	427040	168690	199200	92870	95440	178730
MEAN	4400	10380	5722	4882	4871	6320	14230	5442	6640	2996	3079	5958
MAX	6060	14000	7250	5800	5480	10600	19400	8770	8550	4070	3860	8600
MIN	3600	6090	3820	2810	4180	4350	8950	3300	4280	2460	2090	3650
CFSM	.23	.54	.30	.26	.26	.33	.75	.29	.35	.16	.16	.31
IN.	.27	.61	.35	.29	.28	.38	.83	.33	.39	.18	.19	.35

CAL YR 1979 TOTAL 4251360 MEAN 11650 MAX 49400 MIN 3440 CFSM .61 IN 8.28
WTR YR 1980 TOTAL 2275540 MEAN 6217 MAX 19400 MIN 2090 CFSM .33 IN 4.43

05288500 MISSISSIPPI RIVER NEAR ANOKA, MN--Continued

WATER-QUALITY RECORDS

LOCATION.--Sediment samples collected at Camden Avenue bridge, in Minneapolis, 7.0 mi (11 km) downstream from discharge station. Tritium samples collected at discharge station near right bank. Prior to October 1, 1978, sediment samples collected at Lowry Avenue bridge.

DRAINAGE AREA.--19,600 mi^2 (50,800 km^2), approximately.

PERIOD OF RECORD.--Water years 1963-67, 1975 to current year.

PERIOD OF RECORD.--
WATER TEMPERATURE: October 1975 to current year.
SUSPENDED SEDIMENT DISCHARGE: August 1975 to current year.

REMARKS.--During the winter period, daily suspended-sediment load was estimated on the basis of water records and monthly sediment samples. Water temperature was obtained once-daily for most of the open water period and monthly for winter period. Water-discharge records for the Mississippi River near Anoka are used for computation of sediment load.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 128 mg/L Apr. 24, 1979; minimum daily mean, 1 mg/L on several days in 1978 and 1980.
SEDIMENT LOADS: Maximum daily, 17,100 tons (15,500 tonnes) Apr. 24, 1979; minimum daily, 6.7 tons (6.1 tonnes) Dec. 3, 1976.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATION: Maximum daily mean, 78 mg/L Mar. 29; minimum daily mean, 1 mg/L several days.
SEDIMENT LOADS: Maximum daily, 3,770 tons (3,420 tonnes) Apr. 9; minimum daily, 11 tons (10 tonnes) Feb. 17.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.0	9.0	4.0		---	---	3.0	---	21.0	22.0	24.0	---
2	15.0	5.0	---		---	---	4.0	---	20.0	20.0	24.0	---
3	15.0	12.0	---		---	---	3.0	---	20.0	22.0	27.0	21.0
4	13.0	13.0	---		.5	---	2.5	---	20.0	26.0	23.0	20.0
5	12.5	6.0	---		---	---	5.0	21.0	23.0	---	22.0	21.0
6	12.0	3.0	---		---	---	6.5	---	21.0	27.0	23.0	22.0
7	13.0	4.0	---		---	---	6.0	---	20.0	25.0	23.0	---
8	11.0	1.0	---		---	---	4.0	---	21.0	24.0	23.0	22.0
9	11.0	---	---		---	---	2.5	---	19.0	26.0	23.0	21.0
10	9.0	---	---		---	---	4.0	---	19.0	26.0	25.0	20.0
11	9.0	1.0	---		---	.0	4.0	---	20.0	27.0	22.0	19.0
12	9.0	---	---		---	---	4.0	---	20.0	30.0	22.0	18.0
13	8.0	2.0	---		---	---	5.0	---	21.0	28.0	22.0	---
14	11.0	---	.0		---	---	4.5	---	21.0	28.0	22.0	17.0
15	8.0	2.0	.0		---	---	6.5	---	23.0	30.0	22.0	16.0
16	10.0	3.0	---		---	---	7.5	---	20.0	26.0	---	16.0
17	10.0	4.0	---		---	---	9.0	---	20.0	29.0	---	14.0
18	11.0	5.0	---		---	---	10.5	---	21.0	26.0	18.0	15.0
19	18.0	6.0	1.0		---	---	12.0	---	20.0	27.0	21.0	15.0
20	15.0	5.0	---		---	---	14.0	---	21.0	25.0	23.0	---
21	12.0	5.0	1.0		---	---	16.0	---	22.0	23.0	22.0	16.0
22	10.0	4.0	---		---	---	17.0	---	26.0	22.0	22.0	15.0
23	9.0	---	---		---	---	14.5	---	24.0	22.0	23.0	12.0
24	7.0	---	---		---	---	12.0	---	24.0	23.0	24.0	14.0
25	6.0	---	---		---	---	12.5	---	24.0	25.5	22.0	14.0
26	8.0	---	---		---	---	12.0	---	24.0	24.0	22.0	12.0
27	8.0	---	.0		---	---	---	---	28.0	27.0	21.0	12.0
28	10.0	---	---		---	---	---	---	24.0	24.0	20.0	16.0
29	8.0	---	---		---	---	---	---	---	24.0	21.0	13.0
30	10.0	---	---		---	---	---	---	22.0	24.0	---	12.0
31	10.0	---	1.0		---	3.5	---	22.0	---	25.0	---	---
MEAN	11.0											

WTR YR 1980 MEAN MAX 30.0 MIN .0

05288500 MISSISSIPPI RIVER NEAR ANOKA, MN--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	29	352	18	385	36	505	10	154	1	13	2	24
2	26	317	31	796	36	420	10	145	1	13	2	23
3	17	202	32	942	40	517	10	148	1	12	2	26
4	19	205	28	900	57	857	9	119	1	12	2	27
5	16	176	40	1450	46	763	9	123	1	13	2	24
6	11	116	37	1380	18	323	9	121	1	13	2	24
7	9	96	46	1740	8	157	9	83	1	13	2	25
8	9	96	24	875	8	131	8	61	1	14	2	26
9	10	103	12	431	8	117	8	77	1	14	2	26
10	8	82	10	346	8	140	8	88	1	13	2	26
11	10	108	9	282	8	146	8	97	1	14	2	25
12	10	100	10	305	8	134	7	80	1	13	2	26
13	6	63	14	393	28	395	7	85	1	14	2	25
14	6	59	12	324	42	501	7	105	1	14	2	26
15	4	39	8	214	35	446	6	89	1	14	2	27
16	5	52	8	233	14	192	6	93	1	13	2	29
17	4	39	7	206	10	103	6	91	1	11	2	26
18	8	82	6	160	10	119	6	94	1	13	2	27
19	9	102	7	187	10	158	5	78	1	14	2	30
20	7	82	8	210	8	132	5	70	1	15	6	116
21	7	85	8	216	6	98	5	72	1	14	15	310
22	8	103	8	210	7	127	4	56	2	29	23	458
23	9	131	8	208	8	140	4	47	2	27	32	631
24	8	115	8	192	9	143	4	51	2	25	40	846
25	6	82	8	191	10	151	4	59	2	25	48	1030
26	5	64	8	192	10	163	3	38	2	23	56	1290
27	4	54	8	181	11	184	3	33	2	25	65	1660
28	6	81	8	182	11	184	3	39	2	26	73	1970
29	7	108	8	150	11	181	2	26	2	24	78	2150
30	8	116	8	132	11	175	2	27	---	---	48	1370
31	10	164	---	---	10	156	2	28	---	---	36	1030
TOTAL	---	3574	---	13613	---	7958	---	2477	---	483	---	13353

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	46	1490	21	497	21	243	14	154	15	96	17	169
2	37	1270	20	454	17	207	14	144	16	99	18	177
3	46	1780	20	431	15	191	15	149	17	96	19	205
4	64	2640	20	436	15	217	14	130	15	92	19	219
5	69	3000	20	406	19	305	12	95	14	80	19	233
6	44	1940	14	270	34	625	17	176	14	84	23	320
7	44	2080	10	170	40	806	15	153	28	184	20	245
8	52	2460	15	238	39	881	12	102	50	493	17	220
9	72	3770	10	146	37	854	11	80	24	240	20	265
10	61	3180	11	164	33	708	11	79	19	183	23	273
11	51	2620	11	175	29	625	13	91	16	161	29	350
12	53	2690	9	142	26	573	13	87	12	107	24	378
13	46	2240	10	155	25	547	13	86	10	89	36	688
14	32	1520	9	127	25	567	13	101	10	84	40	912
15	25	1150	9	129	29	662	11	75	10	70	32	732
16	38	1650	9	114	23	483	17	118	10	72	27	564
17	27	1090	11	143	18	351	17	133	12	98	26	604
18	25	972	15	231	21	429	15	102	14	115	26	577
19	26	1000	8	116	22	441	17	129	13	104	22	462
20	29	979	11	149	22	423	19	158	11	92	16	306
21	22	695	9	111	19	347	19	165	10	77	15	284
22	26	800	14	174	18	312	16	126	15	143	16	282
23	30	956	12	139	18	308	16	140	16	153	16	269
24	27	787	9	101	20	333	19	181	18	168	14	237
25	28	832	9	101	20	315	19	149	13	110	13	218
26	26	737	10	110	19	268	20	151	15	134	12	190
27	24	619	10	109	17	242	19	142	19	171	10	164
28	25	621	12	120	15	200	16	123	20	189	9	138
29	22	532	41	380	14	193	14	104	16	167	9	133
30	21	513	31	276	13	174	14	94	15	156	10	154
31	---	---	23	235	---	---	14	95	16	153	---	---
TOTAL	---	46613	---	6549	---	12830	---	3812	---	4260	---	9968

TOTAL LOAD FOR YEAR: 125490 TONS.

05288500 MISSISSIPPI RIVER NEAR ANOKA, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TRITIUM IN WATER MOLECULES (TU) (07012)	TRITIUM WATER MOLECULES COUNT ERROR (TU) (07013)
OCT 05...	77.4	4.2
NOV 16...	65.3	5.1
DEC 19...	77.4	5.0
FEB 04...	75.2	5.0
MAR 11...	68.9	3.8
APR 02...	57.2	3.7
JUL 01...	60.5	4.8
AUG 01...	62.6	4.2
29...	71.2	4.1

DATE	TIME	NUMBER OF SAMPLING POINTS (00063)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	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)
SEP 05...	1137	3	4530	0	2	26	68	86	96	100

05288550 MISSISSIPPI RIVER AT FRIDLEY, MN

LOCATION.--Lat 45°06'12", long 93°16'37", in SW¼NE¼ sec.10, T.30 N., R.24 W., Anoka County, Hydrologic Unit 07010206, on left bank at St. Paul Pumping Station in Fridley, 0.9 mi (1.5 km) upstream from Rice Creek, and 3.4 mi (5.5 km) downstream from Coon Rapids Dam, and at mile 862.8 (1,388 km) upstream from Ohio River.

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

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: November 1974 to current year.
pH: November 1974 to current year.
WATER TEMPERATURES: November 1974 to current year.
DISSOLVED OXYGEN: November 1974 to current year.

INSTRUMENTATION.--Water quality monitor since November 1974.

REMARKS.--Extremes are published for years with 80 percent or more record. Malfunctions of the monitor resulted in less than 80 percent of the data being recorded.

COOPERATION.--Water-quality monitor is operated by the Metropolitan Waste Control Commission, St. Paul, MN.

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1										---	---	---
2										---	---	---
3										---	---	---
4										---	---	---
5										---	---	---
6										---	---	---
7										---	---	---
8										---	---	---
9										---	---	---
10										---	---	---
11										---	---	---
12										---	---	---
13										---	---	---
14										---	---	---
15										---	---	---
16										---	---	---
17										---	---	---
18										---	---	---
19										---	---	---
20										---	---	---
21										---	---	---
22										302	294	297
23										314	303	309
24										311	306	309
25										305	301	302
26										303	301	302
27										310	303	306
28										312	310	311
29										312	304	308
30										307	305	306
31										305	301	303

05288550 MISSISSIPPI RIVER AT FRIDLEY, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	304	300	301	318	316	317	---	---	---	293	288	290
2	303	300	301	317	316	317	---	---	---	294	289	292
3	306	303	305	333	314	319	---	---	---	298	292	295
4	304	303	303	320	314	318	---	---	---	299	292	295
5	304	303	303	322	315	318	---	---	---	302	296	299
6	303	300	301	324	322	323	---	---	---	306	183	268
7	300	298	299	321	320	321	---	---	---	316	188	305
8	299	298	298	322	321	321	---	---	---	320	315	317
9	298	295	296	323	322	323	---	---	---	323	314	318
10	296	295	295	324	322	323	---	---	---	323	310	316
11	295	289	293	322	320	321	---	---	---	319	311	316
12	301	294	297	321	320	320	---	---	---	322	320	321
13	302	297	299	321	320	321	---	---	---	323	322	322
14	302	295	298	322	321	321	---	---	---	324	321	322
15	300	294	297	315	312	314	246	243	245	325	318	321
16	302	296	298	296	295	296	248	246	247	333	324	328
17	305	301	303	285	272	276	250	246	248	335	325	332
18	---	---	---	254	226	240	252	249	250	332	312	325
19	---	---	---	238	197	217	256	249	253	326	303	317
20	338	302	315	211	202	207	263	256	260	333	323	328
21	352	316	333	205	203	204	267	263	265	340	330	334
22	359	323	346	205	203	204	271	266	269	---	---	---
23	337	323	326	205	203	205	272	266	269	---	---	---
24	325	324	325	214	210	212	275	267	271	---	---	---
25	325	317	324	222	218	220	279	275	277	---	---	---
26	321	316	319	231	227	230	283	276	279	---	---	---
27	322	321	321	243	236	233	288	282	285	339	332	335
28	322	321	321	245	243	244	293	285	288	344	332	338
29	321	319	320	---	---	---	294	288	290	344	334	339
30	---	---	---	---	---	---	292	288	290	344	331	339
31	---	---	---	---	---	---	---	---	---	340	330	337

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	341	325	335	368	354	361	356	348	353	386	370	379
2	342	334	338	366	355	360	355	346	351	390	382	387
3	335	327	331	364	353	359	353	345	350	392	375	388
4	344	330	337	365	318	358	353	349	351	389	381	386
5	335	266	323	364	356	360	355	352	354	388	379	383
6	327	320	323	367	361	365	359	354	357	381	376	379
7	327	296	322	366	357	361	359	326	352	385	380	382
8	331	316	326	368	357	362	327	279	317	388	384	386
9	352	316	332	375	368	370	326	319	322	388	381	385
10	359	343	353	379	374	377	321	314	317	384	376	379
11	371	352	363	381	376	379	331	321	324	390	307	371
12	367	322	359	383	377	380	342	330	335	363	357	361
13	367	354	362	383	376	380	346	340	343	361	352	357
14	374	359	367	383	374	379	345	324	333	356	351	354
15	374	363	369	384	315	373	330	320	326	359	347	354
16	381	370	375	373	365	369	336	319	330	361	309	329
17	383	366	376	374	366	370	342	336	339	309	303	307
18	385	363	378	373	369	371	343	338	341	302	297	299
19	381	370	377	377	346	372	341	332	336	305	296	302
20	371	359	366	374	367	371	391	336	369	308	298	305
21	366	357	361	371	351	364	392	386	390	312	304	309
22	367	355	361	365	357	361	394	384	389	315	307	311
23	368	358	363	365	355	360	393	383	388	317	314	315
24	365	358	361	361	328	353	391	384	387	316	308	314
25	366	353	360	355	346	352	393	386	389	318	314	316
26	375	336	361	358	350	354	394	366	386	318	316	317
27	381	365	372	359	351	356	393	301	376	319	315	317
28	380	366	376	356	345	351	397	392	394	319	316	317
29	377	357	366	351	343	347	396	389	392	321	292	319
30	368	358	364	353	349	350	392	310	371	302	280	290
31	---	---	---	358	349	354	381	357	374	---	---	---
MONTH	385	266	355	384	315	364	397	279	356	392	280	343

05288550 MISSISSIPPI RIVER AT FRIDLEY, MN--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1										---	---	---
2										---	---	---
3										---	---	---
4										---	---	---
5										---	---	---
6										---	---	---
7										---	---	---
8										---	---	---
9										---	---	---
10										---	---	---
11										---	---	---
12										---	---	---
13										---	---	---
14										---	---	---
15										---	---	---
16										---	---	---
17										---	---	---
18										---	---	---
19										---	---	---
20										---	---	---
21										---	---	---
22										7.9	7.8	7.8
23										7.9	7.8	7.8
24										7.8	7.7	7.7
25										7.7	7.7	7.7
26										7.7	7.7	7.7
27										7.7	7.7	7.7
28										7.7	7.7	7.7
29										7.7	7.6	7.7
30										7.7	7.6	7.6
31										7.7	7.6	7.6

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	7.7	7.6	7.6	7.8	7.7	7.7	---	---	---	8.3	8.0	8.2
2	7.7	7.6	7.6	7.7	7.7	7.7	---	---	---	8.2	8.0	8.1
3	7.6	7.6	7.6	7.7	7.7	7.7	---	---	---	8.2	8.0	8.1
4	7.6	7.6	7.6	7.7	7.7	7.7	---	---	---	8.3	8.0	8.2
5	7.6	7.6	7.6	7.7	7.7	7.7	---	---	---	8.3	8.2	8.3
6	7.6	7.6	7.6	7.7	7.7	7.7	---	---	---	8.4	8.3	8.3
7	7.6	7.6	7.6	7.7	7.6	7.6	---	---	---	8.4	8.3	8.3
8	7.6	7.6	7.6	7.6	7.6	7.6	---	---	---	8.4	8.3	8.3
9	7.6	7.6	7.6	7.6	7.6	7.6	---	---	---	8.5	8.3	8.4
10	7.6	7.6	7.6	7.7	7.6	7.6	---	---	---	8.3	8.2	8.3
11	7.7	7.6	7.6	7.7	7.6	7.7	---	---	---	8.2	8.0	8.1
12	7.8	7.6	7.7	7.7	7.7	7.7	---	---	---	8.0	8.0	8.0
13	7.8	7.7	7.8	7.7	7.7	7.7	---	---	---	8.0	7.9	8.0
14	7.8	7.7	7.8	7.7	7.7	7.7	---	---	---	8.0	7.9	7.9
15	7.9	7.7	7.8	7.7	7.7	7.7	7.9	7.8	7.8	8.6	7.9	8.2
16	7.9	7.7	7.8	7.7	7.7	7.7	7.9	7.8	7.9	8.6	8.4	8.5
17	7.8	7.7	7.8	7.8	7.7	7.7	8.0	7.9	7.9	8.5	8.4	8.5
18	---	---	---	7.8	7.8	7.8	8.0	7.9	8.0	8.5	8.3	8.4
19	---	---	---	7.9	7.8	7.8	8.1	7.9	8.0	8.5	8.1	8.3
20	7.8	7.7	7.8	7.9	7.8	7.8	8.2	8.0	8.1	8.5	8.1	8.3
21	7.9	7.7	7.8	7.8	7.8	7.8	8.5	8.1	8.3	8.3	8.2	8.2
22	7.9	7.8	7.8	7.8	7.7	7.8	8.5	8.2	8.4	---	---	---
23	7.9	7.8	7.9	7.7	7.7	7.7	8.5	8.2	8.4	---	---	---
24	7.9	7.9	7.9	7.7	7.6	7.6	8.5	8.2	8.4	---	---	---
25	7.9	7.9	7.9	7.6	7.6	7.6	8.4	8.2	8.3	---	---	---
26	7.9	7.8	7.8	7.6	7.6	7.6	8.4	8.2	8.3	---	---	---
27	7.8	7.8	7.8	7.6	7.6	7.6	8.5	8.2	8.4	8.3	8.0	8.2
28	7.8	7.8	7.8	7.6	7.6	7.6	8.6	8.3	8.4	8.2	7.9	8.1
29	7.8	7.8	7.8	---	---	---	8.5	8.1	8.3	8.2	7.9	8.0
30	---	---	---	---	---	---	8.3	8.0	8.2	8.0	7.8	7.9
31	---	---	---	---	---	---	---	---	---	8.2	7.8	8.0

05288550 MISSISSIPPI RIVER AT FRIDLEY, MN--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	8.0	7.8	7.9	8.3	7.8	8.1	8.5	8.2	8.4	8.1	8.0	8.0
2	8.0	7.8	7.9	8.4	8.1	8.2	8.5	8.2	8.3	8.2	7.9	8.0
3	8.1	7.8	7.9	8.5	8.2	8.3	8.5	8.2	8.3	8.2	8.0	8.1
4	8.1	7.9	8.0	8.5	8.3	8.4	8.4	8.3	8.3	8.3	7.9	8.1
5	8.0	7.7	7.9	8.4	8.2	8.3	8.3	8.2	8.3	8.3	8.1	8.2
6	7.9	7.6	7.8	8.4	8.2	8.3	8.3	8.2	8.3	8.3	8.1	8.2
7	7.7	7.5	7.6	8.4	8.2	8.3	8.3	8.1	8.2	8.3	8.1	8.2
8	7.6	7.5	7.6	8.3	8.2	8.3	8.3	7.8	8.0	8.3	8.1	8.2
9	7.7	7.6	7.6	8.3	8.1	8.2	8.2	8.0	8.1	8.2	8.0	8.1
10	7.9	7.6	7.7	8.4	8.0	8.2	8.2	7.9	8.0	8.2	8.0	8.1
11	8.0	7.8	7.9	8.3	8.1	8.2	8.2	7.9	8.0	8.0	7.8	8.0
12	8.0	7.8	7.9	8.3	8.1	8.2	8.3	7.9	8.1	7.8	7.5	7.7
13	7.8	7.8	7.8	8.3	8.0	8.2	8.2	7.9	8.0	7.5	7.4	7.5
14	7.9	7.8	7.8	8.3	8.1	8.2	8.5	7.8	8.2	7.4	7.4	7.4
15	8.0	7.8	7.9	8.4	8.0	8.2	8.6	8.2	8.4	7.6	7.4	7.5
16	8.1	7.9	8.0	8.3	8.0	8.2	8.4	8.3	8.3	7.6	7.5	7.6
17	8.1	7.9	8.0	8.3	8.0	8.2	8.4	8.1	8.2	7.6	7.5	7.6
18	8.1	8.0	8.0	8.3	8.1	8.2	8.4	8.1	8.2	7.5	7.5	7.5
19	8.1	7.9	8.0	8.3	8.1	8.2	8.3	8.1	8.2	7.6	7.5	7.5
20	8.1	7.9	8.0	8.2	8.1	8.1	8.6	8.0	8.3	7.6	7.5	7.5
21	8.2	7.9	8.0	8.3	8.0	8.1	8.7	8.3	8.5	7.6	7.5	7.5
22	8.2	7.9	8.0	8.4	8.0	8.2	8.7	8.3	8.5	7.7	7.5	7.6
23	8.2	8.0	8.1	8.4	8.0	8.2	8.7	8.4	8.5	7.7	7.6	7.6
24	8.1	7.9	8.0	8.4	8.2	8.3	8.7	8.3	8.5	7.8	7.6	7.6
25	8.1	7.8	7.9	8.4	8.2	8.3	8.7	8.5	8.6	7.8	7.6	7.6
26	8.0	7.6	7.8	8.4	8.1	8.3	8.5	8.0	8.3	7.7	7.6	7.6
27	8.0	7.6	7.8	8.4	8.1	8.3	8.2	8.0	8.1	7.8	7.6	7.7
28	7.9	7.5	7.6	8.4	8.2	8.3	8.2	8.0	8.1	7.8	7.6	7.7
29	8.0	7.6	7.7	8.5	8.1	8.3	8.3	8.0	8.2	7.7	7.6	7.6
30	8.1	7.7	7.8	8.5	8.3	8.4	8.3	8.0	8.1	7.8	7.5	7.6
31	---	---	---	8.5	8.2	8.4	8.2	8.0	8.1	---	---	---
MONTH	8.2	7.5	7.9	8.5	7.8	8.3	8.7	7.8	8.3	8.3	7.4	7.8

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1										---	---	---
2										---	---	---
3										---	---	---
4										---	---	---
5										---	---	---
6										---	---	---
7										---	---	---
8										---	---	---
9										---	---	---
10										---	---	---
11										---	---	---
12										---	---	---
13										---	---	---
14										---	---	---
15										---	---	---
16										---	---	---
17										---	---	---
18										---	---	---
19										---	---	---
20										---	---	---
21										---	---	---
22										1.0	1.0	1.0
23										1.0	.5	1.0
24										1.0	.5	1.0
25										1.5	.5	1.0
26										2.0	1.0	1.5
27										2.0	1.0	1.5
28										2.0	2.0	2.0
29										2.0	1.0	1.5
30										1.0	1.0	1.0
31										1.0	1.0	1.0

05288550 MISSISSIPPI RIVER AT FRIDLEY, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1.0	1.0	1.0	1.5	.5	1.5	---	---	---	19.5	15.0	17.0
2	1.0	1.0	1.0	2.0	1.0	1.5	---	---	---	20.0	17.0	18.5
3	1.0	1.0	1.0	2.0	.5	1.0	---	---	---	20.0	17.5	19.0
4	1.5	1.0	1.0	.5	.0	.5	---	---	---	20.5	17.5	19.0
5	2.5	1.0	1.5	.5	.0	.0	---	---	---	20.0	18.5	19.5
6	2.0	1.5	2.0	.5	.0	.5	---	---	---	19.0	16.5	17.5
7	2.0	1.5	2.0	1.0	.0	.5	---	---	---	16.0	14.0	15.0
8	2.0	.5	1.5	1.5	1.0	1.0	---	---	---	14.0	12.0	13.0
9	1.5	.0	.5	1.5	1.5	1.5	---	---	---	15.0	12.5	13.5
10	1.0	.5	1.0	1.5	.5	1.0	---	---	---	14.5	13.5	14.5
11	1.0	.0	.5	1.5	1.0	1.5	---	---	---	14.5	13.5	14.0
12	1.5	.0	.5	1.5	1.5	1.5	---	---	---	13.5	13.0	13.5
13	1.5	.5	1.0	2.0	1.5	1.5	---	---	---	15.5	13.0	14.0
14	1.0	.5	1.0	2.0	1.0	1.5	---	---	---	15.5	15.0	15.5
15	1.0	1.0	1.0	2.0	1.5	1.5	8.0	6.0	7.0	17.5	15.0	16.0
16	1.0	.5	1.0	2.0	2.0	2.0	8.5	7.0	8.0	20.0	16.0	17.5
17	1.0	.5	1.0	2.0	.5	1.5	11.0	8.0	9.5	17.0	16.0	16.5
18	---	---	---	.5	.5	.5	12.5	10.0	11.5	17.0	16.0	16.0
19	---	---	---	1.5	1.0	1.5	14.0	11.5	13.0	19.5	16.0	18.0
20	1.5	1.0	1.5	1.5	1.5	1.5	15.0	13.0	14.0	24.0	18.5	22.0
21	2.0	1.5	1.5	2.5	1.0	1.5	17.5	14.5	16.0	23.5	22.0	22.5
22	2.0	1.0	1.5	3.0	1.5	2.5	18.5	16.0	17.5	---	---	---
23	2.5	1.0	1.5	3.0	2.0	2.5	18.0	16.0	17.0	---	---	---
24	2.5	1.5	2.5	3.0	2.0	2.5	17.0	15.0	16.0	---	---	---
25	2.5	1.0	2.0	3.0	2.0	3.0	18.5	15.0	17.0	---	---	---
26	2.5	.0	1.5	3.0	2.0	3.0	17.5	14.5	16.5	---	---	---
27	2.0	1.0	1.5	3.0	1.5	2.5	17.5	14.0	16.0	23.5	22.0	23.0
28	2.0	1.0	1.5	2.5	1.5	2.0	17.5	15.5	16.5	24.5	21.5	23.0
29	2.0	1.0	2.0	---	---	---	17.0	13.5	15.0	25.0	22.5	23.0
30	---	---	---	---	---	---	16.5	14.0	15.0	22.5	21.0	22.0
31	---	---	---	---	---	---	---	---	---	22.0	20.0	21.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	21.5	19.5	20.5	24.5	20.0	23.0	26.5	23.5	25.0	20.5	19.0	20.0
2	20.5	19.5	20.0	25.0	21.5	23.0	26.0	24.0	25.0	21.0	18.5	19.5
3	21.5	19.0	20.0	26.0	22.5	24.0	26.5	23.5	25.0	22.0	19.0	20.5
4	22.0	19.5	20.5	27.0	24.0	25.0	25.5	23.5	24.0	22.5	20.5	21.0
5	21.0	19.0	20.0	27.5	24.5	25.5	23.0	22.0	22.5	22.5	20.0	21.0
6	22.0	19.5	20.5	27.5	24.5	25.5	25.5	22.5	24.0	22.0	20.0	20.5
7	21.5	19.5	20.5	28.5	25.5	27.0	25.0	23.0	24.0	23.0	20.5	21.5
8	19.5	18.0	18.5	28.0	25.0	26.5	25.5	23.0	24.0	24.5	21.5	23.0
9	19.0	17.5	18.0	28.5	25.0	26.5	24.5	23.0	23.5	23.5	21.0	22.5
10	20.0	18.5	19.0	29.0	25.0	27.0	24.0	22.5	23.0	21.5	19.5	20.5
11	20.5	19.0	20.0	29.5	26.5	27.5	24.0	22.0	22.5	19.5	17.5	18.5
12	20.0	19.0	19.5	29.5	27.0	28.0	24.5	21.5	23.0	17.5	17.0	17.0
13	20.5	19.0	20.0	28.5	26.5	27.5	24.0	22.0	23.0	17.5	17.0	17.0
14	22.5	20.5	21.5	29.0	27.0	27.5	25.5	22.0	23.5	17.0	16.5	17.0
15	22.0	20.0	21.0	29.5	26.0	27.5	25.5	22.5	24.0	16.5	15.5	16.0
16	21.0	19.5	20.5	29.0	26.5	27.5	23.5	21.0	22.0	17.5	16.0	16.5
17	22.0	20.0	21.0	28.5	26.0	27.0	21.0	19.5	20.0	16.5	15.0	16.0
18	22.0	20.5	21.5	27.5	25.5	26.5	21.5	18.5	20.0	15.0	14.5	15.0
19	21.0	19.5	20.5	27.0	25.0	25.5	24.0	21.0	22.5	15.0	14.5	14.5
20	21.0	19.5	20.0	25.5	24.0	24.5	25.5	24.0	24.5	15.5	15.0	15.0
21	22.0	19.5	20.5	25.0	23.0	24.0	26.0	24.0	25.0	15.5	15.0	15.0
22	23.0	21.0	22.0	25.0	22.5	23.5	25.5	23.0	24.0	16.0	14.5	15.0
23	24.5	22.0	23.0	25.5	22.0	24.0	25.0	23.0	23.5	16.0	14.5	15.0
24	24.5	23.0	24.0	26.0	23.0	24.5	24.5	23.0	23.5	15.5	14.0	14.5
25	27.0	23.0	25.0	26.5	24.0	25.0	25.5	23.0	24.0	15.0	14.0	14.5
26	32.0	23.5	27.5	26.5	23.5	25.0	24.5	22.0	23.0	14.0	12.5	13.5
27	30.5	24.5	27.0	26.5	23.5	25.0	22.0	21.0	21.5	14.0	12.5	13.0
28	30.0	24.5	28.0	26.0	23.5	24.5	22.0	20.0	21.0	14.0	13.0	13.5
29	29.0	22.0	26.0	26.5	23.0	24.5	23.5	21.0	22.0	13.5	13.0	13.5
30	25.5	22.0	24.5	26.0	23.5	24.5	23.5	20.5	22.0	15.5	13.5	14.5
31	---	---	---	26.0	24.0	25.0	22.0	20.0	21.0	---	---	---
MONTH	32.0	17.5	21.5	29.5	20.0	25.5	26.5	18.5	23.0	24.5	12.5	17.0

05288550 MISSISSIPPI RIVER AT FRIDLEY, MN--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1										---	---	---
2										---	---	---
3										---	---	---
4										---	---	---
5										---	---	---
6										---	---	---
7										---	---	---
8										---	---	---
9										---	---	---
10										---	---	---
11										---	---	---
12										---	---	---
13										---	---	---
14										---	---	---
15										---	---	---
16										---	---	---
17										---	---	---
18										---	---	---
19										---	---	---
20										---	---	---
21										---	---	---
22										13.4	13.2	13.3
23										13.8	13.3	13.5
24										13.4	12.9	13.1
25										13.3	12.8	13.0
26										13.1	12.6	12.9
27										13.1	12.6	12.8
28										13.1	12.8	12.9
29										13.3	12.8	13.1
30										13.3	12.9	13.1
31										13.5	12.8	13.1

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	13.4	12.9	13.1	12.5	12.1	12.3	---	---	---	11.3	8.9	9.9
2	13.4	12.7	13.1	12.7	11.9	12.2	---	---	---	9.5	7.7	8.6
3	13.8	12.8	13.2	12.7	12.0	12.3	---	---	---	8.4	6.4	7.5
4	13.6	12.8	13.1	12.5	11.7	12.2	---	---	---	8.6	5.5	7.5
5	13.0	12.8	12.9	12.3	11.8	12.1	---	---	---	9.3	7.6	8.3
6	12.9	12.7	12.8	12.5	11.9	12.2	---	---	---	10.2	7.2	8.7
7	12.7	12.6	12.7	12.2	11.6	12.0	---	---	---	10.6	8.6	9.3
8	12.7	12.6	12.7	11.7	11.5	11.6	---	---	---	10.9	8.9	9.8
9	12.8	12.5	12.7	11.8	11.3	11.6	---	---	---	10.2	9.1	9.7
10	12.8	12.6	12.7	11.9	11.4	11.6	---	---	---	9.1	7.5	8.6
11	13.3	12.6	12.9	11.6	11.2	11.4	---	---	---	8.4	6.8	7.3
12	12.7	12.0	12.4	11.8	11.4	11.6	---	---	---	7.4	6.5	7.0
13	12.7	12.0	12.4	11.8	11.3	11.6	---	---	---	10.6	6.6	8.0
14	13.0	11.9	12.4	11.8	11.5	11.7	---	---	---	10.0	8.5	9.0
15	13.1	12.3	12.5	11.8	11.3	11.6	---	---	---	---	---	---
16	13.0	12.2	12.6	11.6	11.2	11.4	12.2	11.7	11.9	---	---	---
17	13.1	12.3	12.7	11.9	11.5	11.7	11.9	11.2	11.5	---	---	---
18	---	---	---	11.9	11.8	11.9	11.4	10.5	11.0	---	---	---
19	---	---	---	12.8	12.0	12.5	10.9	10.4	10.7	---	---	---
20	10.6	10.2	10.4	12.4	11.9	12.1	11.3	10.0	10.7	9.7	7.4	8.6
21	10.9	10.1	10.6	12.4	11.7	12.1	11.4	9.5	10.7	9.6	7.3	8.0
22	11.0	10.4	10.7	11.7	10.4	11.1	12.3	8.8	11.0	---	---	---
23	11.0	10.6	10.8	10.6	10.0	10.3	11.7	10.1	10.8	---	---	---
24	10.9	10.6	10.8	10.0	9.3	9.6	11.0	9.4	10.1	---	---	---
25	11.6	10.7	11.0	9.6	9.1	9.3	10.3	8.9	9.4	---	---	---
26	12.7	5.6	11.7	9.7	9.1	9.3	11.4	9.2	10.1	---	---	---
27	12.8	12.1	12.4	11.7	9.0	10.4	11.6	10.0	10.8	10.5	7.5	9.0
28	12.4	12.0	12.2	11.9	11.3	11.7	11.6	9.8	10.7	10.1	6.8	8.4
29	12.6	11.9	12.4	---	---	---	12.5	9.5	11.1	10.1	6.3	7.8
30	---	---	---	---	---	---	11.8	10.3	11.0	9.7	7.8	8.7
31	---	---	---	---	---	---	---	---	---	11.9	7.9	9.6

05288550 MISSISSIPPI RIVER AT FRIDLEY, MN--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	10.3	7.1	8.6	10.4	2.3	7.2	9.4	6.4	7.7	8.9	7.1	7.8
2	9.6	7.0	8.4	10.8	7.5	8.8	9.2	6.1	7.4	9.7	7.3	8.3
3	9.8	7.7	8.7	10.5	7.2	8.6	11.1	6.0	8.3	8.7	6.7	7.6
4	10.1	6.9	8.4	9.1	6.3	7.7	10.1	6.9	8.2	9.5	6.5	7.8
5	9.6	8.0	8.7	8.5	6.1	7.1	7.7	7.2	7.4	11.1	7.4	8.9
6	9.2	7.6	8.2	8.9	5.9	7.2	10.4	7.2	8.4	10.8	8.3	9.2
7	7.8	7.1	7.5	8.7	6.4	7.5	8.5	6.2	7.4	10.2	7.9	8.8
8	9.5	7.3	8.5	9.7	5.9	7.6	10.1	6.0	7.8	9.6	7.5	8.4
9	9.2	8.3	8.7	9.4	6.7	7.8	10.0	7.7	8.6	9.7	7.4	8.3
10	9.7	8.2	8.9	9.5	6.5	7.7	10.6	7.7	8.7	9.6	7.6	8.4
11	9.8	8.7	9.3	8.9	6.1	7.2	11.6	8.2	9.5	9.6	7.3	8.7
12	8.7	8.1	8.4	8.8	5.7	7.0	11.5	8.2	9.5	9.2	8.5	8.8
13	9.0	8.0	8.4	8.7	5.5	7.0	10.1	7.9	8.6	8.9	8.4	8.6
14	8.6	7.3	7.9	9.4	6.0	7.4	11.2	7.7	9.3	8.6	8.3	8.5
15	9.2	7.1	8.0	10.7	6.0	7.9	11.5	7.7	9.2	9.8	8.0	9.0
16	9.3	7.4	8.3	9.8	6.4	7.8	8.8	7.5	8.1	10.6	9.0	9.7
17	10.3	7.4	8.7	10.0	6.7	8.0	10.4	7.9	8.9	10.3	9.6	10.0
18	9.8	8.0	8.7	9.3	6.6	7.7	11.5	8.2	9.7	11.0	9.8	10.4
19	10.4	7.8	9.0	9.1	6.3	7.2	12.8	8.0	9.3	10.8	10.0	10.4
20	10.2	8.6	9.2	8.6	6.4	7.3	10.1	8.6	9.0	10.3	9.6	10.0
21	10.5	8.5	9.2	10.4	6.6	8.2	10.7	7.0	8.4	10.8	9.6	10.1
22	10.3	8.1	8.9	10.5	7.3	8.7	10.1	6.6	7.8	10.8	10.0	10.3
23	10.1	7.4	8.5	9.9	7.0	8.2	8.2	5.7	6.9	11.8	9.9	10.7
24	8.6	5.5	7.4	10.0	6.9	8.2	10.5	5.5	8.2	11.4	10.3	10.8
25	8.5	5.4	6.3	10.3	6.8	8.4	11.2	7.2	8.6	11.2	10.1	10.7
26	4.7	2.0	3.2	10.1	6.8	8.2	7.7	6.8	7.3	11.8	10.9	11.2
27	3.8	1.3	2.6	9.4	6.4	7.8	9.0	3.6	7.4	12.2	10.8	11.3
28	5.6	1.3	2.3	8.5	6.2	7.2	9.6	7.1	8.1	11.7	10.6	11.0
29	3.8	1.3	2.4	10.9	6.5	8.6	9.9	6.9	8.1	11.4	10.3	10.9
30	4.7	2.1	3.1	10.1	6.8	8.3	8.9	7.1	7.8	11.3	9.3	10.4
31	---	---	---	10.4	6.6	8.2	8.1	7.0	7.4	---	---	---
MONTH	10.5	1.3	7.5	10.9	2.3	7.8	12.8	3.6	8.3	12.2	6.5	9.5

05290000 LITTLE MINNESOTA RIVER NEAR PEEVER, SD

LOCATION.--Lat 45°36'05", long 96°52'18", in SW¼ sec.13, T.125 N., R.50 W., Roberts County, Hydrologic Unit 07020001, on Sisseton Indian Reservation, on right bank 2 mi (3 km) northwest of town of Browns Valley, MN, 5.3 mi (8.5 km) northeast of Peever, 7.2 mi (11.6 km) downstream from Jorgenson River, and 8 mi (13 km) upstream from Big Stone Lake.

DRAINAGE AREA.--447 mi^2 (1,158 km^2).

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

REVISED RECORDS.--WSP 1308: 1943(M).

GAGE.--Water-stage recorder. Datum of gage is 1,002.20 ft (305.471 m) National Geodetic Vertical Datum of 1929. Oct. 1, 1939, to Mar. 20, 1940, nonrecording gage at site 4.5 mi (7.2 km) downstream at different datum. Mar. 21 to Apr. 12, 1940, nonrecording gage at site 100 ft (30 m) downstream at present datum. April 13 to Aug. 27, 1940, nonrecording gage at present site and datum.

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

AVERAGE DISCHARGE.--41 years, 44.6 ft^3/s (1.263 m^3/s), 1.35 in/yr (34 mm/yr), 32,310 acre-ft/yr (39.8 hm^3/yr); median of yearly mean discharges, 33.1 ft^3/s (0.937 m^3/s), 1.01 in/yr (26 mm/yr), 23,980 acre-ft/yr (29.6 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,730 ft^3/s (134 m^3/s) Apr. 8, 1952, gage height, 12.16 ft (3.706 m); maximum gage height, 13.35 ft (4.069 m) Mar. 25, 1943, from floodmark (backwater from ice); no flow at times in 1940, 1942, 1950, 1954, 1957, 1959, 1963, 1968, 1976, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 490 ft^3/s (13.9 m^3/s) Mar. 31, gage height, 5.02 ft (1.530 m), backwater from ice, no other peak above base of 450 ft^3/s (12.7 m^3/s); minimum, 0.14 ft^3/s (0.004 m^3/s) Sept. 22; minimum gage height, 2.27 ft (0.692 m) Sept. 10.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.76	14	3.3	2.4	.76	.76	303	17	4.5	1.5	.39	.29
2	.75	11	3.3	2.3	.76	.76	256	16	6.1	1.1	.45	.23
3	.75	8.1	3.2	2.3	.76	.76	231	16	7.0	.97	.46	.24
4	.75	6.9	3.2	2.2	.76	.76	210	14	9.1	1.2	.32	.23
5	.74	6.1	3.1	2.1	.76	.76	182	14	12	.92	.26	.22
6	.74	5.7	3.1	2.0	.76	.76	177	13	19	.83	.26	.24
7	.74	5.5	3.0	1.9	.76	.76	166	12	18	.81	.30	.26
8	.73	5.3	3.0	1.8	.76	.76	155	11	13	.70	.29	.23
9	.73	5.0	3.0	1.6	.76	.76	149	11	11	.62	.26	.22
10	.73	4.9	2.9	1.5	.76	.76	128	10	8.6	.54	.34	.20
11	.72	4.7	2.9	1.4	.76	.76	107	9.7	7.0	.50	.58	.22
12	.70	4.6	2.9	1.3	.76	.76	92	8.4	6.2	.43	.47	.28
13	1.0	4.5	2.8	1.3	.76	.76	78	8.1	5.9	.44	.46	.29
14	1.5	5.1	2.8	1.2	.76	.80	67	8.3	5.6	.39	.38	.29
15	2.2	4.3	2.8	1.2	.76	1.7	60	8.0	7.3	1.7	.34	.29
16	2.6	4.2	2.7	1.1	.76	5.5	54	7.2	7.6	2.6	.47	.24
17	3.4	4.2	2.7	1.1	.76	22	49	8.0	6.2	1.4	.76	.24
18	4.0	4.1	2.7	1.0	.76	100	48	7.5	5.2	1.9	.65	.23
19	4.7	4.0	2.7	1.0	.76	168	46	6.8	4.7	1.4	.49	.25
20	4.7	3.9	2.7	.95	.76	285	42	6.3	4.1	1.3	.41	.29
21	4.8	3.9	2.6	.92	.76	306	37	7.2	3.9	1.4	.31	.29
22	4.8	3.8	2.6	.90	.76	321	33	7.1	3.5	1.4	.35	.20
23	5.0	3.8	2.6	.86	.76	233	30	6.5	3.0	1.0	.38	.17
24	4.8	3.7	2.6	.84	.76	274	27	6.0	3.1	1.0	.34	.19
25	5.0	3.7	2.6	.82	.76	241	24	5.4	2.7	.83	.30	.26
26	4.9	3.6	2.5	.80	.76	243	23	5.0	2.3	.58	.34	.25
27	5.2	3.5	2.5	.80	.76	213	21	4.8	2.5	.61	.34	.23
28	5.3	3.5	2.5	.78	.76	259	20	4.1	2.0	.69	.38	.24
29	6.1	3.4	2.5	.78	.76	290	18	3.9	1.7	.56	.38	.25
30	8.4	3.4	2.4	.78	---	350	18	4.8	1.4	.47	.31	.24
31	15	---	2.4	.76	---	420	---	4.8	---	.43	.29	---
TOTAL	102.24	152.4	86.6	40.69	22.04	3742.88	2851	271.9	194.2	30.22	12.06	7.30
MEAN	3.30	5.08	2.79	1.31	.76	121	95.0	8.77	6.47	.97	.39	.24
MAX	15	14	3.3	2.4	.76	420	303	17	19	2.6	.76	.29
MIN	.70	3.4	2.4	.76	.76	.76	18	3.9	1.4	.39	.26	.17
CFSM	.007	.01	.006	.003	.002	.27	.21	.02	.01	.002	.001	.001
IN.	.01	.01	.01	.00	.00	.31	.24	.02	.02	.00	.00	.00
AC-FT	203	302	172	81	44	7420	5650	539	385	60	24	14

CAL YR 1979 TOTAL 31618.49 MEAN 86.6 MAX 1760 MIN .42 CFSM .19 IN 2.63 AC-FT 62720
WTR YR 1980 TOTAL 7513.53 MEAN 20.5 MAX 420 MIN .17 CFSM .05 IN .63 AC-FT 14900

05291000 WHETSTONE RIVER NEAR BIG STONE CITY, SD

LOCATION.--Lat 45°17'32", long 96°29'14", in SE¼NW¼ sec.18, T.121 N., R.46 W., Grant County, Hydrologic Unit 07020001, on right bank 20 ft (6 m) downstream from former highway bridge site, 1.5 mi (2.4 km) west of Big Stone City, and 4.5 mi (7.2 km) upstream from Big Stone Lake.
DRAINAGE AREA.--389 mi^2 (1,008 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1910 to November 1912 (no winter records), and March 1931 to current year. Monthly discharge only for some periods, published in WSP 1308.
REVISED RECORDS.--WSP 895: Drainage area. WSP 1308: 1932(M), 1935(M).
GAGE.--Water-stage recorder. Datum of gage is 996.96 ft (303.873 m) adjustment of 1912. Mar. 8, 1910, to Nov. 30, 1912, nonrecording gage 2 mi (3 km) downstream at different datum. Mar. 18, 1931, to May 3, 1939, nonrecording gage at site 20 ft (6 m) upstream at present datum. May 4, 1939, to Nov. 8, 1952, water-stage recorder at site 80 ft (24 m) downstream at present datum.
REMARKS.--Records good.
AVERAGE DISCHARGE.--49 years (water years 1932-80), 48.6 ft^3/s (1,376 m^3/s), 1.70 in/yr (43 mm/yr), 35,210 acre-ft/yr (43.4 hm^3/yr), median of yearly mean discharges, 35.1 ft^3/s (0.99 m^3/s), 1.23 in/yr (31 mm/yr), 25,430 acre-ft/yr (31.4 hm^3/yr).
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,870 ft^3/s (195 m^3/s) Apr. 8, 1969, gage height, 14.32 ft (4.365 m) from floodmark; no flow at times in most years.
EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, about 26 ft (8 m) in June 1919, present site and datum, from information by local resident, discharge 29,000 ft^3/s (821 m^3/s).
EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 200 ft^3/s (5.66 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Mar. 20	1500	*774	21.9	a*6.79	2.070	Mar. 31	1330	415	11.8	a5.92	1.804

a Backwater from ice.

Minimum discharge, 0.36 ft^3/s (0.010 m^3/s) Sept. 17, gage height, 1.32 ft (0.402 m); minimum gage height, 1.03 ft (0.314 m) Aug. 9.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	41	8.4	10	8.4	8.4	280	15	13	6.2	2.3	3.2
2	7.8	23	11	6.3	8.4	8.4	210	14	20	5.9	2.2	2.8
3	8.3	17	11	8.7	8.4	8.4	153	13	18	5.6	2.3	2.1
4	9.1	12	11	9.8	8.4	8.4	134	12	24	6.3	2.1	2.1
5	9.4	10	11	10	8.4	8.4	114	11	46	6.2	2.2	2.1
6	10	8.8	11	8.0	8.4	8.4	103	9.5	80	6.0	2.6	2.3
7	9.9	8.6	9.5	6.1	8.4	8.4	101	8.8	129	5.5	2.4	2.1
8	9.5	8.1	8.9	5.5	8.4	8.2	102	8.1	100	5.3	1.8	2.0
9	9.8	8.0	11	5.5	8.4	9.5	103	7.9	101	5.1	1.8	1.8
10	9.8	7.6	16	7.4	8.4	9.8	97	9.9	86	5.0	2.3	1.8
11	11	7.9	6.3	7.1	8.4	8.2	80	13	56	6.2	2.7	1.8
12	12	7.6	10	5.5	8.4	8.0	65	10	38	6.2	4.1	1.8
13	12	7.4	7.4	8.4	8.4	7.8	52	9.8	30	5.9	4.7	1.8
14	13	7.6	7.6	14	8.4	8.4	43	8.7	23	5.6	4.1	1.8
15	12	7.9	8.4	16	8.4	30	38	8.6	17	6.2	3.8	1.7
16	12	8.0	6.3	16	8.4	100	35	8.7	15	8.0	5.3	1.7
17	12	8.6	11	15	8.4	165	34	7.9	13	9.0	6.7	1.7
18	12	9.5	14	14	8.4	190	32	7.6	11	8.7	6.1	1.7
19	14	9.5	13	12	8.4	327	30	7.3	9.9	6.7	5.3	1.6
20	14	10	13	9.8	8.4	545	30	6.7	8.5	6.2	4.9	1.6
21	13	9.0	13	11	8.4	555	30	6.2	8.2	5.4	4.2	1.6
22	13	8.7	13	11	8.4	270	29	5.7	7.9	5.0	3.4	1.6
23	14	8.4	13	8.7	8.4	145	26	4.9	7.4	4.5	3.6	1.6
24	14	8.9	12	8.7	8.4	125	24	4.0	7.3	4.2	3.4	1.5
25	15	8.7	11	8.6	8.4	130	23	3.9	7.3	4.0	2.9	1.5
26	14	9.2	10	8.4	8.4	100	21	3.8	6.7	3.6	2.9	1.5
27	14	9.2	11	8.4	8.4	115	19	3.7	7.8	3.1	3.0	1.4
28	13	7.4	11	8.4	8.4	170	18	3.4	8.1	2.7	2.8	1.4
29	13	7.4	11	8.4	8.4	260	17	3.0	6.6	2.9	2.7	1.3
30	16	7.4	11	8.4	---	310	16	4.2	6.2	2.5	2.9	1.3
31	36	---	10	8.4	---	335	---	5.0	---	2.8	2.9	---
TOTAL	390.2	312.4	331.8	293.5	243.6	3990.7	2059	245.3	911.9	166.5	104.4	54.2
MEAN	12.6	10.4	10.7	9.47	8.40	129	68.6	7.91	30.4	5.37	3.37	1.81
MAX	36	41	16	16	8.4	555	280	15	129	9.0	6.7	3.2
MIN	7.6	7.4	6.3	5.5	8.4	7.8	16	3.0	6.2	2.5	1.8	1.3
CFSM	.03	.03	.03	.02	.02	.33	.18	.02	.08	.01	.009	.005
IN.	.04	.03	.03	.03	.02	.38	.20	.02	.09	.02	.01	.01
AC-FT	774	620	658	582	483	7920	4080	487	1810	330	207	108

CAL YR 1979 TOTAL 41969.1 MEAN 115 MAX 3660 MIN 4.4 CFSM .30 IN 4.01 AC-FT 83250
WTR YR 1980 TOTAL 9103.5 MEAN 24.9 MAX 555 MIN 1.3 CFSM .06 IN .87 AC-FT 18060

05291000 WHETSTONE RIVER NEAR BIG STONE CITY, SD--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-62, 1967-69, 1974 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1973 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1973 to current year.

REMARKS.--During the winter period, daily sediment concentrations were estimated on the basis of water records and monthly sediment samples. Water temperature was obtained when sediment samples were collected.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum daily (water years 1973-79), 34.0°C July 7, 1974; minimum daily, 0.0°C many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,540 mg/L Mar. 27, 1979; minimum daily mean, 0 mg/L on July 30, 31, Aug. 1-7, 24-26, 1976.
SEDIMENT LOADS: Maximum daily, 4,370 tons (3,960 tonnes) Apr. 13, 1979; minimum daily, 0 ton (0 tonne) on July 30, 31, Aug. 1-7, 24-26, 1976.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Minimum daily, 0.0°C many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 214 mg/L Mar. 31; minimum daily mean, 17 mg/L Apr. 10.
SEDIMENT LOADS: Maximum daily, 194 tons (176 tonnes) Mar. 31; minimum daily, 0.08 ton (0.07 tonnes).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.0	4.0	---	---		---	2.0		---	---	30.0	19.5
2	---	---	---	---		---	4.0		---	---	28.0	21.0
3	---	---	---	---		---	6.0		---	---	29.5	25.0
4	---	---	---	---		---	6.0		---	---	26.5	22.5
5	---	---	---	---		---	---		---	---	24.5	25.0
6	---	---	---	---		---	6.0		---	---	---	---
7	---	---	---	---		.0	7.0		---	---	29.5	---
8	---	---	---	---		---	7.0		---	---	24.0	---
9	---	---	---	---		---	7.0		19.0	---	21.0	---
10	---	---	1.5	---		---	8.0		---	30.0	25.0	---
11	---	---	---	---		---	8.0		---	---	26.0	---
12	---	---	---	---		---	8.0		---	---	22.5	---
13	---	---	---	---		---	---		---	---	23.5	---
14	---	---	---	---		---	---		---	---	27.5	---
15	---	---	---	---		---	---		---	26.5	24.0	21.5
16	---	---	---	---		1.0	---		---	---	18.5	---
17	---	---	---	---		2.0	---		---	---	19.5	16.5
18	---	---	---	---		2.0	---		---	---	24.0	17.0
19	---	---	---	---		1.0	---		---	---	23.5	15.5
20	---	---	---	---		2.0	---		---	---	25.5	13.5
21	---	---	---	---		1.0	---		---	21.5	24.5	16.0
22	---	---	---	---		---	---		---	25.5	22.0	15.5
23	---	---	---	.0		2.0	---		---	26.5	27.0	---
24	---	---	---	---		2.0	---		---	27.5	---	15.0
25	---	---	---	---		2.0	---		---	27.5	24.5	14.0
26	---	---	---	---		2.0	---		---	27.5	19.5	14.5
27	---	---	---	---		2.0	---		---	---	21.5	13.0
28	---	---	---	---		2.0	---		---	26.5	25.5	16.0
29	---	---	---	---		2.0	---		---	27.0	25.5	18.5
30	---	---	---	---		2.0	---		---	27.5	25.5	---
31	---	---	---	---		2.5	---		---	27.5	17.5	---

05291000 WHETSTONE RIVER NEAR BIG STONE CITY, SD--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	64	1.3	31	3.4	57	1.3	62	1.7	58	1.3	55	1.2
2	102	2.1	32	2.0	58	1.7	62	1.1	58	1.3	55	1.2
3	100	2.2	33	1.5	59	1.8	62	1.5	58	1.3	55	1.2
4	97	2.4	34	1.1	60	1.8	62	1.6	58	1.3	54	1.2
5	95	2.4	34	.92	61	1.8	62	1.7	58	1.3	54	1.2
6	93	2.5	35	.83	62	1.8	62	1.3	58	1.3	54	1.2
7	90	2.4	36	.84	62	1.6	62	1.0	58	1.3	54	1.2
8	88	2.3	37	.81	63	1.5	61	.91	58	1.3	54	1.2
9	85	2.2	38	.82	64	1.9	61	.91	57	1.3	53	1.4
10	83	2.2	39	.80	65	2.8	61	1.2	57	1.3	53	1.4
11	80	2.4	40	.85	65	1.1	61	1.2	57	1.3	53	1.2
12	78	2.5	41	.84	65	1.8	61	.91	57	1.3	53	1.1
13	75	2.4	41	.82	65	1.3	61	1.4	57	1.3	53	1.1
14	72	2.5	42	.86	65	1.3	61	2.3	57	1.3	57	1.3
15	70	2.3	43	.92	64	1.5	61	2.6	57	1.3	66	5.3
16	68	2.2	44	.95	64	1.1	60	2.6	57	1.3	39	11
17	66	2.1	45	1.0	64	1.9	60	2.4	56	1.3	56	25
18	63	2.0	46	1.2	64	2.4	60	2.3	56	1.3	83	43
19	61	2.3	47	1.2	64	2.2	60	1.9	56	1.3	63	56
20	59	2.2	48	1.3	64	2.2	60	1.6	56	1.3	35	52
21	56	2.0	48	1.2	64	2.2	60	1.8	56	1.3	38	57
22	54	1.9	49	1.2	64	2.2	60	1.8	56	1.3	32	23
23	52	2.0	50	1.1	63	2.2	60	1.4	56	1.3	25	9.8
24	49	1.9	51	1.2	63	2.0	59	1.4	56	1.3	33	11
25	46	1.9	52	1.2	63	1.9	59	1.4	55	1.2	24	8.4
26	44	1.7	53	1.3	63	1.7	59	1.3	55	1.2	37	10
27	42	1.6	54	1.3	63	1.9	59	1.3	55	1.2	29	9.0
28	39	1.4	55	1.1	63	1.9	59	1.3	55	1.2	30	14
29	37	1.3	55	1.1	63	1.9	59	1.3	55	1.2	87	61
30	35	1.5	56	1.1	63	1.9	59	1.3	---	---	163	136
31	33	3.2	---	---	62	1.7	59	1.3	---	---	214	194
TOTAL	---	65.3	---	34.76	---	56.3	---	47.73	---	37.2	---	742.6
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	165	125	38	1.5	63	2.2	57	.95	81	.50	54	.47
2	87	49	38	1.4	55	3.0	57	.91	50	.30	50	.38
3	22	9.1	38	1.3	48	2.3	57	.86	47	.29	23	.13
4	18	6.5	38	1.2	57	3.7	57	.97	56	.32	52	.29
5	18	5.5	38	1.1	86	11	57	.95	67	.40	27	.15
6	19	5.3	38	.97	86	19	57	.92	59	.41	24	.15
7	20	5.5	38	.90	206	72	57	.85	43	.28	21	.12
8	20	5.5	38	.83	148	40	57	.82	68	.33	22	.12
9	18	5.0	38	.81	117	32	57	.78	90	.44	22	.11
10	17	4.5	58	1.6	93	22	57	.77	53	.33	49	.24
11	23	5.0	63	2.2	71	11	68	1.1	68	.50	73	.35
12	37	6.5	40	1.1	61	6.3	52	.87	63	.70	53	.26
13	39	5.5	38	1.0	57	4.6	45	.72	65	.82	34	.17
14	39	4.5	38	.89	56	3.5	51	.77	105	1.2	43	.21
15	39	4.0	38	.88	56	2.6	57	.95	52	.53	30	.14
16	39	3.7	38	.89	56	2.3	74	1.6	46	.66	29	.13
17	39	3.6	38	.81	56	2.0	65	1.6	49	.89	50	.23
18	38	3.3	38	.78	56	1.7	60	1.4	65	1.1	91	.42
19	38	3.1	38	.75	56	1.5	61	1.1	102	1.5	43	.19
20	38	3.1	38	.69	56	1.3	65	1.1	67	.89	60	.26
21	38	3.1	38	.64	56	1.2	80	1.2	89	1.0	66	.29
22	38	3.0	38	.58	56	1.2	81	1.1	67	.62	38	.16
23	38	2.7	38	.50	56	1.1	85	1.0	52	.51	36	.16
24	38	2.5	38	.41	56	1.1	82	.93	55	.50	69	.28
25	38	2.4	38	.40	57	1.1	64	.69	103	.81	49	.20
26	38	2.2	38	.39	57	1.0	47	.46	48	.38	48	.19
27	38	1.9	38	.38	57	1.2	47	.39	37	.30	61	.23
28	38	1.8	38	.35	57	1.2	72	.52	39	.29	49	.19
29	38	1.7	38	.31	57	1.0	59	.46	45	.33	23	.08
30	38	1.6	38	.43	57	.95	68	.46	66	.52	32	.11
31	---	---	39	.53	---	---	104	.79	47	.37	---	---
TOTAL	---	286.1	---	26.52	---	255.05	---	27.99	---	18.02	---	6.41

TOTAL LOAD FOR YEAR: 1603.98 TONS.

05291500 BIG STONE LAKE AT ORTONVILLE, MN

LOCATION.--Lat 45°18'18", long 96°26'57", in NW¼SW¼ sec.9, T.121 N., R.46 W.; Big Stone County, Hydrologic Unit 07020001, at powerplant intake at west edge of Ortonville, 0.5 mi (0.8 km) north of concrete dam at outlet, 0.5 mi (0.8 km) southwest of Ortonville.

PERIOD OF RECORD.--March 1937 to current year.

GAGE.--Nonrecording gage read once a day. Datum of gage is 957.69 ft (291.904 m) National Geodetic Vertical Datum of 1929. Prior to Sept. 17, 1947, nonrecording gage at site 0.5 mi (0.8 km) south at same datum. Sept. 18, 1947, to June 30, 1963, water-stage recorder at site 0.5 mi (0.8 km) south at same datum. Sept. 21, 1959, to June 30, 1963, supplementary nonrecording gage read once daily, at present site and datum.

REMARKS.--Natural lake with concrete dam at outlet. Fixed crest of dam is at 5.95 ft (1.814 m), with one 5 ft (1.5 m) and two 2.5 ft (0.76 m) gates with lowest sill at 0.71 ft (0.22 m).
Silt barrier dam 700 ft (213 m) upstream in outlet channel of lake completed July 7, 1958; crest at 5.9 ft (1.80 m). Supplementary nonrecording gage readings used for stages below crest of silt barrier to June 30, 1963. Water level subject to fluctuation caused by wind action.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 12.73 ft (3.880 m) Apr. 17, 1952; minimum observed, 3.53 ft (1.076 m) Mar. 2, 1957 (strong upstream wind in channel). Minimum observations of 3.10 ft (0.945 m) Mar. 2, 1940 and 2.20 ft (0.671 m) Nov. 20, 1940 at spillway site are the result of blockage of channel to spillway by ice and snow and do not represent lake elevations.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 8.43 ft (2.569 m) Apr. 7; minimum observed, 6.40 ft (1.951 m) Oct. 26.

GAGE HEIGHT, IN FEET, OCTOBER 1979 TO SEPTEMBER 1980

Oct. 31 ..... 7.15	Feb. 29 ..... 7.40	June 30 ..... 7.46
Nov. 30 ..... 7.00	Mar. 31 ..... 8.33	July 31 ..... 7.31
Dec. 31 ..... 7.10	Apr. 30 ..... 7.66	Aug. 31 ..... 7.10
Jan. 31 ..... 7.24	May 31 ..... 7.51	Sept. 30 ..... 6.80

NOTE.--Gage-height record other than that shown above is available in the District office.

05292000 MINNESOTA RIVER AT ORTONVILLE, MN

LOCATION.--Lat 45°17'44", long 96°26'38", in NE¼NW¼ sec.16, T.121 N., R.46 W., Big Stone County, Hydrologic Unit 07020001, on left bank 400 ft (122 m) downstream from bridge on U.S. Highway 12 and 1,300 ft (396 m) downstream from dam at outlet of Big Stone Lake, at Ortonville.

DRAINAGE AREA.--1,160 mi^2 (3,000 km^2), approximately.

PERIOD OF RECORD.--February 1938 to current year.

REVISED RECORDS.--WSP 895: 1939. WSP 1508: 1942 (yearly mean).

GAGE.--Water-stage recorder. Datum of gage is 956.38 ft (291.505 m) National Geodetic Vertical Datum of 1929. Prior to Mar. 31, 1939, nonrecording gage on downstream side of dam 1,300 ft (396 m) upstream at datum 1.31 ft (0.40 m) higher.

REMARKS.--Records good. Some regulation by Big Stone Lake (station 05291500).

AVERAGE DISCHARGE.--42 years, 110 ft^3/s (3.115 m^3/s), 79,700 acre-ft/yr (98.3 hm^3/yr); median of yearly mean discharges, 85.8 ft^3/s (2.430 m^3/s), 62,160 acre-ft/yr (76.6 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,060 ft^3/s (86.7 m^3/s) Apr. 13, 1952, gage height, 12.92 ft (3.938 m); no flow Dec. 13, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 487 ft^3/s (13.8 m^3/s) Apr. 12, gage height, 7.19 ft (2.192 m); minimum, 0.76 ft^3/s (0.022 m^3/s) Jan. 13, 14, 17, 18, 21, 25, and 26.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	88	1.1	1.1	.92	1.2	460	9.8	11	14	2.7	8.8
2	27	1.5	1.0	1.1	.92	1.2	466	7.7	8.4	14	2.9	8.1
3	41	1.2	1.1	1.1	1.0	1.2	469	7.7	6.6	14	2.5	9.2
4	20	1.2	1.4	1.0	1.0	1.3	467	7.2	15	14	3.1	9.5
5	37	1.3	1.7	1.0	1.0	1.3	453	5.0	18	15	2.9	9.1
6	19	1.2	1.5	1.0	1.0	1.3	446	3.8	49	14	3.2	8.5
7	18	1.2	1.5	1.1	1.0	1.3	454	2.5	100	15	3.7	8.1
8	17	1.3	1.2	1.0	1.0	1.3	461	1.9	72	17	3.9	9.7
9	15	1.2	1.2	1.0	1.0	1.3	463	1.8	62	19	3.9	9.4
10	8.5	1.1	1.4	1.0	1.0	1.3	427	2.3	54	18	4.6	8.8
11	8.2	1.1	1.3	.92	1.1	1.3	427	1.9	52	17	5.4	8.7
12	6.6	1.2	1.2	.92	1.1	1.3	429	1.9	52	18	8.0	8.8
13	5.4	1.2	1.4	.83	1.1	1.3	384	1.9	93	15	15	8.7
14	4.8	1.2	1.3	.92	1.1	1.3	353	1.8	45	18	12	7.2
15	5.5	1.2	1.3	1.1	1.1	1.3	367	1.8	14	23	11	5.4
16	4.5	1.2	1.2	1.0	1.1	1.9	319	1.8	14	20	9.8	3.4
17	3.6	1.2	1.3	.92	1.1	2.1	258	1.9	14	13	10	2.6
18	2.4	1.2	1.3	.92	1.2	9.8	192	2.5	14	15	9.6	2.7
19	2.1	1.3	1.3	.92	1.2	91	199	3.4	14	11	11	2.4
20	1.6	1.3	1.6	.92	1.2	163	170	3.8	14	14	13	2.6
21	1.5	1.4	1.5	1.0	1.2	253	156	3.4	14	14	16	2.5
22	1.9	1.3	1.3	1.0	1.2	201	246	3.4	14	9.3	16	3.1
23	1.5	1.4	1.3	1.0	1.2	212	170	4.2	14	6.1	18	2.6
24	1.3	1.2	1.3	1.0	1.2	225	137	5.5	14	3.8	17	2.8
25	1.2	1.2	1.1	.92	1.2	233	133	5.5	14	4.9	15	2.9
26	1.2	1.4	1.2	.92	1.2	245	116	5.5	14	3.8	11	2.7
27	1.4	1.3	1.1	.92	1.2	265	117	7.7	14	3.1	11	2.8
28	1.2	1.3	1.1	.92	1.2	277	102	6.0	16	3.4	9.9	2.4
29	1.3	1.3	1.1	.92	1.2	291	62	5.5	14	2.9	9.9	2.7
30	4.0	1.2	1.1	.92	---	317	10	9.1	14	2.9	9.7	3.5
31	46	---	1.2	.92	---	348	---	7.2	---	2.7	9.0	---
TOTAL	338.7	124.3	39.6	30.21	31.94	3154.0	8913	135.4	864.0	374.9	280.7	169.7
MEAN	10.9	4.14	1.28	.97	1.10	102	297	4.37	28.8	12.1	9.05	5.66
MAX	46	88	1.7	1.1	1.2	348	469	9.8	100	23	18	9.7
MIN	1.2	1.1	1.0	.83	.92	1.2	10	1.8	6.6	2.7	2.5	2.4
CFSM	.009	.004	.001	.001	.001	.09	.26	.004	.03	.01	.008	.005
IN.	.01	.00	.00	.00	.00	.10	.29	.00	.03	.01	.01	.01
AC-FT	672	247	79	60	63	6260	17680	269	1710	744	557	337

CAL YR 1979 TOTAL 90897.70 MEAN 249 MAX 2220 MIN 1.0 CFSM .22 IN 2.91 AC-FT 180300
WTR YR 1980 TOTAL 14456.45 MEAN 39.5 MAX 469 MIN .83 CFSM .03 IN .46 AC-FT 28670

05293000 YELLOW BANK RIVER NEAR ODESSA, MN

LOCATION.--Lat 45°13'35", long 96°21'12", in SE¼SE¼ sec.1, T.120 N., R.46 W., Lac qui Parle County, Hydrologic Unit 07020001, on left bank 150 ft (46 m) downstream from highway bridge, 2.5 mi (4.0 km) southwest of Odessa, and 4.5 mi (7.2 km) upstream from mouth.

DRAINAGE AREA.--398 mi^2 (1,031 km^2).

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1388: 1947(M), 1950.

GAGE.--Water-stage recorder. Datum of gage is 953.34 ft (290.578 m) National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to Aug. 28, 1940, nonrecording gage at site 150 ft (46 m) upstream at same datum.

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

AVERAGE DISCHARGE.--41 years, 57.8 ft^3/s (1.637 m^3/s), 1.97 in/yr (50 mm/yr), 41,880 acre-ft/yr (51.6 hm^3/yr); median of yearly mean discharges, 48.6 ft^3/s (1.376 m^3/s), 1.66 in/yr (42 mm/yr), 35,210 acre-ft/yr (43.4 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,970 ft^3/s (197 m^3/s) Apr. 9, 1969, gage height, 19.07 ft (5.813 m) from floodmark; no flow at times in several years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 300 ft^3/s (8.50 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Mar. 20	2115	330	9.34	a5.67	1.728	June 9	0345	*755	21.4	*6.36	1.939

a Backwater from ice.

Minimum discharge, no flow Mar. 4-14; minimum gage height, 1.67 ft (0.509 m) Sept. 9, 10, 11.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	50	12	12	6.4	.30	191	18	2.6	18	3.1	1.2
2	6.2	59	12	12	6.3	.20	195	17	5.0	16	3.1	1.1
3	6.5	61	12	12	6.1	.14	175	15	7.1	15	3.0	.94
4	7.3	47	13	11	5.9	.00	151	14	25	15	2.7	.94
5	8.6	42	15	11	5.7	.00	130	12	112	14	2.5	.86
6	10	36	16	11	5.5	.00	124	11	390	13	2.4	.86
7	9.9	30	16	10	5.3	.00	119	9.4	661	12	2.3	.79
8	10	27	15	10	5.1	.00	108	8.9	597	11	2.2	.72
9	11	23	17	10	4.9	.00	100	8.2	636	11	2.1	.60
10	10	22	17	9.8	4.6	.00	100	7.6	358	11	2.3	.55
11	11	20	15	9.6	4.4	.00	88	7.5	245	9.6	3.4	.72
12	12	17	15	9.4	4.2	.00	78	7.2	175	8.5	3.0	.79
13	12	21	15	9.3	4.0	.00	69	6.6	136	7.9	3.5	.79
14	13	19	15	9.1	3.7	.00	61	6.1	105	7.1	3.2	.79
15	14	18	15	8.9	3.6	5.8	54	5.9	82	7.2	2.6	.72
16	13	19	15	8.8	3.4	34	49	5.5	68	8.1	3.6	.60
17	13	18	15	8.6	3.2	80	44	5.0	57	7.0	4.8	.55
18	16	18	15	8.4	3.0	110	41	4.7	49	6.5	4.8	.55
19	14	17	14	8.3	2.8	240	38	4.3	41	14	4.5	.55
20	19	16	14	8.1	2.6	289	37	4.0	35	13	3.9	.55
21	28	15	14	7.9	2.4	270	36	3.8	31	10	2.7	.55
22	29	14	14	7.8	2.2	226	35	3.2	27	8.4	2.2	.55
23	28	14	14	7.7	2.0	166	35	2.9	23	7.1	1.7	.45
24	28	14	14	7.5	1.6	193	31	2.3	21	6.0	1.4	.50
25	31	14	13	7.4	1.5	124	29	1.9	19	5.4	1.3	.55
26	31	13	13	7.2	1.1	131	28	1.6	17	4.9	1.3	.55
27	32	12	13	7.1	.80	113	26	1.4	21	4.4	1.3	.45
28	31	12	13	7.0	.56	120	24	1.1	22	4.1	1.3	.45
29	32	12	13	6.8	.54	137	23	1.0	19	3.8	1.2	.45
30	36	12	13	6.7	---	189	20	1.3	19	3.4	1.3	.45
31	52	---	12	6.6	---	200	---	1.6	---	3.2	1.2	---
TOTAL	580.2	712	439	277.0	103.40	2628.44	2239	200.0	4005.7	285.6	79.9	20.12
MEAN	18.7	23.7	14.2	8.94	3.57	84.8	74.6	6.45	134	9.21	2.58	.67
MAX	52	61	17	12	6.4	289	195	18	661	18	4.8	1.2
MIN	5.7	12	12	6.6	.54	.00	20	1.0	2.6	3.2	1.2	.45
AC-FT	1150	1410	871	549	205	5210	4440	397	7950	566	158	40

CAL YR 1979 TOTAL 35117.10 MEAN 96.2 MAX 2470 MIN 2.9 AC-FT 69650
WTR YR 1980 TOTAL 11570.36 MEAN 31.6 MAX 661 MIN .00 AC-FT 22950

05293000 YELLOW BANK RIVER NEAR ODESSA, MN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1961-62, 1974 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1973 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1973 to current year.

REMARKS.--During the winter period, suspended-sediment samples were collected monthly and daily sediment concentration was estimated on the basis of water records and monthly sediment samples. Water temperature was obtained once daily during open water period and monthly for the winter period.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum daily, 29.0°C July 10, 1974, July 17, 1975; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 731 mg/L Apr. 13, 1979; minimum daily mean, no flow for several days during 1976, 1977, 1980.
SEDIMENT LOADS: Maximum daily, 4,880 tons (4,430 tonnes) Apr. 13, 1979; minimum daily, no flow for several days during 1976, 1977, 1980.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum daily, 28.0°C July 6, 12; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 349 mg/L June 6; minimum daily mean, no flow Mar. 4-14.
SEDIMENT LOADS: Maximum daily, 518 tons (470 tonnes) June 7; minimum daily, 0.00 ton (0.00 tonne) Mar. 1-14.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.0	3.5	1.0	1.0		---	1.0	15.0	19.0	22.0	20.0	19.0
2	11.0	4.0	2.0	.0		---	1.0	15.0	19.0	19.0	22.0	20.0
3	12.0	3.0	1.0	.5		---	1.0	16.0	22.0	21.0	22.0	21.0
4	10.0	3.0	1.0	1.0		---	2.0	19.0	19.0	21.0	24.0	18.0
5	11.0	6.0	2.0	1.0		---	7.0	17.0	20.0	22.0	23.0	18.0
6	8.0	3.0	1.0	1.0		---	7.0	14.0	19.5	28.0	24.0	19.0
7	12.0	3.0	1.0	1.0		---	9.0	10.0	19.0	26.0	26.0	23.0
8	10.0	3.0	1.0	1.0		---	7.0	9.0	18.0	23.0	25.0	23.0
9	8.0	2.0	1.0	1.0		---	7.0	10.0	18.0	22.0	23.0	18.0
10	8.0	2.0	1.5	1.0		---	7.0	12.0	19.0	23.0	23.0	15.0
11	8.0	3.0	1.0	1.0		---	8.0	10.0	18.0	26.0	23.0	17.0
12	7.0	2.0	1.0	1.0		---	7.0	11.0	18.0	28.0	23.0	18.0
13	5.0	2.0	1.0	---		---	9.0	11.0	18.0	24.0	23.0	17.0
14	7.0	2.0	.5	---		---	8.0	10.0	20.0	27.0	23.0	17.0
15	6.0	3.0	1.0	---		---	10.0	10.0	24.0	25.0	19.5	15.0
16	8.0	4.0	.5	---		---	10.0	12.0	20.0	23.0	18.0	15.0
17	8.0	4.0	1.0	---		---	13.0	14.0	21.0	23.0	19.0	13.0
18	9.0	3.0	.0	---		---	14.0	19.0	21.0	23.0	18.0	13.0
19	10.0	4.0	2.0	---		2.0	17.0	19.0	20.0	23.0	21.0	13.0
20	12.0	3.0	3.0	---		1.0	15.0	15.0	20.0	20.0	22.0	13.0
21	10.0	5.0	3.0	---		.0	19.0	16.0	19.0	22.0	21.0	14.0
22	8.0	3.0	2.0	---		---	19.0	18.0	19.0	19.0	19.0	13.0
23	6.0	3.0	1.0	.0		1.0	17.0	19.0	24.0	20.0	19.0	10.0
24	5.0	2.0	1.0	---		2.0	13.0	19.0	23.0	23.0	24.0	10.0
25	5.0	2.0	2.0	---		2.0	17.0	22.0	21.0	23.0	25.0	11.0
26	6.0	1.0	2.0	---		1.0	13.0	21.0	26.0	20.0	20.0	8.0
27	8.0	1.0	2.0	---		2.0	14.0	20.0	24.0	23.0	18.0	7.0
28	10.0	1.0	1.0	---		1.0	15.0	22.0	24.0	23.0	18.0	14.0
29	8.0	1.0	1.0	---		2.0	14.0	21.0	20.0	21.0	22.0	14.0
30	9.0	1.0	2.0	---		3.0	19.0	19.0	19.0	24.0	22.0	15.0
31	9.0	---	1.0	---		2.5	---	17.0	---	21.0	18.0	---
MEAN	8.5	3.0	1.5				10.5	15.5	20.5	23.0	21.5	15.5

05293000 YELLOW BANK RIVER NEAR ODESSA, MN--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	97	1.5	42	5.7	73	2.4	45	1.5	115	2.0	10	.00
2	73	1.2	96	15	70	2.3	61	2.0	111	1.9	7	.00
3	45	.79	117	19	62	2.0	61	2.0	108	1.8	3	.00
4	38	.75	155	20	54	1.9	73	2.2	104	1.7	0	.00
5	30	.70	86	9.8	82	3.3	63	1.9	101	1.6	0	.00
6	20	.54	123	12	63	2.7	93	2.8	97	1.4	0	.00
7	10	.27	97	7.9	42	1.8	96	2.6	93	1.3	0	.00
8	13	.35	91	6.6	83	3.4	64	1.7	89	1.2	0	.00
9	15	.45	66	4.1	80	3.7	84	2.3	86	1.1	0	.00
10	17	.46	111	6.6	63	2.9	94	2.5	82	1.0	0	.00
11	22	.65	62	3.3	67	2.7	76	2.0	79	.94	0	.00
12	12	.39	78	3.6	56	2.3	113	2.9	75	.85	0	.00
13	22	.71	88	5.0	92	3.7	117	2.9	71	.77	0	.00
14	36	1.3	78	4.0	102	4.1	120	2.9	67	.67	0	.00
15	22	.83	64	3.1	104	4.2	123	3.0	63	.61	1	.02
16	40	1.4	54	2.8	51	2.1	126	3.0	60	.55	6	.55
17	43	1.5	55	2.7	84	3.4	129	3.0	57	.49	12	2.6
18	44	1.9	108	5.2	89	3.6	132	3.0	53	.43	18	5.3
19	58	2.2	72	3.3	109	4.1	136	3.0	49	.37	62	40
20	58	3.0	62	2.7	91	3.4	139	3.0	46	.32	56	44
21	41	3.1	52	2.1	63	2.4	142	3.0	42	.27	42	31
22	23	1.8	65	2.5	95	3.6	145	3.1	39	.23	46	28
23	18	1.4	77	2.9	46	1.7	146	3.0	35	.19	53	24
24	10	.76	100	3.8	53	2.0	143	2.9	32	.14	39	20
25	10	.84	96	3.6	51	1.8	140	2.8	28	.11	36	12
26	25	2.1	73	2.6	45	1.6	136	2.6	25	.07	15	5.3
27	34	2.9	56	1.8	51	1.8	133	2.5	21	.05	22	6.7
28	32	2.7	69	2.2	64	2.2	129	2.4	17	.03	18	5.8
29	30	2.6	61	2.0	72	2.5	125	2.3	14	.02	20	7.4
30	34	3.3	97	3.1	41	1.4	122	2.2	---	---	62	32
31	39	5.5	---	---	91	2.9	118	2.1	---	---	52	28
TOTAL	---	47.89	---	169.0	---	83.9	---	79.1	---	22.11	---	292.67
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	30	15	27	1.3	92	.65	57	2.8	90	.75	36	.12
2	52	27	37	1.7	89	1.2	58	2.5	104	.87	69	.20
3	59	28	29	1.2	87	1.7	38	1.5	74	.60	66	.17
4	46	19	28	1.1	57	3.8	48	1.9	70	.51	88	.22
5	42	15	50	1.6	169	51	30	1.1	63	.43	89	.21
6	34	11	53	1.6	349	367	35	1.2	54	.35	72	.17
7	34	11	46	1.2	290	518	27	.87	62	.39	72	.15
8	32	9.3	29	.70	219	353	40	1.2	83	.49	87	.17
9	28	7.6	26	.58	242	416	46	1.4	89	.50	96	.16
10	36	9.7	41	.84	142	137	56	1.7	74	.46	108	.16
11	36	8.6	40	.81	120	79	40	1.0	72	.66	114	.22
12	38	8.0	51	.99	115	54	56	1.3	81	.66	53	.11
13	48	8.9	44	.78	117	43	63	1.3	74	.70	75	.16
14	44	7.2	39	.64	113	32	53	1.0	63	.54	74	.16
15	47	6.9	37	.59	104	23	48	.93	102	.72	69	.13
16	52	6.9	32	.48	108	20	50	1.1	105	1.0	60	.10
17	42	5.0	27	.36	92	14	47	.89	93	1.2	57	.08
18	50	5.5	24	.30	79	10	50	.88	109	1.4	76	.11
19	41	4.2	25	.29	96	11	46	1.7	103	1.3	89	.13
20	35	3.5	21	.23	80	7.6	33	1.2	85	.90	76	.11
21	35	3.4	30	.31	71	5.9	35	.95	103	.75	96	.14
22	37	3.5	31	.27	79	5.8	48	1.1	88	.52	91	.14
23	41	3.9	56	.44	109	6.8	45	.86	63	.29	147	.18
24	69	5.8	48	.30	100	5.7	51	.83	49	.19	227	.31
25	60	4.7	49	.25	111	5.7	52	.76	60	.21	152	.23
26	43	3.3	67	.29	89	4.1	56	.74	85	.30	90	.13
27	32	2.2	62	.23	66	3.7	60	.71	83	.29	54	.07
28	40	2.6	95	.28	41	2.4	69	.76	79	.28	43	.05
29	40	2.5	103	.28	44	2.3	62	.64	61	.20	66	.08
30	27	1.5	99	.35	54	2.8	81	.74	57	.20	91	.11
31	---	---	82	.35	---	---	92	.79	43	.14	---	---
TOTAL	---	250.7	---	20.64	---	2188.15	---	36.35	---	17.80	---	4.48

TOTAL LOAD FOR YEAR: 3212.79 TONS.

05294000 POMME DE TERRE RIVER AT APPLETON, MN

LOCATION.--Lat 45°12'10", long 96°01'20", in SW¼NW¼ sec.14, T.120 N., R.43 W., Swift County, Hydrologic Unit 07020002, on left bank 60 ft (18 m) upstream from bridge on U.S. Highway 59 and State Highway 119 at Appleton and 8 mi (13 km) upstream from mouth.

DRAINAGE AREA.--905 mi^2 (2,344 km^2), approximately.

PERIOD OF RECORD.--March 1931 to September 1935 (no winter records), October 1935 to current year. Prior to October 1953, published as "near Appleton."

REVISED RECORDS.--WSP 1308: 1931(M), 1937(M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 978.00 ft (298.094 m) National Geodetic Vertical Datum of 1929. Prior to Dec. 22, 1952, nonrecording gage at site 4 mi (6 km) upstream at datum 25.17 ft (7.672 m) higher.

REMARKS.--Records good except those for winter period, which are fair. Flow affected by lakes above station. Occasional regulation at low flow by old milldam 500 ft (152 m) upstream.

AVERAGE DISCHARGE.--45 years (water years 1936-80), 105 ft^3/s (2.974 m^3/s), 1.58 in/yr (40 mm/yr), 76,070 acre-ft/yr (93.8 hm^3/yr); median of yearly mean discharge, 93 ft^3/s (2.63 m^3/s), 1.40 in/yr (36 mm/yr), 67,400 acre-ft/yr (83 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,520 ft^3/s (156 m^3/s) Apr. 11, 1969, gage height, 13.78 ft (4.200 m); maximum gage height, 14.58 ft (4.444 m) Apr. 9, 1969 (backwater from ice); no flow for several periods.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft^3/s (5.66 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Mar. 21	1800	226	6.40	5.47	1.667	June 9	0800	*676	19.1	*6.51	1.984
Apr. 4	0045	485	13.7	6.12	1.865	June 23	1945	254	7.19	5.52	1.682

Minimum discharge, 26 ft^3/s (0.74 m^3/s) Nov. 10; gage height, 4.39 ft (1.338 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	170	54	45	37	40	296	138	91	136	49	68
2	50	153	54	45	36	40	310	133	99	127	48	64
3	48	118	50	43	36	41	366	128	109	119	47	58
4	48	101	47	42	34	36	383	123	98	114	44	55
5	46	92	50	43	35	38	275	119	111	112	42	51
6	46	86	53	44	36	40	268	114	340	105	39	49
7	44	86	53	37	36	43	264	112	342	101	38	48
8	44	80	50	34	36	44	268	105	530	94	38	45
9	43	70	45	35	36	46	260	101	630	92	38	42
10	42	44	44	43	36	45	260	105	456	87	39	40
11	45	73	42	40	36	45	268	107	404	82	43	46
12	50	73	38	38	35	50	264	107	370	77	43	46
13	49	87	36	37	38	47	257	103	350	72	45	57
14	50	89	39	34	39	47	243	99	351	69	45	57
15	50	85	40	38	39	48	236	95	352	69	44	54
16	46	83	38	39	39	59	229	91	292	78	56	51
17	41	83	36	38	39	61	226	89	260	102	60	50
18	45	83	34	42	39	114	218	85	238	88	66	47
19	48	83	40	46	40	174	212	80	222	79	67	47
20	49	85	45	48	40	168	205	79	207	78	67	47
21	51	85	45	47	40	174	196	76	196	88	63	47
22	52	84	44	46	40	144	193	69	185	94	66	47
23	51	82	43	45	40	138	189	66	213	87	67	46
24	53	63	43	44	40	141	180	62	210	80	66	46
25	53	57	43	43	40	133	174	59	179	73	63	50
26	51	80	43	44	40	141	166	56	164	65	62	47
27	50	67	43	44	40	166	160	54	162	60	62	48
28	49	44	43	44	40	202	154	52	169	57	59	48
29	47	35	44	46	40	226	151	56	158	53	57	51
30	56	40	44	39	---	250	144	65	144	52	63	53
31	104	---	45	38	---	260	---	68	---	51	69	---
TOTAL	1553	2461	1368	1291	1102	3201	7015	2796	7632	2641	1655	1505
MEAN	50.1	82.0	44.1	41.6	38.0	103	234	90.2	254	85.2	53.4	50.2
MAX	104	170	54	48	40	260	383	138	630	136	69	68
MIN	41	35	34	34	34	36	144	52	91	51	38	40
CFSM	.06	.09	.05	.05	.04	.11	.26	.10	.28	.09	.06	.06
IN.	.06	.10	.06	.05	.05	.13	.29	.11	.31	.11	.07	.06
AC-FT	3080	4880	2710	2560	2190	6350	13910	5550	15140	5240	3280	2990

CAL YR 1979 TOTAL 68294.5 MEAN 187 MAX 1250 MIN 6.9 CFSM .21 IN 2.81 AC-FT 135500
WTR YR 1980 TOTAL 34220.0 MEAN 93.5 MAX 630 MIN 34 CFSM .10 IN 1.41 AC-FT 67880

05300000 LAC QUI PARLE RIVER NEAR LAC QUI PARLE, MN

LOCATION.--Lat 44°59'42", long 95°55'09", in SW¼SW¼ sec.27, T.118 N., R.42 W., Lac qui Parle County, Hydrologic Unit 07020003, on right bank 40 ft (12 m) downstream from highway bridge and 0.5 mi (0.8 km) southwest of village of Lac qui Parle.

DRAINAGE AREA.--983 mi^2 (2,546 km^2).

PERIOD OF RECORD.--April 1910 to November 1914; March 1931 to current year (winter records incomplete prior to 1934). Published as "at Lac qui Parle," 1910-14.

REVISED RECORDS.--WSP 1308: 1912(M), 1935(M).

GAGE.--Water-stage recorder. Datum of gage is 951.98 ft (290.164 m) National Geodetic Vertical Datum of 1929 (Minnesota Department of Transportation benchmark). Apr. 27, 1910, to Nov. 15, 1914, nonrecording gage at site 2 mi (3 km) down stream at different datum. Mar. 17, 1931, to Mar. 9, 1937, nonrecording gage at site 40 ft (12 m) upstream at present datum.

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

AVERAGE DISCHARGE.--49 years (water years 1913, 1932, 1934-80), 123 ft^3/s (3.483 m^3/s), 1.70 in/yr (43 mm/yr), 89,110 acre-ft/yr (110 hm^3/yr); median of yearly mean discharges, 108 ft^3/s (3.059 m^3/s), 1.49 in/yr (38 mm/yr), 78,250 acre-ft/yr (96.5 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,100 ft^3/s (484 m^3/s) Apr. 10, 1969; gage height, 18.94 ft (5.773 m), from floodmark; maximum gage height, 19.37 ft (5.904 m) Apr. 9, 1965, from floodmark, (backwater from ice); no flow at times in several years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,370 ft^3/s (38.8 m^3/s) June 8, gage height, 5.33 ft (1.625 m); maximum gage height, 5.98 ft (1.823 m) Mar. 21 (backwater from ice); minimum, 0.23 ft^3/s (0.007 m^3/s) Sept. 21; minimum gage height, 0.33 ft (0.101 m) Sept. 7.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.9	201	72	36	13	8.1	225	83	20	278	18	3.1
2	9.9	322	66	35	12	8.1	220	73	19	219	16	2.1
3	9.5	365	62	34	12	8.0	215	68	25	177	16	2.2
4	7.5	332	60	33	12	8.0	175	64	29	158	13	1.7
5	6.6	268	59	32	12	8.0	171	60	135	140	15	1.2
6	6.6	221	59	31	11	8.0	146	55	565	131	25	.87
7	6.5	190	59	28	11	8.0	144	50	1190	125	26	.65
8	6.4	165	54	23	11	8.0	137	49	1350	114	21	.65
9	6.4	149	52	21	11	8.0	137	43	1290	104	16	.69
10	8.5	132	51	20	11	8.0	136	45	980	104	13	.45
11	8.8	135	50	20	10	8.0	136	46	766	91	13	1.9
12	8.7	133	49	19	10	8.0	131	42	654	85	11	1.7
13	9.0	124	47	18	10	8.0	124	42	535	74	10	1.6
14	8.5	120	44	18	9.8	8.0	121	40	442	66	9.0	2.2
15	8.6	111	37	17	9.6	8.8	117	38	370	57	8.0	3.7
16	9.3	111	34	17	9.5	30	108	35	308	52	8.5	4.3
17	9.9	109	37	16	9.3	50	100	33	256	47	11	4.0
18	13	107	40	16	9.2	95	98	34	212	48	13	3.3
19	16	105	40	15	9.0	220	98	34	174	50	14	3.2
20	20	100	40	15	8.9	405	98	30	154	50	20	3.5
21	21	93	40	15	8.8	430	96	28	135	48	23	3.6
22	30	93	40	15	8.6	415	96	26	134	46	22	3.9
23	18	91	39	15	8.5	270	95	25	256	41	18	4.1
24	13	89	39	15	8.4	220	92	22	142	38	14	4.5
25	12	88	39	14	8.3	205	89	19	116	43	12	4.3
26	20	83	39	14	8.2	200	88	18	105	35	9.8	4.0
27	23	85	39	14	8.2	210	88	16	207	31	7.5	4.0
28	17	81	38	14	8.2	220	88	16	317	29	5.8	3.7
29	17	79	38	13	8.1	190	88	14	342	26	4.8	3.7
30	22	76	38	13	---	185	88	17	332	23	4.3	3.7
31	99	---	37	13	---	235	---	18	---	20	3.6	---
TOTAL	479.6	4358	1438	619	286.6	3701.0	3745	1183	11560	2550	421.3	82.51
MEAN	15.5	145	46.4	20.0	9.88	119	125	38.2	385	82.3	13.6	2.75
MAX	99	365	72	36	13	430	225	83	1350	278	26	4.5
MIN	6.4	76	34	13	8.1	8.0	88	14	19	20	3.6	.45
CFSM	.02	.15	.05	.02	.01	.12	.13	.04	.39	.08	.01	.003
IN.	.02	.16	.05	.02	.01	.14	.14	.04	.44	.10	.02	.00
AC-FT	951	8640	2850	1230	568	7340	7430	2350	22930	5060	836	164

CAL YR 1979	TOTAL	100584.00	MEAN	276	MAX	4340	MIN 3.9	CFSM .28	IN 3.81	AC-FT	199500
WTR YR 1980	TOTAL	30424.01	MEAN	83.1	MAX	1350	MIN .45	CFSM .09	IN 1.15	AC-FT	60350

05301000 MINNESOTA RIVER NEAR LAC QUI PARLE, MN

LOCATION.--Lat 45°01'17", long 95°52'05", in NW¼NE¼ sec.24, T.118 N., R.42 W., Chippewa County, Hydrologic Unit 07020004, on left bank 200 ft (61 m) downstream from dam at Lac qui Parle Outlet, 2.4 mi (3.9 km) northeast of village of Lac qui Parle, and 3.5 mi (5.6 km) west of Watson.

DRAINAGE AREA.--4,050 mi^2 (10,500 km^2), approximately.

PERIOD OF RECORD.--October 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 900.00 ft (274.320 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Nov. 10, 1944, at datum 0.20 ft (0.061 m) lower.

REMARKS.--Records good. Part of flow from 2,050 mi 2 (5,310 km 2) of Chippewa River basin at times diverted into Minnesota River above station. Some regulation by Big Stone Lake since Apr. 17, 1937, Lac qui Parle since January 1938, Marsh Lake since Nov. 1, 1939, and Odessa Dam since May 1974.

AVERAGE DISCHARGE.--38 years, 632 ft^3/s (17.90 m^3/s), 457,900 acre-ft/yr (565 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,400 ft^3/s (833 m^3/s) Apr. 12, 1969, gage height, 39.75 ft (12.116 m); no flow Nov. 17, 1942, Sept. 29, 1947, Oct. 19 to Nov. 18, 1951, Nov. 24, 1952, Dec. 9-11, 1976, Feb. 28 to Mar. 5, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,590 ft^3/s (45.0 m^3/s) Apr. 4, gage height, 26.64 ft (8.120 m); minimum, 5.3 ft^3/s (0.150 m^3/s) July 25, gage height, 19.97 ft (6.087 m), due to regulation.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	248	634	320	189	254	266	1230	209	40	877	44	76
2	210	1060	315	187	246	258	1400	217	40	932	107	77
3	189	1050	310	189	242	255	1450	225	41	997	108	77
4	157	1030	305	190	244	220	1580	230	41	992	45	77
5	158	1020	300	189	240	157	1580	225	97	985	23	75
6	159	1010	300	190	236	126	1580	312	247	974	33	75
7	144	998	296	190	234	125	1570	442	371	869	32	76
8	139	784	300	200	232	125	1570	482	467	691	59	76
9	139	480	300	200	233	125	1570	469	677	590	93	77
10	139	474	300	200	228	121	1550	432	883	283	93	77
11	139	471	300	200	227	120	1540	432	1040	200	43	77
12	140	468	300	200	231	121	1550	434	1200	200	22	79
13	142	467	302	200	228	118	1530	435	1240	203	28	80
14	143	372	300	205	228	118	1520	435	1320	205	49	79
15	144	281	300	204	227	119	1510	437	1370	198	60	81
16	115	285	300	231	230	110	1440	433	1360	151	70	80
17	58	289	280	261	229	103	1310	428	1320	135	70	81
18	60	293	270	257	228	103	1230	427	1300	134	58	80
19	48	291	250	252	241	103	1080	414	1280	136	65	81
20	23	292	235	252	277	118	1060	369	1140	135	55	80
21	26	291	225	252	282	143	1040	317	955	136	70	81
22	25	288	216	241	277	197	963	281	934	136	81	81
23	36	313	214	240	273	314	800	238	936	137	82	80
24	47	344	214	240	272	375	683	214	929	139	82	77
25	36	343	216	240	270	487	647	182	927	94	81	77
26	34	338	202	290	268	561	556	156	913	143	85	78
27	33	334	190	285	262	663	557	110	893	144	85	77
28	34	331	190	278	259	815	508	58	899	144	86	78
29	34	325	190	270	266	878	453	41	898	125	82	78
30	36	320	190	265	---	882	346	41	879	78	76	96
31	143	---	190	260	---	955	---	41	---	29	76	---
TOTAL	3178	15276	8120	7047	7164	9181	35403	9166	24637	11192	2043	2364
MEAN	103	509	262	227	247	296	1180	296	821	361	65.9	78.8
MAX	248	1060	320	290	282	955	1580	482	1370	997	108	96
MIN	23	281	190	187	227	103	346	41	40	29	22	75
AC-FT	6300	30300	16110	13980	14210	18210	70220	18180	48870	22200	4050	4690

CAL YR 1979 TOTAL 444901.8 MEAN 1219 MAX 10500 MIN 1.8 AC-FT 882500
WTR YR 1980 TOTAL 134771.0 MEAN 368 MAX 1580 MIN 22 AC-FT 267300

05304500 CHIPPEWA RIVER NEAR MILAN, MN

LOCATION.--Lat 45°06'39", long 95°47'57", in SE¼SE¼ sec.16, T.119 N., R.41 W., Chippewa County, Hydrologic Unit 07020005, on right bank 800 ft (240 m) upstream from bridge on State Highway 40, 2.0 mi (3.2 km) upstream from small tributary, and 5.5 mi (8.8 km) east of Milan.

DRAINAGE AREA.--1,870 mi^2 (4,840 km^2), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1937 to current year.

REVISED RECORDS.--WSP 1145: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 959.69 ft (292.514 m) National Geodetic Vertical Datum of 1929. Prior to June 15, 1942, nonrecording gage on bridge 800 ft (240 m) downstream at same datum.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by several small lakes above gage.

AVERAGE DISCHARGE.--43 years, 266 ft^3/s (7.533 m^3/s), 1.93 in/yr (49 mm/yr), 192,700 acre-ft/yr (238 hm^3/yr); median of yearly mean discharges, 221 ft^3/s (6.26 m^3/s), 1.60 in/yr (41 mm/yr), 160,000 acre-ft/yr (197 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,400 ft^3/s (323 m^3/s) Apr. 9, 1969, gage height, 15.45 ft (4.709 m); no flow at times during 1940.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 400 ft^3/s (11.3 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 2	0015	437	12.4	2.89	0.881	June 13	2045	880	24.9	3.70	1.128
Apr. 3	1730	1090	30.9	4.64	1.414	June 25	0200	631	17.9	3.24	0.988

Minimum daily discharge, 68 ft^3/s (1.93 m^3/s) Feb. 15 to Mar. 13; minimum gage height, 1.65 ft (0.503 m) Sept. 11.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	140	395	169	132	74	68	800	449	222	279	109	120
2	136	433	168	130	72	68	745	438	249	267	107	120
3	133	407	166	130	71	68	720	425	277	258	103	115
4	126	384	166	128	71	68	865	409	279	252	98	110
5	123	375	164	128	71	68	803	395	305	242	94	104
6	117	373	164	125	70	68	782	379	543	233	90	97
7	113	378	164	118	70	68	760	366	780	225	85	95
8	110	374	164	110	70	68	737	352	711	214	86	91
9	106	343	163	104	70	68	715	343	695	207	87	83
10	102	319	162	102	70	68	698	338	697	199	85	79
11	102	275	161	100	69	68	686	334	688	192	84	86
12	100	318	160	99	69	68	662	329	700	184	83	95
13	98	289	160	98	69	68	644	318	838	175	84	108
14	100	288	159	97	69	69	624	310	828	169	83	121
15	99	288	155	96	68	85	609	303	724	165	84	114
16	97	280	153	96	68	110	584	297	651	167	94	109
17	97	274	152	96	68	115	563	288	591	172	110	107
18	98	268	150	95	68	135	549	282	535	172	122	103
19	115	266	150	94	68	215	541	277	474	163	136	104
20	116	262	150	93	68	290	534	270	430	158	129	108
21	125	257	148	93	68	300	532	258	399	152	118	109
22	131	252	146	92	68	250	523	248	386	150	112	118
23	129	245	144	91	68	165	511	236	568	144	105	110
24	131	240	142	90	68	135	504	230	535	141	102	100
25	128	225	140	90	68	125	499	223	426	142	101	100
26	125	210	140	88	68	140	494	219	365	135	101	102
27	125	200	140	86	68	200	491	205	335	132	100	102
28	129	170	138	83	68	285	483	196	317	127	99	101
29	129	170	135	79	68	325	472	186	306	120	97	102
30	140	170	133	77	---	425	461	188	290	117	99	119
31	219	---	132	76	---	860	---	202	---	113	112	---
TOTAL	3739	8728	4738	3116	2005	5113	18591	9293	15144	5566	3099	3132
MEAN	121	291	153	101	69.1	165	620	300	505	180	100	104
MAX	219	433	169	132	74	860	865	449	838	279	136	121
MIN	97	170	132	76	68	68	461	186	222	113	83	79
CFSM	.07	.16	.08	.05	.04	.09	.33	.16	.27	.10	.05	.06
IN.	.07	.17	.09	.06	.04	.10	.37	.18	.30	.11	.06	.06
AC-FT	7420	17310	9400	6180	3980	10140	36880	18430	30040	11040	6150	6210

CAL YR 1979 TOTAL 203582 MEAN 558 MAX 3800 MIN 25 CFSM .30 IN 4.05 AC-FT 403800
WTR YR 1980 TOTAL 82264 MEAN 225 MAX 865 MIN 68 CFSM .12 IN 1.64 AC-FT 163200

05304500 CHIPPEWA RIVER NEAR MILAN, MN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-67, 1972 to current year.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---		---	---	---	---	---	---	---	23.0	---
2	---	---		---	---	---	---	---	---	---	---	---
3	---	---		.5	---	---	---	---	---	23.5	---	23.5
4	---	---		---	---	---	3.5	---	---	---	---	---
5	---	---		---	---	---	7.0	18.0	19.5	---	---	---
6	---	---		---	---	---	13.0	16.0	20.0	---	---	---
7	---	---		---	---	---	9.0	---	---	---	---	---
8	---	---		---	---	---	7.0	13.5	19.0	---	---	---
9	---	---		---	---	---	5.5	15.5	19.5	---	---	---
10	---	---		---	---	---	5.5	---	---	---	---	---
11	---	---		---	---	---	6.0	---	21.0	27.0	---	---
12	6.0	---		---	---	---	8.0	---	22.0	---	---	---
13	---	---		---	---	---	6.5	---	24.0	---	---	---
14	---	---		---	---	---	9.0	15.5	24.5	---	---	---
15	---	---		---	---	---	10.0	---	22.0	---	---	---
16	---	---		---	---	---	---	---	24.0	---	---	---
17	---	---		---	---	---	12.0	---	23.5	---	---	---
18	---	---		---	---	---	14.0	---	24.0	---	---	---
19	---	---		---	.0	---	17.5	19.5	23.0	---	---	---
20	---	6.0		---	---	---	18.0	21.5	---	---	---	---
21	---	---		---	---	---	---	22.0	---	---	---	---
22	---	---		---	---	---	---	24.5	---	---	---	---
23	---	---		---	---	---	16.0	24.5	26.0	---	---	---
24	---	---		---	---	---	14.0	24.5	---	---	---	---
25	---	---		---	---	---	15.0	---	---	---	---	---
26	---	---		---	---	---	---	---	---	---	---	---
27	---	---		---	---	---	17.0	---	25.0	---	---	---
28	---	---		---	---	---	---	---	---	---	---	---
29	---	---		---	---	---	---	---	---	---	---	---
30	---	---		---	---	---	---	---	---	---	---	---
31	---	---		---	---	3.0	---	---	---	---	---	---

05304500 CHIPPEWA RIVER NEAR MILAN, MN--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	OCTOBER MEAN CONCEN-TRATION (MG/L)	OCTOBER LOADS (T/DAY)	NOVEMBER MEAN CONCEN-TRATION (MG/L)	NOVEMBER LOADS (T/DAY)	DECEMBER MEAN CONCEN-TRATION (MG/L)	DECEMBER LOADS (T/DAY)	JANUARY MEAN CONCEN-TRATION (MG/L)	JANUARY LOADS (T/DAY)	FEBRUARY MEAN CONCEN-TRATION (MG/L)	FEBRUARY LOADS (T/DAY)	MARCH MEAN CONCEN-TRATION (MG/L)	MARCH LOADS (T/DAY)
1	---	---	142	151			---	---	---	---	---	---
2	---	---	127	148			---	---	---	---	---	---
3	---	---	120	132			78	27	---	---	---	---
4	---	---	114	118			---	---	---	---	---	---
5	---	---	107	108			---	---	---	---	---	---
6	---	---	99	100			---	---	---	---	---	---
7	---	---	92	94			---	---	---	---	---	---
8	---	---	86	87			---	---	---	---	---	---
9	---	---	81	75			---	---	---	---	---	---
10	---	---	---	---			---	---	---	---	---	---
11	---	---	---	---			---	---	---	---	---	---
12	31	8.4	---	---			---	---	---	---	---	---
13	---	---	---	---			---	---	---	---	---	---
14	---	---	---	---			---	---	---	---	---	---
15	---	---	---	---			---	---	---	---	---	---
16	---	---	---	---			---	---	---	---	114	34
17	---	---	---	---			---	---	---	---	114	35
18	---	---	---	---			---	---	---	---	121	44
19	---	---	---	---			---	---	128	24	157	91
20	---	---	80	57			---	---	---	---	137	107
21	---	---	---	---			---	---	---	---	113	92
22	---	---	---	---			---	---	---	---	97	65
23	---	---	---	---			---	---	---	---	88	39
24	---	---	---	---			---	---	---	---	87	32
25	---	---	---	---			---	---	---	---	85	29
26	---	---	---	---			---	---	---	---	88	33
27	---	---	---	---			---	---	---	---	91	49
28	---	---	---	---			---	---	---	---	95	73
29	---	---	---	---			---	---	---	---	101	89
30	---	---	---	---			---	---	---	---	118	135
31	85	50	---	---			---	---	---	---	150	348

DAY	APRIL MEAN CONCEN-TRATION (MG/L)	APRIL LOADS (T/DAY)	MAY MEAN CONCEN-TRATION (MG/L)	MAY LOADS (T/DAY)	JUNE MEAN CONCEN-TRATION (MG/L)	JUNE LOADS (T/DAY)	JULY MEAN CONCEN-TRATION (MG/L)	JULY LOADS (T/DAY)	AUGUST MEAN CONCEN-TRATION (MG/L)	AUGUST LOADS (T/DAY)	SEPTEMBER MEAN CONCEN-TRATION (MG/L)	SEPTEMBER LOADS (T/DAY)
1	97	210	56	68	---	---	110	83	71	21	---	---
2	79	159	62	73	74	50	106	76	---	---	---	---
3	83	161	68	78	73	55	102	71	---	---	108	34
4	84	196	73	81	99	75	99	67	---	---	---	---
5	83	180	83	89	526	433	97	63	---	---	---	---
6	78	165	96	98	340	498	93	59	---	---	---	---
7	61	125	95	94	174	366	91	55	---	---	---	---
8	55	109	83	79	166	319	88	51	---	---	---	---
9	37	71	71	66	163	306	87	49	---	---	---	---
10	33	62	67	61	158	297	84	45	---	---	---	---
11	34	63	82	74	152	282	81	42	---	---	---	---
12	36	64	104	92	153	289	---	---	---	---	---	---
13	31	54	128	110	144	326	---	---	---	---	---	---
14	30	51	146	122	140	313	---	---	---	---	---	---
15	29	48	145	119	128	250	---	---	---	---	---	---
16	30	47	134	107	141	248	---	---	---	---	---	---
17	33	50	122	95	136	217	---	---	---	---	---	---
18	30	44	109	83	149	215	---	---	---	---	---	---
19	29	42	102	76	163	209	---	---	---	---	---	---
20	36	52	97	71	157	182	---	---	---	---	---	---
21	44	63	104	72	151	163	---	---	---	---	---	---
22	50	71	83	56	144	150	---	---	---	---	---	---
23	55	76	125	80	271	416	---	---	---	---	---	---
24	51	69	93	58	246	355	---	---	---	---	---	---
25	46	62	---	---	196	225	---	---	---	---	---	---
26	43	57	---	---	148	146	---	---	---	---	---	---
27	43	57	---	---	126	114	---	---	---	---	---	---
28	43	56	---	---	120	103	---	---	---	---	---	---
29	44	56	---	---	117	97	---	---	---	---	---	---
30	51	63	---	---	114	89	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---

05311000 MINNESOTA RIVER AT MONTEVIDEO, MN

LOCATION.--Lat 44°56'00", long 95°44'00", in NW¼NW¼ sec.19, T.117 N., R.40 W., Yellow Medicine County, Hydrologic Unit 07020004, on right bank 100 ft (30 m) upstream from bridge on U.S. Highway 212, at Montevideo, and 400 ft (122 m) downstream from Chippewa River.

DRAINAGE AREA.--6,180 mi^2 (16,000 km^2), approximately.

PERIOD OF RECORD.--July 1909 to September 1917, October 1917 to September 1929 (no winter records), October 1929 to current year. Prior to October 1939, published as "near Montevideo." Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1035: 1919(M). WSP 1085: 1935-36. WSP 1508: 1912, 1925(M), 1929(M).

GAGE.--Water-stage recorder. Datum of gage is 909.12 ft (277.100 m) National Geodetic Vertical Datumof 1929. July 22, 1909, to Feb. 4, 1932, nonrecording gage at bridge 600 ft (183 m) downstream at present datum. Feb. 5, 1932, to Nov. 26, 1934, nonrecording gage at bridge 100 ft (30 m) downstream at present datum.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by Big Stone Lake since Apr. 17, 1937, Lac qui Parle since January 1938 and Marsh Lake since Nov. 1, 1939.

AVERAGE DISCHARGE.--59 years (water years 1910-17, 1930-80), 685 ft^3/s (19.40 m^3/s), 496,300 acre-ft/yr (612 hm^3/yr); median of yearly mean discharges, 547 ft^3/s (15.49 m^3/s), 396,300 acre-ft/yr (489 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,100 ft^3/s (994 m^3/s) Apr. 12, 1969, gage height, 21.68 ft (6.608 m), from high-water mark; no flow for several days in 1933-34, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,910 ft^3/s (54.1 m^3/s) June 15, gage height, 8.11 ft (2.472 m); minimum, 78 ft^3/s (2.21 m^3/s) Aug. 5. 6, gage height, 1.65 ft (0.503 m), result of regulation.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	307	416	425	270	320	310	1310	499	178	945	121	110
2	290	1140	415	270	315	305	1550	476	170	951	137	110
3	264	1340	410	270	315	300	1630	475	169	1040	172	109
4	206	1330	410	270	310	285	1780	472	173	1060	165	107
5	194	1320	410	270	310	240	1840	461	206	1050	92	105
6	190	1250	405	270	305	190	1790	466	309	1040	82	105
7	186	1210	405	270	300	180	1750	591	491	1010	89	105
8	169	1160	402	300	295	178	1780	650	533	790	90	104
9	166	820	402	290	295	174	1780	661	691	732	125	100
10	180	680	402	290	290	172	1780	637	1140	504	145	101
11	180	697	402	290	285	170	1760	624	1340	341	143	110
12	169	686	402	290	285	168	1760	620	1580	323	91	110
13	163	688	402	290	285	168	1760	620	1700	321	80	109
14	163	695	400	290	280	168	1750	620	1870	324	85	108
15	162	573	400	290	280	160	1730	620	1910	357	98	110
16	222	547	400	290	280	154	1730	616	1890	332	113	112
17	167	500	400	330	280	152	1610	615	1860	262	111	109
18	134	485	390	345	280	150	1570	615	1810	254	106	107
19	136	484	380	350	280	175	1420	614	1710	252	107	107
20	117	481	370	350	290	220	1370	588	1630	253	104	107
21	98	478	360	350	335	284	1360	508	1340	253	90	107
22	96	474	345	345	340	355	1290	470	1250	253	105	106
23	88	474	340	340	335	475	1180	431	1240	253	114	106
24	96	492	340	340	330	570	959	397	1250	252	113	109
25	105	518	340	340	325	674	915	373	1240	245	113	105
26	101	523	330	335	320	739	815	337	1220	215	113	105
27	96	481	310	335	320	819	791	308	1180	254	115	105
28	91	470	270	335	315	975	778	225	1020	256	117	105
29	88	450	270	335	315	1050	692	189	979	255	119	105
30	93	435	270	330	---	1050	668	180	961	209	111	105
31	156	---	270	330	---	1050	---	176	---	163	108	---
TOTAL	4873	21297	11477	9600	8815	12060	42898	15134	33040	14749	3474	3203
MEAN	157	710	370	310	304	389	1430	488	1101	476	112	107
MAX	307	1340	425	350	340	1050	1840	661	1910	1060	172	112
MIN	88	416	270	270	280	150	668	176	169	163	80	100
AC-FT	9670	42240	22760	19040	17480	23920	85090	30020	65530	29250	6890	6350

CAL YR 1979	TOTAL	577735	MEAN	1583	MAX	12000	MIN 56	AC-FT	1146000
WTR YR 1980	TOTAL	180620	MEAN	493	MAX	1910	MIN 80	AC-FT	358300

05311400 SOUTH BRANCH YELLOW MEDICINE RIVER AT MINNEOTA, MN

LOCATION.--Lat 44°33'50", long 95°59'50", in SE¼ sec.26, T.113 N., R.43 W., Lyon County, Hydrologic Unit 07020004, on downstream side of bridge on State Highway 68, 0.5 mi (0.8 km) northwest of Minneota and 6 mi (9.7 km) upstream from mouth.

DRAINAGE AREA.--111 mi^2 (287 km^2), approximately.

PERIOD OF RECORD.--April 1960 to current year. Monthly and daily discharge for the period Apr. 1, 1960, to June 30, 1960, published in WSP 1914.

GAGE.--Nonrecording gage and crest-stage gage. Datum of gage is 1,150.00 ft (350.520 m) National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--20 years, 21.5 ft^3/s (0.609 m^3/s), 2.63 in/yr (67 mm/yr), 15,580 acre-ft/yr (19.2 hm^3/yr); median of yearly mean discharges, 15.4 ft^3/s (0.436 m^3/s), 1.88 in/yr (48 mm/yr), 11,160 acre-ft/yr (13.8 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,430 ft^3/s (125 m^3/s) Apr. 8, 1969, gage height, 13.41 ft (4.087 m); no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 82 ft^3/s (2.32 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 1	0630	108	3.06	5.51	1.679	June 5	1630	167	4.73	5.79	1.765
Mar. 16	0530	*204	5.78	a*7.36	2.243	June 28	0830	164	4.64	5.76	1.756
Mar. 19	0200	108	3.06	a6.46	1.969						

a Backwater from ice.

Minimum daily discharge, 0.03 ft^3/s (0.001 m^3/s) Sept. 26, 27, 28, 30; minimum gage height, 2.28 ft (0.695 m) Sept. 13, 20, 26.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	98	16	11	4.2	4.2	26	13	2.8	55	1.7	1.6
2	1.3	72	15	11	4.2	4.2	24	11	1.8	42	6.8	1.2
3	1.2	59	14	10	4.2	4.2	23	10	2.7	37	3.6	.68
4	1.4	52	16	9.8	3.9	4.2	23	9.4	3.0	32	1.6	.60
5	1.3	46	16	9.6	3.9	4.2	23	8.5	93	26	1.2	.48
6	1.3	40	16	9.4	3.4	4.2	23	7.9	92	21	.96	.32
7	1.4	34	16	9.2	3.7	4.2	23	7.2	111	18	.96	.32
8	1.4	32	17	9.0	4.2	4.2	25	6.8	107	15	.90	.29
9	1.3	29	17	8.8	4.2	4.2	46	6.8	87	14	.78	.23
10	1.3	22	17	8.6	4.2	4.2	38	6.4	68	12	.84	.19
11	1.4	23	17	8.4	4.2	4.2	29	6.0	51	11	1.5	.17
12	1.6	22	18	8.4	4.2	4.2	25	5.7	36	9.4	1.0	.15
13	1.8	22	18	8.4	4.2	4.2	22	5.9	29	7.7	.96	.14
14	2.1	21	19	8.4	4.2	4.2	19	5.7	25	5.7	.60	.45
15	2.5	20	16	8.2	4.2	26	19	5.0	21	4.6	.84	.36
16	2.6	20	16	8.0	4.2	171	18	4.6	17	12	1.7	.21
17	2.4	19	14	7.8	4.2	82	16	4.5	14	13	3.6	.14
18	3.7	20	14	7.6	4.2	62	18	5.7	12	20	2.4	.10
19	4.9	20	14	7.6	4.2	85	17	5.7	12	24	2.2	.10
20	6.0	18	14	7.5	4.2	52	18	5.0	9.4	22	5.0	.08
21	5.7	17	14	7.5	4.2	43	18	5.5	8.1	18	8.8	.08
22	5.4	14	14	7.5	4.2	34	18	5.0	7.3	14	6.4	.08
23	5.7	12	14	6.0	4.2	26	17	4.3	6.2	11	5.2	.08
24	6.0	11	13	7.3	4.2	24	16	3.9	5.0	8.1	3.9	.04
25	6.6	13	12	7.1	4.2	25	15	3.3	6.2	7.2	3.2	.04
26	7.0	17	11	7.0	4.2	25	14	2.9	11	5.2	2.9	.03
27	7.0	16	10	5.4	4.2	26	14	2.7	93	4.3	2.2	.03
28	7.0	16	9.9	4.2	4.2	28	13	2.7	145	3.6	1.7	.03
29	7.2	16	9.9	3.7	4.2	33	12	2.6	99	2.7	1.6	.04
30	16	16	10	4.2	---	25	13	2.9	77	2.3	1.3	.03
31	63	---	11	4.2	---	17	---	2.9	---	2.0	.96	---
TOTAL	178.8	837	448.8	240.8	119.9	842.8	625	179.5	1252.5	479.8	77.30	8.29
MEAN	5.77	27.9	14.5	7.77	4.13	27.2	20.8	5.79	41.8	15.5	2.49	.28
MAX	63	98	19	11	4.2	171	46	13	145	55	8.8	1.6
MIN	1.2	11	9.9	3.7	3.4	4.2	12	2.6	1.8	2.0	.60	.03
CFSM	.05	.25	.13	.07	.04	.25	.19	.05	.38	.14	.02	.003
IN.	.06	.28	.15	.08	.04	.28	.21	.06	.42	.16	.03	.00
AC-FT	355	1660	890	478	238	1670	1240	356	2480	952	153	16

CAL YR 1979 TOTAL 17213.38 MEAN 47.2 MAX 1060 MIN .00 CFSM .43 IN 5.77 AC-FT 34140
WTR YR 1980 TOTAL 5290.49 MEAN 14.5 MAX 171 MIN .03 CFSM .13 IN 1.77 AC-FT 10490

05313500 YELLOW MEDICINE RIVER NEAR GRANITE FALLS, MN

LOCATION.--Lat 44°43'18", long 95°31'07", in SW¼ sec.35, T.115 N., R.39 W., Yellow Medicine County, Hydrologic Unit 07020004, on right bank 50 ft (15 m) downstream from highway bridge, 6 mi (9.7 km) upstream from mouth, and 8 mi (13 km) south of town of Granite Falls.

DRAINAGE AREA.--653 mi^2 (1,691 km^2).

PERIOD OF RECORD.--March 1931 to September 1935 (no winter records), October 1935 to September 1938, October 1939 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1508: 1931, 1934(M), 1937(M), 1946(M), 1950(M).

GAGE.--Water-stage recorder. Datum of gage is 960.64 ft (292.803 m) National Geodetic Vertical Datum of 1929. Mar. 16, 1931, to June 13, 1938, nonrecording gage, on bridge 50 ft (15 m) upstream at present datum. Oct. 12, 1939, to Nov. 30, 1952, nonrecording gage 500 ft (152 m) downstream at present datum.

REMARKS.--Records good except those for winter period, which are fair. Natural discharge affected by unknown amount of interbasin flow between Yellow Medicine, Redwood, and Cottonwood River basins during extreme floods.

AVERAGE DISCHARGE.--44 years (water years 1936-38, 1940-80), 106 ft^3/s (3.002 m^3/s), 2.20 in/yr (56 mm/yr), 76,800 acre-ft/yr (94.7 hm 3/yr); median of yearly mean discharges, 79.0 ft^3/s (2.237 m^3/s), 1.64 in/yr (42 mm/yr), 57,240 acre-ft/yr (70.6 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,200 ft^3/s (487 m^3/s) Apr. 10, 1969, gage height, 14.90 ft (4.542 m); no flow at times in 1931, 1933, 1948, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1919 reached a stage of 17.5 (5.3 m), from information by local residents, discharge, 25,200 ft^3/s (714 m^3/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 300 ft^3/s (8.50 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 3	1015	700	19.8	4.30	1.311	June 8	0115	*772	21.9	4.41	1.344
Mar. 19	0400	595	16.9	a*5.18	1.579	June 30	1000	310	8.78	3.52	1.073

a Backwater from ice.

Minimum discharge, 1.5 ft^3/s (0.042 m^3/s) Sept. 30; minimum gage height, 2.12 ft (0.646 m) Sept. 29. 30.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	337	87	82	20	19	195	70	24	266	11	14
2	23	606	86	82	19	19	190	69	23	216	13	12
3	23	692	86	81	19	19	187	67	22	171	12	11
4	22	664	88	81	19	19	168	62	23	144	10	8.9
5	23	561	90	81	19	19	151	60	217	119	13	8.4
6	23	468	92	80	19	19	142	56	444	104	21	7.5
7	20	407	92	74	19	19	132	50	703	89	17	7.8
8	20	350	91	65	19	19	128	47	745	78	12	6.9
9	18	310	90	57	19	19	137	45	675	66	9.9	5.9
10	17	266	89	52	19	19	163	44	620	58	9.1	4.7
11	18	257	88	50	19	19	195	42	516	54	9.3	7.9
12	20	231	87	48	19	19	175	41	417	48	8.1	7.6
13	22	219	86	47	19	19	156	40	337	40	7.6	7.2
14	19	211	86	46	19	19	140	38	275	36	7.5	6.0
15	19	201	86	44	19	24	122	36	230	33	6.9	5.6
16	18	191	86	43	19	145	110	35	188	48	10	5.0
17	16	185	85	42	19	150	108	35	154	38	14	4.8
18	17	180	85	41	19	225	103	35	127	37	11	4.4
19	33	171	84	40	19	440	96	34	107	38	20	4.0
20	23	158	84	40	19	395	95	34	89	39	40	3.4
21	23	158	84	39	19	285	95	34	78	42	34	3.1
22	31	156	84	37	19	190	98	34	66	43	29	2.9
23	34	157	84	34	19	110	98	31	58	40	28	2.9
24	37	130	83	33	19	60	95	31	51	35	31	2.5
25	30	114	83	30	19	70	98	29	47	32	27	2.5
26	27	136	83	28	19	100	92	27	55	28	23	2.4
27	26	117	82	26	19	115	90	26	76	25	20	2.3
28	27	100	82	24	19	155	85	24	181	21	17	2.1
29	27	87	82	22	19	160	79	26	266	19	14	2.0
30	33	90	82	21	---	175	75	25	306	16	12	1.9
31	107	---	82	20	---	180	---	23	---	14	13	---
TOTAL	821	7910	2659	1490	552	3245	3798	1250	7120	2037	510.4	167.6
MEAN	26.5	264	85.8	48.1	19.0	105	127	40.3	237	65.7	16.5	5.59
MAX	107	692	92	82	20	440	195	70	745	266	40	14
MIN	16	87	82	20	19	19	75	23	22	14	6.9	1.9
CFSM	.04	.40	.13	.07	.03	.16	.19	.06	.36	.10	.03	.009
IN.	.05	.45	.15	.08	.03	.18	.22	.07	.41	.12	.03	.01

CAL YR 1979 TOTAL 114012.9 MEAN 312 MAX 4200 MIN 3.3 CFSM .48 IN 6.50
WTR YR 1980 TOTAL 31560.0 MEAN 86.2 MAX 745 MIN 1.9 CFSM .13 IN 1.80

05313500 YELLOW MEDICINE RIVER NEAR GRANITE FALLS, MN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1961-62, 1971-75, 1977 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: November 1979 to September 1980.
SUSPENDED-SEDIMENT DISCHARGE: October 1979 to September 1980.

REMARKS.--Sediment observer collects suspended-sediment samples daily when the stage is equal to or greater than 3.0 feet and several times daily during periods of rapidly changing stage. Water temperatures are obtained when sediment samples are collected.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---		---	---	---	---		---	---		
2		8.0		---	---	---	4.5		---	---		
3		4.5		---	---	---	---		---	23.0		
4		4.5		.5	---	---	---		---	---		
5		4.5		---	---	---	---		---	---		
6		4.0		---	---	---	---		---	---		
7		3.0		---	---	---	---		19.5	---		
8		.5		---	---	---	---		18.0	---		
9		1.0		---	---	---	---		18.0	---		
10		1.5		---	---	---	---		18.5	---		
11		1.0		---	---	---	---		18.5	---		
12		1.0		---	---	---	---		20.0	---		
13		1.5		---	---	---	---		21.0	---		
14		3.0		---	.0	---	---		22.0	---		
15		4.0		---	---	---	---		22.0	---		
16		4.0		---	---	---	---		21.0	---		
17		3.5		---	---	---	---		21.0	---		
18		3.5		---	---	.0	---		21.0	---		
19		6.0		---	---	1.0	---		20.5	---		
20		3.5		---	---	.5	---		---	---		
21		---		---	---	.0	---		---	---		
22		---		---	---	1.0	---		---	---		
23		---		---	---	.5	---		---	---		
24		---		---	---	.5	---		---	---		
25		---		---	---	---	---		---	---		
26		---		---	---	---	---		---	---		
27		---		---	---	---	---		---	---		
28		---		---	---	---	---		---	---		
29		---		---	---	---	---		---	---		
30		---		---	---	---	---		---	---		
31		---		---	---	---	---		---	---		

05313500 YELLOW MEDICINE RIVER NEAR GRANITE FALLS, MN--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	161	146			---	---	---	---	---	---
2	---	---	172	281			---	---	---	---	---	---
3	---	---	112	209			---	---	---	---	---	---
4	---	---	86	154			102	22	---	---	---	---
5	---	---	139	211			---	---	---	---	---	---
6	---	---	56	71			---	---	---	---	---	---
7	---	---	86	95			---	---	---	---	---	---
8	---	---	37	35			---	---	---	---	---	---
9	---	---	202	169			---	---	---	---	---	---
10	---	---	128	92			---	---	---	---	---	---
11	---	---	88	61			---	---	---	---	---	---
12	---	---	99	62			---	---	---	---	---	---
13	---	---	81	48			---	---	---	---	---	---
14	---	---	51	29			---	---	125	6.4	---	---
15	---	---	112	61			---	---	---	---	37	2.4
16	---	---	113	58			---	---	---	---	87	34
17	---	---	55	27			---	---	---	---	62	25
18	116	5.3	122	59			---	---	---	---	132	80
19	---	---	167	77			---	---	---	---	162	192
20	---	---	164	70			---	---	---	---	100	107
21	---	---	156	67			---	---	---	---	67	52
22	---	---	155	65			---	---	---	---	69	35
23	---	---	155	66			---	---	---	---	36	11
24	---	---	---	---			---	---	---	---	19	3.1
25	---	---	---	---			---	---	---	---	20	3.8
26	---	---	---	---			---	---	---	---	23	6.2
27	---	---	---	---			---	---	---	---	26	8.1
28	---	---	---	---			---	---	---	---	31	13
29	---	---	---	---			---	---	---	---	34	15
30	---	---	---	---			---	---	---	---	37	17
31	---	---	---	---			---	---	---	---	40	19
	---		---				---		---		---	

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	42	22			---	---	222	159	---	---	---	---
2	42	22			---	---	190	111	---	---	---	---
3	42	21			---	---	157	72	---	---	---	---
4	42	19			182	11	120	47	---	---	105	2.5
5	42	17			332	195	---	---	---	---	---	---
6	---	---			435	521	---	---	178	10	---	---
7	---	---			695	1320	---	---	---	---	---	---
8	---	---			458	921	---	---	---	---	---	---
9	81	30			352	642	---	---	---	---	---	---
10	128	56			223	373	---	---	---	---	---	---
11	105	55			200	279	---	---	---	---	---	---
12	78	37			204	230	---	---	---	---	---	---
13	56	24			205	187	---	---	---	---	---	---
14	---	---			261	194	---	---	---	---	---	---
15	---	---			368	229	---	---	---	---	---	---
16	---	---			335	170	---	---	---	---	---	---
17	---	---			285	119	---	---	---	---	---	---
18	---	---			360	123	---	---	---	---	---	---
19	---	---			238	69	---	---	---	---	---	---
20	---	---			---	---	---	---	---	---	---	---
21	---	---			---	---	---	---	---	---	---	---
22	---	---			---	---	---	---	---	---	---	---
23	---	---			---	---	---	---	---	---	---	---
24	---	---			---	---	---	---	---	---	---	---
25	---	---			---	---	---	---	---	---	---	---
26	---	---			---	---	---	---	---	---	---	---
27	---	---			61	13	---	---	---	---	---	---
28	---	---			186	91	---	---	---	---	---	---
29	---	---			261	187	---	---	---	---	---	---
30	---	---			253	209	---	---	---	---	---	---
31	---	---			---	---	---	---	---	---	---	---
	---				---		---		---		---	

05315000 REDWOOD RIVER NEAR MARSHALL, MN

LOCATION.--Lat 44°25'49", long 95°50'43", in SE¼SW¼ sec.12, T.111 N., R.42 W., Lyon County, Hydrologic Unit 07020006, on right bank 2.0 mi (3.2 km) upstream from Redwood River diversion structure on southwest edge of town of Marshall, MN. Prior to Apr. 10, 1980, at site 5 mi (8.0 km) downstream.

DRAINAGE AREA.--303 mi^2 (785 km^2).

PERIOD OF RECORD.--March 1940 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 1,188.23 ft (362.172 m) National Geodetic Vertical Datum of 1929. Nonrecording gage and crest-stage gage 5 mi (8.0 km) downstream from present site. Datum of gage is 1,144.88 ft (348.959 m) National Geodetic Vertical Datum of 1929. Nonrecording gage and crest-stage gage on diversion channel. Datum of gage is 1,100.00 ft (335.280 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Water diverted at medium and high stages into diversion channel 2.0 mi (3.2 km) below station. Diversion began Mar. 18, 1964. These records include flow in the diversion channel. Unknown amount of natural diversion into Cottonwood River basin at extremely high stages 0.8 mi (1.3 km) below station.

AVERAGE DISCHARGE.--40 years, 46.5 ft^3/s (1.317 m^3/s), 2.06 in/yr (52 mm/yr) 33,690 acre-ft (41.5 hm^3/yr); median of yearly mean discharges, 38.7 ft^3/s (1.096 m^3/s), 1.71 in/yr (43 mm/yr), 28,040 acre-ft/yr (34.6 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 5,370 ft^3/s (152 m^3/s) June 17, 1957, gage height, 10.14 ft (3.091 m); maximum gage height, 11.05 ft (3.368 m) Apr. 6, 1951, from floodmark; no flow at times.

Diversion only, maximum discharge, 4,440 ft^3/s (126 m^3/s) Apr. 10, 1969, gage height, 78.45 ft (23.912 m); no flow on many days.

Combined flow, maximum discharge, 5,590 ft^3/s (158 m^3/s) Apr. 10, 1969; no flow at times.

EXTREMES FOR CURRENT YEAR.--River only below diversion, maximum discharge, 170 ft^3/s (4.81 m^3/s) Apr. 9, gage height, 2.16 ft (0.658 m); maximum gage height, 3.21 ft (0.978 m) Mar. 17, (backwater from ice); minimum discharge, 1.9 ft^3/s (0.054 m^3/s) Sept. 30.

Diversion only, maximum discharge, 310 ft^3/s (8.78 m^3/s) Nov. 4, gage height, 73.53 ft (22.412 m); maximum gage height, 74.61 ft (22.741 m) Mar. 17, (backwater from ice); no flow on many days.

Combined flow, maximum discharge, 382 ft^3/s (10.8 m^3/s) Nov. 4; minimum discharge, 1.9 ft^3/s (0.054 m^3/s) Sept. 30.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	289	72	22	10	11	121	35	64	21	18	10
2	16	279	71	21	10	11	110	34	60	25	20	9.1
3	13	347	70	20	10	11	206	34	58	34	14	7.4
4	13	376	69	19	10	11	191	34	64	40	13	6.9
5	12	333	69	18	10	11	167	33	268	45	12	5.5
6	10	277	69	17	10	11	164	31	253	50	9.0	5.0
7	9.1	239	68	17	10	11	151	29	274	53	6.6	4.5
8	12	211	68	16	10	11	148	27	272	56	5.5	3.6
9	11	185	68	15	10	11	171	26	255	57	5.0	3.6
10	8.2	172	67	15	10	11	106	26	208	58	4.5	3.1
11	9.1	179	67	14	10	11	96	25	170	57	5.5	3.3
12	10	136	67	14	10	11	86	24	155	54	5.0	3.1
13	10	125	67	13	10	20	79	24	100	53	14	3.2
14	10	114	67	13	11	30	72	23	75	52	15	3.5
15	9.1	114	62	12	11	38	67	23	57	51	10	3.5
16	11	105	58	12	11	51	65	22	45	50	13	3.7
17	9.1	102	51	12	11	346	62	24	41	48	47	5.0
18	10	102	48	11	11	300	60	34	37	46	44	4.5
19	12	93	44	11	11	233	58	35	27	43	41	5.0
20	10	82	42	11	11	173	55	37	32	42	38	5.0
21	11	83	38	10	11	142	53	35	31	39	31	4.0
22	12	76	36	10	11	107	51	31	27	37	27	4.0
23	12	74	34	10	11	95	47	28	22	35	23	4.0
24	12	73	32	10	11	91	46	26	18	32	21	3.7
25	12	73	31	10	11	87	45	23	23	30	19	3.7
26	11	73	29	10	11	82	44	22	22	28	14	3.5
27	14	72	28	10	11	72	42	193	20	26	14	3.5
28	12	72	26	10	11	62	40	143	19	25	13	3.4
29	12	72	25	10	11	93	40	90	18	23	10	3.3
30	18	72	24	10	---	102	37	75	18	21	10	3.2
31	196	---	23	10	---	113	---	67	---	19	10	---
TOTAL	544.6	4600	1590	413	306	2369	2680	1313	2733	1250	532.1	134.8
MEAN	17.6	153	51.3	13.3	10.6	76.4	89.3	42.4	91.1	40.3	17.2	4.49
MAX	196	376	72	22	11	346	206	193	274	58	47	10
MIN	8.2	72	23	10	10	11	37	22	18	19	4.5	3.1
CFSM	.06	.50	.17	.04	.04	.25	.29	.14	.30	.13	.06	.02
IN.	.07	.56	.19	.05	.04	.29	.32	.16	.33	.15	.06	.02

CAL YR 1979 TOTAL 43328.93 MEAN 119 MAX 1620 MIN .00 CFSM .39 IN 5.25
WTR YR 1980 TOTAL 18465.50 MEAN 50.5 MAX 376 MIN 3.1 CFSM .16 IN 2.24

05316500 REDWOOD RIVER NEAR REDWOOD FALLS, MN

LOCATION.--Lat 44°31'25", long 95°10'20", in SE¼NE¼ sec.9, T.112 N., R.36 W., Redwood County, Hydrologic Unit 07020006, on right bank 4 ft (1.2 m) upstream from highway bridge, 3 mi (4.8 km) west of town of Redwood Falls, and 8.5 mi (13.7 km) upstream from mouth.

DRAINAGE AREA.--697 mi^2 (1,805 km^2).
PERIOD OF RECORD.--July 1909 to September 1914 (no winter records except 1911-12). August 1930 to September 1935 (no winter records), October 1935 to current year.

GAGE.--Water-stage recorder. Datum of gage is 972.33 ft (296.366 m) National Geodetic Vertical Datum of 1929. July 1909 to September 1914, nonrecording gage at bridge 20 ft (6 m) downstream at datum 0.22 ft (0.067 m) lower. August 1930 to Oct. 25, 1949, nonrecording gage, at bridge 20 ft (6 m) downstream at present datum.

REMARKS.--Records good except those for winter periods, which are fair. Natural discharge affected by unknown amount of interbasin flow between Yellow Medicine, Redwood, and Cottonwood River basins during extreme floods.

AVERAGE DISCHARGE.--46 years (water years 1912, 1936-80), 104 ft^3/s (2,945 m^3/s), 2.03 in/yr (52 mm/yr), 75,350 acre-ft/yr (92.9 hm^3/yr); median of yearly mean discharges, 73.8 ft^3/s (2.090 m^3/s), 1.44 in/yr (37 mm/yr) 53,470 acre-ft/yr (65.9 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,700 ft^3/s (558 m^3/s) June 18, 1957, gage height, 15.92 ft (4.852 m), from floodmark; no flow for several days in January 1940 and for part of each day Aug. 19, 20, 1959.
EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 400 ft^3/s (11.3 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 1	1000	1340	37.9	4.68	1.426	May 29	2230	590	16.7	3.49	1.064
Mar. 20	1900	*3250	92.0	a*11.17	3.405	June 6	0445	1110	31.4	4.27	1.301

a Backwater from ice.

Minimum discharge, 8.2 ft^3/s (0.232 m^3/s) Sept. 28; minimum gage height, 1.46 ft (0.445 m) Sept. 24, 25, 27, 28.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	1310	150	107	31	30	259	93	236	76	30	32
2	78	1250	150	106	31	30	268	88	193	67	69	35
3	79	1190	150	104	30	30	266	84	165	64	81	32
4	72	1160	150	102	30	30	276	83	194	68	59	26
5	70	1160	150	99	30	30	248	80	821	79	36	31
6	67	1120	150	96	30	30	240	80	1070	80	30	32
7	63	1020	150	94	30	30	241	76	1020	81	25	23
8	60	856	155	91	30	30	240	73	873	83	22	18
9	61	711	160	87	30	30	335	70	720	85	20	15
10	60	597	160	84	30	30	352	69	581	85	19	12
11	62	510	160	81	30	30	334	67	476	83	17	13
12	62	461	155	77	30	30	296	66	408	80	17	14
13	58	410	150	74	30	30	253	63	351	77	51	14
14	57	378	148	70	30	30	219	64	279	73	64	15
15	56	352	145	66	30	30	190	61	230	72	53	14
16	56	335	142	63	30	200	170	58	181	77	44	15
17	58	320	140	60	30	570	162	57	153	80	70	12
18	57	302	138	56	30	860	153	67	132	85	99	11
19	74	291	135	53	30	1190	149	78	116	83	109	11
20	73	263	132	51	30	1740	150	83	103	76	110	11
21	72	257	130	48	30	1850	150	83	93	73	107	11
22	68	265	128	46	30	1030	144	78	84	69	90	11
23	64	261	125	43	30	450	137	68	78	63	76	11
24	60	233	122	41	30	341	128	61	70	59	64	10
25	58	250	121	39	30	253	121	53	65	56	53	9.6
26	55	240	119	38	30	253	114	47	157	52	45	10
27	68	230	117	37	30	241	109	50	238	47	41	8.8
28	61	190	115	35	30	233	107	86	167	44	37	13
29	56	160	112	34	30	241	100	376	106	41	33	13
30	63	150	111	33	---	245	97	447	84	36	28	9.6
31	548	---	109	32	---	245	---	282	---	33	28	---
TOTAL	2472	16232	4279	2047	872	10392	6008	3091	9444	2127	1627	493.0
MEAN	79.7	541	138	66.0	30.1	335	200	99.7	315	68.6	52.5	16.4
MAX	548	1310	160	107	31	1850	352	447	1070	85	110	35
MIN	55	150	109	32	30	30	97	47	65	33	17	8.8
CFSM	.11	.78	.20	.10	.04	.48	.29	.14	.45	.10	.08	.02
IN.	.13	.87	.23	.11	.05	.55	.32	.16	.50	.11	.09	.03
AC-FT	4900	32200	8490	4060	1730	20610	11920	6130	18730	4220	3230	978

CAL YR 1979 TOTAL 130542.1 MEAN 358 MAX 2430 MIN 2.6 CFSM .51 IN 6.97 AC-FT 258900
WTR YR 1980 TOTAL 59084.0 MEAN 161 MAX 1850 MIN 8.8 CFSM .23 IN 3.15 AC-FT 117200

05317000 COTTONWOOD RIVER NEAR NEW ULM, MN

LOCATION.--Lat 44°17'29", long 94°26'24", in SW¼NE¼ sec.33, T.110 N., R.30 W., Brown County, Hydrologic Unit 07020008, on left bank 600 ft (183 m) upstream from highway bridge, 1.8 mi (2.9 km) south of New Ulm, and 3.2 mi (5.1 km) upstream from mouth.

DRAINAGE AREA.--1,280 mi^2 (3,320 km^2), approximately.

PERIOD OF RECORD.--July 1909 to December 1913, March 1931 to March 1938, August 1938 to current year (winter records incomplete prior to 1936).

REVISED RECORDS.--WSP 355: 1912.

GAGE.--Water-stage recorder. Datum of gage is 796.83 ft (242.874 m) National Geodetic Vertical Datum of 1929. July 1, 1909, to Dec. 13, 1913, nonrecording gage at site 2.7 mi (4.3 km) upstream at different datum. Mar. 15, 1931, to Mar. 31, 1938, nonrecording gage 2.2 mi (3.5 km) upstream at datum 11.41 ft (3.477 m) higher. Aug. 23, 1938, to June 25, 1948, nonrecording gage at present site and datum.

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

AVERAGE DISCHARGE.--46 years (water years 1912-13, 1936-37, 1939-80), 275 ft^3/s (7.79 m^3/s), 2.92 in/yr (74 mm/yr), 199,200 acre-ft/yr (246 hm^3/yr); median of yearly mean discharges, 222 ft^3/s (6.29 m^3/s), 2.36 in/yr (60 mm/yr), 160,800 acre-ft/yr (198 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,700 ft^3/s (813 m^3/s) Apr. 10, 1969, gage height, 19.15 ft (5.837 m); maximum gage height, 20.86 ft (6.358 m) Apr. 8, 1965, from floodmark (backwater from ice); minimum discharge observed, 0.5 ft^3/s (0.014 m^3/s) Nov. 27, 1952; minimum gage height, 0.72 ft (0.219 m) Nov. 20, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,300 ft^3/s (36.8 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 3	1815	2650	75.0	9.00	2.743	June 1	0430	2620	74.2	8.84	2.694
Mar. 19	----	3750	106	a*14.62	4.456	June 7	0330	*4000	113	10.58	3.225

a Ice jam

Minimum discharge, 28 ft^3/s (0.79 m^3/s) Sept. 30, gage height, 1.28 ft (0.390 m).

PEAK DISCHARGE FOR WATER YEARS 1969 TO 1979.--Peak discharge above base of 1,300 ft^3/s (36.8 m^3/s) and maximum (*):

Water year	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
1969	Oct. 11, 1968	2200	1720	48.7	7.71	2.350
	Oct. 19, 1968	1730	15100	428	16.28	4.962
	Apr. 10, 1969	0100	*28700	813	*19.15	5.837
	July 5, 1969	1830	1950	55.2	7.78	2.371
	July 19, 1969	2200	1540	43.6	7.12	2.170
1970	Apr. 8, 1970	1735	*2110	59.8	*8.33	2.539
1971	Nov. 12, 1970	1800	1360	38.5	6.81	2.706
	Mar. 16, 1971	1900	*7460	211	*13.10	3.993
	Mar. 30, 1971	1845	2410	68.3	8.32	2.536
	June 9, 1971	1800	2010	56.9	7.65	2.332
1972	Mar. 17, 1972	1100	*3160	89.5	*9.38	2.859
	May 4, 1972	1545	1590	45.0	6.75	2.057
	June 1, 1972	2230	1320	37.4	6.18	1.884
	June 8, 1972	0745	2100	59.5	7.63	2.326
1973	Mar. 14, 1973	0215	*2680	75.9	*8.67	2.643
1974	Apr. 15, 1974	0745	*738	20.9	*4.86	1.481
1975	Apr. 19, 1975	0330	2560	72.5	8.56	2.609
	Apr. 24, 1975	1915	*3260	92.3	*9.66	2.944
1976	Mar. 22, 1976	0345	*1430	40.5	*6.37	1.942
1977	Mar. 14, 1977	0600	2380	67.4	8.46	2.579
	June 18, 1977	1915	*2900	82.1	*9.20	2.804
1978	Mar. 22, 1978	2000	*2770	78.4	*9.11	2.777
1979	Mar. 25, 1979	0600	4760	135	12.12	3.694
	Apr. 1, 1979	0600	*5970	169	*12.89	3.929
	Apr. 17, 1979	1045	2630	74.5	8.99	2.740
	May 12, 1979	0215	3260	92.3	9.95	3.033
	June 18, 1979	0415	2060	58.3	8.03	2.448
	June 30, 1979	1330	2210	62.6	8.28	2.524
	Aug. 6, 1979	0400	1580	44.7	6.99	2.131
	Aug. 11, 1979	0445	1450	41.1	6.68	2.036
	Aug. 24, 1979	1000	1460	41.3	6.75	2.057

05317000 COTTONWOOD RIVER NEAR NEW ULM, MN--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	212	1430	436	410	108	91	582	307	2530	223	43	56
2	205	2430	444	395	103	90	555	289	2140	201	80	48
3	197	2620	700	380	100	88	543	275	1670	185	85	49
4	186	2590	850	360	98	88	600	259	1370	177	78	52
5	181	2460	820	340	97	86	690	248	1280	169	66	49
6	176	2250	780	320	96	85	715	237	2900	158	60	47
7	170	1900	720	300	94	83	743	225	3800	148	57	44
8	165	1590	700	282	93	82	679	213	3070	137	55	42
9	160	1320	680	272	92	80	676	203	2460	129	52	47
10	157	1140	660	269	92	79	743	196	1930	120	55	44
11	156	1010	640	262	91	78	857	190	1530	112	50	47
12	154	904	620	262	91	77	819	184	1210	106	46	47
13	149	815	600	259	91	77	682	189	963	98	62	41
14	145	753	590	256	91	78	586	181	807	93	66	39
15	143	704	580	252	91	80	531	174	684	86	73	37
16	141	669	570	250	91	82	492	169	584	82	90	36
17	139	639	560	240	90	800	465	169	514	81	96	33
18	149	618	550	220	92	1000	442	173	473	79	90	32
19	190	602	540	202	94	3190	433	177	444	75	97	32
20	305	580	530	192	96	2400	435	184	401	73	102	35
21	384	584	520	185	98	1900	438	192	371	70	98	40
22	454	608	510	175	100	1340	440	190	346	65	85	39
23	455	618	500	165	101	896	430	181	324	66	82	34
24	431	638	490	160	101	676	418	170	301	63	77	33
25	407	602	480	160	98	554	401	158	289	59	69	32
26	382	613	470	150	95	507	386	164	275	57	65	30
27	365	692	460	132	94	468	374	164	259	54	64	31
28	348	647	450	122	92	455	355	907	262	52	58	31
29	329	543	440	118	92	482	338	1630	252	50	55	36
30	334	404	430	112	---	527	322	1900	241	47	53	30
31	514	---	420	109	---	547	---	2420	---	46	51	---
TOTAL	7883	32973	17740	7311	2762	17066	16170	12318	33680	3161	2160	1193
MEAN	254	1099	572	236	95.2	551	539	397	1123	102	69.7	39.8
MAX	514	2620	850	410	108	3190	857	2420	3800	223	102	56
MIN	139	404	420	109	90	77	322	158	241	46	43	30
CFSM	.20	.86	.45	.18	.07	.43	.42	.31	.88	.08	.05	.03
IN.	.23	.96	.52	.21	.08	.50	.47	.36	.98	.09	.06	.03
AC-FT	15640	65400	35190	14500	5480	33850	32070	24430	66800	6270	4280	2370

CAL YR 1979	TOTAL	290262	MEAN 795	MAX 5820	MIN 14	CFSM .62	IN 8.44	AC-FT	575700	
WTR YR 1980	TOTAL	154417	MEAN 422	MAX 3800	MIN 30	CFSM .33	IN 4.49	AC-FT	306300	

05317200 LITTLE COTTONWOOD RIVER NEAR COURTLAND, MN

LOCATION.--Lat 44°14'47", long 94°20'19", in SW¼NE¼ sec.17, T.109 N., R.29 W., Blue Earth County, Hydrologic Unit 07020007, on right bank 30 ft (9.1 m) downstream from bridge on State Highway 68, 0.7 mi (1.1 km) above mouth, 1.5 mi (2.4 km) south of Courtland.

DRAINAGE AREA.--230 mi^2 (596 km^2), approximately.

PERIOD OF RECORD.--October 1973 to current year. September 1969 to September 1973, operated as a low-flow station only.

GAGE.--Water-stage recorder. Datum of gage is 788.25 ft (240.259 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for Nov. 7 to Jan. 12, which are fair.

AVERAGE DISCHARGE.--7 years, 38.5 ft^3/s (1.09 m^3/s), 2.27 in/yr (58 mm/yr), 27,890 acre-ft/yr (34.4 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 933 ft^3/s (26.4 m^3/s) Mar. 26, 1979, gage height, 8.29 ft (2.527 m) (backwater from ice); minimum, 0.01 ft^3/s (0.001 m^3/s) Sept. 17, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 180 ft^3/s (5.10 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 5	2100	215	6.09	3.80	1.158	June 6	1100	266	7.53	4.08	1.244
Mar. 19	1530	*325	9.20	*4.56	1.390						

Minimum discharge, 1.1 ft^3/s (0.031 m^3/s) Sept. 19, 30, minimum gage height, 1.26 ft (0.384 m) Aug. 1, 2.

PEAK DISCHARGE FOR WATER YEARS 1974 TO 1979.--Peak discharge above base of 180 ft^3/s (5.10 m^3/s) and maximum (*):

Water year	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
1974	Mar. 3, 1974	1400	*132	3.74	*3.13	0.954
1975	Apr. 17, 1975	0300	*517	14.6	*5.27	1.606
	Apr. 23, 1975	2000	284	8.04	4.16	1.268
	Apr. 28, 1975	1530	340	9.63	4.47	1.362
	June 22, 1975	1515	287	8.13	4.10	1.250
1976	Mar. 12, 1976	1400	*269	7.62	*4.05	1.234
	Mar. 22, 1976	1915	253	7.16	3.98	1.213
1977	June 18, 1977	0645	*231	6.54	*3.89	1.186
1978	Mar. 21, 1978	1915	*529	15.0	*5.54	1.689
	Apr. 11, 1978	0430	225	6.37	4.06	1.237
1979	Mar. 26, 1979	2245	*933	26.4	*8.29	2.527
	Apr. 2, 1979	0915	915	25.9	7.48	2.280
	Apr. 14, 1979	0015	365	10.3	5.14	1.567
	May 13, 1979	0130	715	20.2	6.67	2.033
	June 17, 1979	1600	229	6.49	4.08	1.244
	July 21, 1979	1145	376	10.6	5.01	1.527
	July 26, 1979	2015	229	6.49	4.05	1.234
	Aug. 4, 1979	0615	878	24.9	7.25	2.210
	Aug. 9, 1979	1415	322	9.12	4.58	1.396
	Aug. 21, 1979	2200	482	13.7	5.40	1.646
	Aug. 27, 1979	2015	328	9.29	4.41	1.344
	Sept. 6, 1979	1000	191	5.41	3.50	1.067
	Sept.13, 1979	0430	374	10.6	4.72	1.439

05317200 LITTLE COTTONWOOD RIVER NEAR COURTLAND, MN--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	171	51	48	14	20	76	57	70	31	2.3	4.6
2	61	155	64	46	13	20	72	54	80	29	8.0	4.3
3	55	171	90	44	13	19	77	51	115	26	12	4.4
4	50	188	110	43	13	19	138	49	163	24	8.8	5.0
5	49	203	108	42	13	18	153	48	232	22	6.0	4.1
6	47	202	110	40	13	17	127	45	263	20	4.7	3.6
7	44	189	121	37	13	17	129	41	241	19	4.3	3.3
8	41	173	117	35	13	16	133	41	215	17	4.0	2.7
9	40	151	116	35	14	16	168	38	214	16	3.8	2.5
10	39	139	123	35	14	16	182	37	218	14	4.2	2.2
11	39	132	123	35	14	16	161	36	216	13	4.2	1.8
12	38	120	108	34	14	15	144	35	207	11	4.0	1.8
13	35	110	100	33	14	15	132	34	193	9.4	5.5	1.8
14	35	108	95	31	14	15	117	34	163	8.7	6.4	1.7
15	34	108	90	31	14	33	105	33	133	7.5	7.7	1.7
16	33	100	85	33	14	50	93	31	108	6.6	7.8	1.7
17	32	96	80	35	14	76	86	30	91	6.0	11	1.5
18	33	94	76	36	14	135	84	30	80	5.7	8.9	1.2
19	49	88	71	37	14	244	83	30	70	5.9	8.9	1.2
20	54	84	69	37	14	231	82	30	64	5.6	11	1.9
21	53	88	67	37	15	177	83	28	60	5.3	11	1.6
22	64	119	65	37	18	145	83	27	56	5.0	8.5	1.5
23	101	134	63	33	20	128	80	26	53	4.5	7.4	1.4
24	98	129	61	32	20	101	77	24	50	3.8	7.4	1.6
25	92	117	59	32	23	78	75	23	47	3.8	6.1	1.6
26	89	99	58	29	23	86	72	23	44	3.8	5.4	1.6
27	86	72	56	25	23	76	70	28	41	3.1	5.4	1.5
28	82	53	54	21	21	74	67	25	38	3.1	5.4	1.2
29	77	41	52	18	20	92	63	24	36	3.0	5.1	1.2
30	76	44	51	15	---	83	59	61	34	2.6	5.1	1.1
31	128	---	50	15	---	76	---	70	---	2.6	4.8	---
TOTAL	1817	3678	2543	1041	456	2124	3071	1143	3595	338.0	205.1	67.3
MEAN	58.6	123	82.0	33.6	15.7	68.5	102	36.9	120	10.9	6.62	2.24
MAX	128	203	123	48	23	244	182	70	263	31	12	5.0
MIN	32	41	50	15	13	15	59	23	34	2.6	2.3	1.1
AC-FT	3600	7300	5040	2060	904	4210	6090	2270	7130	670	407	133

CAL YR 1979 TOTAL 44958.31 MEAN 123 MAX 889 MIN .92 AC-FT 89170
WTR YR 1980 TOTAL 20078.40 MEAN 54.9 MAX 263 MIN 1.1 AC-FT 39830

05319500 WATONWAN RIVER NEAR GARDEN CITY, MN

LOCATION.--Lat°44 02'47", long 94°11'43", in SW¼NE¼ sec.28, T.107 N., R.28 W., Blue Earth County, Hydrologic Unit 07020010, on left bank 25 ft (7.62 m) downstream from bridge on County Highway 13, 1.5 miles (2.4 km) west of Garden City, 7.3 mi (11.7 km) upstream from mouth, and 9.2 mi (14.8 km) downstream from Perch Creek.

DRAINAGE AREA.-- 812 mi^2 (2,103 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1940 to September 1945, 1953, 1960, 1961, 1969, one or more discharge measurements each year, September 1976 to current year.

REVISED RECORDS.--WDR MN-78-2: 1977.

GAGE.--Water-stage recorder. Datum of gage is 905.05 ft (275.859 m) National Geodetic Vertical Datum of 1929. Prior to September 30, 1945, nonrecording gage at site 200 ft (61 m) upstream and at datum 0.17 ft (0.052 m) higher.

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

AVERAGE DISCHARGE.--9 years (water years 1941-45, 1977-80), 299 ft^3/s (8.468 m^3/s), 5.00 in/yr (127 mm/yr), 216,600 acre-ft/yr (267 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,620 ft^3/s (159 m^3/s) May 21, 1944, gage height 9.84 ft (2.999 m) datum then in use; minimum daily, 1.9 ft^3/s (0.054 m^3/s) Jan. 20 to Feb. 8, 1977; minimum gage height, 0.27 ft (0.082 m) July 23, 1940, datum then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 7, 1965, reached a stage of 18.89 ft (5.758 m) at datum 0.17 ft (0.052 m) higher, from floodmarks, discharge, 19,000 ft^3/s (538 m^3/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 900 ft^3/s (25.5 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 4	0515	1300	36.8	4.56	1.390	June 2	1845	*5250	149	*9.80	2.987
Apr. 7	1630	1420	40.2	4.76	1.451						

Minimum discharge, 26 ft^3/s (0.74 m^3/s) Sept. 18, 19, gage height, 0.68 ft (0.207 m).

PEAK DISCHARGE FOR WATER YEARS 1977 TO 1979.--Peak discharge above base of 900 ft^3/s (25.5 m^3/s) and maximum (*):

Water year	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
1977	June 17, 1977	0300	*1350	38.2	4.70	1.433
1978	Mar. 23, 1978	0245	*2720	77.0	6.56	1.999
	June 18, 1978	1815	930	26.3	3.82	1.164
1979	Apr. 2, 1979	1730	*4100	116	8.45	2.576
	May. 13, 1979	1715	1290	36.5	4.53	1.381
	June 20, 1979	1045	1150	32.6	4.27	1.301
	June 30, 1979	1900	1450	41.1	4.81	1.466
	Aug. 11, 1979	0900	1180	33.4	4.33	1.320
	Aug. 23, 1979	1915	2040	57.8	5.80	1.768
	Sept.15, 1979	2330	1210	34.3	4.38	1.335

05319500 WATONWAN RIVER NEAR GARDEN CITY, MN--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	289	861	560	210	59	53	316	288	2980	230	36	43
2	266	1080	560	200	58	53	292	270	4800	226	48	40
3	256	1200	570	190	56	53	287	257	4650	207	46	39
4	245	1250	580	180	56	54	352	245	3600	195	42	45
5	233	1200	580	170	55	54	756	235	3080	183	42	45
6	216	1140	590	165	55	55	1100	223	2920	173	36	48
7	209	1100	600	155	54	56	1380	210	2810	161	35	43
8	201	1080	610	150	54	56	1350	202	2780	149	34	39
9	190	1020	630	145	53	57	1280	189	2420	137	33	35
10	185	945	640	138	53	58	1280	190	1930	127	36	33
11	181	856	630	132	52	59	1210	183	1500	122	42	32
12	179	784	570	128	52	60	1070	174	1190	113	43	32
13	174	726	540	122	52	63	893	176	986	102	55	31
14	170	678	515	118	52	72	741	177	856	98	64	29
15	166	647	490	112	52	80	650	175	734	98	68	28
16	164	616	470	108	52	350	584	167	638	91	65	28
17	158	593	450	105	52	440	529	161	559	83	68	27
18	166	578	430	98	52	490	505	162	502	79	69	27
19	253	564	400	94	52	520	483	174	471	74	66	27
20	372	542	385	90	52	530	477	182	416	71	67	33
21	459	532	370	87	52	520	474	187	382	64	69	54
22	510	590	350	82	52	500	470	183	353	62	61	50
23	670	690	340	80	52	450	457	175	330	58	55	54
24	802	763	320	76	52	410	430	166	310	55	49	45
25	834	798	305	72	52	350	407	158	297	51	45	38
26	812	807	290	70	52	315	382	150	286	49	45	34
27	759	798	280	68	52	310	362	142	273	46	50	32
28	702	767	265	66	52	305	339	134	260	44	52	30
29	643	620	250	62	52	310	322	152	247	42	52	28
30	601	571	235	61	---	317	305	1180	238	40	47	28
31	643	---	225	60	---	319	---	2280	---	38	45	---
TOTAL	11708	24396	14030	3594	1541	7319	19483	8947	42798	3268	1565	1097
MEAN	378	813	453	116	53.1	236	649	289	1427	105	50.5	36.6
MAX	834	1250	640	210	59	530	1380	2280	4800	230	69	54
MIN	158	532	225	60	52	53	287	134	238	38	33	27
CFSM	.47	1.00	.56	.14	.07	.29	.80	.36	1.76	.13	.06	.05
IN.	.54	1.12	.64	.16	.07	.34	.89	.41	1.96	.15	.07	.05
AC-FT	23220	48390	27830	7130	3060	14520	38640	17750	84890	6480	3100	2180

CAL YR 1979 TOTAL 210950.0 MEAN 578 MAX 4000 MIN 7.5 CFSM .71 IN 9.66 AC-FT 418400
WTR YR 1980 TOTAL 139746.0 MEAN 382 MAX 4800 MIN 27 CFSM .47 IN 6.40 AC-FT 277200

05319500 WATONWAN RIVER NEAR GARDEN CITY, MN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-69, 1977 to current year.

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1			---	---	---	---			---	---	---	---
2			---	---	---	---			---	---	---	---
3			---	---	---	---			---	---	---	---
4			---	---	---	---			---	---	---	---
5			---	---	---	---			---	---	---	---
6			---	---	---	---			---	---	---	---
7			---	---	---	---			---	---	---	---
8			129	376	---	---			150	22	---	---
9			152	419	---	---			---	---	---	---
10			173	441	---	---			---	---	---	---
11			184	425	---	---			---	---	---	---
12			160	339	---	---			---	---	---	---
13			175	343	---	---			---	---	---	---
14			202	370	---	---			---	---	---	---
15			208	363	---	---			---	---	---	---
16			195	324	---	---			---	---	---	---
17			172	275	---	---			---	---	---	---
18			160	250	---	---			---	---	---	---
19			167	254	72	78			---	---	---	---
20			170	249	---	---			---	---	---	---
21			152	218	---	---			---	---	---	---
22			142	226	---	---			---	---	---	---
23			149	278	---	---			---	---	---	---
24			155	319	---	---			---	---	---	---
25			149	321	---	---			---	---	---	---
26			136	296	---	---			---	---	86	73
27			121	261	---	---			---	---	---	---
28			---	---	---	---			---	---	---	---
29			---	---	---	---			---	---	---	---
30			---	---	---	---			---	---	---	---
31			---	---	---	---			---	---	---	---

DAY	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1			---	---			---	---	---	---		
2			---	---			125	76	---	---		
3			---	---			---	---	---	---		
4			---	---			---	---	---	---		
5			---	---			---	---	---	---		
6			---	---			---	---	---	---		
7			---	---			---	---	---	---		
8			---	---			---	---	---	---		
9			---	---			---	---	---	---		
10			66	34			---	---	---	---		
11			---	---			---	---	---	---		
12			---	---			---	---	---	---		
13			---	---			---	---	---	---		
14			---	---			---	---	---	---		
15			---	---			---	---	---	---		
16			---	---			---	---	---	---		
17			---	---			---	---	---	---		
18			---	---			---	---	---	---		
19			---	---			---	---	77	14		
20			---	---			---	---	---	---		
21			---	---			---	---	---	---		
22			---	---			---	---	---	---		
23			---	---			---	---	---	---		
24			---	---			---	---	---	---		
25			---	---			---	---	---	---		
26			---	---			---	---	---	---		
27			---	---			---	---	---	---		
28			---	---			---	---	---	---		
29			---	---			---	---	---	---		
30			---	---			---	---	---	---		
31			---	---			---	---	---	---		

05320000 BLUE EARTH RIVER NEAR RAPIDAN, MN

LOCATION.--Lat 44°05'44", long 94°06'33", in SE¼SE¼ sec.6, T.107 N., R.27 W., Blue Earth County, Hydrologic Unit 07020009, on left bank 0.2 mi (0.3 km) downstream from abandoned powerplant of Northern States Power Co., 2 mi (3.2 km) west of Rapidan, 3.5 mi (5.6 km) downstream from Watonwan River, and 7.8 mi (12.6 km) upstream from Le Sueur River.

DRAINAGE AREA.--2,430 mi^2 (6,290 km^2), approximately.

PERIOD OF RECORD.--July 1909 to November 1910 (published as "at Rapidan Mills," no winter records), October 1939 to September 1945, July 1949 to current year.

REVISED RECORDS.--WSP 895: Drainage area. WSP 1508: 1910.

GAGE.--Water-stage recorder. Datum of gage is 807.83 ft (246.227 m) National Geodetic Vertical Datum of 1929. July 20, 1909, to Apr. 28, 1910, nonrecording gage at site 0.2 mi (0.3 km) upstream at different datum. Apr. 29 to Nov. 12, 1910, nonrecording gage at site 800 ft (244 m) upstream at different datum. Oct. 4 to Nov. 14, 1939, nonrecording gage at present site and datum.

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

AVERAGE DISCHARGE.--37 years (water years 1940-45, 1950-80), 834 ft^3/s (23.62 m^3/s), 4.66 in/yr (118 mm/yr), 604,200 acre-ft/yr (745 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 43,100 ft^3/s (1,220 m^3/s) Apr. 9, 1965, gage height, 21.36 ft (6.511 m), from floodmark; minimum, 6.9 ft 3/s (0.20 m 3/s) Oct. 12, 1955, gage height, 1.04 ft (0.317 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,170 ft^3/s (260 m^3/s) June 3, gage height, 8.42 ft (2.566 m); minimum, 129 ft^3/s (3.65 m^3/s) Aug. 6, gage height, 1.68 ft (0.512 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1160	1890	1300	835	330	250	1320	1020	5420	752	143	1060
2	1100	2110	1130	828	320	250	1220	960	7730	700	186	986
3	1050	2280	1320	798	300	250	1120	908	9110	650	153	970
4	1000	2370	1580	659	295	250	1110	859	8660	612	144	920
5	954	2340	1900	638	285	250	1630	815	7930	574	140	820
6	904	2330	1900	620	275	250	2620	771	7450	519	134	758
7	860	2380	1910	600	270	250	3530	728	7120	475	137	703
8	821	2590	1650	590	265	250	3750	685	6990	438	137	643
9	782	2740	1420	590	260	250	3620	644	6500	417	133	587
10	741	2630	1580	580	260	280	3480	620	5480	385	135	552
11	712	2430	1710	620	260	310	3480	597	4420	585	147	502
12	684	2260	1280	640	260	350	3360	574	3750	621	172	448
13	657	2120	948	620	260	400	3040	570	3220	524	631	411
14	636	1990	830	580	260	450	2710	555	2820	438	648	382
15	601	1900	920	538	260	520	2430	545	2570	395	745	355
16	581	1850	1040	502	260	980	2220	527	2480	354	1160	328
17	559	1810	1040	568	260	1200	2030	520	2360	327	1180	304
18	548	1760	1040	490	260	1500	1870	520	2100	303	1020	288
19	611	1710	1070	466	260	1760	1770	530	1860	282	1310	275
20	735	1660	1090	460	250	1800	1720	552	1680	255	1550	274
21	874	1610	1110	460	238	1750	1690	565	1520	241	1410	332
22	963	1660	1030	470	238	1650	1660	571	1380	253	1120	357
23	1150	1810	1020	470	242	1550	1630	567	1260	252	971	627
24	1430	2110	980	436	246	1300	1560	550	1170	233	855	852
25	1880	2360	947	400	250	1170	1460	529	1080	214	739	769
26	2150	2390	924	390	250	1110	1370	509	1000	198	654	691
27	2060	2320	908	380	250	1050	1290	481	976	186	619	633
28	1940	2230	880	370	250	1020	1200	446	1120	176	750	582
29	1850	2020	850	360	250	1030	1130	449	953	166	940	546
30	1760	1590	842	350	---	1100	1070	1390	842	156	1230	521
31	1770	---	835	340	---	1240	---	3690	---	149	1230	---
TOTAL	33523	63250	36984	16648	7664	25770	62090	23247	110951	11830	20523	17476
MEAN	1081	2108	1193	537	264	831	2070	750	3698	382	662	583
MAX	2150	2740	1910	835	330	1800	3750	3690	9110	752	1550	1060
MIN	548	1590	830	340	238	250	1070	446	842	149	133	274
CFSM	.45	.87	.49	.22	.11	.34	.85	.31	1.52	.16	.27	.24
IN.	.51	.97	.57	.25	.12	.39	.95	.36	1.70	.18	.31	.27
AC-FT	66490	125500	73360	33020	15200	51110	123200	46110	220100	23460	40710	34660

CAL YR 1979 TOTAL 711589 MEAN 1950 MAX 10800 MIN 26 CFSM .80 IN 10.89 AC-FT 1411000
WTR YR 1980 TOTAL 429956 MEAN 1175 MAX 9110 MIN 133 CFSM .48 IN 6.58 AC-FT 852800

05320500 LE SUEUR RIVER NEAR RAPIDAN, MN

LOCATION.--Lat 44°06'40", long 94°02'28", in SW¼ sec.35, T.108 N., R.27 W., Blue Earth County, Hydrologic Unit 07020011, on right bank 600 ft (183 m) downstream from highway bridge, 1.8 mi (2.9 km) northeast of Rapidan, and 2.3 mi (3.7 km) upstream from mouth.

DRAINAGE AREA.--1,100 mi^2 (2,850 km^2), approximately.

PERIOD OF RECORD.--October 1939 to September 1945, July 1949 to current year.

GAGE.--Water-stage recorder. Datum of gage is 775.76 ft (236.452 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 15, 1939, nonrecording gage at same site and datum.

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

AVERAGE DISCHARGE.--37 years (water years 1940-45, 1950-80), 430 ft^3/s (12.18 m^3/s), 5.31 in/yr (135 mm/yr), 311,500 acre-ft/yr (384 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,700 ft^3/s (700 m^3/s) Apr. 8, 1965, gage height, 22.10 ft (6.736 m), from floodmark; maximum gage height, 22.72 ft (6.925 m) May 22, 1960, from floodmark; minimum daily discharge, 1.6 ft^3/s (0.045 m^3/s) Feb. 9-25, 1959; minimum gage height, 0.65 ft (0.198 m) Sept. 7-13, 1976.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,300 ft^3/s (36.8 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Mar. 19	1800	*3190	90.3	a*6.87	2.094	June 2	0630	2860	81.0	6.04	1.841
Apr. 7	2330	2160	61.2	5.19	1.582	June 8	0300	2270	64.3	5.34	1.628

a ice jam.

Minimum discharge, 28 ft^3/s (0.793 m^3/s) Aug. 12, gage height, 1.00 ft (0.305 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	171	457	415	205	92	87	817	502	2140	647	32	152
2	168	481	403	200	90	86	755	474	2780	539	63	133
3	168	553	410	198	89	85	737	456	2370	454	55	126
4	170	532	420	192	87	85	754	425	2030	381	55	160
5	164	497	420	190	86	85	1130	399	1920	321	52	149
6	161	489	395	187	85	85	1910	373	1770	271	41	156
7	155	500	360	182	85	85	2110	345	1950	234	37	130
8	151	651	337	178	85	85	2120	321	2250	197	35	108
9	146	736	333	173	85	85	2050	302	2080	171	30	91
10	137	708	350	170	85	85	1910	288	1780	152	30	78
11	136	660	300	170	85	85	1820	282	1500	136	34	73
12	135	604	240	170	85	86	1750	269	1310	123	31	68
13	130	550	194	170	85	88	1660	271	1180	109	51	61
14	127	511	200	170	85	100	1560	264	1000	98	71	56
15	121	474	220	175	85	230	1420	256	852	87	88	53
16	121	451	270	185	85	1050	1280	250	749	78	158	49
17	120	433	290	200	85	1550	1160	243	651	70	203	44
18	121	423	290	230	85	1900	1070	238	580	64	171	40
19	139	412	283	240	85	2360	994	231	520	59	196	40
20	132	394	280	220	86	2700	940	227	480	55	270	47
21	148	390	272	190	88	2740	902	221	440	50	252	139
22	163	425	268	160	95	2510	864	208	400	46	200	231
23	233	526	260	140	100	1920	815	197	360	42	160	459
24	337	624	250	130	100	1530	770	184	330	52	143	576
25	567	676	245	122	97	1230	719	173	306	51	126	491
26	635	692	235	118	94	1160	676	164	271	42	115	415
27	585	681	228	112	92	1020	645	156	258	37	102	365
28	530	645	220	108	90	924	604	147	438	35	99	327
29	486	530	218	103	89	921	560	154	441	33	113	288
30	446	434	211	100	---	873	530	980	667	32	163	255
31	442	---	209	94	---	855	---	1300	---	32	160	---
TOTAL	7445	16139	9026	5182	2565	26685	35032	10300	33803	4698	3336	5360
MEAN	240	538	291	167	88.4	861	1168	332	1127	152	108	179
MAX	635	736	420	240	100	2740	2120	1300	2780	647	270	576
MIN	120	390	194	94	85	85	530	147	258	32	30	40
CFSM	.22	.49	.27	.15	.08	.78	1.06	.30	1.03	.14	.10	.16
IN.	.25	.55	.31	.18	.09	.90	1.18	.35	1.14	.16	.11	.18
AC-FT	14770	32010	17900	10280	5090	52930	69490	20430	67050	9320	6620	10630

CAL YR 1979	TOTAL	276854	MEAN 759	MAX 6630	MIN 16	CFSM .69	IN 9.36	AC-FT	549100	
WTR YR 1980	TOTAL	159571	MEAN 436	MAX 2780	MIN 30	CFSM .40	IN 5.40	AC-FT	316500	

05325000 MINNESOTA RIVER AT MANKATO, MN

LOCATION.--Lat 44°09'58", long 94°00'57", in NW¼NE¼ sec.13, T.108 N., R.27 W., Nicollet County, Hydrologic Unit 07020007, on left bank 12 ft (3.7 m) downstream from bridge on U.S. Highway 169 in North Mankato, 1.1 mi (1.8 km) downstream from Blue Earth River and at mile 107.1 (172.3 km) upstream from Mississippi River.

DRAINAGE AREA.--14,900 mi^2 (38,600 km^2), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1903 to current year (no winter records 1904, 1906-10, 1918-29). Monthly discharge only for some periods, published in WSP 1308. Published as "near Mankato": 1903-21.

REVISED RECORDS.--WSP 875: 1917. WSP 955: Drainage area. WSP 1085: 1929. WSP 1238: 1903, 1908, 1919. WSP 1508: 1916(M), 1918(M), 1926(M), 1928, 1930, 1932(M), 1938(M). WDR-MN-76-1: 1881(M).

GAGE.--Water-stage recorder. Datum of gage is 747.92 ft (227.966 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 19, 1921, nonrecording gage, at site 1.1 mi (1.8 km) upstream at datum 6.4 ft (2.0 m) higher. Mar. 15, 1922, to Nov. 30, 1924, nonrecording gage, and Dec. 1, 1924 to May 24, 1971, recorder at site 0.5 mi (0.8 km) downstream at present datum. May 25, 1971 to Aug. 14, 1977, recorder at site 0.2 mi (0.3 km) downstream at present datum. Aug. 14, 1977 to July 27, 1978, nonrecording gage at present site and datum.

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

AVERAGE DISCHARGE.--59 years (water years 1905, 1911-17, 1930-80), 2,707 ft^3/s (76.66 m^3/s), 2.47 in/yr (63 mm/yr), 1,961,000 acre-ft/yr (2.42 km^3/yr); median of yearly mean discharges, 2,487 ft^3/s (70.43 m^3/s) 2.27 in/yr (58 mm/yr), 1,802,000 acre-ft/yr (2.22 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 94,100 ft^3/s (2,660 m^3/s) Apr. 10, 1965, gage height, 29.09 ft (8.867 m); minimum observed, 26 ft^3/s (0.74 m^3/s) Aug. 4, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since Apr. 26, 1881, 29.9 ft (9.114 m) present site and datum, from floodmark, discharge, 110,000 ft^3/s (3,120 m^3/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,700 ft^3/s (445 m^3/s) June 8, gage height, 15.12 ft (4.609 m); minimum, 488 ft^3/s (13.8 m^3/s) Aug. 12, gage height, 2.74 ft (0.835 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2610	3960	3580	2500	980	920	5060	3350	11300	3700	708	1690
2	2510	5660	2880	2300	970	920	4950	3210	14300	3350	916	1560
3	2440	7140	2940	2150	965	920	4810	3070	15500	3110	861	1550
4	2370	7840	3400	2000	960	920	4890	2920	14400	2920	814	1570
5	2290	8150	3700	1950	950	920	5810	2740	13000	2770	754	1430
6	2220	8300	3800	1900	940	920	7500	2580	12500	2630	689	1370
7	2150	8400	3750	1850	920	920	8760	2470	14200	2550	630	1280
8	2080	8620	3700	1800	920	920	9210	2350	15400	2440	623	1170
9	1980	8660	3600	1750	920	920	9140	2260	15400	2340	577	1070
10	1890	8220	3550	1700	920	920	8910	2210	14400	2260	565	1010
11	1860	7570	3450	1700	920	920	8910	2210	12900	2270	559	947
12	1830	6910	3400	1650	920	920	8920	2210	11400	2250	505	871
13	1790	6250	3350	1650	920	920	8390	2240	10000	2070	930	806
14	1730	5730	3300	1650	920	930	7760	2190	8620	1860	1160	751
15	1690	5390	3250	1600	920	1000	7210	2140	7650	1670	1180	721
16	1660	5130	3200	1550	920	2560	6660	2100	7180	1500	1650	689
17	1620	4960	3150	1550	920	4010	6230	2070	6780	1410	1860	648
18	1620	4770	3100	1500	920	5360	5890	2060	6270	1370	1690	613
19	1780	4620	3100	1450	920	7340	5650	2050	5830	1330	1830	599
20	1920	4440	3100	1450	920	7200	5470	2060	5420	1280	2140	665
21	2150	4360	3100	1400	920	7950	5330	2070	5160	1210	2110	836
22	2370	4470	3050	1350	920	9210	5210	2060	4900	1150	1890	848
23	2620	4700	3050	1350	920	8570	5030	2040	4540	1100	1770	1220
24	2910	5060	3000	1300	920	7680	4830	1980	4160	1060	1640	1630
25	3320	5320	3000	1300	920	7050	4610	1900	3820	1020	1520	1560
26	3730	5330	3000	1250	920	7060	4390	1830	3570	964	1400	1430
27	3680	5230	3000	1200	920	5730	4150	1780	3420	909	1280	1330
28	3480	5090	2960	1150	920	4750	3910	1720	3790	868	1310	1230
29	3240	4400	2900	1100	920	4630	3700	2290	3890	834	1440	1140
30	3170	3610	2750	1050	---	4650	3520	3940	3910	788	1780	1080
31	3260	---	2600	1000	---	4790	---	7690	---	741	1830	---
TOTAL	73970	178290	99710	49100	26925	112430	184810	77790	263610	55724	38611	33314
MEAN	2386	5943	3216	1584	928	3627	6160	2509	8787	1798	1246	1110
MAX	3730	8660	3800	2500	980	9210	9210	7690	15500	3700	2140	1690
MIN	1620	3610	2600	1000	920	920	3520	1720	3420	741	505	599
CFSM	.16	.40	.22	.11	.06	.24	.41	.17	.59	.12	.08	.07
IN.	.18	.45	.25	.12	.07	.28	.46	.19	.66	.14	.10	.08
AC-FT	146700	353600	197800	97390	53410	223000	366600	154300	522900	110500	76580	66080

CAL YR 1979 TOTAL 2561769 MEAN 7019 MAX 29700 MIN 188 CFSM .47 IN 6.40 AC-FT 5081000
WTR YR 1980 TOTAL 1194284 MEAN 3263 MAX 15500 MIN 505 CFSM .22 IN 2.98 AC-FT 2369000

05325000 MINNESOTA RIVER AT MANKATO, MN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963-66, 1968 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1967 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1967 to current year.

REMARKS.--During the winter period, suspended-sediment samples were collected weekly and daily sediment load was estimated on the basis of water records and weekly sediment samples. Water temperature was obtained once-daily during open water period and weekly for the winter period.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum daily, 30.5°C July 15, 1980; minimum daily, 0.0°C on many days each year.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,850 mg/L Aug. 7, 1968; minimum daily mean, 13 mg/L Nov. 24, 1974, Feb. 18, 19, 1979.
SEDIMENT LOADS: Maximum daily, 247,000 tons (224,100 tonnes) Apr. 9, 1969; minimum daily, 5.2 tons (4.7 tonnes) Nov. 6, 1976.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum daily, 30.5°C July 15; minimum daily, 0.0°C, on many days.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,220 mg/L May 31; minimum daily mean, 22 mg/L Dec. 13.
SEDIMENT LOADS: Maximum daily, 29,100 tons (26,400 tonnes) June 1; minimum daily, 104 tons (94 tonnes) Feb. 3, 4.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.0	8.0	---	---	---	---	6.0	20.0	19.0	24.0	28.0	20.0
2	19.0	8.0	1.0	---	---	---	6.0	21.0	18.0	25.0	26.0	18.0
3	15.0	7.0	1.0	---	---	4.0	4.0	20.0	19.0	23.5	26.5	21.0
4	---	8.0	2.0	---	.0	---	5.0	21.0	20.0	25.0	25.0	19.0
5	11.0	6.0	1.0	---	---	---	7.0	20.0	21.0	25.5	26.0	20.0
6	12.0	5.0	1.0	---	---	---	9.0	16.0	21.0	26.0	27.0	20.0
7	13.0	4.5	1.0	---	---	---	9.0	14.0	20.0	28.0	27.5	21.0
8	11.0	4.0	.0	---	---	---	8.0	13.5	19.0	27.0	26.0	23.0
9	9.0	3.0	1.0	---	---	---	5.5	17.0	20.0	27.5	26.0	22.0
10	10.0	3.5	3.0	1.0	---	.0	5.5	16.5	20.0	30.0	25.0	21.0
11	11.0	3.0	.0	---	.0	---	7.0	15.0	21.0	29.5	26.0	16.0
12	10.0	3.0	.0	---	---	---	6.5	16.0	20.0	28.0	25.0	18.0
13	11.0	3.0	.0	---	---	---	5.5	14.0	25.0	26.0	24.0	20.0
14	9.0	3.0	1.0	---	---	---	7.0	15.5	23.5	30.0	22.0	18.0
15	12.0	4.5	1.0	---	---	---	9.0	13.0	21.5	30.5	23.0	16.0
16	13.0	6.0	1.0	1.0	---	---	10.0	16.0	22.0	29.0	19.0	16.0
17	8.0	7.0	.0	---	---	2.0	12.0	14.0	23.0	27.5	20.0	12.0
18	11.0	7.0	.0	---	.0	2.0	13.0	14.0	24.0	27.5	23.0	14.0
19	12.0	8.0	---	---	---	2.0	15.0	18.0	21.0	27.0	26.0	14.0
20	15.0	6.0	---	---	---	3.0	15.0	18.0	21.0	25.0	24.0	16.5
21	12.5	5.0	---	---	---	---	19.0	20.0	21.0	23.0	24.0	16.5
22	9.0	4.0	---	---	---	---	18.0	21.5	24.0	25.0	24.5	17.0
23	8.0	3.0	---	---	---	1.0	15.0	20.0	23.0	25.5	24.0	14.0
24	9.0	3.0	---	---	---	---	---	22.0	25.0	27.0	24.0	15.0
25	8.0	3.0	---	---	---	2.0	14.0	24.0	25.0	25.0	25.0	15.0
26	8.0	2.0	---	---	1.0	---	14.0	24.0	26.5	26.0	22.0	11.5
27	9.0	1.0	---	---	---	---	16.0	23.0	26.0	25.0	19.0	12.0
28	10.0	.0	.0	.0	---	---	15.5	26.0	25.0	27.0	18.0	13.5
29	10.5	.0	---	---	---	---	15.0	22.0	27.0	27.0	21.0	15.0
30	10.0	.0	1.5	---	---	---	18.0	19.0	24.0	27.0	22.0	14.0
31	11.0	---	---	---	---	---	---	19.0	---	27.0	18.0	---
MEAN		4.5						18.5	22.0	26.5	24.0	17.0

05325000 MINNESOTA RIVER AT MANKATO, MN--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	109	768	235	2510	198	1910	51	344	40	106	65	161
2	117	793	301	4600	138	1070	49	304	40	105	65	161
3	110	725	346	6670	119	946	48	279	40	104	65	161
4	97	620	269	5700	99	909	47	254	40	104	71	176
5	92	568	216	4750	124	1240	46	242	45	115	78	194
6	87	522	198	4440	111	1140	46	236	50	127	86	214
7	85	494	194	4400	119	1200	82	410	52	129	92	229
8	94	528	205	4770	101	1010	78	379	55	137	99	246
9	68	364	229	5350	130	1260	65	307	55	137	105	261
10	69	353	195	4330	143	1370	58	266	55	137	111	276
11	72	361	195	3990	80	745	56	257	55	137	110	273
12	72	355	184	3430	47	431	55	245	55	137	108	268
13	61	295	146	2460	22	199	54	241	55	137	106	263
14	53	248	212	3280	70	624	53	236	55	137	104	261
15	57	260	196	2850	79	693	52	225	55	137	105	283
16	71	318	189	2620	62	536	51	213	55	137	147	1020
17	74	323	140	1870	103	876	50	209	55	137	194	2100
18	86	376	120	1550	147	1230	49	198	60	149	274	3970
19	78	374	118	1470	117	979	48	188	60	149	428	8480
20	87	450	124	1490	92	770	46	180	60	149	339	6590
21	107	622	121	1420	86	720	45	170	60	149	408	8760
22	89	569	118	1430	80	659	43	157	60	149	402	10000
23	92	651	117	1480	74	609	41	149	60	149	317	7340
24	124	974	124	1690	72	583	40	140	61	152	252	5230
25	161	1440	106	1520	68	551	40	140	63	156	198	3770
26	177	1780	123	1770	65	526	40	135	64	159	248	4900
27	166	1650	124	1750	60	486	40	130	65	161	340	5260
28	124	1170	109	1500	57	456	40	124	65	161	256	3280
29	131	1150	143	1700	55	431	40	119	65	161	221	2760
30	154	1320	191	1860	54	401	40	113	---	---	197	2470
31	192	1690	---	---	52	365	40	108	---	---	177	2290
TOTAL	---	22111	---	88650	---	24925	---	6698	---	4004	---	81647
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	162	2210	101	915	955	29100	333	3330	101	193	248	1130
2	151	2020	108	937	730	28200	341	3090	124	307	205	863
3	142	1840	111	921	472	19800	302	2540	112	260	230	963
4	192	2530	108	851	404	15700	248	1950	96	211	272	1150
5	348	5460	106	784	440	15500	227	1700	97	198	178	687
6	502	10200	85	593	428	14400	208	1480	94	175	155	573
7	617	14600	76	506	620	23700	193	1330	83	141	161	556
8	595	14800	81	514	602	25100	213	1400	85	143	156	493
9	463	11400	83	507	482	20100	197	1240	87	136	127	367
10	323	7770	83	495	416	16200	198	1210	76	116	67	183
11	263	6320	95	567	401	13900	204	1250	82	124	87	222
12	216	5200	89	532	433	13300	178	1080	98	134	113	266
13	206	4670	94	568	424	11400	201	1120	161	404	120	261
14	192	4020	99	586	450	10500	187	941	85	267	118	239
15	150	2920	102	590	423	8740	214	966	93	297	108	210
16	148	2660	104	589	445	8630	203	824	177	788	96	179
17	150	2520	123	689	463	8470	195	742	238	1200	81	142
18	133	2120	117	650	444	7520	181	668	207	944	75	124
19	148	2260	113	626	408	6420	183	657	225	1110	84	136
20	156	2310	122	678	392	5730	172	594	308	1780	107	192
21	153	2200	126	703	400	5570	156	508	292	1660	158	357
22	152	2140	113	628	458	6060	133	415	271	1380	150	343
23	150	2040	116	638	414	5080	130	388	262	1250	338	1110
24	148	1930	128	685	337	3790	138	393	205	908	315	1390
25	130	1620	135	693	366	3770	132	363	163	669	217	914
26	121	1430	114	562	340	3280	130	338	162	612	191	737
27	117	1310	122	588	348	3220	128	314	164	567	174	625
28	88	929	132	613	400	4090	121	284	160	566	181	601
29	90	899	370	2280	371	3900	111	250	160	622	203	625
30	104	988	1100	12500	373	3940	101	215	235	1130	177	516
31	---	---	1220	25300	---	---	94	188	267	1320	---	---
TOTAL	---	123316	---	58288	---	345110	---	31768	---	19612	---	16154

TOTAL LOAD FOR YEAR: 822283 TONS.

05327000 HIGH ISLAND CREEK NEAR HENDERSON, MN

LOCATION.--Lat 44°34'19", long 93°55'18", in NE¼NW¼ sec.26, T.113 N., R.26 W., Sibley County, Hydrologic Unit 07020012, on left bank 20 ft (6.1 m) downstream from bridge on County Road 6, 1.6 mi (2.6 km) upstream from mouth, and 3.1 mi (5.0 km) north of Henderson.

DRAINAGE AREA.--237 mi^2 (614 km^2).

PERIOD OF RECORD.--October 1973 to current year. May 1970 to September 1973, operated as a low-flow station only.

GAGE.--Water-stage recorder. Datum of gage is 728.56 ft (222.065 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good.

AVERAGE DISCHARGE.--7 years, 53.9 ft^3/s (1.526 m^3/s), 3.09 in/yr (78 mm/yr), 39,050 acre-ft/yr (48.1 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,570 ft^3/s (44.5 m^3/s) Aug. 28, 1979, gage height, 8.86 ft (2.701 m); minimum discharge, 0.44 ft^3/s (0.012 m^3/s) Oct. 3, 4, 1976; minimum daily, 0.52 ft^3/s (0.015 m^3/s) July 14, 1976.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 300 ft^3/s (8.50 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Nov. 1	0900	300	8.50	3.18	0.969	Mar. 18	1815	*399	11.3	*3.78	1.152
Nov. 8	1100	300	8.50	3.18	0.969	Mar. 19	1715	393	11.1	3.75	1.143
Mar. 16	1715	321	9.09	3.37	1.027	June 7	1730	381	10.8	3.69	1.125

Minimum discharge, 1.7 ft^3/s (0.048 m^3/s) July 31, Aug. 1, 2, 5-13.

PEAK DISCHARGE FOR WATER YEARS 1974 TO 1979.--Peak discharge above base of 300 ft^3/s (8.50 m^3/s) and maximum (*):

Water year	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
1974	Apr. 13, 1974	0500	428	12.1	3.93	1.198
	June 2, 1974	1445	*825	23.4	*5.72	1.743
	June 10, 1974	1445	391	11.1	3.74	1.140
1975	Apr. 17, 1975	2400	418	11.8	3.88	1.183
	Apr. 23, 1975	1015	872	24.7	5.91	1.801
	Apr. 28, 1975	unknown	*1500	42.5	*8.22	2.505
	June 29, 1975	1615	480	13.6	4.19	1.277
1976	Mar. 12, 1976	0730	*160	4.53	*2.78	0.847
1977	Mar. 12, 1977	0100	543	15.4	4.49	1.369
	July 23, 1977	2050	*633	17.9	*4.90	1.494
1978	Mar. 21, 1978	2100	*864	24.5	*5.88	1.792
	Mar. 22, 1978	1545	571	16.2	4.62	1.408
	Apr. 19, 1978	0245	312	8.84	3.58	1.091
1979	Mar. 23, 1979	1530	399	11.3	3.66	1.116
	Apr. 2, 1979	1630	849	24.0	5.75	1.753
	Apr. 7, 1979	2345	1070	30.3	6.53	1.990
	May 16, 1979	1845	354	10.0	3.81	1.161
	June 16, 1979	1645	390	11.0	3.98	1.213
	July 23, 1979	0930	358	10.1	3.49	1.064
	Aug. 9, 1979	1245	514	14.6	4.27	1.301
	Aug. 21, 1979	1315	1130	32.0	7.04	2.146
	Aug. 28, 1979	1800	*1570	44.5	*8.86	2.701
	Sept.13, 1979	0730	534	15.1	4.37	1.332

REVISIONS.--Revised maximum discharges for water years 1974, 1975, 1977, and 1978, and revised daily discharges, in cubic feet per second, for high-water periods in these years are given below. These figures supersede those published in the reports for 1974, 1975, 1977, and 1978.

Water year	Date	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Water year	Date	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
1974	June 6, 1974	825	23.4	5.72	1.743	1977	July 23, 1977	633	17.9	4.90	1.494
1975	Apr. 28, 1975	1500	42.5	8.22	2.505	1978	Mar. 21, 1978	864	24.5	5.88	1.792

Apr. 23, 1975....739
24.....560
27.....526
28.....1400
Apr. 29, 1975....935
30.....700
July 23, 1977....195
24.....433
Mar. 21, 1978....230
22.....380

MONTH	TOTAL	MEAN	MAX	MIN	CFSM	IN	AC-FT
April 1975	7340.1	245	1400	4.3	1.03	1.15	14560
WTR YR 1975	20526.60	56.2	1400	1.1	.24	3.22	40710
July 1977	1236.0	39.9	433	1.5	.17	.19	2450
WTR YR 1977	3963.09	10.9	433	.46	.05	.62	7860
March 1978	2311.1	74.6	380	4.5	.32	.36	4580
WTR YR 1978	18498.10	50.7	380	4.5	.21	2.90	36690

05327000 HIGH ISLAND CREEK NEAR HENDERSON, MN--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	276	100	58	10	8.1	128	37	49	16	1.7	4.8
2	97	250	104	56	9.5	7.7	122	37	44	14	1.9	4.5
3	89	227	106	44	8.9	7.6	125	36	41	14	1.9	4.8
4	82	220	107	42	8.1	7.5	112	36	41	13	1.9	7.3
5	80	230	108	40	9.0	7.3	110	34	65	12	1.8	6.4
6	74	256	108	39	8.6	6.7	100	33	90	11	1.7	4.2
7	72	287	104	38	8.5	6.3	99	31	294	9.4	1.7	4.1
8	69	298	99	36	8.5	6.3	96	30	282	8.5	1.7	3.8
9	67	297	97	35	8.5	6.1	104	28	187	8.5	1.7	3.8
10	65	278	93	34	8.5	6.3	104	28	154	8.5	1.7	3.8
11	63	274	89	31	8.5	5.9	107	27	139	8.5	1.7	8.8
12	61	248	86	29	8.1	5.9	155	26	137	7.9	1.7	9.8
13	58	229	76	28	8.0	5.9	134	25	141	6.3	2.4	7.8
14	57	211	77	27	8.0	5.8	110	24	138	6.3	2.7	6.7
15	56	195	78	27	7.7	8.4	98	22	126	6.0	2.3	10
16	53	181	76	29	7.6	216	89	21	111	5.4	3.4	20
17	51	169	74	32	6.9	116	86	20	94	5.0	5.0	11
18	52	159	72	30	6.7	184	77	23	78	4.2	4.5	8.9
19	76	149	70	29	7.1	277	74	23	67	4.1	5.3	9.0
20	78	139	69	29	8.1	227	69	21	57	3.8	16	8.3
21	76	139	69	28	9.0	147	65	19	50	3.7	11	8.5
22	76	155	66	27	14	112	60	17	43	3.5	5.9	6.3
23	90	164	65	26	18	153	56	15	37	3.2	4.4	6.0
24	93	162	64	24	17	137	51	13	33	2.8	3.8	4.8
25	93	155	63	23	17	170	48	12	31	3.1	6.1	5.6
26	96	159	61	20	14	200	46	11	27	2.8	5.2	4.2
27	99	141	59	18	11	216	44	11	24	2.3	4.8	3.5
28	102	121	58	16	9.9	211	42	10	22	2.1	4.1	3.5
29	103	96	58	14	9.5	166	40	14	20	2.1	4.1	3.2
30	106	98	58	12	---	130	38	51	18	1.9	6.5	2.9
31	164	---	58	11	---	127	---	60	---	1.8	4.6	---
TOTAL	2503	5963	2472	932	284.2	2890.8	2589	795	2640	201.7	123.2	196.3
MEAN	80.7	199	79.7	30.1	9.80	93.3	86.3	25.6	88.0	6.51	3.97	6.54
MAX	164	298	108	58	18	277	155	60	294	16	16	20
MIN	51	96	58	11	6.7	5.8	38	10	18	1.8	1.7	2.9
CFSM	.34	.84	.34	.13	.04	.39	.36	.11	.37	.03	.02	.03
IN.	.39	.94	.39	.15	.04	.45	.41	.12	.41	.03	.02	.03
AC-FT	4960	11830	4900	1850	564	5730	5140	1580	5240	400	244	389

CAL YR 1979 TOTAL 63068.0 MEAN 173 MAX 1230 MIN 2.6 CFSM .73 IN 9.90 AC-FT 125100
WTR YR 1980 TOTAL 21590.2 MEAN 59.0 MAX 298 MIN 1.7 CFSM .25 IN 3.39 AC-FT 42820

05330000 MINNESOTA RIVER NEAR JORDAN, MN

LOCATION.--Lat 44°41'35", long 93°38'30", in NW¼SW¼ sec.7, T.114 N., R.23 W., Carver County, Hydrologic Unit 07020012, on pier at center downstream side of bridge 1.5 mi (2.4 km) northwest of Jordan and at mile 39.4 (63.4 km) upstream from Mississippi River.

DRAINAGE AREA.--16,200 mi^2 (42,000 km^2), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1934 to current year. Prior to Oct. 1, 1966, published as "near Carver, Minn".

REVISED RECORDS.--WSP 955: Drainage area. WSP 1508: 1935.

GAGE.--Water-stage recorder. Datum of gage is 690.00 ft (210.312 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1966, water-stage recorder 2.8 mi (4.5 km) downstream with auxiliary nonrecording gage at present site and present datum.

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

AVERAGE DISCHARGE.--46 years, 3,402 ft^3/s (96.34 m^3/s), 2.85 in/yr (72 mm/yr), 2,465,000 acre-ft/yr (3.04 km^3/yr); median of yearly mean discharges, 3,006 ft^3/s (85.13 m^3/s), 2.52 in/yr (64 mm/yr), 2,178,000 acre-ft/yr (2.69 km^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 117,000 ft^3/s (3,310 m^3/s) Apr. 11, 1965; maximum gage height, 35.07 ft (10.689 m) Apr. 12, 1965 (backwater from Mississippi River); minimum discharge, 79 ft^3/s (2.24 m^3/s) Nov. 17, 1955; minimum gage height, 2.66 ft (0.811 m) Nov. 22, 1935.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,200 ft^3/s (402 m^3/s) June 12, gage height, 19.40 ft (5.913 m); minimum discharge, 726 ft^3/s (20.6 m^3/s) Aug. 14, gage height, 4.51 ft (1.375 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3490	4430	5070	3000	1380	1320	6220	4020	6480	4190	902	1830
2	3360	5270	4130	2800	1370	1320	6150	3840	8590	4070	887	1810
3	3240	6360	3630	2700	1360	1310	6100	3720	9890	3770	901	1690
4	3110	7560	3620	2530	1350	1310	6160	3610	11000	3500	993	1640
5	3020	8390	3900	2440	1350	1310	6830	3480	11900	3270	946	1650
6	2930	8750	4000	2340	1340	1300	7990	3270	12500	3070	906	1580
7	2840	9000	4100	2260	1340	1300	8940	3090	12900	2920	871	1480
8	2750	9200	4100	2200	1340	1300	9550	2940	13100	2790	834	1410
9	2650	9410	4050	2150	1330	1300	9860	2820	13300	2680	786	1330
10	2560	9500	4000	2100	1330	1300	9900	2720	13700	2550	772	1240
11	2470	9370	3950	2100	1330	1300	9880	2630	14000	2440	753	1200
12	2380	8960	3900	2090	1330	1300	9920	2590	14200	2370	733	1210
13	2310	8360	3850	2070	1330	1300	9720	2570	14000	2360	741	1110
14	2260	7730	3800	2040	1330	1300	9210	2580	13400	2250	750	1040
15	2180	7130	3750	2000	1330	1320	8560	2540	11900	2060	1030	981
16	2130	6690	3700	1970	1330	1450	7940	2470	9950	1900	1140	1010
17	2080	6390	3650	1940	1330	3900	7370	2410	8610	1720	1340	987
18	2030	6130	3600	1910	1330	5160	6940	2390	7810	1600	1710	928
19	2110	5950	3530	1870	1320	7010	6600	2370	7170	1520	1770	876
20	2220	5720	3500	1830	1320	8370	6350	2330	6590	1470	1760	857
21	2340	5590	3500	1800	1320	8880	6140	2320	6090	1420	1970	886
22	2540	5620	3500	1750	1320	8960	5960	2300	5750	1360	2100	996
23	2870	5760	3490	1730	1320	9400	5770	2270	5440	1290	2000	1020
24	3200	5950	3480	1710	1320	9690	5570	2230	5090	1240	1850	1070
25	3510	6230	3470	1700	1320	9560	5360	2170	4710	1220	1760	1430
26	3840	6540	3460	1670	1320	9100	5160	2090	4380	1150	1700	1630
27	4280	6590	3400	1620	1320	8540	4890	2020	4090	1110	1580	1560
28	4410	6460	3350	1550	1320	7520	4630	1970	3870	1070	1460	1460
29	4310	6200	3300	1500	1320	6490	4410	1920	3990	1030	1370	1380
30	4150	5620	3200	1430	---	6190	4210	2150	4150	989	1450	1300
31	4080	---	3150	1400	---	6100	---	3630	---	954	1650	---
TOTAL	91650	210860	115130	62200	38650	135910	212290	83460	268550	65333	39415	38591
MEAN	2956	7029	3714	2006	1333	4384	7076	2692	8952	2108	1271	1286
MAX	4410	9500	5070	3000	1380	9690	9920	4020	14200	4190	2100	1830
MIN	2030	4430	3150	1400	1320	1300	4210	1920	3870	954	733	857
CFSM	.18	.43	.23	.12	.08	.27	.44	.17	.55	.13	.08	.08
IN.	.21	.48	.26	.14	.09	.31	.49	.19	.62	.15	.09	.09
AC-FT	181800	418200	228400	123400	76660	269600	421100	165500	532700	129600	78180	76550

CAL YR 1979 TOTAL 2973356 MEAN 8146 MAX 32000 MIN 255 CFSM .50 IN 6.83 AC-FT 5898000
WTR YR 1980 TOTAL 1362039 MEAN 3721 MAX 14200 MIN 733 CFSM .23 IN 3.13 AC-FT 2702000

05330000 MINNESOTA RIVER NEAR JORDAN, MN--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963-69, 1972 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: July 1973 to current year.
pH: January 1974 to current year.
WATER TEMPERATURES: July 1973 to current year.
DISSOLVED OXYGEN: July 1973 to current year.

INSTRUMENTATION.--Water-quality monitor since July 1973.

REMARKS.--Extremes are for those water years with 80 percent or more record. Letter K indicates non-ideal colony count. Letter ND indicates none detected. Water is pumped to a monitor that is inside a heated shelter; therefore, water temperature during the winter period may be affected.

COOPERATION.--Water-quality monitor is operated by the Metropolitan Waste Control Commission, St. Paul, MN.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1978, 1980): Maximum, 1,280 micromhos Dec. 20, 1979; minimum, 324 micromhos June 3, 1980.
pH (water years 1978, 1980): Maximum, 8.7 units May 22-26, 1980; minimum, 7.5 units Jan. 1-19, 1978, Sept. 8, 1980.
WATER TEMPERATURES (water years 1978-80): Maximum, 30.0°C July 15, 1980; minimum, 0.5°C many days during the winter.
DISSOLVED OXYGEN (water years 1978-80): Maximum, 19.6 mg/L Oct. 19, 1978; minimum, 2.5 mg/L Sept. 5, 1978.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 1,280 micromhos Dec. 20; minimum, 324 micromhos June 3.
pH: Maximum, 8.7 units May 22-26; minimum, 7.5 units Sept. 8.
WATER TEMPERATURES: Maximum, 30.0°C July 15; minimum, 0.5°C many days during the winter.
DISSOLVED OXYGEN: Maximum, 17.6 mg/L May 9; minimum, 2.7 mg/L July 24.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE, WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)
OCT												
22...	1145	2530	900	8.3	4.0	11.0	15	11.2	104	K20	K50	420
NOV												
14...	1245	7800	1040	8.3	2.0	2.0	15	11.8	89	120	210	620
DEC												
17...	1030	3650	1250	8.1	10.0	.0	2.0	13.2	93	64	130	660
JAN												
22...	1230	1750	1130	7.9	-4.0	.0	.50	10.7	75	110	64	610
FEB												
19...	1430	1320	1050	8.1	4.0	2.5	.60	8.0	60	42	K5	540
MAR												
24...	1230	9780	460	7.7	3.5	1.0	50	9.1	66	82	1200	190
JUN												
12...	1200	14200	740	--	19.5	20.5	2.3	6.9	78	200	1600	340
JUL												
24...	1130	1240	795	8.2	29.0	24.0	29	12.7	153	26	K30	370
AUG												
26...	1045	1720	770	8.3	11.5	23.0	29	8.1	96	--	360	380
SEP												
24...	1230	1070	725	8.5	20.5	15.0	2.0	14.2	143	200	48	300

05330000 MINNESOTA RIVER NEAR JORDAN, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY (MG/L AS CACO3) (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)
OCT 22...	140	100	42	22	.5	4.6	280	140	33	.4	15	579
NOV 14...	320	150	60	28	.5	4.5	300	240	32	.5	25	817
DEC 17...	310	160	63	27	.5	5.0	350	280	41	.5	22	897
JAN 22...	260	150	58	33	.6	4.9	350	210	37	.3	20	836
FEB 19...	180	130	52	39	.7	5.5	360	220	37	.3	23	786
MAR 24...	68	49	16	11	.3	7.7	120	57	13	.2	11	287
JUN 12...	140	86	30	11	.3	3.5	200	120	20	.4	20	550
JUL 24...	130	77	42	30	.7	5.9	240	160	32	.3	14	571
AUG 26...	120	93	37	22	.5	5.1	260	97	32	.4	23	544
SEP 24...	100	65	34	30	.8	4.7	200	100	33	.3	13	424

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
OCT 22...	549	3960	5.3	5.3	.140	.030	1.9	1.8	.160	.060	0	--
NOV 14...	769	17200	12	11	.080	.060	1.7	1.7	.160	.110	0	7.0
DEC 17...	866	8840	13	13	.080	.050	1.3	.97	.110	.100	--	6.4
JAN 22...	758	3950	7.8	7.8	.210	.210	1.4	1.4	.130	.070	0	--
FEB 19...	734	2800	2.9	2.5	.430	.430	1.2	1.2	.130	.100	0	5.0
MAR 24...	249	7580	3.1	2.8	.820	.630	2.7	2.3	.580	.350	--	16
JUN 12...	455	21100	9.8	9.8	.040	.020	1.2	.63	.390	.160	0	9.5
JUL 24...	506	1910	.05	.00	.300	.020	1.6	.51	.160	.020	0	9.0
AUG 26...	492	2530	5.9	5.9	.100	.000	1.4	.70	.140	.090	0	--
SEP 24...	402	1230	.48	.48	.010	.010	1.4	1.2	.200	.040	--	8.8

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	GROSS ALPHA, DISSOLVED (UG/L AS U-NAT) (80030)
MAY 14...	1345	2580	760	8.3	13.0	16.2	159	13
AUG 26...	1045	1720	770	8.3	23.0	8.1	96	11

DATE	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS ALPHA, DISSOLVED (PCI/L AS U-NAT) (01515)	GROSS ALPHA, SUSP. TOTAL (PCI/L AS U-NAT) (01516)	GROSS BETA, DISSOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DISSOLVED (PCI/L AS SR/YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90) (80060)	RADIUM 226, DISSOLVED, RADON METHOD (PCI/L) (09511)
MAY 14...	1.6	8.8	1.1	9.2	1.8	8.7	1.7	.09
AUG 26...	3.3	7.5	2.2	7.1	3.1	6.9	2.9	.11

05330000 MINNESOTA RIVER NEAR JORDAN, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)
OCT										
22...	1145	5	3	200	100	0	0	20	<10	0
JAN										
22...	1230	2	2	<50	<50	2	0	30	10	2
AUG										
26...	1045	4	4	100	0	1	0	10	10	0

DATE	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)
OCT										
22...	0	24	4	180	10	6	0	180	9	.1
JAN										
22...	2	7	3	660	20	3	0	100	80	.1
AUG										
26...	0	11	6	1600	30	5	2	230	0	<.1

DATE	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED (MG/L AS C) (00689)
OCT										
22...	.1	5	3	0	0	0	<10	1	7.8	.7
JAN										
22...	.1	4	3	2	1	0	20	10	6.1	.8
AUG										
26...	<.1	6	2	2	2	0	20	10	8.4	1.5

DATE	TIME	ALDRIN, TOTAL (UG/L) (39330)	ALDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG) (39333)	CHLOR-DANE, TOTAL (UG/L) (39350)	CHLOR-DANE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG) (39351)	DDD, TOTAL (UG/L) (39360)	DDD, TOTAL IN BOT-TOM MA-TERIAL (UG/KG) (39363)	DDE, TOTAL (UG/L) (39365)	DDE, TOTAL IN BOT-TOM MA-TERIAL (UG/KG) (39368)	DDT, TOTAL (UG/L) (39370)	DDT, TOTAL IN BOT-TOM MA-TERIAL (UG/KG) (39373)
NOV											
06...	1320	--	ND	--	ND	--	ND	--	ND	--	ND
14...	1245	ND	--	ND	--	ND	--	ND	--	ND	--
FEB											
27...	1145	ND	--	ND	--	ND	--	ND	--	ND	--
AUG											
26...	1045	ND	--	ND	--	ND	--	ND	--	ND	--

DATE	DI-AZINON, TOTAL (UG/L) (39570)	DI-AZINON, TOTAL IN BOT-TOM MA-TERIAL (UG/KG) (39571)	DI-ELDRIN TOTAL (UG/L) (39380)	DI-ELDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG) (39383)	ENDRIN, TOTAL (UG/L) (39390)	ENDRIN, TOTAL IN BOT-TOM MA-TERIAL (UG/KG) (39393)	ETHION, TOTAL (UG/L) (39398)	ETHION, TOTAL IN BOT-TOM MA-TERIAL (UG/KG) (39399)	HEPTA-CHLOR, TOTAL (UG/L) (39410)	HEPTA-CHLOR, TOTAL IN BOT-TOM MA-TERIAL (UG/KG) (39413)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L) (39420)
NOV											
06...	--	ND	--	ND	--	ND	--	ND	--	ND	--
14...	ND	--	ND	--	ND	--	ND	--	ND	--	ND
FEB											
27...	ND	--	ND	--	ND	--	ND	--	ND	--	ND
AUG											
26...	ND	--	ND	--	ND	--	ND	--	ND	--	ND

05330000 MINNESOTA RIVER NEAR JORDAN, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	HEPTACHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG) (39423)	LINDANE TOTAL (UG/L) (39340)	LINDANE TOTAL IN BOTTOM MATERIAL (UG/KG) (39343)	MALATHION, TOTAL (UG/L) (39530)	MALATHION, TOTAL IN BOTTOM MATERIAL (UG/KG) (39531)	METHOXYCHLOR, TOTAL (UG/L) (39480)	METHOXYCHLOR, TOT. IN BOTTOM MATL. (UG/KG) (39481)	METHYL PARATHION, TOTAL (UG/L) (39600)	METHYL PARATHION, TOT. IN BOTTOM MATL. (UG/KG) (39601)	METHYL TRITHION, TOTAL (UG/L) (39790)
NOV										
06...	ND	--	ND	--	ND	--	ND	--	ND	--
14...	--	ND	--	ND	--	ND	--	ND	--	ND
FEB										
27...	--	ND	--	ND	--	ND	--	ND	--	ND
AUG										
26...	--	ND	--	ND	--	ND	--	ND	--	ND

DATE	METHYL TRITHION, TOT. IN BOTTOM MATL. (UG/KG) (39791)	PARATHION, TOTAL (UG/L) (39540)	PARATHION, TOTAL IN BOTTOM MATERIAL (UG/KG) (39541)	TOXAPHENE, TOTAL (UG/L) (39400)	TOXAPHENE, TOTAL IN BOTTOM MATERIAL (UG/KG) (39403)	TOTAL TRITHION (UG/L) (39786)	TRITHION, TOTAL IN BOTTOM MATERIAL (UG/KG) (39787)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	SILVEX, TOTAL (UG/L) (39760)
NOV										
06...	ND	--	ND	--	ND	--	ND	--	--	--
14...	--	ND	--	ND	--	ND	--	ND	ND	ND
FEB										
27...	--	ND	--	ND	--	ND	--	--	--	--
AUG										
26...	--	ND	--	ND	--	ND	--	--	--	--

DATE	TIME	LENGTH OF EXPOSURE (DAYS) (00022)	PERIPHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERIPHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	CHLOR-A PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2) (70958)
NOV						
14...	1245	23	.320	.240	.770	.160
AUG						
22...	1645	29	17.0	14.9	8.03	.390

05330000 MINNESOTA RIVER NEAR JORDAN, MN--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1979 TO SEPTEMBER 1980

DATE	NOV 14,79		MAR 24,80		MAY 14,80		JUN 12,80	
TIME	1245		1230		1345		1200	
TOTAL CELLS/ML	3200		730		150000		27000	
DIVERSITY: DIVISION	1.2		1.7		1.6		1.2	
.CLASS	1.2		1.7		1.6		1.2	
..ORDER	1.7		2.2		2.3		1.4	
...FAMILY	2.2		2.5		2.7		1.5	
....GENUS	2.3		3.1		3.3		1.6	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...CHLOROCOCCACEAE								
....CHLOROCOCCUM	*	0	--	-	--	-	--	-
...MICRACTINIACEAE								
....GOLENKINIA	--	-	--	-	*	0	*	0
....MICRACTINIUM	39	1	--	-	4900	3	--	-
...OOCYSTACEAE								
....ANKISTRODESMUS	39	1	110#	16	4900	3	210	1
....CHLORELLA	--	-	--	-	*	0	--	-
....CHODATELLA	--	-	--	-	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	2500	2	270	1
....KIRCHNERIELLA	--	-	--	-	--	-	--	-
....OOCYSTIS	--	-	--	-	--	-	--	-
....SELENASTRUM	100	3	--	-	2100	1	--	-
....TREUBARIA	--	-	--	-	*	0	--	-
...SCENEDESMACEAE								
....ACTINASTRUM	--	-	--	-	8600	6	--	-
....CRUCIGENIA	52	2	--	-	--	-	--	-
....SCENEDESMUS	100	3	57	8	8000	5	--	-
....TETRASTRUM	--	-	--	-	7400	5	270	1
..TETRASPORALES								
...PALMELLACEAE								
....SPHAEROCYSTIS	--	-	--	-	--	-	3400	13
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	*	0	57	8	5200	4	140	1
...HAEMATOCOCCACEAE								
....HAEMATOCOCCUS	--	-	--	-	--	-	140	1
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	350	11	100	14	52000#	35	1200	4
....MELOSIRA	--	-	57	8	--	-	960	4
....STEPHANODISCUS	--	-	--	-	*	0	*	0
..PENNALES								
...FRAGILARIACEAE								
....FRAGILARIA	--	-	--	-	1200	1	--	-
....SYNEDRA	--	-	--	-	*	0	--	-
...GOMPHONEMATACEAE								
....GOMPHONEMA	--	-	14	2	--	-	--	-
...NAVICULACEAE								
....GYROSIGMA	--	-	--	-	--	-	--	-
....NAVICULA	--	-	--	-	--	-	210	1
...NITZSCHIACEAE								
....NITZSCHIA	90	3	57	8	9200	6	750	3
.CHRYSOPHYCEAE								
..CHRYSOMONADALES								
...MALLOMONADACEAE								
....MALLOMONAS	--	-	--	-	--	-	--	-
.XANTHOPHYCEAE								
..HETEROCOCCALES								
...CHLOROTHECIACEAE								
....OPHIOCYTIUM	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
.CRYPTOPHYCEAE								
..CRYPTOMONADALES								
...CRYPTOCHRYSIDACEAE								
....CHROOMONAS	--	-	--	-	*	0	--	-
...CRYPTOMONADACEAE								
....CRYPTOMONAS	26	1	--	-	*	0	--	-

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

05330000 MINNESOTA RIVER NEAR JORDAN, MN--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1979 TO SEPTEMBER 1980--Continued

DATE	NOV 14,79		MAR 24,80		MAY 14,80		JUN 12,80	
TIME	1245		1230		1345		1200	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..CHROOCOCCALES								
...CHROOCOCCACEAE								
....AGMENELLUM	--	-	--	-	4900	3	--	-
....ANACYSTIS	320	10	--	-	19000	13	--	-
....COCCOCHLORIS	--	-	--	-	*	0	--	-
....GOMPHOSPHAERIA	--	-	--	-	--	-	--	-
..HORMOGONALES								
...OSCILLATORIACEAE								
....LYNGBYA	--	-	140#	20	--	-	--	-
....OSCILLATORIA	1800#	56	110#	16	13000	9	19000#	71
...RIVULARIACEAE								
....RAPHIDIOPSIS	260	8	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
.EUGLENOPHYCEAE								
..EUGLENALES								
...EUGLENACEAE								
....EUGLENA	*	0	--	-	*	0	*	0
....TRACHELOMONAS	--	-	--	-	*	0	--	-
PYRRHOPHYTA (FIRE ALGAE)								
.DINOPHYCEAE								
..PERIDINIALES								
...GLENODINIACEAE								
....GLENODINIUM	--	-	--	-	--	-	--	-
...PERIDINIACEAE								
....PERIDINIUM	--	-	14	2	--	-	--	-

DATE	JUL 24,80		AUG 26,80		SEP 24,80	
TIME	1130		1045		1230	
TOTAL CELLS/ML	270000		120000		320000	
DIVERSITY: DIVISION	1.3		1.0		1.3	
.CLASS	1.3		1.0		1.3	
..ORDER	1.5		1.8		1.5	
...FAMILY	1.6		1.8		1.7	
....GENUS	2.3		2.1		2.1	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...CHLOROCOCCACEAE						
....CHLOROCOCCUM	--	-	--	-	--	-
...MICRACTINIACEAE						
....GOLENKINIA	--	-	--	-	--	-
....MICRACTINIUM	--	-	--	-	7700	2
...OOCYSTACEAE						
....ANKISTRODESMUS	*	0	*	0	1800	1
....CHLORELLA	--	-	--	-	--	-
....CHODATELLA	--	-	*	0	*	0
....DICTYOSPHAERIUM	9900	4	--	-	8600	3
....KIRCHNERIELLA	*	0	--	-	1800	1
....OOCYSTIS	--	-	600	1	--	-
....SELENASTRUM	--	-	--	-	*	0
....TREUBARIA	--	-	*	0	*	0
...SCENEDESMACEAE						
....ACTINASTRUM	2500	1	1200	1	8300	3
....CRUCIGENIA	--	-	--	-	--	-
....SCENEDESMUS	9900	4	4800	4	3500	1
....TETRASTRUM	*	0	1800	2	3500	1
..TETRASPORALES						
...PALMELLACEAE						
....SPHAEROCYSTIS	--	-	--	-	--	-
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	*	0	*	0	2100	1
...HAEMATOCOCCACEAE						
....HAEMATOCOCCUS	--	-	--	-	--	-

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

05330000 MINNESOTA RIVER NEAR JORDAN, MN--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1979 TO SEPTEMBER 1980--Continued

DATE TIME	JUL 24,80 1130		AUG 26,80 1045		SEP 24,80 1230	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHRYSOPHYTA						
.BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	74000#	28	11000	10	39000	12
....MELOSIRA	3100	1	4200	4	24000	7
....STEPHANODISCUS	--	-	--	-	--	-
..PENNALES						
...FRAGILARIACEAE						
....FRAGILARIA	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-
...GOMPHONEMATACEAE						
....GOMPHONEMA	--	-	--	-	--	-
...NAVICULACEAE						
....GYROSIGMA	--	-	--	-	*	0
....NAVICULA	*	0	--	-	--	-
...NITZSCHIACEAE						
....NITZSCHIA	1900	1	600	1	*	0
.CHRYSOPHYCEAE						
..CHRYSOMONADALES						
...MALLOMONADACEAE						
....MALLOMONAS	--	-	--	-	*	0
.XANTHOPHYCEAE						
..HETEROCOCCALES						
...CHLOROTHECIACEAE						
....OPHIOCYTIUM	*	0	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)						
.CRYPTOPHYCEAE						
..CRYPTOMONADALES						
...CRYPTOCHRYSIDACEAE						
....CHROOMONAS	--	-	--	-	--	-
...CRYPTOMONADACEAE						
....CRYPTOMONAS	--	-	*	0	*	0
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..CHROOCOCCALES						
...CHROOCOCCACEAE						
....AGMENELLUM	--	-	--	-	2400	1
....ANACYSTIS	110000#	42	32000#	28	*	0
....COCCOCHLORIS	39000	15	--	-	*	0
....GOMPHOSPHAERIA	--	-	--	-	3500	1
..HORMOGONALES						
...OSCILLATORIACEAE						
....LYNGBYA	--	-	--	-	--	-
....OSCILLATORIA	9300	3	59000#	50	210000#	65
...RIVULARIACEAE						
....RAPHIDIOPSIS	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)						
.EUGLENOPHYCEAE						
..EUGLENALES						
...EUGLENACEAE						
....EUGLENA	--	-	*	0	*	0
....TRACHELOMONAS	--	-	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)						
.DINOPHYCEAE						
..PERIDINIALES						
...GLENODINIACEAE						
....GLENODINIUM	--	-	--	-	*	0
...PERIDINIACEAE						
....PERIDINIUM	--	-	--	-	--	-

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

05330000 MINNESOTA RIVER NEAR JORDAN, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	1010	996	1000	991	958	979	830	816	824
2	---	---	---	996	962	984	1020	975	989	886	872	879
3	---	---	---	962	948	954	1070	1020	1050	904	888	900
4	---	---	---	958	950	955	1070	1040	1060	904	898	901
5	---	---	---	974	952	958	1090	1060	1080	912	892	900
6	---	---	---	1040	958	1000	1080	892	968	944	904	918
7	---	---	---	1140	1030	1070	944	920	932	960	940	946
8	---	---	---	1150	1090	1130	961	932	951	982	960	974
9	---	---	---	1150	1120	1140	979	956	966	1010	980	996
10	---	---	---	1120	1120	1120	963	949	956	1030	976	999
11	939	899	913	1020	1000	1010	970	958	934	1080	994	1040
12	956	906	927	1020	1020	1020	984	958	968	1090	1050	1070
13	949	911	930	1030	1020	1030	994	905	950	1060	1040	1040
14	942	909	926	1050	1030	1030	1040	984	1020	1090	1060	1080
15	932	909	920	1030	1020	1020	1080	1040	1060	1100	1080	1090
16	937	911	923	1040	1030	1040	1170	1090	1140	1120	1090	1100
17	932	890	913	1050	1040	1050	1210	1170	1200	1120	936	954
18	902	861	889	1050	1040	1040	1240	1200	1220	1140	1100	1120
19	883	857	874	1050	1040	1050	1240	1200	1220	1120	1090	1100
20	913	868	894	1040	1030	1040	1280	1080	1160	1140	1080	1100
21	925	857	899	1040	998	1030	1080	1030	1060	1100	1040	1070
22	902	824	861	996	956	977	1050	1020	1040	1060	1040	1050
23	835	821	831	951	911	936	1040	992	1010	1070	1040	1060
24	850	833	839	909	883	897	988	940	959	1060	1050	1060
25	918	833	883	880	850	866	946	898	919	1020	1000	1010
26	956	920	946	847	833	840	908	852	881	1010	1000	1010
27	970	956	962	852	833	842	848	794	823	---	---	---
28	989	969	977	861	850	859	844	804	822	---	---	---
29	997	906	988	897	864	880	802	770	786	---	---	---
30	1000	964	994	956	902	933	820	796	809	1090	1050	1070
31	1010	959	998	---	---	---	798	782	791	1090	1070	1080
MONTH				1150	833	990	1280	770	990			

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1080	1030	1060	926	878	901	934	902	921	842	806	826
2	1030	998	1010	914	886	901	944	930	937	820	792	809
3	1000	977	986	977	905	943	1080	940	1020	806	750	785
4	974	955	967	936	874	892	1150	1030	1120	792	736	771
5	967	938	953	898	859	875	1220	1160	1200	774	716	751
6	---	---	---	974	874	931	1270	1220	1250	754	690	727
7	---	---	---	962	924	943	1250	1170	1210	762	698	734
8	1080	1010	1040	948	910	929	1180	1160	1170	748	710	727
9	1080	1070	1080	953	922	936	1220	1180	1210	728	670	700
10	1080	1060	1070	986	936	955	1240	588	838	740	706	726
11	1040	1010	1020	1020	965	988	634	622	628	762	722	746
12	1010	989	1000	1020	967	990	672	636	655	760	716	741
13	994	967	982	1080	1000	1030	734	674	710	760	732	746
14	1020	1010	1020	1080	1020	1040	748	732	738	780	754	765
15	1030	1000	1020	1030	977	1000	784	748	766	784	754	771
16	1030	1020	1020	---	---	---	818	784	802	798	756	779
17	1020	988	1000	---	---	---	818	708	754	810	784	797
18	1000	983	993	---	---	---	744	724	735	846	806	824
19	1010	978	992	---	---	---	768	744	755	848	798	826
20	991	952	967	---	---	---	772	766	770	842	788	810
21	959	902	928	---	---	---	774	768	772	806	750	782
22	902	855	878	---	---	---	778	768	773	780	724	755
23	928	850	883	---	---	---	790	776	784	788	714	750
24	926	824	866	436	426	431	806	792	802	746	686	720
25	887	848	866	474	436	453	816	806	811	712	650	684
26	923	907	919	538	476	506	828	814	820	696	658	680
27	941	905	924	634	542	584	834	824	830	750	668	708
28	936	931	933	674	636	650	844	832	838	842	754	807
29	957	915	933	772	680	730	852	836	842	842	714	786
30	---	---	---	846	774	813	854	818	839	798	742	758
31	---	---	---	902	850	876	---	---	---	970	384	738
MONTH							1270	588	877	970	384	759

05330000 MINNESOTA RIVER NEAR JORDAN, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	502	406	438	750	726	742	770	750	761	840	724	786
2	468	350	400	730	582	652	770	736	755	960	840	924
3	368	324	334	602	558	572	778	768	775	1020	1000	1010
4	440	344	385	670	606	645	772	754	761	1000	974	984
5	---	---	---	730	662	701	768	738	758	1010	908	934
6	---	---	---	778	724	747	724	580	627	938	878	908
7	---	---	---	772	742	756	704	644	674	932	868	890
8	---	---	---	780	758	766	710	676	689	882	818	847
9	---	---	---	784	770	777	708	678	689	---	---	---
10	---	---	---	792	758	775	724	712	719	---	---	---
11	---	---	---	802	776	790	736	728	732	872	850	859
12	---	---	---	826	798	807	758	736	746	920	870	903
13	---	---	---	802	752	769	848	783	825	980	898	934
14	916	834	876	758	694	714	825	730	804	1020	974	995
15	1010	918	961	722	676	708	787	706	734	1020	952	999
16	1080	1020	1060	736	694	722	---	---	---	970	920	952
17	1080	1060	1070	802	728	766	---	---	---	934	740	830
18	1080	1050	1060	830	802	817	---	---	---	820	746	784
19	1050	894	909	824	806	816	---	---	---	830	778	808
20	934	912	921	850	800	819	892	858	876	810	770	787
21	922	908	914	848	822	838	956	882	929	800	766	776
22	916	900	910	842	790	821	956	904	926	784	704	753
23	914	892	902	810	744	782	944	906	923	736	640	696
24	900	854	879	795	736	765	920	888	920	725	546	606
25	888	850	867	756	702	736	910	860	890	704	552	633
26	898	844	866	702	662	682	850	768	810	780	710	748
27	864	844	850	684	662	673	890	796	850	842	774	803
28	876	858	867	688	660	675	910	850	890	1000	842	934
29	864	772	837	720	666	705	900	826	870	1080	1010	1050
30	784	710	749	734	700	722	867	778	832	1120	1080	1110
31	---	---	---	770	724	796	832	770	805	---	---	---
MONTH				850	558	744						

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	8.4	8.1	8.3	8.0	7.9	8.0	8.2	8.1	8.1
2	---	---	---	8.4	8.4	8.4	8.0	7.9	7.9	8.2	8.1	8.1
3	---	---	---	8.4	8.4	8.4	8.0	7.9	8.0	8.1	8.0	8.0
4	---	---	---	8.4	8.4	8.4	8.0	7.9	8.0	8.0	8.0	8.0
5	---	---	---	8.4	8.3	8.3	8.0	8.0	8.0	8.0	8.0	8.0
6	---	---	---	8.3	8.2	8.2	8.1	8.0	8.1	8.0	8.0	8.0
7	---	---	---	8.2	8.1	8.1	8.1	8.1	8.1	8.0	8.0	8.0
8	---	---	---	8.2	7.9	8.0	8.1	8.0	8.1	8.0	7.9	8.0
9	---	---	---	7.9	7.9	7.9	8.1	8.1	8.1	7.9	7.9	7.9
10	---	---	---	7.9	7.9	7.9	8.1	8.1	8.1	8.0	7.9	8.0
11	7.9	7.8	7.9	8.0	7.9	8.0	8.1	8.0	8.1	8.0	7.9	7.9
12	7.9	7.8	7.8	8.0	8.0	8.0	8.1	8.0	8.1	7.9	7.9	7.9
13	7.9	7.8	7.8	8.0	8.0	8.0	8.3	8.1	8.2	7.9	7.9	7.9
14	8.0	7.8	7.9	8.1	7.9	8.0	8.3	8.2	8.3	8.0	7.9	7.9
15	8.0	7.8	7.9	8.0	7.9	7.9	8.3	8.2	8.3	7.9	7.9	7.9
16	8.0	7.8	7.9	8.0	7.9	8.0	8.2	8.2	8.2	7.9	7.9	7.9
17	8.0	7.8	7.9	8.1	8.0	8.0	8.2	8.1	8.2	7.9	7.8	7.8
18	7.9	7.8	7.8	8.1	8.0	8.1	8.3	8.2	8.2	7.8	7.8	7.8
19	7.9	7.8	7.8	8.1	8.1	8.1	8.2	8.2	8.2	7.8	7.8	7.8
20	8.0	7.8	7.9	8.1	8.0	8.0	8.2	8.2	8.2	7.8	7.8	7.8
21	7.9	7.8	7.9	8.0	8.0	8.0	8.2	8.2	8.2	7.8	7.8	7.8
22	8.2	7.8	8.0	8.0	8.0	8.0	8.2	8.2	8.2	7.9	7.8	7.8
23	8.3	8.2	8.2	8.1	8.0	8.0	8.2	8.2	8.2	7.8	7.7	7.8
24	8.3	8.2	8.3	8.0	8.0	8.0	8.2	8.1	8.2	7.8	7.8	7.8
25	8.3	8.1	8.3	8.0	8.0	8.0	8.1	8.1	8.1	7.8	7.7	7.8
26	8.3	8.2	8.2	8.0	8.0	8.0	8.2	8.1	8.1	7.7	7.7	7.7
27	8.3	8.3	8.3	8.0	8.0	8.0	8.2	8.1	8.1	---	---	---
28	8.4	8.2	8.3	8.0	8.0	8.0	8.1	8.1	8.1	---	---	---
29	8.4	8.2	8.3	8.0	7.9	8.0	8.1	8.1	8.1	---	---	---
30	8.3	8.2	8.3	8.0	7.9	8.0	8.2	8.1	8.1	7.8	7.7	7.7
31	8.4	8.3	8.3	---	---	---	8.2	8.2	8.2	7.8	7.7	7.8
MONTH				8.4	7.9	8.1	8.3	7.9	8.1			

05330000 MINNESOTA RIVER NEAR JORDAN, MN--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	7.8	7.8	7.8	8.0	7.9	8.0	8.1	8.0	8.1	8.4	8.2	8.3
2	7.8	7.8	7.8	8.0	7.9	7.9	8.1	8.1	8.1	8.3	8.1	8.2
3	7.8	7.7	7.8	8.0	7.9	8.0	8.1	8.1	8.1	8.3	8.1	8.2
4	7.8	7.8	7.8	8.0	7.9	7.9	8.2	8.1	8.2	8.3	8.0	8.2
5	7.8	7.8	7.8	7.9	7.9	7.9	8.2	8.1	8.2	8.3	8.0	8.1
6	---	---	---	7.9	7.8	7.9	8.2	8.2	8.2	8.3	8.0	8.1
7	---	---	---	7.9	7.8	7.8	8.2	8.2	8.2	8.3	8.0	8.2
8	---	---	---	7.9	7.8	7.8	8.2	8.1	8.1	8.5	8.1	8.3
9	---	---	---	7.9	7.8	7.9	8.2	8.1	8.2	8.5	8.2	8.3
10	---	---	---	7.9	7.8	7.8	8.2	8.2	8.2	8.3	8.1	8.2
11	---	---	---	7.9	7.8	7.8	8.3	8.2	8.3	8.5	8.2	8.3
12	---	---	---	7.9	7.8	7.8	8.3	8.2	8.3	8.5	8.1	8.3
13	---	---	---	7.9	7.9	7.9	8.3	8.3	8.3	8.5	8.1	8.3
14	7.8	7.8	7.8	7.9	7.9	7.9	8.4	8.3	8.3	8.5	8.2	8.4
15	7.9	7.8	7.8	7.9	7.9	7.9	8.4	8.3	8.4	8.6	8.2	8.4
16	7.9	7.8	7.8	7.9	7.9	7.9	8.4	8.3	8.4	8.5	8.2	8.4
17	7.9	7.8	7.8	7.9	7.9	7.9	8.4	8.2	8.3	8.3	8.2	8.3
18	7.9	7.8	7.8	7.9	7.8	7.8	8.2	8.1	8.2	8.4	8.2	8.3
19	8.0	7.8	7.9	7.9	7.7	7.8	8.2	8.1	8.2	8.6	8.3	8.4
20	7.9	7.9	7.9	7.8	7.7	7.7	8.3	8.2	8.2	8.6	8.3	8.4
21	7.9	7.9	7.9	7.7	7.6	7.7	8.3	8.2	8.2	8.6	8.2	8.4
22	7.9	7.9	7.9	7.6	7.6	7.6	8.3	8.2	8.3	8.7	8.2	8.5
23	7.9	7.9	7.9	7.7	7.6	7.7	8.3	8.2	8.3	8.7	8.3	8.5
24	8.0	7.9	7.9	7.7	7.6	7.6	8.3	8.2	8.3	8.7	8.3	8.5
25	8.0	7.9	7.9	7.7	7.6	7.6	8.3	8.2	8.2	8.7	8.3	8.5
26	8.0	7.9	7.9	7.7	7.6	7.7	8.3	8.2	8.2	8.7	8.3	8.5
27	8.0	8.0	8.0	7.8	7.7	7.7	8.3	8.2	8.3	8.6	8.3	8.4
28	8.0	7.9	8.0	7.8	7.8	7.8	8.4	8.2	8.3	8.5	8.3	8.4
29	8.0	7.9	7.9	8.0	7.8	7.9	8.4	8.3	8.3	8.5	8.0	8.3
30	---	---	---	8.0	7.9	8.0	8.4	8.3	8.4	8.2	7.9	8.1
31	---	---	---	8.1	8.0	8.1	---	---	---	8.1	7.7	7.9
MONTH				8.1	7.6	7.8	8.4	8.0	8.2	8.7	7.7	8.3

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.7	7.6	7.7	8.0	8.0	8.0	8.2	8.0	8.1	8.0	7.7	7.8
2	7.7	7.7	7.7	8.0	7.9	8.0	8.2	8.0	8.1	8.0	7.8	7.9
3	7.8	7.7	7.7	8.0	7.9	7.9	8.2	8.0	8.1	8.0	7.8	7.9
4	7.8	7.7	7.8	8.0	7.9	7.9	8.2	8.0	8.1	7.9	7.8	7.8
5	8.0	7.8	7.8	8.1	7.9	8.0	8.3	8.0	8.2	7.9	7.7	7.8
6	7.8	7.7	7.7	8.1	8.0	8.0	8.4	8.2	8.3	7.9	7.6	7.8
7	7.8	7.6	7.7	8.2	8.0	8.1	8.3	8.2	8.2	7.9	7.6	7.7
8	7.9	7.6	7.8	8.2	8.0	8.1	8.3	8.0	8.2	7.9	7.5	7.7
9	8.0	7.7	7.8	8.2	8.0	8.1	8.3	8.1	8.2	8.1	7.8	7.9
10	---	---	---	8.3	8.0	8.2	8.2	8.1	8.1	8.1	7.8	7.9
11	---	---	---	8.2	8.1	8.2	8.3	8.0	8.1	7.7	7.6	7.7
12	---	---	---	8.2	8.1	8.2	8.2	8.1	8.1	8.0	7.6	7.7
13	---	---	---	8.2	8.1	8.2	8.3	8.1	8.2	8.0	7.8	7.9
14	7.9	7.8	7.9	8.3	8.1	8.2	8.4	8.1	8.3	7.9	7.7	7.8
15	8.0	7.9	7.9	8.3	8.0	8.2	8.4	8.2	8.3	8.0	7.7	7.9
16	8.0	8.0	8.0	8.3	8.0	8.1	---	---	---	7.9	7.6	7.8
17	8.1	8.0	8.0	8.3	8.1	8.2	---	---	---	8.0	7.7	7.8
18	8.1	8.0	8.1	8.3	8.1	8.2	---	---	---	8.1	7.8	7.9
19	8.1	7.8	7.9	8.3	8.2	8.3	---	---	---	8.1	7.8	7.9
20	7.9	7.9	7.9	8.3	8.2	8.2	8.0	7.9	7.9	8.0	7.7	7.9
21	8.0	7.9	7.9	8.4	8.2	8.2	8.0	7.8	7.9	8.1	7.8	7.9
22	7.9	7.9	7.9	8.3	8.1	8.2	8.0	7.8	7.9	8.1	7.7	7.9
23	8.0	7.9	7.9	8.2	8.0	8.1	7.9	7.7	7.8	8.1	7.7	7.9
24	8.0	7.9	7.9	---	---	---	7.9	7.8	7.9	8.2	7.8	8.0
25	8.0	7.9	7.9	8.3	7.9	8.1	8.0	7.8	7.9	8.0	7.8	7.9
26	8.0	7.9	8.0	8.3	8.0	8.2	8.0	7.7	7.8	8.1	7.9	8.0
27	8.0	7.9	8.0	8.3	8.0	8.2	7.9	7.7	7.8	8.1	7.9	8.0
28	8.0	7.9	8.0	8.2	8.0	8.1	8.0	7.8	7.9	8.2	8.0	8.1
29	8.0	8.0	8.0	8.3	8.0	8.1	8.0	7.7	7.9	8.1	8.0	8.0
30	8.0	7.9	8.0	8.2	8.0	8.1	7.9	7.6	7.8	8.1	7.9	8.0
31	---	---	---	8.5	7.9	8.1	7.7	7.6	7.6	---	---	---
MONTH										8.2	7.5	7.9

05330000 MINNESOTA RIVER NEAR JORDAN, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	15.0	12.5	14.0	1.0	1.0	1.0	1.0	1.0	1.0
2	---	---	---	16.5	14.0	15.0	1.0	1.0	1.0	1.0	1.0	1.0
3	---	---	---	15.5	13.5	14.5	1.5	1.0	1.0	1.0	1.0	1.0
4	---	---	---	13.5	12.5	13.0	1.5	1.0	1.5	1.0	1.0	1.0
5	---	---	---	12.5	10.0	11.0	1.5	1.0	1.5	1.0	1.0	1.0
6	---	---	---	9.5	7.5	9.0	1.0	1.0	1.0	1.0	1.0	1.0
7	---	---	---	8.5	7.0	7.5	1.0	1.0	1.0	1.0	1.0	1.0
8	---	---	---	7.5	3.0	4.5	1.0	1.0	1.0	1.0	.5	1.0
9	---	---	---	3.0	2.0	2.5	1.0	1.0	1.0	1.0	.5	1.0
10	---	---	---	2.0	1.5	2.0	1.0	1.0	1.0	1.0	1.0	1.0
11	11.0	10.5	10.5	1.5	1.0	1.5	1.0	.5	1.0	1.0	1.0	1.0
12	10.5	9.5	10.0	1.0	1.0	1.0	1.0	.5	1.0	1.0	1.0	1.0
13	10.0	9.0	9.5	1.0	.5	1.0	1.0	1.0	1.0	1.5	1.0	1.0
14	10.5	9.0	9.5	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
15	10.5	9.0	10.0	2.5	1.0	2.0	1.0	.5	1.0	1.0	1.0	1.0
16	11.5	10.0	10.5	3.5	2.5	3.0	.5	.5	.5	1.0	1.0	1.0
17	12.0	10.5	11.0	4.0	3.0	3.5	1.0	.5	.5	1.0	1.0	1.0
18	12.5	11.5	11.5	5.0	3.5	4.0	1.0	1.0	1.0	1.0	1.0	1.0
19	13.0	12.5	12.5	6.0	5.0	5.5	1.0	1.0	1.0	1.0	1.0	1.0
20	14.5	13.0	14.0	6.0	5.5	6.0	1.0	1.0	1.0	1.0	1.0	1.0
21	14.0	13.0	13.5	6.0	5.0	5.5	1.0	1.0	1.0	1.0	1.0	1.0
22	15.0	11.0	13.5	5.0	4.0	4.5	1.0	1.0	1.0	1.0	.5	1.0
23	17.5	14.5	16.0	4.0	3.5	4.0	1.0	1.0	1.0	1.0	.5	1.0
24	19.0	14.0	16.5	3.5	2.5	3.0	1.0	1.0	1.0	1.0	1.0	1.0
25	17.5	14.0	15.5	2.5	2.5	2.5	1.0	1.0	1.0	1.0	.5	1.0
26	16.5	12.5	14.5	2.5	2.0	2.0	1.0	1.0	1.0	1.0	.5	.5
27	16.5	15.5	16.0	2.0	1.5	1.5	1.0	1.0	1.0	---	---	---
28	---	---	---	1.5	.5	1.0	1.0	1.0	1.0	---	---	---
29	---	---	---	1.5	.5	1.0	1.0	1.0	1.0	---	---	---
30	---	---	---	1.0	1.0	1.0	1.0	1.0	1.0	1.0	.5	1.0
31	---	---	---	---	---	---	1.0	1.0	1.0	1.0	.5	1.0
MONTH				16.5	.5	5.0	1.5	.5	1.0			

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1.5	1.0	1.0	1.0	.5	1.0	4.5	4.0	4.5	18.0	16.0	17.0
2	1.5	1.0	1.0	1.0	.5	1.0	5.5	4.0	4.5	18.5	17.0	17.5
3	1.0	.5	1.0	1.5	1.0	1.0	5.0	4.0	4.5	19.5	18.0	18.5
4	1.5	1.0	1.0	1.0	.5	1.0	5.0	3.5	4.5	20.0	19.0	19.5
5	1.0	1.0	1.0	1.0	.5	1.0	5.5	4.0	5.0	20.0	19.0	19.5
6	---	---	---	1.0	.5	1.0	7.0	5.5	6.0	19.5	18.5	19.0
7	---	---	---	1.5	.5	1.0	8.0	7.0	7.5	18.5	16.0	17.0
8	1.0	.5	.5	1.5	.5	1.0	8.0	7.5	8.0	16.0	15.0	15.5
9	1.0	.5	.5	1.5	1.0	1.5	7.5	6.5	7.0	16.0	14.0	15.0
10	1.0	.5	1.0	1.5	1.0	1.0	6.5	5.5	6.0	15.0	15.0	15.0
11	1.0	.5	1.0	1.0	1.0	1.0	6.0	5.5	6.0	15.5	14.5	15.0
12	1.0	.5	.5	1.0	1.0	1.0	6.5	5.5	6.0	16.0	14.5	15.5
13	1.0	.5	1.0	1.5	1.0	1.0	6.0	5.5	6.0	15.5	15.0	15.5
14	1.0	1.0	1.0	1.5	1.0	1.0	6.5	5.5	6.0	15.5	14.5	15.0
15	1.5	1.0	1.0	1.5	1.0	1.5	7.5	6.0	7.0	16.0	14.0	15.0
16	1.0	.5	1.0	1.5	1.0	1.5	8.5	7.5	8.0	16.0	15.0	15.5
17	1.5	.5	1.0	1.5	1.5	1.5	10.5	8.5	9.5	15.5	15.0	15.5
18	1.5	1.0	1.0	2.5	1.5	2.0	11.5	10.0	10.5	15.5	15.0	15.0
19	1.5	1.0	1.5	3.0	1.5	2.0	13.5	11.5	12.5	16.5	14.5	15.5
20	1.5	1.0	1.5	2.0	1.5	1.5	15.0	13.0	14.0	18.0	16.0	17.0
21	1.5	1.0	1.0	1.5	1.0	1.5	16.5	14.5	15.5	20.0	17.5	18.5
22	1.5	1.0	1.0	1.5	1.0	1.0	17.5	16.0	16.5	21.5	19.5	20.5
23	1.0	1.0	1.0	1.5	1.0	1.0	17.5	16.5	17.0	22.5	20.5	21.5
24	1.5	1.0	1.0	1.0	1.0	1.0	17.0	16.0	16.5	23.0	21.5	22.0
25	1.0	.5	1.0	1.0	1.0	1.0	16.0	15.0	15.5	24.0	22.5	23.0
26	1.5	.5	1.0	1.0	1.0	1.0	15.0	14.0	14.5	24.5	23.0	23.5
27	1.5	1.0	1.0	1.0	1.0	1.0	15.0	13.5	14.0	24.5	23.0	23.5
28	1.5	.5	1.0	1.5	1.0	1.0	15.0	14.0	14.5	25.5	23.5	24.0
29	1.0	.5	.5	3.0	1.5	2.0	15.5	14.0	15.0	25.5	23.5	24.5
30	---	---	---	3.5	2.5	3.0	16.5	14.5	15.5	23.5	22.5	23.0
31	---	---	---	4.5	3.5	4.0	---	---	---	23.0	20.5	22.0
MONTH				4.5	.5	1.5	17.5	3.5	10.0	25.5	14.0	18.5

05330000 MINNESOTA RIVER NEAR JORDAN, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	20.5	19.5	20.0	24.0	22.5	23.5	27.0	25.0	26.0	22.5	21.0	21.5
2	19.5	19.0	19.5	24.0	23.0	23.5	27.0	25.0	26.0	22.5	21.0	21.5
3	19.5	19.0	19.5	24.5	23.0	23.5	26.0	24.5	25.5	23.5	21.5	22.5
4	20.0	19.5	19.5	25.0	23.5	24.5	25.5	24.0	25.0	23.0	22.0	22.5
5	25.0	20.0	22.0	25.5	24.5	25.0	25.0	23.5	24.0	24.0	21.5	23.0
6	26.0	23.0	24.5	26.5	24.5	25.5	25.5	23.5	24.5	25.5	23.5	24.5
7	26.0	22.5	24.5	27.5	26.0	27.0	25.5	25.0	25.5	24.5	21.5	23.0
8	23.0	19.5	21.5	27.0	26.5	27.0	26.5	24.5	25.0	23.0	21.0	22.5
9	26.0	21.5	24.5	27.5	26.5	27.0	25.5	24.0	24.5	23.5	22.0	22.5
10	---	---	---	28.5	26.5	27.5	24.5	23.0	23.5	22.0	20.5	21.0
11	---	---	---	29.0	25.5	28.0	24.5	22.5	23.5	21.0	20.0	20.5
12	---	---	---	29.5	26.5	28.5	23.5	22.0	22.5	20.0	19.0	19.5
13	---	---	---	29.0	28.0	28.5	24.0	19.5	22.5	20.0	19.5	20.0
14	22.0	20.5	21.0	29.5	28.0	29.0	23.5	21.0	22.5	19.5	18.5	19.0
15	22.0	21.5	22.0	30.0	28.0	29.0	23.0	21.5	22.0	19.5	18.0	18.5
16	22.5	21.5	22.0	29.5	27.5	28.5	---	---	---	19.5	17.5	18.5
17	22.5	21.5	22.0	29.0	26.5	28.0	---	---	---	17.5	16.5	17.0
18	22.5	21.5	22.0	28.0	25.5	27.5	---	---	---	17.0	16.0	16.5
19	22.5	21.5	22.5	27.0	26.0	26.5	---	---	---	17.0	15.5	16.0
20	22.5	22.0	22.0	26.0	25.0	25.5	24.5	23.5	24.0	17.0	16.5	16.5
21	23.0	21.5	22.5	25.5	24.0	25.0	25.0	23.5	24.0	17.5	16.5	17.0
22	23.5	22.5	23.0	25.0	24.0	24.5	25.0	23.5	24.5	18.0	17.0	17.5
23	24.5	23.0	23.5	25.5	23.0	24.5	25.0	24.0	24.5	17.5	16.5	17.0
24	24.5	23.5	24.0	24.5	22.5	23.5	24.5	23.5	24.0	17.5	16.5	17.0
25	25.0	23.0	24.0	25.5	24.5	25.0	26.0	23.5	24.5	17.0	16.0	16.5
26	25.5	24.5	25.0	25.5	24.0	25.0	25.0	22.5	24.0	16.0	14.5	15.0
27	25.5	24.5	25.0	26.0	23.5	24.5	22.5	21.5	22.0	15.0	14.0	14.5
28	25.0	24.0	24.5	25.5	24.5	25.0	22.0	21.0	21.5	15.5	14.0	14.5
29	25.0	23.5	24.0	26.0	24.5	25.5	23.5	21.5	22.5	15.5	14.5	15.0
30	23.5	22.5	23.0	26.5	25.0	25.5	24.0	21.0	22.5	16.0	14.5	15.5
31	---	---	---	26.5	25.0	25.5	23.0	21.5	22.0	---	---	---
MONTH				30.0	22.5	26.0				25.5	14.0	19.0

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	9.4	8.5	8.8	13.9	13.5	13.7	14.4	14.3	14.3
2	---	---	---	8.9	8.3	8.6	13.9	13.4	13.7	14.4	13.1	14.0
3	---	---	---	9.9	8.7	9.2	13.6	13.0	13.3	14.3	13.7	14.0
4	---	---	---	10.1	9.5	9.8	13.1	12.6	12.8	14.7	13.9	14.3
5	---	---	---	10.5	10.1	10.3	13.5	12.7	13.0	15.3	14.8	15.0
6	---	---	---	10.6	10.0	10.2	13.2	12.3	12.7	15.4	15.0	15.2
7	---	---	---	10.6	9.7	10.2	12.6	12.2	12.5	15.6	15.5	15.5
8	---	---	---	13.9	10.0	12.2	13.0	12.5	12.8	15.5	13.7	14.3
9	---	---	---	14.4	12.9	13.8	13.3	12.6	13.0	14.1	13.8	14.0
10	---	---	---	14.1	13.3	13.7	13.2	12.8	13.0	14.2	13.3	13.8
11	11.0	10.0	10.5	13.8	13.4	13.6	14.0	13.3	13.8	14.3	13.5	13.8
12	11.0	9.6	10.5	13.7	13.0	13.4	14.7	14.4	14.5	14.2	13.8	14.0
13	11.9	10.0	10.9	13.8	12.7	13.3	15.0	14.5	14.7	14.7	14.1	14.5
14	11.9	10.8	11.3	13.6	12.8	13.1	15.2	14.0	14.7	14.8	14.7	14.7
15	12.5	11.1	11.5	13.3	13.1	13.2	15.2	13.7	14.6	14.7	14.6	14.7
16	12.2	9.9	11.2	14.0	12.6	13.1	15.4	13.8	14.8	14.7	14.5	14.6
17	12.4	11.2	11.7	13.2	11.9	12.4	15.2	13.9	14.7	14.5	11.9	12.1
18	11.6	9.1	10.9	12.2	11.4	11.8	15.0	13.7	14.6	12.0	11.8	11.9
19	9.3	8.5	8.9	11.8	11.0	11.4	15.1	13.4	14.5	12.0	11.7	11.9
20	10.1	8.5	9.2	11.8	10.9	11.4	15.0	13.6	14.5	12.1	11.9	12.0
21	10.5	9.9	10.2	12.0	10.9	11.5	14.8	13.2	14.2	12.2	11.9	12.0
22	10.3	9.7	10.1	12.2	11.7	11.9	14.7	13.1	14.1	12.4	12.1	12.2
23	10.1	8.8	9.4	12.3	11.4	11.9	14.7	12.9	13.9	12.3	12.1	12.2
24	10.1	9.1	9.5	12.3	11.8	12.1	14.5	14.0	14.3	12.5	12.2	12.3
25	10.2	10.0	10.1	12.4	11.7	12.0	14.6	12.6	13.6	12.6	12.3	12.4
26	10.0	8.8	9.4	12.0	11.6	11.8	14.1	13.6	13.9	12.6	12.3	12.4
27	8.9	8.6	8.8	12.1	11.5	11.8	14.4	14.1	14.3	---	---	---
28	9.0	7.4	8.1	12.1	11.8	12.0	14.4	13.0	13.5	---	---	---
29	9.2	7.4	7.9	13.0	12.4	12.7	14.0	13.1	13.6	---	---	---
30	9.0	7.6	7.9	14.3	13.2	13.7	14.3	14.0	14.2	11.8	10.7	11.6
31	8.2	7.3	7.5	---	---	---	14.3	14.2	14.3	11.7	11.2	11.4
MONTH				14.4	8.3	11.8	15.4	12.2	13.9			

05330000 MINNESOTA RIVER NEAR JORDAN, MN--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	11.7	11.3	11.4	12.3	11.7	12.0	12.5	12.2	12.4	11.6	9.3	10.5
2	11.7	11.4	11.5	12.0	11.4	11.7	12.1	11.9	12.0	12.1	8.9	10.5
3	11.5	10.7	11.0	12.5	11.8	12.0	12.0	11.7	11.8	12.5	9.3	10.8
4	11.2	10.5	10.9	12.7	12.3	12.5	11.7	10.6	11.3	11.7	9.1	10.4
5	11.3	11.1	11.2	12.7	11.7	12.4	11.2	10.9	11.0	12.2	8.6	10.2
6	---	---	---	11.9	10.9	11.3	11.0	9.9	10.4	11.1	8.1	9.7
7	---	---	---	11.1	10.9	11.0	10.0	9.4	9.6	15.2	7.8	12.1
8	11.8	11.2	11.5	11.4	11.0	11.2	9.7	9.2	9.4	16.7	11.6	13.7
9	11.5	11.1	11.3	11.5	11.2	11.3	10.2	9.7	9.9	17.6	12.6	14.9
10	11.4	11.2	11.2	12.0	11.3	11.7	10.8	10.2	10.5	14.7	12.5	13.3
11	11.5	11.1	11.4	12.0	11.7	11.8	12.2	10.7	11.2	16.3	11.1	13.5
12	11.4	10.6	10.9	11.7	11.6	11.7	11.3	11.0	11.1	15.8	11.8	13.8
13	11.0	10.5	10.8	11.8	11.6	11.7	11.1	10.9	11.0	13.9	10.9	12.5
14	11.2	10.6	10.9	12.0	10.9	11.3	11.1	10.8	11.0	13.2	10.2	11.6
15	11.5	10.8	11.1	11.2	10.8	11.0	11.1	10.9	11.0	13.4	9.9	11.6
16	11.1	10.7	11.0	13.0	11.1	12.2	11.2	10.4	10.8	11.8	9.7	10.8
17	11.0	10.5	10.7	13.2	13.1	13.2	11.4	10.4	11.0	10.5	8.3	9.1
18	10.9	10.5	10.7	13.9	13.0	13.6	11.4	10.4	10.8	9.9	8.2	9.0
19	10.9	10.2	10.5	13.8	13.1	13.6	10.4	9.9	10.2	12.3	9.3	10.7
20	10.6	10.1	10.4	13.4	12.9	13.2	10.4	10.0	10.2	14.0	11.2	12.6
21	10.6	9.7	10.0	12.6	12.0	12.3	10.6	10.0	10.3	14.1	12.0	13.0
22	10.2	9.9	10.0	12.1	11.8	11.9	11.4	10.8	11.0	15.0	11.8	13.0
23	10.3	10.0	10.2	11.6	11.3	11.4	11.1	10.5	10.8	13.6	9.8	11.4
24	10.7	10.2	10.4	11.6	11.5	11.5	11.1	10.4	10.7	13.0	8.4	10.3
25	10.9	10.5	10.7	11.4	10.8	11.1	11.1	10.3	10.7	11.2	7.3	9.0
26	11.0	10.6	10.8	11.4	11.0	11.2	10.7	10.1	10.4	10.1	6.6	8.1
27	11.5	11.2	11.3	12.1	11.3	11.6	11.3	9.7	10.5	8.6	5.9	7.4
28	12.1	11.6	11.8	12.6	11.7	12.1	11.7	10.5	11.0	7.5	4.9	5.9
29	12.2	11.8	12.1	13.1	12.1	12.6	11.5	10.2	10.8	9.0	5.7	7.0
30	---	---	---	13.2	13.0	13.1	11.9	9.7	10.6	7.0	5.0	6.2
31	---	---	---	12.7	12.3	12.5	---	---	---	5.2	3.8	4.5
MONTH				13.9	10.8	12.0	12.5	9.2	10.8	17.6	3.8	10.6

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	4.9	4.0	4.5	6.8	6.4	6.6	7.1	5.2	6.1	9.2	6.2	7.4
2	6.0	4.9	5.6	6.5	5.9	6.3	6.9	5.0	5.9	9.0	6.5	7.5
3	6.0	5.8	5.9	6.5	6.1	6.3	7.4	5.3	6.1	8.0	6.2	7.0
4	6.0	5.3	5.6	6.5	6.1	6.2	7.2	5.2	6.1	6.6	5.9	6.2
5	---	---	---	6.9	5.9	6.3	8.2	5.5	6.7	8.7	6.5	7.3
6	---	---	---	7.5	6.1	6.8	8.1	6.3	7.0	9.8	6.5	7.8
7	---	---	---	7.8	6.2	7.0	7.8	4.8	6.4	9.7	6.2	7.9
8	---	---	---	8.3	6.7	7.5	8.3	5.4	6.9	9.7	6.2	8.2
9	---	---	---	8.5	6.3	7.4	7.4	5.6	6.4	9.5	6.3	7.4
10	---	---	---	8.3	6.6	7.1	7.0	5.3	6.2	9.7	6.1	7.8
11	10.8	8.9	9.4	7.2	5.8	6.5	7.5	5.3	6.3	8.7	8.0	8.4
12	9.8	9.0	9.3	7.0	5.3	6.2	6.3	5.6	6.0	9.8	6.5	7.9
13	9.6	7.2	9.2	6.2	5.3	5.7	10.0	6.6	7.7	9.1	6.8	7.9
14	9.5	9.3	9.4	6.4	4.6	5.4	8.3	5.7	7.3	8.4	7.1	7.7
15	9.4	8.9	9.1	6.3	3.5	5.3	8.4	6.9	7.6	11.0	6.7	8.4
16	9.2	9.0	9.1	6.2	4.3	5.2	---	---	---	10.4	7.7	8.9
17	9.8	9.1	9.3	9.5	4.7	7.2	---	---	---	10.9	6.3	7.9
18	9.2	8.7	8.9	9.4	6.8	7.9	---	---	---	9.7	6.5	7.8
19	8.8	6.4	6.6	9.1	7.0	8.1	---	---	---	9.6	7.4	8.5
20	6.4	6.2	6.3	8.1	6.7	7.3	8.3	6.4	7.4	9.5	7.3	8.1
21	6.3	6.1	6.2	9.1	6.0	7.3	8.8	5.8	7.2	9.6	6.6	8.0
22	6.2	5.9	6.1	8.2	6.2	7.1	8.2	5.6	6.7	10.4	7.0	8.5
23	6.0	5.7	5.9	8.6	5.2	6.8	6.8	5.1	5.9	11.2	7.6	9.3
24	5.8	5.5	5.7	11.2	2.7	4.9	7.1	5.1	6.0	11.1	7.8	9.4
25	5.6	5.2	5.5	12.1	8.8	10.2	7.9	5.2	6.4	12.4	7.8	9.8
26	7.9	5.0	6.7	8.5	6.4	7.5	5.7	4.2	4.7	12.4	9.8	11.0
27	7.8	7.0	7.2	6.2	4.9	5.6	5.8	4.2	4.9	12.7	10.1	11.4
28	7.3	6.7	7.0	5.2	3.8	4.4	10.3	4.5	7.1	13.2	10.7	11.8
29	6.9	6.4	6.7	6.6	3.9	5.5	10.6	7.1	8.7	11.8	10.4	11.2
30	6.5	6.3	6.4	5.1	3.9	4.4	11.3	7.7	9.3	12.5	9.7	10.9
31	---	---	---	7.4	3.5	5.8	9.8	7.1	7.9	---	---	---
MONTH				12.1	2.7	6.5				13.2	5.9	8.6

05330000 MINNESOTA RIVER NEAR JORDAN, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE, WATER (DEG C) (00010)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
OCT						
22...	1145	2530	11.0	61	417	78
NOV						
14...	1210	7830	2.0	150	3170	79
DEC						
17...	1030	3650	.0	124	1220	--
19...	1330	3530	.0	138	1320	--
JAN						
22...	1150	1750	.0	110	520	--
FEB						
27...	1145	1320	.0	54	192	--
MAR						
24...	1230	9780	1.0	172	4540	74
MAY						
14...	1335	2580	13.0	98	683	93
JUN						
12...	1155	14200	20.5	320	12300	73
JUL						
10...	1315	2540	26.0	223	1530	97
24...	1125	1240	24.0	199	666	97
AUG						
26...	1040	1720	23.0	135	627	81
SEP						
24...	1220	1070	15.0	70	202	95

DATE	TIME	NUMBER OF SAM-PLING POINTS (00063)	STREAM-FLOW, INSTAN-TANEOUS (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)
JUL											
24...	1125	3	1240	0	2	30	64	85	93	99	100

05330800 PURGATORY CREEK AT EDEN PRAIRIE, MN

LOCATION.--Lat 44°49'27", long 93°25'34", in NW¼SE¼ sec.26, T.116 N., R.22 W., Hennepin County, Hydrologic Unit 07020012, on left bank in Eden Prairie, 0.4 mi (0.6 km) downstream from culvert on County Road 1 (Pioneer Trail), and 2.4 mi (3.9 km) upstream from Minnesota River.

DRAINAGE AREA.--26.8 mi^2 (69.4 km^2).

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1968-72. October 1975 to September 1980 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 769.24 ft (234.464 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for winter periods, no gage-height record Jan. 15 to Feb. 6, and June 19 to July 25 when the manonmeter was insensitive, which are fair.

AVERAGE DISCHARGE.--5 years (water years 1976-80), 9.65 ft^3/s (0.273 m^3/s), 4.89 in/yr (124 mm/yr), 6990 acre-ft/yr (8.62 hm^3/yr)

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 150 ft^3/s (4.25 m^3/s) Aug. 31, 1977, gage height, 2.90 ft (0.884 m); maximum gage height, 3.90 ft (1.189 m) Mar. 27, 1979 (backwater from ice); minimum daily discharge, 0.15 ft^3/s (0.004 m^3/s) Sept. 7, 8, 1976, Aug. 13, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 70 ft^3/s (1.98 m^3/s) June 7, gage height, 2.70 ft (0.823 m); maximum gage height, 2.73 ft (0.832 m) Dec. 2 (backwater from ice); minimum, 0.43 ft^3/s (0.012 m^3/s) July 11, gage height, 0.95 ft (0.290 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	15	11	3.6	2.3	2.2	22	9.7	3.8	3.9	1.2	7.2
2	3.6	15	10	3.6	2.3	2.1	20	9.3	4.1	2.7	1.5	6.3
3	3.6	15	9.5	3.6	2.3	1.8	19	8.4	3.6	1.8	1.1	7.5
4	3.6	14	8.4	3.6	2.3	1.9	17	7.6	2.8	1.5	1.0	8.4
5	2.8	15	8.3	3.6	2.3	1.8	15	6.5	26	1.0	.89	6.6
6	2.8	14	7.8	3.5	2.3	1.7	14	5.8	31	1.0	.75	5.2
7	2.8	13	8.4	3.5	2.3	1.6	14	4.4	54	1.0	.76	4.5
8	3.1	13	8.0	3.4	2.3	1.6	13	4.1	55	1.2	2.5	3.9
9	2.8	11	8.3	3.4	2.3	1.7	16	5.7	63	1.2	.90	3.1
10	2.6	10	8.0	3.3	2.3	1.6	16	3.2	66	1.0	2.4	2.2
11	2.6	10	7.8	3.2	2.2	1.6	17	3.6	66	1.3	3.1	9.1
12	2.6	10	7.5	3.2	2.1	1.6	18	3.3	62	4.4	1.5	13
13	1.9	9.3	7.1	3.1	2.1	1.6	19	3.1	55	3.9	1.5	13
14	1.9	8.5	6.6	3.0	2.1	1.8	18	3.1	48	3.8	1.4	13
15	1.9	8.8	6.0	3.0	2.1	2.5	17	2.6	40	4.6	1.2	13
16	2.3	8.6	5.7	2.9	2.1	22	16	2.3	34	6.2	2.2	12
17	2.1	8.8	5.3	2.9	2.1	7.4	14	3.4	27	4.7	2.0	12
18	3.1	8.6	4.9	2.8	2.1	21	13	8.4	22	4.8	1.8	12
19	6.9	9.1	4.5	2.7	2.1	25	12	7.9	20	4.4	1.5	12
20	6.9	8.9	4.2	2.7	2.2	25	12	9.3	17	4.6	2.8	12
21	7.6	10	3.9	2.6	2.1	26	12	7.2	15	3.2	3.3	12
22	11	14	3.8	2.6	2.4	33	12	6.5	13	2.7	2.7	11
23	13	16	3.8	2.5	2.1	41	11	5.4	12	2.2	2.3	11
24	13	16	3.8	2.5	2.0	40	11	4.8	8.9	2.0	2.1	11
25	14	16	3.8	2.5	2.0	38	11	3.6	6.4	4.6	2.0	11
26	16	16	3.7	2.4	2.1	34	11	2.6	6.2	1.9	1.8	11
27	16	15	3.6	2.4	2.1	32	11	1.8	6.5	1.6	1.8	11
28	16	14	3.3	2.4	2.2	30	9.7	1.6	5.2	2.0	1.6	10
29	14	13	3.1	2.4	2.2	28	9.7	2.1	3.9	1.6	1.4	7.8
30	13	11	3.3	2.4	---	25	10	2.6	3.9	1.3	6.0	5.7
31	15	---	3.5	2.3	---	23	---	2.3	---	1.9	5.1	---
TOTAL	212.9	366.6	186.9	91.6	63.4	477.5	430.4	152.2	781.3	84.0	62.10	277.5
MEAN	6.87	12.2	6.03	2.95	2.19	15.4	14.3	4.91	26.0	2.71	2.00	9.25
MAX	16	16	11	3.6	2.4	41	22	9.7	66	6.2	6.0	13
MIN	1.9	8.5	3.1	2.3	2.0	1.6	9.7	1.6	2.8	1.0	.75	2.2
CFSM	.26	.46	.23	.11	.08	.58	.53	.18	.97	.10	.08	.35
IN.	.30	.51	.26	.13	.09	.66	.60	.21	1.08	.12	.09	.39

CAL YR 1979 TOTAL 4871.45 MEAN 13.3 MAX 89 MIN .72 CFSM .50 IN 6.76
WTR YR 1980 TOTAL 3186.40 MEAN 8.71 MAX 66 MIN .75 CFSM .33 IN 4.42

05330908 MINNESOTA RIVER AT BURNSVILLE, MN

LOCATION.--Lat 44°48'41", long 93°15'04", in NE¼SE¼ sec.23, T.27 N., R.20 W., Dakota County, Hydrologic Unit 07020012, on right bank 8.9 mi (14.3 km) from mouth at Northern States' Black Dog Power Plant.

DRAINAGE AREA.--Not determined.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: June to September 1980.
pH: June to September 1980.
WATER TEMPERATURE: June to September 1980.
DISSOLVED OXYGEN: June to Septembr 1980.

INSTRUMENTATION.--Water-quality monitor since June 1980.

REMARKS.--Water is pumped to a monitor that is inside a heated shelter. No extremes for specific conductance, pH, water temperature, or dissolved oxygen are given because less than 80 percent of the water year was recorded.

COOPERATION.--Water-quality monitor is operated by the Metropolitan Waste Control Commission, St. Paul, MN.

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	---	---	---	774	760	767	877	866	872
2	---	---	---	---	---	---	792	766	776	870	856	864
3	582	571	577	---	---	---	791	780	784	868	831	849
4	569	556	562	---	---	---	785	773	779	896	867	886
5	594	561	575	---	---	---	853	775	812	905	892	899
6	632	594	613	---	---	---	860	853	856	900	885	895
7	655	628	642	---	---	---	861	857	860	896	874	886
8	673	656	662	---	---	---	864	846	855	887	852	876
9	678	649	665	---	---	---	862	810	826	858	849	855
10	703	645	655	---	---	---	819	808	813	861	851	854
11	661	642	648	---	---	---	837	819	829	860	835	847
12	683	663	673	---	---	---	842	824	830	853	817	834
13	718	683	699	---	---	---	833	813	820	843	826	831
14	756	720	740	---	---	---	851	834	846	851	843	849
15	779	757	769	---	---	---	851	845	848	867	852	862
16	807	480	780	---	---	---	855	844	850	885	859	873
17	826	808	819	735	728	732	851	817	839	892	791	866
18	833	823	830	757	739	751	881	803	839	793	778	789
19	833	821	826	768	755	760	848	749	809	786	774	782
20	831	822	827	785	770	778	772	747	756	785	773	781
21	837	831	834	787	773	780	804	776	785	795	768	778
22	833	832	832	790	763	774	819	797	806	792	773	784
23	833	824	830	779	760	769	833	820	827	778	766	773
24	827	825	826	767	750	760	845	833	839	777	762	770
25	---	---	---	760	743	750	859	844	852	772	757	766
26	---	---	---	752	721	742	865	859	862	759	718	739
27	---	---	---	754	734	744	874	866	871	726	711	718
28	---	---	---	755	743	751	912	869	891	742	719	735
29	---	---	---	760	755	757	917	896	903	767	740	756
30	---	---	---	764	757	761	924	892	913	810	768	791
31	---	---	---	773	762	765	887	869	879	---	---	---
MONTH							924	747	833	905	711	822

05330908 MINNESOTA RIVER AT BURNSVILLE, MN--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	---	---	---	8.1	7.9	7.9	8.0	7.8	7.9
2	---	---	---	---	---	---	8.1	7.9	7.9	8.4	8.1	8.2
3	7.8	7.8	7.8	---	---	---	8.2	7.9	8.0	8.4	8.3	8.3
4	7.8	7.8	7.8	---	---	---	8.0	7.9	7.9	8.3	8.2	8.2
5	7.9	7.8	7.8	---	---	---	8.1	7.9	8.0	8.3	8.2	8.2
6	7.9	7.8	7.9	---	---	---	8.1	8.0	8.0	8.3	8.1	8.2
7	7.9	7.9	7.9	---	---	---	8.1	8.0	8.0	8.3	8.1	8.2
8	8.0	7.9	7.9	---	---	---	8.1	8.0	8.0	8.3	8.1	8.2
9	8.0	7.9	8.0	---	---	---	8.1	8.0	8.0	8.2	8.2	8.2
10	8.0	7.9	7.9	---	---	---	8.2	8.0	8.0	8.2	8.0	8.1
11	8.0	7.9	7.9	---	---	---	8.1	7.9	8.0	8.1	8.0	8.0
12	8.0	8.0	8.0	---	---	---	8.2	7.8	8.0	8.0	7.7	7.8
13	8.0	8.0	8.0	---	---	---	8.1	7.8	7.9	7.9	7.8	7.8
14	8.0	8.0	8.0	---	---	---	8.0	7.8	7.9	7.9	7.8	7.9
15	8.0	8.0	8.0	---	---	---	8.0	7.9	7.9	8.0	7.9	7.9
16	8.0	8.0	8.0	---	---	---	8.1	8.0	8.1	8.1	8.0	8.1
17	8.4	8.0	8.1	8.3	8.3	8.3	8.0	7.9	8.0	8.2	7.8	8.0
18	8.2	8.1	8.2	8.4	8.3	8.4	8.0	7.9	8.0	7.9	7.7	7.8
19	8.2	8.1	8.2	8.5	8.4	8.4	8.6	8.0	8.2	7.8	7.7	7.7
20	8.2	8.2	8.2	8.5	8.4	8.5	8.6	8.1	8.4	7.8	7.6	7.7
21	8.2	8.2	8.2	8.6	8.5	8.5	8.4	8.1	8.3	7.9	7.8	7.8
22	8.2	8.2	8.2	8.6	8.5	8.5	8.4	8.3	8.3	7.9	7.7	7.8
23	8.2	8.2	8.2	8.6	8.4	8.5	8.3	8.2	8.2	8.1	7.8	7.9
24	8.2	8.2	8.2	8.5	8.2	8.3	8.3	8.2	8.3	8.0	7.8	7.9
25	---	---	---	8.3	8.0	8.2	8.3	8.3	8.3	7.9	7.8	7.9
26	---	---	---	8.5	8.0	8.1	8.3	8.1	8.3	8.0	7.8	7.9
27	---	---	---	8.4	8.0	8.2	8.1	8.1	8.1	8.1	7.9	8.0
28	---	---	---	8.1	7.8	7.9	8.1	8.1	8.1	8.0	7.9	8.0
29	---	---	---	7.9	7.8	7.9	8.2	8.1	8.1	8.0	7.9	7.9
30	---	---	---	7.9	7.7	7.8	8.3	8.2	8.2	8.0	7.9	7.9
31	---	---	---	8.1	7.7	7.9	8.1	7.9	8.1	---	---	---
MONTH							8.6	7.8	8.1	8.4	7.6	8.0

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	---	---	---	28.5	20.0	25.5	22.0	20.5	21.0
2	---	---	---	---	---	---	27.5	18.0	25.5	24.0	19.0	21.0
3	20.5	19.5	20.0	---	---	---	29.0	24.0	26.5	23.5	21.0	22.5
4	21.0	20.0	20.5	---	---	---	26.5	24.5	25.0	23.5	22.0	23.0
5	22.0	20.0	21.0	---	---	---	25.0	22.5	23.5	24.5	21.5	23.0
6	24.0	21.5	22.5	---	---	---	25.5	22.5	24.0	24.5	21.0	23.0
7	24.0	23.5	24.0	---	---	---	24.5	23.5	24.0	26.0	20.0	24.0
8	24.0	23.0	23.5	---	---	---	26.5	24.0	24.5	28.5	18.0	25.0
9	23.5	22.0	22.5	---	---	---	25.0	23.0	24.0	27.5	20.0	25.0
10	23.0	21.5	22.5	---	---	---	24.0	22.0	22.5	25.5	23.0	24.5
11	23.5	21.5	22.5	---	---	---	24.0	21.0	21.5	23.0	18.0	21.0
12	22.5	21.5	22.0	---	---	---	23.5	20.0	21.5	19.0	18.0	18.5
13	24.0	22.0	23.0	---	---	---	25.0	20.5	22.5	18.5	17.5	18.0
14	26.5	24.0	25.0	---	---	---	25.5	22.0	23.0	18.0	16.0	17.0
15	27.5	26.0	26.5	---	---	---	24.0	21.0	22.0	18.0	15.5	16.5
16	28.0	26.0	27.0	---	---	---	22.0	19.5	21.0	17.0	14.5	16.0
17	28.0	23.0	25.5	29.0	28.0	28.5	23.0	20.5	21.5	17.5	13.5	16.0
18	24.0	22.5	23.0	27.5	25.5	26.5	22.5	18.0	21.0	17.0	15.5	16.0
19	24.0	22.0	23.0	27.0	25.0	26.0	26.0	21.5	19.5	15.5	13.5	14.5
20	24.0	22.5	23.0	25.0	22.5	23.5	25.0	22.0	23.5	15.5	14.5	15.0
21	25.0	22.0	23.5	25.5	24.0	24.5	24.0	21.5	23.0	16.0	14.0	14.5
22	26.0	24.0	25.0	25.5	22.5	23.5	25.5	22.0	23.5	16.0	14.0	15.0
23	28.0	25.0	26.5	25.0	22.0	23.0	26.0	23.5	24.5	17.5	13.0	14.5
24	28.0	27.5	27.5	27.0	21.0	24.5	25.5	24.0	24.5	16.5	13.0	14.5
25	---	---	---	27.0	24.5	25.5	27.0	18.0	25.0	16.5	13.0	14.5
26	---	---	---	28.5	25.0	26.0	26.5	21.5	25.0	15.5	13.5	14.5
27	---	---	---	29.0	22.5	25.5	24.0	20.5	22.0	13.5	11.5	12.5
28	---	---	---	28.0	24.0	25.0	22.5	19.0	21.0	12.5	11.0	12.0
29	---	---	---	26.5	23.5	25.0	26.0	21.5	23.5	12.5	11.5	12.0
30	---	---	---	26.5	20.5	25.0	26.0	24.0	24.5	14.5	12.0	13.0
31	---	---	---	28.5	23.5	25.5	24.5	21.5	22.5	---	---	---
MONTH							29.0	18.0	23.5	28.5	11.0	18.0

05330908 MINNESOTA RIVER AT BURNSVILLE, MN--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	---	---	---	7.5	4.6	5.5	8.2	6.9	7.6
2	---	---	---	---	---	---	7.4	3.7	5.0	10.7	7.0	8.6
3	6.3	6.1	6.2	---	---	---	8.6	3.9	5.7	9.5	7.4	8.3
4	6.8	6.3	6.6	---	---	---	6.6	4.5	5.1	8.8	6.4	7.6
5	7.0	6.7	6.9	---	---	---	7.4	4.0	5.7	9.4	6.8	7.9
6	6.8	6.6	6.7	---	---	---	7.4	5.6	6.2	10.7	7.9	9.0
7	6.8	6.5	6.7	---	---	---	5.9	4.8	5.5	10.3	7.8	9.0
8	6.8	6.6	6.7	---	---	---	7.4	4.8	5.7	10.1	7.7	8.9
9	6.9	6.6	6.7	---	---	---	6.3	4.3	5.0	8.2	6.7	7.5
10	7.2	6.7	7.0	---	---	---	8.5	4.8	5.9	8.8	7.1	7.9
11	7.2	6.8	7.0	---	---	---	6.3	4.4	5.1	8.3	6.5	7.5
12	7.0	6.6	6.8	---	---	---	8.3	4.8	6.1	7.3	6.3	6.8
13	6.9	6.6	6.7	---	---	---	7.4	4.7	5.6	7.0	6.1	6.5
14	6.8	6.3	6.5	---	---	---	7.0	4.9	5.6	6.7	6.2	6.4
15	6.5	6.0	6.2	---	---	---	7.1	4.6	5.4	8.1	6.1	6.8
16	6.2	5.8	6.0	---	---	---	6.3	5.4	6.0	8.7	6.4	7.5
17	6.7	5.8	6.3	9.1	7.7	8.5	5.7	4.7	5.2	11.7	7.9	9.0
18	6.8	6.4	6.6	7.8	6.6	7.1	7.0	4.6	5.7	12.8	8.9	10.5
19	6.8	6.5	6.7	7.9	6.2	6.8	10.6	6.4	8.0	11.6	9.9	10.6
20	6.9	6.5	6.7	7.5	5.9	6.5	10.9	7.4	9.3	11.0	8.8	9.8
21	6.7	6.5	6.6	9.2	6.4	7.8	9.0	6.2	7.4	11.6	8.9	9.9
22	6.5	6.2	6.4	11.3	7.2	9.2	10.2	7.6	8.7	12.5	9.7	11.0
23	6.5	5.9	6.2	12.7	8.9	10.7	8.5	7.2	7.9	16.0	10.1	12.2
24	6.3	5.8	6.0	14.3	10.8	12.0	7.5	6.2	6.9	16.9	11.4	13.3
25	---	---	---	12.3	9.2	10.3	7.7	5.9	6.6	13.7	11.6	12.4
26	---	---	---	12.6	8.4	9.6	6.3	5.2	5.7	12.5	11.0	11.7
27	---	---	---	12.7	8.0	10.1	5.2	4.4	4.9	13.3	9.8	11.1
28	---	---	---	8.0	4.6	6.7	7.1	4.4	5.7	11.7	10.3	11.0
29	---	---	---	5.0	3.5	4.4	8.4	6.0	6.9	10.8	9.1	9.7
30	---	---	---	4.3	3.0	3.5	9.3	6.5	7.7	10.3	8.4	9.2
31	---	---	---	7.6	2.7	4.7	9.4	7.6	8.4	---	---	---
MONTH							10.9	3.7	6.3	16.9	6.1	9.2

05330920 MINNESOTA RIVER AT FORT SNELLING STATE PARK, ST. PAUL, MN

LOCATION.--Lat 44°52'13", long 93°11'32", in NE¼SE¼ sec.32, T.28 N., R.23 W., Hennepin County, Hydrologic Unit 07020012, on left bank 3 mi (5 km) upstream from mouth.

DRAINAGE AREA.--16,900 mi^2 (43,800 km^2).

PERIOD OF RECORD.--Water years 1973 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1978 to current year.
pH: October 1978 to current year.
WATER TEMPERATURE: October 1978 to current year.
DISSOLVED OXYGEN: October 1978 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1978.

REMARKS.--Water discharge estimated on the basis of discharge for Minnesota River near Jordan (station 05330000) adjusted for travel time. Water is pumped to a monitor that is inside a heated shelter; therefore, water temperature during the winter period may be affected. Extremes are published for those years with 80 percent or more record.

COOPERATION.--Water-quality monitor is operated by the Metropolitan Waste Control Commission, St. Paul, MN. Samples are collected by the Metropolitan Waste Control Commission and analyzed by the U.S. Geological Survey.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water year 1980): Maximum, 1,240 micromhos Dec. 18, 19, 22, 23, 1979; minimum, 220 micromhos Mar. 26, 1980.
pH (water year 1980): Maximum, 8.5 units Jan. 1, 3, Feb. 27, 1980; minimum, 7.1 units Jan 28-29, 1980.
WATER TEMPERATURES (water year 1980): Maximum, 27.0°C July 14-15, 1980; minimum, 0.5°C many days during winter.
DISSOLVED OXYGEN (water year 1980): Maximum, 17.7 mg/L May 12, 1980; minimum, 3.3 mg/L July 31, 1980.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 1,240 micromhos Dec. 18, 19, 22, 23; minimum, 220 micromhos Mar. 26.
pH: Maximum, 8.5 units Jan. 1, 3, Feb. 27; minimum, 7.1 units Jan. 28-29.
WATER TEMPERATURES: MAXIMUM, 27.0°C July 14-15; minimum, 0.5°C many days during winter.
DISSOLVED OXYGEN: Maximum, 17.7 mg/L May 12; minimum, 3.3 mg/L July 31.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW (CFS) (00060)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	FLUO-RIDE, TOTAL (MG/L AS F) (00951)
NOV 16...	1150	7490	1060	8.2	3.5	13.2	102	.1
FEB 06...	1225	1440	1100	7.8	1.5	13.0	96	.1
AUG 28...	0820	1850	801	8.2	22.0	5.6	65	.4

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
NOV 16...	6	0	0	60	1	8	5	1400	6
FEB 06...	2	100	10	100	0	7	3	640	1
AUG 28...	5	200	0	100	0	11	5	910	4

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
NOV 16...	120	.3	5	3	5	0	30	.01
FEB 06...	210	<.1	5	5	2	0	20	.01
AUG 28...	160	<.1	5	8	1	0	20	.01

05330920 MINNESOTA RIVER AT FORT SNELLING STATE PARK, ST. PAUL, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW (CFS) (00060)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, DIS-SOLVED (UG/L AS B) (01020)
SEP 16...	1200	1280	736	7.9	18.5	6.6	72	.4	2	0	0	120

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, HEXA-VALENT, DIS. (UG/L AS CR) (01032)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
SEP 16...	0	0	0	6	80	0	20	<.1	0	0	0	10

05330920 MINNESOTA RIVER AT FORT SNELLING STATE PARK AT ST. PAUL, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	947	943	944	1040	996	1020	1070	1060	1060
2	---	---	---	946	936	944	1050	1040	1050	1130	1060	1090
3	---	---	---	934	920	925	1050	1050	1050	1130	1130	1130
4	---	---	---	956	927	940	1060	1050	1050	1140	1130	1130
5	---	---	---	959	946	955	1070	1060	1060	1150	1140	1140
6	---	---	---	949	898	931	1080	1060	1070	1140	1130	1130
7	---	---	---	971	952	959	1080	1070	1070	1150	1130	1140
8	---	---	---	1010	972	994	1090	1080	1080	1150	1120	1140
9	---	---	---	1030	1020	1020	1100	1090	1090	1140	1130	1130
10	---	---	---	1030	1020	1020	1090	1090	1090	1150	1140	1140
11	---	---	---	1040	1040	1040	1130	1090	1100	1170	1150	1160
12	---	---	---	1060	1050	1060	1150	1130	1140	1170	1150	1160
13	---	---	---	1080	1000	1030	1160	1160	1150	1230	1170	1190
14	---	---	---	1010	1010	1010	1160	1150	1150	1220	1180	1210
15	---	---	---	1030	1030	1030	1180	1150	1170	1180	1160	1170
16	---	---	---	1040	1040	1030	1200	1190	1190	1170	1140	1150
17	---	---	---	1050	1050	1040	1220	1210	1210	1150	1140	1150
18	---	---	---	1060	1060	1050	1240	1210	1230	1220	1150	1190
19	---	---	---	1070	1070	1070	1240	1210	1230	1220	1220	1220
20	---	---	---	1070	1030	1050	1220	1210	1210	1220	1210	1210
21	---	---	---	1050	1020	1040	1230	1210	1210	1200	1190	1190
22	---	---	---	1070	1040	1050	1240	1230	1230	1200	1150	1180
23	---	---	---	1040	1030	1030	1240	1210	1220	1150	1140	1140
24	---	---	---	1030	1020	1020	1220	1210	1210	1140	1130	1130
25	---	---	---	1010	1010	1010	1200	1180	1190	1130	1120	1120
26	---	---	---	1000	998	1000	1180	1160	1170	1120	1110	1110
27	---	---	---	1000	992	996	1160	1150	1150	1110	1110	1110
28	---	---	---	1000	989	998	1150	1130	1130	1110	1100	1110
29	---	---	---	1000	1000	1000	1120	1100	1110	1120	1100	1110
30	943	934	939	1010	1010	1010	1100	1090	1090	1130	1110	1120
31	950	818	933	---	---	---	1080	1070	1080	1120	1110	1110
MONTH				1080	898	1010	1240	996	1140	1230	1060	1140

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1110	1100	1110	990	970	981	494	455	474	891	868	879
2	1130	1100	1110	988	968	978	522	495	503	872	852	864
3	1130	1120	1130	1000	962	976	530	515	523	872	847	862
4	1140	1130	1130	996	968	978	530	516	523	862	842	854
5	1140	1120	1130	980	961	970	555	531	543	859	847	852
6	1140	1110	1120	1000	964	979	578	555	568	857	834	843
7	1140	1120	1130	988	964	976	594	578	587	844	808	820
8	1130	1120	1120	989	956	971	590	563	580	826	807	817
9	1130	1110	1120	998	964	980	577	565	569	811	790	803
10	1120	1110	1120	984	954	965	585	574	581	817	800	805
11	1130	1100	1120	985	950	968	600	586	593	822	815	818
12	1130	1100	1110	960	950	955	607	601	603	823	787	804
13	1120	1100	1110	986	946	961	617	608	613	796	775	783
14	1120	1080	1100	1000	960	979	639	619	630	793	783	789
15	1090	1070	1080	1000	958	979	642	638	640	794	781	787
16	1090	1060	1070	970	859	942	655	643	649	791	779	786
17	1080	1060	1070	961	881	929	663	656	660	796	743	783
18	1070	1050	1060	879	516	732	670	665	667	816	781	800
19	1100	1060	1080	489	341	402	678	661	669	821	807	812
20	1100	1080	1080	---	---	---	685	673	679	823	805	815
21	1120	1070	1090	---	---	---	701	688	692	813	794	806
22	1090	1060	1070	---	---	---	721	709	716	809	789	797
23	1070	1040	1050	---	---	---	731	716	722	808	784	796
24	1050	1010	1030	---	---	---	745	738	742	809	789	799
25	1010	1000	1010	---	---	---	782	766	776	802	780	794
26	1010	998	1000	352	220	282	805	798	802	792	784	790
27	1000	968	980	379	353	367	828	819	824	794	780	789
28	988	962	972	404	380	392	864	841	853	797	784	790
29	995	981	988	420	404	411	890	863	873	801	722	787
30	---	---	---	438	419	428	892	879	884	817	791	809
31	---	---	---	458	439	450	---	---	---	822	798	811
MONTH	1140	962	1080				892	455	658	891	722	811

05330920 MINNESOTA RIVER AT FORT SNELLING STATE PARK AT ST. PAUL, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	851	704	802	---	---	---	842	821	828	888	868	879
2	711	636	666	---	---	---	829	798	822	882	872	877
3	653	615	637	---	---	---	842	826	835	874	821	859
4	626	604	617	---	---	---	851	829	841	898	817	866
5	632	458	601	---	---	---	866	835	847	915	895	907
6	683	642	665	---	---	---	867	855	862	918	902	910
7	724	685	709	---	---	---	875	861	869	917	889	902
8	746	724	735	---	---	---	868	795	849	902	872	890
9	813	720	739	---	---	---	868	858	862	890	864	874
10	728	717	723	---	---	---	868	812	839	872	858	866
11	728	709	717	---	---	---	836	823	828	859	696	830
12	750	719	739	---	---	---	898	838	868	832	808	824
13	785	735	753	---	---	---	905	876	893	813	805	809
14	830	787	809	875	866	872	884	872	879	820	802	806
15	850	830	840	868	606	843	913	880	900	824	808	813
16	---	---	---	852	825	836	914	890	902	820	805	814
17	---	---	---	841	828	832	920	896	906	824	807	815
18	---	---	---	849	827	836	897	847	873	829	801	818
19	---	---	---	855	843	848	850	793	820	821	763	806
20	---	---	---	863	845	851	793	684	736	813	738	796
21	---	---	---	870	854	861	751	723	738	796	734	780
22	---	---	---	886	850	874	775	749	764	802	785	794
23	---	---	---	856	838	850	794	762	782	814	784	800
24	---	---	---	844	726	822	803	789	797	797	780	788
25	---	---	---	813	771	804	817	798	809	793	780	786
26	---	---	---	815	804	810	838	807	825	788	753	771
27	---	---	---	812	799	803	850	835	842	760	726	740
28	---	---	---	820	804	809	909	841	863	761	733	746
29	---	---	---	886	810	822	916	893	907	781	756	766
30	---	---	---	828	812	820	928	846	908	807	784	792
31	---	---	---	835	817	825	934	871	903	---	---	---
MONTH							934	684	845	918	696	824

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	8.1	8.1	8.1	8.1	8.1	8.1	8.5	8.1	8.2
2	---	---	---	8.2	8.1	8.2	8.1	8.1	8.1	8.1	8.0	8.1
3	---	---	---	8.2	8.1	8.1	8.2	8.0	8.1	8.5	8.0	8.1
4	---	---	---	8.2	8.1	8.1	8.1	8.1	8.1	8.2	8.0	8.0
5	---	---	---	8.2	8.1	8.1	8.2	8.1	8.1	8.2	8.0	8.0
6	---	---	---	8.2	8.1	8.1	8.1	8.1	8.1	8.1	8.0	8.0
7	---	---	---	8.2	8.1	8.1	8.1	8.1	8.1	8.1	7.9	8.0
8	---	---	---	8.2	8.1	8.2	8.1	8.0	8.1	8.1	7.9	8.0
9	---	---	---	8.2	8.2	8.2	8.2	8.1	8.1	8.1	8.0	8.0
10	---	---	---	8.2	8.2	8.2	8.2	8.1	8.1	8.1	7.8	7.9
11	---	---	---	8.3	8.2	8.3	8.2	8.1	8.1	7.9	7.7	7.8
12	---	---	---	8.3	8.3	8.3	8.2	8.1	8.1	7.7	7.7	7.7
13	---	---	---	8.3	8.2	8.3	8.4	8.1	8.2	7.9	7.7	7.8
14	---	---	---	8.3	8.3	8.3	8.2	8.2	8.2	7.8	7.8	7.8
15	---	---	---	8.3	8.1	8.2	8.2	8.1	8.2	7.8	7.8	7.8
16	---	---	---	8.2	8.0	8.1	8.1	8.0	8.0	7.8	7.8	7.8
17	---	---	---	8.1	8.0	8.0	8.1	8.0	8.1	7.8	7.8	7.8
18	---	---	---	8.1	8.0	8.0	8.1	8.1	8.1	7.8	7.7	7.8
19	---	---	---	8.0	8.0	8.0	8.2	8.1	8.1	7.8	7.7	7.7
20	---	---	---	8.0	8.0	8.0	8.3	8.1	8.2	7.8	7.6	7.7
21	---	---	---	8.0	8.0	8.0	8.3	8.2	8.2	7.8	7.7	7.7
22	---	---	---	8.1	8.0	8.0	8.3	8.2	8.2	7.8	7.5	7.6
23	---	---	---	8.1	8.0	8.0	8.4	8.2	8.2	7.5	7.4	7.5
24	---	---	---	8.1	8.0	8.1	8.3	8.2	8.2	7.5	7.3	7.4
25	---	---	---	8.1	8.0	8.1	8.2	8.2	8.2	7.6	7.3	7.4
26	---	---	---	8.1	8.1	8.1	8.3	8.1	8.2	7.3	7.2	7.3
27	---	---	---	8.1	8.1	8.1	8.2	8.1	8.2	7.3	7.2	7.2
28	---	---	---	8.1	8.1	8.1	8.1	8.1	8.1	7.3	7.1	7.2
29	---	---	---	8.1	8.1	8.1	8.1	8.1	8.1	8.2	7.1	7.6
30	8.2	8.2	8.2	8.2	8.1	8.2	8.4	8.1	8.2	8.3	8.2	8.3
31	8.2	8.1	8.1	---	---	---	8.3	8.1	8.2	8.3	8.2	8.3
MONTH				8.3	8.0	8.1	8.4	8.0	8.1	8.5	7.1	7.8

05330920 MINNESOTA RIVER AT FORT SNELLING STATE PARK AT ST. PAUL, MN--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	8.4	8.3	8.3	8.4	8.4	8.4	8.0	7.7	7.9	8.3	8.2	8.3
2	8.3	8.3	8.3	8.4	8.3	8.3	7.8	7.8	7.8	8.2	8.2	8.2
3	8.3	8.2	8.3	8.4	8.3	8.4	7.8	7.8	7.8	8.2	8.1	8.2
4	8.2	8.2	8.2	8.4	8.2	8.3	7.9	7.8	7.9	8.2	8.1	8.1
5	8.3	8.2	8.2	8.2	8.2	8.2	7.8	7.8	7.8	8.3	8.1	8.2
6	8.1	7.8	8.0	8.3	8.2	8.3	7.9	7.8	7.8	8.3	8.0	8.2
7	7.9	7.8	8.0	8.3	8.2	8.3	7.8	7.8	7.8	8.3	8.1	8.2
8	7.8	7.7	7.8	8.2	8.2	8.2	7.8	7.8	7.8	8.3	8.1	8.2
9	7.7	7.6	7.7	8.2	8.2	8.2	7.8	7.8	7.8	8.3	8.1	8.2
10	7.7	7.6	7.7	8.3	8.2	8.3	7.9	7.8	7.9	8.2	8.1	8.2
11	7.7	7.6	7.6	8.3	8.0	8.1	7.9	7.9	7.9	8.3	8.0	8.2
12	7.6	7.6	7.6	8.1	8.1	8.1	8.0	7.9	7.9	8.3	8.1	8.2
13	7.7	7.6	7.7	8.1	8.1	8.1	8.0	8.0	8.0	8.4	8.2	8.3
14	7.6	7.6	7.6	8.1	8.0	8.0	8.0	8.0	8.0	8.4	8.2	8.3
15	7.7	7.6	7.6	8.0	8.0	8.0	7.9	7.8	7.9	8.3	8.1	8.2
16	7.6	7.5	7.5	8.0	8.0	8.0	8.0	7.7	7.8	8.3	8.2	8.2
17	7.6	7.5	7.5	8.1	7.7	7.9	8.0	7.9	7.9	8.2	8.1	8.1
18	7.6	7.5	7.5	7.7	7.5	7.6	8.0	7.9	7.9	8.1	8.0	8.1
19	7.7	7.4	7.6	7.6	7.5	7.5	8.0	7.9	8.0	8.3	8.1	8.2
20	7.4	7.3	7.4	---	---	---	8.0	7.9	8.0	8.3	7.6	8.2
21	7.4	7.4	7.4	---	---	---	8.0	8.0	8.0	8.4	7.6	8.2
22	7.7	7.5	7.6	---	---	---	8.0	8.0	8.0	8.3	7.6	8.3
23	7.7	7.6	7.7	---	---	---	8.1	8.0	8.0	8.3	7.6	8.2
24	7.6	7.5	7.6	---	---	---	8.1	8.0	8.1	8.2	8.1	8.2
25	7.6	7.4	7.5	---	---	---	8.1	8.1	8.1	8.1	8.0	8.1
26	8.4	7.5	8.0	8.2	7.6	7.7	8.1	8.1	8.1	8.0	7.9	8.0
27	8.5	8.4	8.4	7.9	7.8	7.8	8.2	8.1	8.1	8.1	7.8	8.0
28	8.4	8.4	8.4	7.9	7.9	7.9	8.3	8.1	8.2	8.1	7.6	7.6
29	8.4	8.4	8.4	7.9	7.9	7.9	8.3	8.2	8.3	7.7	7.6	7.6
30	---	---	---	7.9	7.9	7.9	8.3	8.3	8.3	7.7	7.6	7.6
31	---	---	---	8.0	8.0	8.0	---	---	---	7.7	7.6	7.6
MONTH	8.5	7.3	7.8				8.3	7.7	8.0	8.4	7.6	8.1

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.7	7.6	7.6	---	---	---	8.0	8.0	8.0	7.9	7.9	7.9
2	7.8	7.6	7.7	---	---	---	8.0	8.0	8.0	7.9	7.9	7.9
3	7.8	7.8	7.8	---	---	---	8.0	8.0	8.0	7.9	7.9	7.9
4	7.8	7.8	7.8	---	---	---	8.0	8.0	8.0	7.9	7.9	7.9
5	7.8	7.8	7.8	---	---	---	8.1	8.0	8.0	7.9	7.9	7.9
6	7.8	7.8	7.8	---	---	---	8.1	8.1	8.1	7.9	7.9	7.9
7	7.8	7.8	7.8	---	---	---	8.1	8.1	8.1	7.9	7.9	7.9
8	7.8	7.8	7.8	---	---	---	8.1	8.1	8.1	7.9	7.9	7.9
9	7.8	7.8	7.8	---	---	---	8.1	8.1	8.1	7.9	7.9	7.9
10	7.8	7.8	7.8	---	---	---	8.1	8.1	8.1	7.9	7.9	7.9
11	7.8	7.8	7.8	---	---	---	8.1	8.1	8.1	7.9	7.9	7.9
12	7.8	7.8	7.8	---	---	---	8.1	8.0	8.1	7.9	7.9	7.9
13	7.8	7.8	7.8	---	---	---	8.0	8.0	8.0	7.9	7.9	7.9
14	7.8	7.8	7.8	7.8	7.8	7.8	8.0	8.0	8.0	7.9	7.9	7.9
15	7.8	7.8	7.8	7.8	7.8	7.8	8.0	8.0	8.0	7.9	7.9	7.9
16	7.8	7.8	7.8	7.8	7.8	7.8	8.1	8.0	8.0	7.9	7.9	7.9
17	7.8	7.8	7.8	7.8	7.8	7.8	8.1	8.1	8.1	7.9	7.7	7.8
18	---	---	---	7.8	7.8	7.8	8.1	7.9	8.0	7.7	7.7	7.7
19	---	---	---	7.8	7.8	7.8	7.9	7.9	7.9	7.7	7.7	7.7
20	---	---	---	7.8	7.8	7.8	7.9	7.9	7.9	7.7	7.7	7.7
21	---	---	---	7.8	7.8	7.8	7.9	7.9	7.9	7.7	7.7	7.7
22	---	---	---	7.8	7.8	7.8	7.9	7.9	7.9	7.7	7.7	7.7
23	---	---	---	7.8	7.8	7.8	7.9	7.9	7.9	7.7	7.7	7.7
24	---	---	---	8.0	7.8	7.9	7.9	7.9	7.9	7.7	7.7	7.7
25	---	---	---	8.0	8.0	8.0	7.9	7.9	7.9	7.7	7.7	7.7
26	---	---	---	8.0	8.0	8.0	7.9	7.9	7.9	7.7	7.7	7.7
27	---	---	---	8.0	8.0	8.0	7.9	7.9	7.9	7.7	7.7	7.7
28	---	---	---	8.0	8.0	8.0	7.9	7.9	7.9	7.7	7.7	7.7
29	---	---	---	8.0	8.0	8.0	7.9	7.9	7.9	7.7	7.7	7.7
30	---	---	---	8.0	8.0	8.0	7.9	7.9	7.9	7.7	7.7	7.7
31	---	---	---	8.0	8.0	8.0	7.9	7.9	7.9	---	---	---
MONTH							8.1	7.9	8.0	7.9	7.7	7.8

05330920 MINNESOTA RIVER AT FORT SNELLING STATE PARK AT ST. PAUL, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	9.5	9.0	9.5	2.5	2.5	2.5	1.0	1.0	1.0
2	---	---	---	9.0	8.5	9.0	2.5	2.5	2.5	1.0	.5	1.0
3	---	---	---	9.0	8.5	8.5	2.5	2.5	2.5	.5	.5	.5
4	---	---	---	8.5	8.0	8.0	3.0	2.5	2.5	.5	.5	.5
5	---	---	---	8.0	8.0	8.0	2.5	2.5	2.5	.5	.5	.5
6	---	---	---	8.0	7.5	7.5	3.0	2.5	2.5	.5	.5	.5
7	---	---	---	7.5	7.0	7.5	3.0	2.5	2.5	.5	.5	.5
8	---	---	---	7.0	6.5	7.0	2.0	2.0	2.0	.5	.5	.5
9	---	---	---	6.5	6.0	6.5	2.0	1.5	1.5	.5	.5	.5
10	---	---	---	6.0	6.0	6.0	1.5	1.0	1.0	.5	.5	.5
11	---	---	---	6.0	5.5	6.0	1.0	.5	1.0	.5	.5	.5
12	---	---	---	5.5	5.5	5.5	1.0	1.0	1.0	.5	.5	.5
13	---	---	---	5.5	5.5	5.5	1.0	1.0	1.0	.5	.5	.5
14	---	---	---	5.5	5.5	5.5	1.0	1.0	1.0	.5	.5	.5
15	---	---	---	5.5	3.5	4.5	1.0	1.0	1.0	.5	.5	.5
16	---	---	---	4.0	3.5	4.0	1.0	1.0	1.0	1.0	.5	.5
17	---	---	---	4.5	4.0	4.5	1.0	1.0	1.0	1.0	.5	1.0
18	---	---	---	5.0	4.0	4.5	1.0	1.0	1.0	1.0	.5	1.0
19	---	---	---	5.5	5.0	5.0	1.0	1.0	1.0	1.0	.5	.5
20	---	---	---	5.5	5.0	5.5	1.0	1.0	1.0	.5	.5	.5
21	---	---	---	5.5	5.5	5.5	1.0	1.0	1.0	.5	.5	.5
22	---	---	---	5.5	5.0	5.0	1.0	1.0	1.0	1.0	.5	1.0
23	---	---	---	5.0	4.5	5.0	1.0	1.0	1.0	1.0	1.0	1.0
24	---	---	---	4.5	4.0	4.5	1.0	1.0	1.0	1.0	1.0	1.0
25	---	---	---	4.0	4.0	4.0	1.0	1.0	1.0	1.0	1.0	1.0
26	---	---	---	4.0	3.5	4.0	1.0	1.0	1.0	1.0	1.0	1.0
27	---	---	---	3.5	3.5	3.5	1.0	1.0	1.0	1.0	1.0	1.0
28	---	---	---	3.5	3.0	3.0	1.0	1.0	1.0	1.0	1.0	1.0
29	---	---	---	3.0	2.5	3.0	1.0	1.0	1.0	1.0	1.0	1.0
30	9.0	9.0	9.0	2.5	2.5	2.5	1.0	1.0	1.0	1.0	1.0	1.0
31	10.0	9.0	9.5	---	---	---	1.0	1.0	1.0	1.0	1.0	1.0
MONTH				9.5	2.5	5.5	3.0	.5	1.5	1.0	.5	.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1.0	1.0	1.0	1.0	1.0	1.0	4.5	2.5	3.5	15.0	14.0	14.5
2	1.5	1.0	1.0	1.0	1.0	1.0	4.5	3.5	4.0	15.5	14.5	15.0
3	1.0	1.0	1.0	1.0	1.0	1.0	4.0	4.0	4.0	15.5	15.0	15.5
4	1.0	1.0	1.0	1.0	1.0	1.0	4.5	4.0	4.0	16.0	15.5	16.0
5	1.0	1.0	1.0	1.0	1.0	1.0	5.0	4.0	4.5	16.0	16.0	16.0
6	1.5	1.0	1.0	1.0	1.0	1.0	5.5	4.5	5.0	16.0	15.5	16.0
7	1.0	1.0	1.0	1.5	1.0	1.0	6.0	5.0	5.5	15.5	14.5	15.0
8	1.0	1.0	1.0	1.5	1.0	1.0	6.0	5.5	6.0	14.5	14.0	14.0
9	1.0	1.0	1.0	1.0	1.0	1.0	5.5	5.5	5.5	14.5	14.0	14.0
10	1.0	1.0	1.0	1.5	1.0	1.0	6.0	5.5	5.5	14.0	14.0	14.0
11	1.0	1.0	1.0	1.5	1.0	1.0	6.0	5.5	5.5	14.0	13.5	13.5
12	1.0	1.0	1.0	1.5	1.0	1.0	6.0	5.5	5.5	14.0	13.5	13.5
13	1.0	1.0	1.0	1.5	1.0	1.5	5.5	5.5	5.5	14.0	13.5	13.5
14	1.0	1.0	1.0	2.0	1.5	1.5	6.0	5.5	6.0	14.0	13.5	14.0
15	1.0	1.0	1.0	2.0	1.5	2.0	6.5	6.0	6.5	14.5	13.5	14.0
16	1.0	1.0	1.0	1.5	1.0	1.5	7.0	6.5	7.0	14.5	14.0	14.0
17	1.0	1.0	1.0	1.5	1.0	1.0	8.0	7.0	7.5	14.0	13.5	13.5
18	1.0	1.0	1.0	1.5	1.0	1.0	9.0	8.0	8.5	13.5	13.5	13.5
19	1.0	1.0	1.0	1.5	1.0	1.0	10.0	8.5	9.0	14.0	13.5	13.5
20	1.5	1.0	1.5	---	---	---	10.5	9.5	10.0	15.0	14.0	14.5
21	1.5	1.5	1.5	---	---	---	11.5	10.5	11.0	19.5	15.0	17.0
22	1.5	1.5	1.5	---	---	---	12.5	11.0	11.5	21.0	19.0	20.0
23	2.0	1.5	1.5	---	---	---	12.0	11.5	12.0	21.0	19.5	20.5
24	1.5	1.0	1.0	---	---	---	12.0	11.5	12.0	21.5	20.5	21.0
25	1.0	1.0	1.0	---	---	---	12.5	12.0	12.5	21.5	21.0	21.0
26	1.0	1.0	1.0	1.5	1.0	1.0	12.5	12.0	12.5	21.5	21.0	21.5
27	1.0	1.0	1.0	1.5	1.0	1.0	13.0	12.5	12.5	23.5	21.5	22.5
28	1.0	1.0	1.0	1.5	1.0	1.5	14.0	13.0	13.5	24.0	23.5	23.5
29	1.0	1.0	1.0	1.5	1.0	1.5	13.5	13.5	13.5	24.5	23.5	24.0
30	---	---	---	2.5	1.5	2.0	14.0	13.5	14.0	23.5	23.0	23.5
31	---	---	---	3.0	2.0	2.5	---	---	---	23.5	22.5	23.0
MONTH	2.0	1.0	1.0				14.0	2.5	8.0	24.5	13.5	17.0

05330920 MINNESOTA RIVER AT FORT SNELLING STATE PARK AT ST. PAUL, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	23.0	22.5	22.5	---	---	---	26.0	25.0	25.5	21.0	20.5	20.5
2	22.0	19.5	21.0	---	---	---	26.0	25.5	25.5	21.0	20.5	20.5
3	19.5	19.5	19.5	---	---	---	26.0	25.0	25.5	21.0	20.5	21.0
4	19.5	19.5	19.5	---	---	---	25.5	25.0	25.5	21.5	21.0	21.0
5	20.0	19.0	19.5	---	---	---	25.0	24.5	25.0	21.5	21.0	21.0
6	20.5	19.5	20.0	---	---	---	25.5	24.5	25.0	21.5	21.0	21.0
7	20.5	19.5	20.0	---	---	---	25.0	25.0	25.0	21.5	21.0	21.5
8	20.0	19.5	20.0	---	---	---	25.5	24.5	25.0	22.0	21.5	21.5
9	20.0	19.5	20.0	---	---	---	25.0	24.5	25.0	22.5	21.5	22.0
10	20.0	19.5	20.0	---	---	---	24.5	24.5	24.5	21.5	21.0	21.5
11	20.0	19.5	20.0	---	---	---	24.5	24.0	24.5	21.5	20.0	20.5
12	20.0	19.5	20.0	---	---	---	24.5	24.0	24.5	20.5	19.5	20.0
13	20.0	20.0	20.0	---	---	---	24.5	24.0	24.0	20.0	19.5	19.5
14	20.5	20.0	20.5	27.0	26.0	26.5	24.0	24.0	24.0	19.5	19.0	19.5
15	21.0	20.5	20.5	27.0	25.5	26.5	24.5	24.0	24.0	19.0	19.0	19.0
16	21.0	18.5	20.5	26.5	26.5	26.5	24.0	22.5	23.5	19.0	18.5	19.0
17	20.0	17.0	18.0	26.5	26.0	26.0	22.5	22.0	22.5	18.5	17.0	18.0
18	---	---	---	26.5	26.0	26.0	22.0	20.0	21.5	17.0	17.0	17.0
19	---	---	---	26.5	25.5	26.0	21.5	20.0	20.5	17.0	16.0	16.5
20	---	---	---	26.0	25.0	25.5	21.5	21.5	21.5	16.5	16.0	16.0
21	---	---	---	25.0	25.0	25.0	22.0	21.5	21.5	16.0	16.0	16.0
22	---	---	---	25.0	24.5	24.5	22.0	21.5	21.5	16.5	16.0	16.0
23	---	---	---	25.0	24.0	24.5	22.0	22.0	22.0	16.0	15.0	15.5
24	---	---	---	25.5	24.0	25.0	22.0	22.0	22.0	15.5	15.0	15.0
25	---	---	---	25.5	25.0	25.0	22.5	22.0	22.0	15.0	15.0	15.0
26	---	---	---	25.5	25.0	25.0	22.5	22.0	22.0	14.5	14.5	14.5
27	---	---	---	25.5	25.0	25.0	22.0	21.5	21.5	14.5	14.0	14.5
28	---	---	---	25.0	25.0	25.0	23.0	21.0	22.0	14.5	14.0	14.0
29	---	---	---	25.5	24.5	25.0	21.5	21.0	21.0	14.5	14.0	14.0
30	---	---	---	25.5	25.0	25.0	21.5	21.0	21.5	15.0	14.0	14.5
31	---	---	---	25.5	25.0	25.0	21.5	21.0	21.0	---	---	---
MONTH							26.0	20.0	23.0	22.5	14.0	18.0

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	9.0	8.8	8.9	11.6	11.4	11.5	10.7	10.4	10.5
2	---	---	---	9.3	8.8	9.1	11.7	11.5	11.6	12.5	10.4	11.4
3	---	---	---	9.1	8.8	9.0	11.6	11.3	11.5	12.5	12.3	12.4
4	---	---	---	9.2	9.0	9.1	11.8	11.3	11.5	12.4	12.2	12.4
5	---	---	---	9.1	9.0	9.0	11.8	11.5	11.7	12.4	12.3	12.4
6	---	---	---	9.4	8.8	9.1	11.8	11.5	11.7	12.4	12.2	12.3
7	---	---	---	9.3	8.7	9.0	11.6	11.3	11.5	12.4	12.2	12.3
8	---	---	---	9.5	8.9	9.1	11.7	11.5	11.6	12.7	12.2	12.4
9	---	---	---	9.5	9.1	9.3	11.7	11.5	11.6	12.8	12.4	12.5
10	---	---	---	9.4	9.1	9.2	11.7	11.4	11.6	12.6	12.0	12.3
11	---	---	---	9.5	9.0	9.3	11.7	10.7	11.3	12.5	12.2	12.4
12	---	---	---	9.6	9.2	9.4	11.0	10.6	10.8	12.3	12.0	12.1
13	---	---	---	11.8	9.4	10.7	10.9	10.5	10.7	12.1	11.8	11.9
14	---	---	---	11.6	11.3	11.5	10.8	10.4	10.6	12.2	11.8	12.0
15	---	---	---	11.3	11.1	11.2	10.7	10.2	10.5	12.0	11.7	11.8
16	---	---	---	11.2	10.9	11.1	10.8	10.3	10.6	11.9	11.5	11.7
17	---	---	---	11.0	10.6	10.8	10.9	10.4	10.6	11.6	11.4	11.5
18	---	---	---	10.7	10.4	10.6	10.5	10.1	10.3	11.9	11.4	11.7
19	---	---	---	10.6	10.2	10.4	10.4	10.0	10.2	12.0	11.6	11.8
20	---	---	---	10.3	9.4	9.8	11.3	10.0	10.7	11.9	11.5	11.8
21	---	---	---	9.5	9.3	9.4	11.3	11.0	11.1	12.1	11.6	11.9
22	---	---	---	9.4	9.1	9.2	11.2	10.9	11.0	12.3	11.6	12.0
23	---	---	---	9.5	9.2	9.4	11.1	10.8	11.0	12.7	11.9	12.2
24	---	---	---	9.7	9.4	9.6	11.0	10.6	10.8	12.4	11.8	12.2
25	---	---	---	9.9	9.6	9.8	10.9	10.5	10.7	12.6	12.0	12.2
26	---	---	---	9.9	9.8	9.8	10.8	10.3	10.6	12.5	11.8	12.2
27	---	---	---	11.7	9.8	10.7	10.8	10.4	10.6	12.3	11.8	12.0
28	---	---	---	11.7	11.5	11.6	10.7	10.4	10.5	12.4	11.9	12.1
29	---	---	---	11.6	11.5	11.6	10.7	10.4	10.5	12.4	11.9	12.1
30	9.7	9.5	9.6	11.6	11.5	11.6	10.7	10.4	10.6	12.5	12.0	12.2
31	9.5	9.0	9.2	---	---	---	10.7	10.4	10.5	12.6	12.1	12.4
MONTH				11.8	8.7	9.9	11.8	10.0	11.0	12.8	10.4	12.0

05330920 MINNESOTA RIVER AT FORT SNELLING STATE PARK AT ST. PAUL, MN--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	13.1	12.5	12.8	9.8	9.3	9.5	12.2	11.3	11.8	13.5	11.2	12.3
2	13.0	12.5	12.8	9.3	9.0	9.2	12.0	11.5	11.7	14.6	11.4	13.0
3	13.4	12.6	13.0	9.4	9.0	9.2	12.0	11.8	11.9	14.3	11.4	13.0
4	13.0	12.6	12.8	9.6	9.0	9.3	12.0	11.3	11.5	14.1	11.5	13.2
5	12.8	12.3	12.6	9.1	8.9	9.1	12.3	11.8	12.1	13.2	11.5	12.4
6	12.5	11.9	12.2	9.5	9.0	9.3	12.1	11.7	11.9	11.8	9.9	10.9
7	12.2	11.5	11.8	9.5	9.2	9.4	12.2	11.4	11.9	16.2	9.2	13.5
8	12.3	11.4	11.9	9.2	8.8	9.0	11.5	10.6	11.0	16.7	12.9	14.9
9	11.5	10.8	11.2	9.0	8.8	8.9	10.8	10.3	10.6	16.6	13.9	15.4
10	11.2	10.7	10.9	10.0	8.8	9.2	10.8	10.3	10.6	14.8	12.8	13.8
11	10.8	9.9	10.3	10.0	8.7	9.2	11.2	10.7	11.0	14.2	11.4	12.7
12	10.2	9.3	9.9	10.8	9.7	10.4	11.4	11.1	11.3	17.7	12.4	14.8
13	10.0	9.2	9.6	10.7	10.2	10.4	11.5	11.2	11.3	16.1	14.8	15.9
14	9.5	8.7	8.9	10.8	10.0	10.4	11.5	11.2	11.3	16.2	14.7	15.6
15	9.0	8.7	8.8	10.7	10.3	10.4	11.5	11.3	11.4	15.0	13.1	14.1
16	8.9	8.6	8.8	11.0	9.8	10.3	11.5	11.0	11.3	14.6	13.0	13.6
17	8.7	8.2	8.5	11.0	9.8	10.5	11.0	10.5	10.8	13.6	10.6	12.0
18	8.4	8.1	8.3	11.9	10.5	11.3	11.3	10.2	10.7	10.7	9.2	9.7
19	9.1	8.4	8.8	11.8	10.4	11.3	11.2	10.4	10.8	10.0	8.3	9.2
20	9.0	8.7	8.9	---	---	---	10.6	9.9	10.4	13.6	8.7	11.0
21	9.1	8.7	8.9	---	---	---	10.4	9.9	10.1	15.6	11.5	13.5
22	9.0	8.7	8.9	---	---	---	9.8	8.3	9.1	15.2	12.6	13.7
23	9.5	8.7	9.1	---	---	---	8.8	8.0	8.3	14.0	10.9	11.8
24	9.1	8.5	8.9	---	---	---	8.7	7.7	8.1	12.6	10.2	11.0
25	9.0	8.6	8.8	---	---	---	8.3	7.5	7.9	11.6	10.1	10.8
26	10.3	8.8	9.5	9.9	9.3	9.5	9.0	7.7	8.5	11.6	9.2	10.1
27	10.7	9.8	10.2	9.9	9.4	9.6	9.7	8.2	8.9	11.6	9.7	10.6
28	9.8	9.3	9.5	10.3	9.4	9.9	12.6	8.5	10.7	10.8	7.3	8.6
29	9.7	9.4	9.6	11.0	10.0	10.4	12.5	11.1	11.7	8.6	4.1	6.5
30	---	---	---	11.4	10.6	11.0	13.1	10.9	11.8	6.0	4.3	5.4
31	---	---	---	12.1	11.0	11.5	---	---	---	6.7	4.5	5.4
MONTH	13.4	8.1	10.2				13.1	7.5	10.7	17.7	4.1	11.9

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.3	4.3	6.2	---	---	---	5.8	3.7	4.5	8.1	6.7	7.3
2	5.6	4.1	4.8	---	---	---	5.7	3.9	4.9	9.0	6.4	7.4
3	7.1	5.3	6.2	---	---	---	5.9	3.7	4.5	8.7	7.6	8.3
4	7.8	6.5	7.3	---	---	---	5.3	4.6	5.0	8.9	6.5	7.8
5	9.5	7.5	8.2	---	---	---	6.0	4.6	5.2	8.9	8.0	8.5
6	8.2	7.1	7.8	---	---	---	5.9	5.3	5.6	10.0	8.7	9.2
7	9.1	7.3	8.7	---	---	---	5.9	4.8	5.4	10.3	9.3	9.6
8	8.7	8.4	8.5	---	---	---	5.7	4.5	5.0	10.2	8.0	9.3
9	8.6	7.1	7.5	---	---	---	5.1	4.4	4.8	7.9	6.1	6.5
10	7.4	7.0	7.2	---	---	---	4.9	3.7	4.1	6.6	5.7	6.3
11	7.4	6.9	7.1	---	---	---	5.1	4.5	4.8	8.1	5.2	6.5
12	7.2	6.9	7.0	---	---	---	4.8	3.9	4.3	6.5	5.5	6.0
13	7.2	6.9	7.1	---	---	---	5.6	4.2	4.7	6.1	5.4	5.7
14	7.0	6.6	6.8	8.0	6.9	7.5	5.7	4.5	5.1	6.1	5.3	5.7
15	7.2	6.6	7.0	7.7	6.2	6.8	5.8	4.6	5.2	5.8	5.1	5.4
16	12.2	3.6	7.8	8.0	6.3	7.2	6.1	4.9	5.5	6.3	5.7	6.0
17	12.8	11.8	12.5	8.7	6.8	7.7	6.1	5.5	5.8	9.6	6.0	7.7
18	---	---	---	8.1	6.7	7.5	6.2	5.1	5.5	10.6	8.9	9.9
19	---	---	---	7.9	7.1	7.4	7.6	6.1	6.7	11.3	9.5	10.3
20	---	---	---	7.6	6.2	6.7	8.8	7.4	8.2	10.5	9.1	10.1
21	---	---	---	9.4	7.2	8.0	8.8	7.7	8.2	9.8	8.7	9.2
22	---	---	---	9.1	7.8	8.4	10.3	8.3	9.1	10.9	9.0	9.9
23	---	---	---	11.5	8.4	9.9	10.4	8.3	9.0	11.8	10.1	11.0
24	---	---	---	12.5	10.8	11.7	8.5	7.0	7.5	12.6	11.2	12.1
25	---	---	---	12.3	10.1	11.2	7.5	6.4	6.9	12.9	11.4	12.2
26	---	---	---	11.3	9.0	10.3	7.0	5.6	6.4	13.2	10.9	12.1
27	---	---	---	10.1	7.8	9.1	5.8	4.8	5.2	13.1	11.6	12.2
28	---	---	---	10.3	6.1	8.1	6.1	4.5	5.1	12.8	11.4	12.0
29	---	---	---	6.6	4.3	5.3	6.9	5.9	6.3	11.5	9.9	10.8
30	---	---	---	5.2	4.1	4.7	7.3	6.0	6.5	11.5	9.2	10.0
31	---	---	---	4.3	3.3	3.8	8.3	6.8	7.7	---	---	---
MONTH							10.4	3.7	5.9	13.2	5.1	8.8

05331000 MISSISSIPPI RIVER AT ST. PAUL, MN

LOCATION.--Lat°44.56'40", long 93°05'20", in SE¼NE¼ sec.6, T.28 N., R.22 W., Ramsey County, Hydrologic Unit 07010206, on left bank in St. Paul, 300 ft (91 m) upstream from Robert Street Bridge, 6 mi (10 km) downstream from Minnesota River, and at mile 839.3 (1,350 km) upstream from Ohio River.

DRAINAGE AREA.--36,800 mi² (95,300 km²), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Water year 1867-69, 1872-92 (annual maximums), March 1892 to current year (prior to 1901, fragmentary during some winters). Records prior to March 1892, published in the 19th Annual Report, Part 4, have been found to be unreliable and should not be used. Monthly discharge only for some periods, published in WSP 1308. Gage-height records (winter records incomplete) collected at same site since 1866 are contained in reports of U.S. Weather Bureau, War Department and Mississippi River Commission.

REVISED RECORDS.--WSP 285: 1892-96. WSP 715: Drainage area. WSP 875: 1938. WSP 895: 1939. WSP 1308: 1867(M). WSP 1508: 1897, 1898(M), 1903(M), 1917-18(M), 1928(M), 1929. WRD MN-74: 1973.

GAGE.--Water-stage recorder. Datum of gage is 683.62 ft (208.367 m) National Geodetic Vertical Datum of 1929. Prior to Mar. 18, 1925, nonrecording gage at several sites within 300 ft (91 m) of present site at present datum. Mar. 18, 1925, to Mar. 10, 1933, water-stage recorder and Mar. 11, 1933, to Sept. 14, 1939, non-recording gage, at present site and datum. Since September 1938, auxiliary water-stage recorder 5.6 mi (9.0 km) downstream.

REMARKS.--Records good. Slight regulation except during extreme floods by reservoirs on headwaters and by powerplants. Beginning July 20, 1938, sewage from Minneapolis and St. Paul, which formerly entered above station, was diverted to a sewage-disposal plant, thence to river below station. Figures of daily discharge do not include this diversion.

COOPERATION.--Records of Mississippi River at Twin City lock and dam computed and furnished by Ford Motor Co. Diversion through sewage disposal plant furnished by Metropolitan Waste Control Commission.

AVERAGE DISCHARGE (ADJUSTED FOR DIVERSION).--82 years (water years 1895, 1897, 1901-80), 10,610 ft³/s (300.5 m³/s), 3.92 in/yr (100 mm/yr); median of yearly mean discharges, 9,974 ft³/s (282.5 m³/s), 3.68 in/yr (93 mm/yr).

EXTREMES FOR PERIOD OF RECORD (1867-70, 1872-1980).--Maximum discharge, 171,000 ft³/s (4,840 m³/s) Apr. 16, 1965, gage height, 26.01 ft (7.928 m) from floodmark.

Maximum flood known since at least 1851, that of 1965. Flood of Apr. 11, 1870 reached a stage of 19.4 ft (5.9 m), discharge, 100,000 ft³/s (2,830 m³/s).

EXTREMES FOR PERIOD OF RECORD (1897,1917-80).--Minimum daily discharge, 632 ft³/s (17.9 m³/s) Aug. 26, 1934.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 30,200 ft³/s (855 m³/s) Apr. 10; gage height, 6.24 ft (1.90 m); minimum daily, 3,100 ft³/s (87.8 m³/s) Aug. 16.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8540	12200	11100	9050	6450	5800	19900	13400	6110	8670	3340	5130
2	8160	15200	9640	8690	6190	5740	20500	12900	8890	7800	3510	4900
3	7980	17500	9130	8620	6040	6180	21600	12200	10800	7490	3280	5420
4	7600	19400	9640	7830	5980	6430	21800	12100	15400	7340	3180	5900
5	7340	21600	9950	7890	6440	5840	22500	11500	18400	6660	3250	6210
6	7090	23300	11200	7660	6400	5780	23800	10900	18800	6890	3180	6500
7	6990	23700	11500	5960	6310	6020	25800	9890	21200	7260	3400	6320
8	6900	23300	10400	5040	6440	6200	26900	9120	22000	6330	4730	6930
9	6800	23300	9700	5960	6600	6270	29100	8250	22500	5630	4490	6170
10	6650	23000	10700	6370	6150	6240	30200	7980	22100	5300	4400	6080
11	6930	22200	11200	6740	6540	6060	29500	8500	21900	5330	4370	5740
12	6000	21700	10400	6480	6290	6170	29700	8420	22800	5120	3970	7010
13	6270	20400	9380	6690	6410	5900	28400	8300	23000	4800	3840	8850
14	5910	19000	8520	7770	6430	6200	28000	7930	22800	5250	4010	10000
15	5890	18100	8760	7680	6450	6440	26900	7850	22600	5720	3770	10900
16	5860	18200	9060	7900	6230	6810	25600	7150	20200	5080	3100	9820
17	5860	18100	7760	7770	5580	6220	23500	6760	17500	5110	3800	9880
18	5790	17100	8280	7900	6360	6300	22800	7980	16300	4370	3700	10400
19	6550	16600	9660	7870	6700	8620	22100	7780	15600	4560	3890	10100
20	6280	16200	9870	7210	6880	14500	20000	7330	14600	4800	4120	9760
21	6520	16500	9780	7320	6640	16400	18300	7130	13700	4840	4660	7780
22	6940	16300	10400	7170	6860	16700	18000	6450	12700	4560	5030	7470
23	7690	16000	10200	6280	6380	16700	17600	6630	12100	4510	5400	6920
24	7840	15400	9580	6640	6010	17700	17000	6170	11600	4890	5080	6920
25	7830	15600	9250	7340	6040	18100	16500	6160	10600	4810	5200	6900
26	7950	15900	9700	6490	5610	18500	16300	5830	9850	4100	5370	6620
27	8600	15500	9820	5820	5940	19000	15000	6060	9600	4040	5150	6940
28	9080	15600	9820	6610	6160	18900	14500	5550	9150	4140	5440	6880
29	9810	14300	9680	6620	5910	19200	13600	5500	8790	4290	5400	7080
30	9830	12600	9420	6660	---	19100	13700	5170	8920	3870	6120	7010
31	10200	---	9240	6740	---	18400	---	5280	---	3670	4970	---
TOTAL	227680	543800	302740	220770	182420	332420	659100	252170	470510	167230	133150	222540
MEAN	7345	.18130	9766	7122	6290	10720	21970	8135	15680	5395	4295	7418
MAX	10200	23700	11500	9050	6880	19200	30200	13400	23000	8670	6120	10900
MIN	5790	12200	7760	5040	5580	5740	13600	5170	6110	3670	3100	4900
†	336	305	284	298	291	332	305	296	367	294	307	305
MEAN ‡	7681	18435	10050	7420	6581	11052	22275	8431	16047	5689	4602	7723
CFSM ‡	0.21	0.50	0.27	0.20	0.18	0.30	0.61	0.23	0.44	0.15	0.13	0.21
IN. ‡	0.24	0.56	0.31	0.23	0.19	0.35	0.68	0.26	0.49	0.18	0.14	0.23

CAL YR 1979 TOTAL 7458870 MEAN 20440 MAX 75400 MIN 3820 MEAN ‡ 20772 CFSM ‡ 0.56 IN ‡ 7.66
WTR YR 1980 TOTAL 3714530 MEAN 10150 MAX 30200 MIN 3100 MEAN ‡ 10459 CFSM ‡ 0.28 IN ‡ 3.86

† Diversion equivalent in cubic feet per second, through sewage disposal plant.
‡ Adjusted for diversion.

05331000 MISSISSIPPI RIVER AT ST. PAUL, MN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1956 to current year.

INSTRUMENTATION.--Temperature recorder since October 1956.

COOPERATION.--Chemical samples collected by the Metropolitan Waste Control Commission, St. Paul, MN.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 31.0°C July 24-28, 1964, July 31, 1975, July 19, 21, 1977; minimum, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 30.0°C July 15; minimum, 0.0°C on many days during winter period.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW (CFS) (00060)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	FLUO-RIDE, TOTAL (MG/L AS F) (00951)
NOV								
23...	1020	16000	573	8.1	10.5	6.9	63	.2
DEC								
11...	1045	11200	676	7.8	1.0	14.1	102	.7
FEB								
04...	1300	5980	600	8.0	1.0	14.5	105	.0
APR								
01...	1240	19900	394	7.8	4.5	13.7	109	.1
JUN								
04...	1035	15400	472	7.4	21.0	8.9	102	.8
AUG								
08...	1255	4730	490	8.1	25.5	6.8	84	.1

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
NOV									
23...	5	100	0	80	0	12	4	660	2
DEC									
11...	5	0	10	50	0	7	3	450	0
FEB									
04...	1	200	10	80	0	2	3	620	3
APR									
01...	2	50	0	60	1	9	4	1300	4
JUN									
04...	4	200	0	100	1	0	12	9300	7
AUG									
08...	3	100	0	80	0	14	4	1100	8

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
NOV								
23...	120	.3	3	3	0	0	10	.00
DEC								
11...	60	.1	1	3	0	0	10	.00
FEB								
04...	90	<.1	1	3	1	0	10	.01
APR								
01...	200	.1	0	5	0	0	10	.00
JUN								
04...	620	<.1	2	11	2	0	40	.01
AUG								
08...	270	<.1	3	2	0	0	20	.00

05331000 MISSISSIPPI RIVER AT ST. PAUL, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW (CFS) (00060)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, DIS-SOLVED (UG/L AS B) (01020)
SEP 18...	0930	10400	335	8.0	15.5	8.6	88	.2	2	0	0	110

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, HEXA-VALENT, DIS. (UG/L AS CR) (01032)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
SEP 18...	0	2	0	4	30	1	10	<.1	2	0	0	0

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

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	18.5	17.5	10.0	9.0	1.0	.0	.5	.5	1.0	.5	1.5	1.0
2	17.5	17.5	9.0	7.5	.5	.0	.5	.5	1.0	.5	1.5	1.0
3	17.5	17.0	7.5	6.5	1.5	.0	.5	.5	1.5	1.0	2.0	1.0
4	17.0	15.5	6.5	6.0	1.0	.5	.5	.0	1.5	1.0	2.0	1.0
5	15.5	14.5	6.0	6.0	1.0	.5	.5	.0	1.5	1.0	1.0	1.0
6	14.5	13.0	5.5	4.5	1.5	.0	.5	.0	1.0	1.0	1.0	1.0
7	13.0	12.5	4.5	4.0	1.5	.5	.5	.0	1.5	1.0	1.5	.5
8	13.5	12.5	4.5	3.5	.5	.5	1.0	.0	1.0	.5	1.5	1.0
9	12.5	12.0	3.0	3.0	.5	.5	.5	.0	1.0	.5	1.5	1.0
10	12.0	11.5	3.0	2.0	1.0	.5	.5	.0	1.0	1.0	2.0	1.0
11	12.0	11.5	2.0	2.0	1.0	.0	.5	.0	1.0	.5	1.5	1.0
12	11.5	10.5	3.0	1.5	.5	.0	.5	.0	1.5	1.0	1.5	1.0
13	10.5	9.5	2.5	2.0	1.0	.0	.5	.0	1.0	1.0	2.0	1.5
14	10.0	9.5	3.0	1.5	.5	.0	.5	.5	1.5	1.0	2.5	2.0
15	10.5	9.5	3.0	2.0	.5	.0	.5	.5	1.5	1.0	2.5	2.0
16	11.5	9.5	4.0	2.5	.5	.0	.5	.5	1.0	1.0	2.5	2.0
17	12.0	10.5	4.5	3.0	.5	.5	.5	.5	1.0	1.0	2.5	1.5
18	13.0	11.5	4.5	3.0	.5	.0	.5	.5	1.5	1.0	3.0	1.5
19	13.0	12.0	6.0	4.0	1.0	.5	1.0	.5	1.5	1.0	3.0	2.0
20	13.5	13.0	6.0	5.5	.5	.5	.5	.0	1.5	1.0	2.5	2.0
21	13.5	13.0	6.0	5.5	1.0	.5	.5	.5	1.5	1.5	2.5	1.5
22	13.0	12.0	5.0	4.0	.5	.0	.5	.5	1.5	1.5	2.0	1.0
23	12.0	10.5	4.0	3.5	.0	.0	.5	.0	2.0	1.5	1.5	1.0
24	10.5	9.5	4.0	3.0	.0	.0	.5	.0	2.0	1.5	1.5	1.5
25	10.0	9.5	3.0	2.5	.0	.0	.5	.0	1.5	1.0	2.0	1.5
26	9.5	9.0	4.0	2.5	.5	.0	.0	.0	1.5	1.0	2.0	1.5
27	9.0	8.0	3.5	2.0	1.0	.5	.5	.0	1.5	1.0	2.0	1.5
28	8.0	7.5	2.5	1.5	1.0	.5	.5	.0	1.5	1.0	2.0	1.5
29	8.5	7.5	2.0	1.0	.0	.0	.5	.0	1.5	.5	2.0	1.5
30	9.5	8.5	1.0	.5	.0	.0	1.0	.0	---	---	2.5	1.5
31	10.0	9.5	---	---	.5	.0	1.5	1.0	---	---	3.5	2.0
MONTH	18.5	7.5	10.0	.5	1.5	.0	1.5	.0	2.0	.5	3.5	.5

05331000 MISSISSIPPI RIVER AT ST. PAUL, MN--Continued

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

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	4.0	3.0	18.0	16.0	23.0	22.0	23.0	22.5	26.5	25.0	22.5	21.5
2	4.0	2.0	19.0	17.0	22.0	21.5	23.5	22.5	26.5	25.5	22.0	21.0
3	4.0	3.0	19.0	18.0	22.0	21.5	24.0	23.0	26.5	25.5	22.5	21.5
4	3.5	2.0	20.0	18.5	21.5	21.5	24.5	23.5	26.0	25.5	22.0	21.5
5	4.5	3.0	20.0	19.0	22.0	21.5	25.0	24.0	25.5	24.5	23.0	22.0
6	5.0	4.0	19.5	18.0	21.5	21.5	25.5	24.0	26.5	24.5	23.0	22.0
7	5.5	5.0	18.0	16.0	22.0	21.5	26.5	25.0	26.0	25.5	23.5	22.5
8	5.5	5.5	16.0	15.0	21.5	21.5	26.5	26.0	25.5	24.5	24.5	23.5
9	5.5	5.0	15.5	14.5	21.5	21.0	28.0	26.0	25.0	24.5	24.5	23.5
10	5.5	5.5	15.5	15.0	21.5	21.0	28.5	27.0	24.5	24.0	24.0	23.0
11	5.5	5.5	15.0	14.0	21.5	21.5	29.5	28.0	24.5	23.5	23.5	21.0
12	6.0	6.0	15.0	14.5	22.5	21.5	29.5	28.5	24.5	23.5	21.0	20.0
13	6.0	6.0	15.0	14.0	22.5	22.0	29.5	28.5	24.0	23.5	20.0	19.0
14	6.5	6.0	15.5	14.5	23.0	22.0	29.5	28.0	24.0	23.0	19.5	19.0
15	7.5	7.0	16.0	14.5	23.0	22.0	30.0	28.0	24.0	23.5	19.5	19.0
16	8.5	7.0	16.0	15.0	23.5	22.5	29.0	28.0	23.5	22.0	19.0	18.5
17	9.5	8.0	16.0	15.0	23.0	22.0	29.0	27.5	22.0	21.5	19.0	18.0
18	11.5	9.5	15.5	15.0	23.0	22.5	29.0	28.0	22.0	21.0	18.0	16.5
19	12.5	10.5	17.0	15.5	23.0	22.0	29.0	28.0	23.0	21.5	17.0	16.0
20	13.5	12.0	19.5	16.5	22.5	22.0	28.0	26.5	23.0	22.0	17.0	16.5
21	16.0	13.0	21.0	19.0	22.5	21.5	26.5	25.5	23.5	22.0	16.5	15.5
22	17.5	15.0	22.5	21.0	24.0	22.0	25.5	25.0	23.5	22.5	16.5	15.5
23	16.5	16.0	23.5	21.5	25.0	23.0	25.5	24.5	24.0	23.0	16.0	15.5
24	16.0	15.0	23.5	22.0	25.0	24.5	25.5	24.5	24.0	23.0	15.5	15.5
25	15.0	14.5	23.5	23.0	26.0	24.0	25.5	24.5	25.0	23.0	15.5	15.0
26	14.5	13.5	23.5	23.0	26.5	25.0	25.0	24.5	24.5	23.5	15.0	14.0
27	14.5	13.0	23.5	23.0	26.5	24.5	25.5	25.0	23.5	23.0	15.0	14.0
28	15.5	13.5	24.0	23.0	25.0	24.0	25.0	25.0	22.5	22.0	15.0	14.0
29	15.5	15.0	24.0	23.0	24.0	23.0	25.5	25.0	23.0	22.0	14.5	14.0
30	16.5	15.0	23.5	22.0	23.0	22.0	26.0	25.0	23.0	22.5	14.0	13.5
31	---	---	23.0	22.0	---	---	25.5	25.0	23.0	21.5	---	---
MONTH	17.5	2.0	24.0	14.0	26.5	21.0	30.0	22.5	26.5	21.0	24.5	13.5
YEAR	30.0	.0										

05331005 MISSISSIPPI RIVER AT INDUSTRIAL MOLASSES, ST. PAUL, MN

LOCATION.--Lat 44°55'52", long 93°02'52", in NE¼NE¼ sec.9, T.28 N., R.22 W., Ramsey County, Hydrologic Unit 07010206, on left bank at molasses plant, 0.5 mi (0.8 km) upstream from Metropolitan waste treatment plant, 2.0 mi (3.2 km) downstream from Lafayette bridge and at mile 836.6 (1,346 km) upstream from Ohio River.

PERIOD OF RECORD.--March 1976 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: March 1976 to current year.
pH: March 1976 to current year.
WATER TEMPERATURES: March 1976 to current year.
DISSOLVED OXYGEN: March 1976 to current year.

INSTRUMENTATION.--Water-quality monitor since March 1976.

REMARKS.--Extremes are published for years with 80 percent or more record.

COOPERATION.--Water-quality monitor is operated by the Metropolitan Waste Control Commission, St. Paul, MN.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water year 1980): Maximum, 723 micromhos Dec. 17, 1979; minimum, 230 micromhos Mar. 24, 1980.
pH (water year 1980): Maximum, 8.8 units Nov. 21, 1979; minimum, 7.4 units Aug. 17, 18, 1980.
WATER TEMPERATURES (water year 1980): Maximum, 29.5°C July 14, 1980; minimum, 0.5°C several days during winter.
DISSOLVED OXYGEN (water year 1980): Maximum, 15 mg/L Feb. 4, 1980; minimum, 2.9 mg/L Aug. 17, 25, 1980.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 723 micromhos Dec. 17; minimum, 230 micromhos Mar. 24.
pH: Maximum, 8.8 units Nov. 21; minimum, 7.4 units Aug. 17, 18.
WATER TEMPERATURES: Maximum, 29.5°C July 14; minimum, 0.5°C several days during winter.
DISSOLVED OXYGEN: Maximum, 15 mg/L Feb. 4; minimum, 2.9 mg/L Aug. 17, 25.

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	599	568	579	542	497	529	570	503	543	583	569	580
2	583	564	572	511	488	498	604	489	580	585	564	575
3	566	557	561	499	481	492	566	487	518	576	545	564
4	577	561	571	503	477	489	523	477	500	599	545	569
5	583	545	571	502	450	487	573	475	533	585	557	569
6	581	556	569	495	457	487	534	498	515	585	563	569
7	569	553	562	509	485	497	605	537	575	637	572	590
8	554	540	549	523	498	513	619	580	590	676	594	635
9	555	543	549	544	526	535	657	624	643	659	602	639
10	550	540	545	563	535	545	631	586	614	599	572	583
11	565	542	552	563	546	556	618	580	601	618	572	598
12	559	417	524	576	554	565	663	563	601	572	533	553
13	584	531	557	586	554	565	645	575	621	596	568	582
14	550	515	532	586	561	573	639	551	593	588	524	570
15	559	527	546	574	554	563	654	633	642	546	514	526
16	555	479	529	573	515	546	651	577	619	568	544	555
17	558	474	532	545	515	527	723	577	646	556	533	547
18	560	511	527	534	510	521	670	641	656	535	510	527
19	521	460	498	554	513	534	659	619	642	517	507	512
20	530	483	505	557	513	539	643	612	628	537	502	518
21	517	499	506	540	518	531	647	625	637	529	512	522
22	520	503	513	533	509	520	642	620	628	544	516	529
23	537	491	513	519	505	510	653	610	629	546	516	530
24	531	520	527	508	493	503	655	620	644	566	508	545
25	555	514	529	504	491	496	656	638	649	545	492	523
26	537	514	525	512	490	505	653	614	635	538	493	514
27	563	540	550	502	495	500	619	605	613	602	502	554
28	563	550	554	508	481	496	604	598	601	550	489	520
29	573	555	567	523	487	503	598	593	596	530	485	512
30	565	533	550	673	463	548	592	582	589	508	492	503
31	577	524	556	---	---	---	585	579	582	508	470	484
MONTH	599	417	543	673	450	522	723	475	602	676	470	552

05331005 MISSISSIPPI RIVER AT INDUSTRIAL MOLLASSES, ST. PAUL, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	504	409	459	462	407	436	325	295	314	---	---	---
2	498	464	480	448	388	423	326	299	316	---	---	---
3	485	457	470	455	399	433	330	299	315	---	---	---
4	495	479	487	475	379	428	325	294	309	---	---	---
5	496	480	490	485	388	427	322	291	310	---	---	---
6	497	455	476	554	384	471	333	300	317	---	---	---
7	466	447	456	507	453	471	338	309	324	---	---	---
8	498	446	470	463	421	444	348	311	332	---	---	---
9	468	421	444	455	415	430	348	315	332	---	---	---
10	507	414	468	473	402	432	345	314	332	---	---	---
11	493	415	455	447	370	399	342	313	329	---	---	---
12	508	421	466	486	381	437	343	315	329	---	---	---
13	543	448	506	489	403	436	345	318	332	---	---	---
14	483	419	456	585	445	478	355	319	342	---	---	---
15	499	461	481	574	525	547	358	327	348	---	---	---
16	475	444	460	541	510	521	358	335	350	495	447	471
17	535	453	490	574	478	524	367	336	354	492	456	471
18	550	444	503	642	513	552	369	337	348	489	452	472
19	524	428	476	522	378	443	379	346	364	521	454	488
20	500	416	458	390	343	362	405	371	391	503	460	483
21	546	460	501	344	317	330	437	402	426	636	474	574
22	546	504	525	321	301	306	465	439	452	619	594	605
23	609	494	550	317	303	309	462	433	450	622	475	588
24	589	485	533	323	230	265	453	428	444	518	473	492
25	518	423	489	279	245	264	456	439	447	630	472	510
26	556	426	514	286	259	274	461	435	448	631	589	604
27	582	491	537	298	267	286	488	454	466	646	483	600
28	520	421	474	307	282	296	509	460	478	657	609	633
29	472	421	446	310	280	296	525	492	509	685	648	659
30	---	---	---	313	282	301	---	---	---	722	643	652
31	---	---	---	326	288	308	---	---	---	648	635	639
MONTH	609	409	483	642	230	398						

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	636	605	618	618	613	616	645	542	609	610	582	590
2	607	439	522	653	610	621	654	606	632	597	463	530
3	490	444	465	632	600	616	649	615	629	508	450	483
4	556	477	526	613	585	606	639	578	631	492	447	476
5	635	536	605	603	575	591	670	635	655	527	480	501
6	610	597	605	635	569	605	664	622	653	502	483	493
7	607	519	591	592	557	570	646	622	631	501	473	486
8	586	497	545	621	568	592	624	545	588	518	474	492
9	497	487	492	643	589	615	605	569	588	521	469	490
10	572	552	562	641	608	630	592	550	565	486	469	480
11	590	563	579	636	591	619	567	449	508	486	457	474
12	609	581	600	639	586	622	474	427	451	475	436	456
13	621	606	614	646	621	630	474	424	445	479	448	465
14	632	620	628	647	623	635	488	447	464	456	426	438
15	648	624	641	621	536	604	472	444	460	440	419	432
16	650	620	641	600	497	543	520	456	481	446	359	405
17	637	613	628	651	542	598	660	569	626	382	359	372
18	627	612	619	597	395	516	650	499	575	386	356	372
19	624	612	617	577	547	565	648	563	629	385	355	372
20	628	612	619	601	551	578	557	475	518	384	357	370
21	628	621	625	572	547	561	479	457	464	399	361	380
22	628	618	623	574	546	560	524	458	486	398	365	383
23	635	602	621	580	548	561	496	462	482	399	379	389
24	636	604	622	---	---	---	524	459	497	406	381	393
25	633	598	623	---	---	---	531	493	514	409	379	395
26	616	598	610	---	---	---	648	450	571	417	390	405
27	636	612	622	---	---	---	617	577	604	421	386	404
28	616	598	610	---	---	---	628	571	601	401	383	392
29	620	602	613	524	480	502	637	487	574	412	386	399
30	---	---	---	519	486	498	578	540	563	416	384	405
31	---	---	---	550	504	532	619	563	579	---	---	---
MONTH							670	424	55[illegible]	610	355	437
YEAR	723	230										

05331005 MISSISSIPPI RIVER AT INDUSTRIAL MOLLASSES, ST. PAUL, MN--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	8.0	7.7	7.8	8.1	8.0	8.0	8.2	8.2	8.2	8.0	7.9	8.0
2	8.0	7.6	7.8	8.0	7.9	8.0	8.2	8.2	8.2	8.0	8.0	8.0
3	8.1	8.0	8.0	8.0	7.9	8.0	8.2	8.2	8.2	8.0	8.0	8.0
4	8.1	8.0	8.1	7.9	7.9	7.9	8.2	8.2	8.2	8.0	8.0	8.0
5	8.1	8.0	8.1	8.0	7.9	7.9	8.2	8.2	8.2	8.0	8.0	8.0
6	8.1	8.1	8.1	8.1	7.9	8.0	8.2	8.2	8.2	8.0	7.9	8.0
7	8.2	8.1	8.1	8.1	8.1	8.1	8.2	8.2	8.2	8.0	7.9	8.0
8	8.2	8.1	8.1	8.1	8.1	8.1	8.2	8.2	8.2	7.9	7.9	7.9
9	8.2	8.1	8.1	8.1	8.1	8.1	8.2	8.2	8.2	7.9	7.9	7.9
10	8.1	8.1	8.1	8.1	8.1	8.1	8.2	8.2	8.2	7.9	7.9	7.9
11	8.1	8.0	8.1	8.2	8.1	8.1	8.2	8.2	8.2	7.9	7.9	7.9
12	8.1	8.0	8.1	8.2	8.1	8.1	8.2	8.2	8.2	7.9	7.8	7.9
13	8.2	8.0	8.1	8.2	8.1	8.2	8.2	8.2	8.2	7.8	7.8	7.8
14	8.2	8.1	8.1	8.2	8.1	8.2	8.2	8.1	8.2	7.8	7.8	7.8
15	8.2	8.1	8.1	8.2	8.1	8.2	8.1	8.1	8.1	7.8	7.8	7.8
16	8.1	8.1	8.1	8.2	8.1	8.2	8.1	8.0	8.1	7.9	7.8	7.8
17	8.2	8.1	8.1	8.2	8.1	8.2	8.0	8.0	8.0	7.8	7.8	7.8
18	8.1	8.0	8.1	8.2	8.1	8.2	8.1	8.0	8.0	7.8	7.8	7.8
19	8.1	8.0	8.0	8.2	8.2	8.2	8.0	8.0	8.0	7.8	7.8	7.8
20	8.0	7.9	7.9	8.2	8.2	8.2	8.0	8.0	8.0	7.8	7.8	7.8
21	7.9	7.8	7.9	8.8	8.2	8.3	8.0	8.0	8.0	7.8	7.8	7.8
22	7.8	7.7	7.8	8.2	8.2	8.2	8.0	8.0	8.0	7.9	7.8	7.8
23	7.8	7.7	7.7	8.2	8.2	8.2	8.0	8.0	8.0	7.8	7.8	7.8
24	7.8	7.7	7.8	8.2	8.2	8.2	8.0	8.0	8.0	7.8	7.8	7.8
25	8.0	7.7	7.9	8.2	8.2	8.2	8.0	8.0	8.0	7.8	7.8	7.8
26	8.1	8.0	8.1	8.2	8.2	8.2	8.0	7.9	7.9	7.8	7.7	7.8
27	8.1	8.0	8.1	8.2	8.2	8.2	8.0	7.9	8.0	7.7	7.7	7.7
28	8.1	8.1	8.1	8.2	8.2	8.2	8.0	7.9	8.0	7.8	7.7	7.7
29	8.1	8.0	8.1	8.2	8.2	8.2	8.0	7.9	7.9	7.7	7.7	7.7
30	8.1	8.0	8.1	8.2	8.2	8.2	8.0	7.9	7.9	7.7	7.7	7.7
31	8.1	8.0	8.0	---	---	---	8.0	7.9	8.0	7.7	7.7	7.7
MONTH	8.2	7.6	8.0	8.8	7.9	8.1	8.2	7.9	8.1	8.0	7.7	7.9

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	2 MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	7.7	7.7	7.7	7.7	7.7	7.7	8.1	8.0	8.1	---	---	---
2	7.7	7.7	7.7	7.7	7.6	7.7	8.2	8.1	8.1	---	---	---
3	7.7	7.7	7.7	7.7	7.6	7.7	8.2	8.1	8.1	---	---	---
4	7.7	7.6	7.7	7.7	7.7	7.7	8.1	8.1	8.1	---	---	---
5	7.7	7.6	7.7	7.7	7.7	7.7	8.1	8.1	8.1	---	---	---
6	7.7	7.7	7.7	7.7	7.7	7.7	8.1	8.1	8.1	---	---	---
7	7.7	7.7	7.7	7.7	7.7	7.7	8.1	8.1	8.1	---	---	---
8	7.7	7.7	7.7	7.7	7.7	7.7	8.3	8.1	8.1	---	---	---
9	7.7	7.7	7.7	7.7	7.7	7.7	8.1	8.1	8.1	---	---	---
10	7.7	7.7	7.7	---	---	---	8.2	8.1	8.1	---	---	---
11	7.7	7.7	7.7	---	---	---	8.3	8.1	8.2	---	---	---
12	7.7	7.6	7.6	---	---	---	8.2	8.2	8.2	---	---	---
13	7.7	7.6	7.7	---	---	---	8.2	8.2	8.2	---	---	---
14	7.7	7.7	7.7	---	---	---	8.3	8.2	8.2	---	---	---
15	7.7	7.6	7.7	---	---	---	8.3	8.2	8.3	---	---	---
16	7.7	7.7	7.7	---	---	---	8.3	8.3	8.3	8.3	8.2	8.3
17	7.7	7.6	7.6	---	---	---	8.3	8.3	8.3	8.4	8.3	8.3
18	7.6	7.6	7.6	8.1	7.9	8.0	8.3	8.2	8.3	8.5	8.3	8.4
19	7.8	7.6	7.6	7.9	7.9	7.9	8.4	8.3	8.3	8.5	8.3	8.4
20	7.7	7.7	7.7	7.9	7.9	7.9	8.3	8.2	8.3	8.4	8.2	8.3
21	7.7	7.7	7.7	7.9	7.8	7.8	8.3	8.2	8.2	8.3	8.2	8.2
22	7.7	7.7	7.7	7.8	7.7	7.7	8.3	8.3	8.3	8.2	8.1	8.2
23	7.7	7.7	7.7	7.8	7.7	7.7	8.4	8.3	8.3	8.2	8.0	8.1
24	7.7	7.7	7.7	7.8	7.7	7.7	8.4	8.3	8.4	8.3	8.1	8.2
25	7.8	7.7	7.7	7.8	7.8	7.8	8.4	8.3	8.3	8.2	8.0	8.1
26	7.7	7.7	7.7	7.8	7.8	7.8	8.3	8.2	8.3	8.1	7.9	8.0
27	7.7	7.7	7.7	7.9	7.8	7.8	8.3	8.2	8.3	7.9	7.6	7.8
28	7.8	7.7	7.8	8.0	7.9	7.9	8.4	8.3	8.4	7.8	7.6	7.7
29	7.7	7.7	7.7	8.0	7.9	7.9	8.4	8.3	8.4	7.8	7.6	7.7
30	---	---	---	8.0	8.0	8.0	---	---	---	7.8	7.7	7.7
31	---	---	---	8.0	7.8	8.0	---	---	---	7.6	7.5	7.6
MONTH	7.8	7.6	7.7									

05331005 MISSISSIPPI RIVER AT INDUSTRIAL MOLLASSES, ST. PAUL, MN--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.7	7.6	7.6	8.2	8.1	8.1	8.2	7.9	8.0	7.9	7.8	7.9
2	7.7	7.6	7.7	8.1	8.1	8.1	8.1	8.0	8.0	8.0	7.8	7.9
3	7.7	7.6	7.7	8.2	8.1	8.1	8.2	8.0	8.0	8.1	7.8	8.0
4	7.7	7.6	7.7	8.2	8.1	8.1	8.1	7.9	8.0	8.3	7.9	8.1
5	7.8	7.7	7.7	8.1	8.0	8.1	8.0	7.9	7.9	8.2	8.1	8.1
6	7.8	7.7	7.7	8.1	8.0	8.0	8.0	7.9	7.9	8.3	8.1	8.2
7	7.8	7.7	7.7	8.2	8.0	8.1	8.0	7.8	7.9	8.3	8.1	8.2
8	7.8	7.7	7.8	8.4	8.0	8.2	7.9	7.6	7.8	8.3	8.1	8.2
9	7.8	7.8	7.8	8.3	8.2	8.3	7.8	7.6	7.7	8.2	8.1	8.1
10	7.8	7.8	7.8	8.4	8.2	8.3	7.6	7.6	7.6	8.2	7.8	8.0
11	7.8	7.8	7.8	8.3	8.2	8.2	8.0	7.6	7.8	7.9	7.6	7.8
12	7.8	7.8	7.8	8.2	7.9	8.1	8.1	7.9	8.0	7.8	7.6	7.7
13	7.9	7.8	7.9	7.9	7.7	7.8	7.9	7.7	7.8	7.9	7.8	7.9
14	8.0	7.9	7.9	8.2	7.7	8.0	7.8	7.6	7.7	7.9	7.8	7.8
15	8.0	7.9	8.0	8.2	8.0	8.1	7.8	7.6	7.7	8.0	7.8	7.9
16	8.0	7.9	8.0	8.1	7.9	8.0	7.6	7.5	7.6	8.1	8.1	8.1
17	8.1	8.0	8.0	8.0	7.9	7.9	7.5	7.4	7.4	8.2	8.1	8.1
18	8.1	8.0	8.1	8.1	7.9	8.0	7.9	7.4	7.6	8.3	8.2	8.2
19	8.1	8.0	8.1	8.0	7.9	8.0	7.8	7.7	7.8	8.3	8.1	8.2
20	8.1	8.0	8.1	7.9	7.8	7.8	7.9	7.7	7.8	8.1	7.5	8.0
21	8.1	8.0	8.1	8.1	7.8	8.0	8.1	7.8	8.0	8.1	8.0	8.0
22	8.1	8.1	8.1	8.2	8.1	8.1	8.0	7.8	7.9	8.2	8.0	8.1
23	8.1	8.0	8.1	8.2	8.1	8.2	7.9	7.8	7.9	8.2	8.1	8.1
24	8.1	8.0	8.1	---	---	---	7.8	7.7	7.7	8.2	8.1	8.1
25	8.1	8.0	8.1	---	---	---	8.2	7.6	8.0	8.2	8.1	8.1
26	8.1	8.1	8.1	---	---	---	8.1	8.0	8.0	8.1	8.1	8.1
27	8.1	8.0	8.1	---	---	---	8.0	7.9	8.0	8.1	8.0	8.1
28	8.2	8.0	8.1	---	---	---	8.0	7.9	7.9	8.1	8.0	8.0
29	8.2	8.1	8.1	8.1	8.0	8.0	8.1	7.9	8.0	8.3	8.0	8.1
30	---	---	---	8.1	8.0	8.0	8.2	7.9	8.0	8.3	8.0	8.2
31	---	---	---	8.0	7.9	7.9	8.0	7.9	8.0	---	---	---
MONTH							8.2	7.4	7.9	8.3	7.5	8.0
YEAR	8.8	7.4										

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	19.0	17.5	18.5	11.0	10.5	10.5	1.0	.5	.5	1.0	.5	1.0
2	18.5	17.0	17.5	10.0	9.0	9.5	.5	.5	.5	1.0	1.0	1.0
3	18.0	17.0	17.5	9.0	8.5	8.5	1.0	.5	.5	1.0	.5	.5
4	17.0	16.0	16.5	8.5	8.0	8.5	1.0	.5	1.0	1.0	.5	.5
5	16.0	15.0	15.5	8.0	7.5	7.5	1.0	.5	1.0	.5	.5	.5
6	15.0	14.0	14.5	7.5	6.5	7.0	1.0	.5	1.0	.5	.5	.5
7	14.5	14.0	14.0	6.5	6.0	6.0	1.5	1.0	1.0	.5	.5	.5
8	14.0	13.5	13.5	6.0	5.0	5.5	1.0	.5	.5	1.0	.5	.5
9	13.5	13.0	13.5	5.0	4.5	4.5	1.0	.5	.5	1.0	.5	.5
10	12.5	12.5	12.5	4.5	4.0	4.0	1.5	1.0	1.0	1.0	.5	.5
11	12.5	12.0	12.0	3.5	3.5	3.5	1.0	.5	1.0	1.0	.5	.5
12	12.0	11.0	11.5	4.0	3.5	3.5	1.0	.5	.5	1.0	.5	.5
13	11.0	10.5	11.0	3.5	3.5	3.5	.5	.5	.5	.5	.5	.5
14	10.5	10.0	10.5	3.5	2.0	3.0	1.0	.5	.5	1.0	.5	1.0
15	11.0	10.0	10.5	2.5	2.0	2.5	.5	.5	.5	1.5	1.0	1.0
16	11.5	10.5	11.0	3.0	2.5	3.0	.5	.5	.5	1.5	1.0	1.0
17	12.0	11.0	11.5	3.5	3.0	3.5	1.0	.5	.5	1.5	1.0	1.0
18	13.5	12.0	12.5	4.0	3.0	3.5	1.0	.5	1.0	1.5	1.0	1.0
19	13.5	12.5	13.0	5.0	4.0	4.5	1.0	.5	1.0	1.5	1.0	1.0
20	13.5	13.5	13.5	5.5	5.0	5.0	1.0	.5	1.0	1.0	1.0	1.0
21	13.5	13.0	13.5	5.5	5.0	5.0	1.0	.5	1.0	1.0	1.0	1.0
22	13.0	12.5	13.0	4.5	4.0	4.0	1.0	.5	.5	1.0	.5	1.0
23	12.5	11.5	12.0	4.0	3.5	3.5	.5	.5	.5	1.0	.5	1.0
24	11.5	10.5	11.0	3.0	3.0	3.0	.5	.5	.5	1.0	1.0	1.0
25	11.0	10.0	10.5	3.0	2.5	2.5	.5	.5	.5	1.0	.5	1.0
26	10.0	9.5	10.0	2.5	2.5	2.5	.5	.5	.5	1.0	.5	1.0
27	9.5	9.0	9.5	2.5	2.0	2.0	1.0	.5	1.0	1.0	1.0	1.0
28	9.5	9.0	9.0	2.0	1.5	2.0	1.0	.5	.5	1.0	1.0	1.0
29	9.5	9.0	9.5	1.5	1.0	1.5	.5	.5	.5	1.0	1.0	1.0
30	10.5	10.0	10.0	1.5	1.0	1.0	.5	.5	.5	1.0	1.0	1.0
31	11.0	10.5	11.0	---	---	---	1.0	.5	.5	1.0	1.0	1.0
MONTH	19.0	9.0	12.5	11.0	1.0	4.5	1.5	.5	.5	1.5	.5	1.0

05331005 MISSISSIPPI RIVER AT INDUSTRIAL MOLLASSES, ST. PAUL, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1.0	1.0	1.0	1.5	1.0	1.5	4.0	3.0	3.5	---	---	---
2	1.0	1.0	1.0	1.5	1.0	1.0	4.0	3.0	3.5	---	---	---
3	1.0	1.0	1.0	1.5	1.0	1.5	4.0	3.5	3.5	---	---	---
4	1.5	1.0	1.0	1.5	1.5	1.5	3.5	3.0	3.5	---	---	---
5	1.0	1.0	1.0	1.5	1.0	1.5	4.5	3.0	4.0	---	---	---
6	1.0	1.0	1.0	1.0	1.0	1.0	5.5	4.5	5.0	---	---	---
7	1.5	1.0	1.0	1.5	1.0	1.0	6.0	5.5	6.0	---	---	---
8	1.5	1.0	1.0	1.5	1.0	1.5	6.0	5.0	5.5	---	---	---
9	1.0	1.0	1.0	1.5	1.0	1.5	5.0	4.0	4.5	---	---	---
10	1.0	1.0	1.0	1.5	1.0	1.5	4.0	4.0	4.0	---	---	---
11	1.0	1.0	1.0	1.5	1.0	1.0	5.0	4.0	4.5	---	---	---
12	1.5	1.0	1.0	1.5	1.0	1.5	5.0	4.5	5.0	---	---	---
13	1.5	1.0	1.0	2.0	1.5	1.5	5.0	4.5	5.0	---	---	---
14	1.5	1.0	1.0	2.5	2.0	2.0	5.5	4.5	5.0	---	---	---
15	1.5	1.0	1.0	2.5	2.0	2.5	7.0	5.5	6.0	---	---	---
16	1.5	1.0	1.0	2.5	2.0	2.0	7.5	6.5	7.0	17.0	16.0	16.5
17	1.0	1.0	1.0	2.5	1.5	2.0	9.5	7.5	8.5	19.5	17.0	18.0
18	1.5	1.0	1.0	3.0	1.5	2.0	11.0	9.5	10.5	21.0	19.0	20.0
19	1.5	1.0	1.5	3.0	2.0	2.5	12.0	10.5	11.5	22.0	21.0	21.0
20	1.5	1.5	1.5	2.5	2.0	2.5	13.0	12.0	12.5	22.5	22.0	22.5
21	1.5	1.5	1.5	2.5	1.5	2.0	15.0	13.0	14.0	23.0	22.5	23.0
22	1.5	1.5	1.5	2.0	1.0	1.5	17.0	14.5	16.0	23.5	22.5	23.0
23	1.5	1.0	1.5	1.5	1.0	1.5	17.0	16.5	17.0	23.5	22.5	23.0
24	1.5	1.0	1.5	1.5	1.5	1.5	16.5	15.5	16.0	24.0	22.5	23.0
25	1.5	1.0	1.5	2.0	1.5	1.5	15.5	15.0	15.5	24.5	23.0	23.5
26	1.5	1.0	1.5	2.0	1.5	2.0	15.0	14.5	14.5	24.5	24.0	24.0
27	1.5	1.0	1.5	2.0	1.5	1.5	15.0	14.0	14.5	24.0	23.5	23.5
28	1.5	1.0	1.5	2.0	1.5	2.0	15.5	14.0	15.0	23.5	22.5	23.0
29	1.5	1.0	1.5	2.0	1.5	1.5	15.5	15.0	15.5	23.5	22.5	23.0
30	---	---	---	2.5	1.5	2.0	15.5	15.0	15.5	22.5	21.0	22.0
31	---	---	---	3.5	2.0	2.5	---	---	---	21.0	20.5	20.5
MONTH	1.5	1.0	1.0	3.5	1.0	1.5	17.0	3.0	9.0			

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	21.0	20.0	20.5	23.0	23.0	23.0	26.5	25.5	26.0	23.0	22.0	22.5
2	21.0	19.5	20.5	24.0	23.0	23.0	26.5	26.0	26.0	22.5	21.0	22.0
3	20.5	20.5	20.5	24.0	23.0	23.5	26.5	25.5	26.0	22.5	22.0	22.0
4	21.5	20.5	21.0	25.0	23.5	24.0	26.5	25.5	26.0	22.5	22.0	22.0
5	21.5	20.5	21.0	25.0	24.0	24.5	25.5	25.0	25.0	23.0	22.0	22.5
6	21.0	20.5	20.5	25.5	24.5	25.0	26.0	25.0	25.0	23.0	22.5	22.5
7	20.5	20.0	20.5	26.5	25.5	26.0	26.0	25.5	26.0	23.5	22.5	23.0
8	21.0	20.0	20.5	26.5	26.0	26.0	25.5	25.0	25.5	24.0	22.5	23.5
9	21.0	20.5	21.0	27.0	26.0	26.5	25.5	25.0	25.0	24.0	23.5	23.5
10	21.0	20.5	20.5	28.0	27.0	27.5	25.0	24.5	24.5	24.0	22.5	23.5
11	21.5	20.5	21.0	29.0	28.0	28.5	24.5	23.5	24.5	22.5	20.5	22.0
12	22.5	21.0	21.5	29.0	28.0	28.5	25.5	24.0	24.5	20.5	20.0	20.0
13	22.5	22.0	22.0	28.5	28.0	28.5	24.5	24.0	24.0	20.0	19.0	19.5
14	23.0	22.0	22.5	29.5	28.0	29.0	24.5	24.0	24.0	19.0	18.0	18.5
15	23.0	22.0	22.5	29.0	28.0	29.0	24.5	24.0	24.0	18.0	17.5	18.0
16	23.5	22.5	23.0	28.5	27.5	28.0	24.0	22.5	23.0	18.0	17.5	18.0
17	23.0	22.0	22.5	28.5	28.0	28.0	22.5	22.0	22.5	18.0	17.5	17.5
18	22.5	22.5	22.5	28.5	27.5	28.0	22.5	20.5	22.0	17.5	16.5	17.0
19	23.0	22.0	22.5	28.5	28.0	28.0	23.0	22.5	22.5	17.0	16.0	16.5
20	23.5	22.5	23.0	28.0	27.0	27.5	23.0	23.0	23.0	17.0	16.5	16.5
21	25.0	23.0	24.0	27.0	26.0	26.5	23.5	23.0	23.0	16.5	16.0	16.5
22	25.0	24.0	24.5	26.0	25.0	25.5	24.0	23.5	23.5	16.5	16.0	16.5
23	25.5	24.0	25.0	25.5	25.0	25.0	24.0	23.5	24.0	16.5	16.0	16.5
24	26.0	25.0	25.5	---	---	---	24.0	24.0	24.0	16.5	16.0	16.5
25	26.0	24.5	25.0	---	---	---	25.0	24.0	24.5	16.5	16.0	16.0
26	24.5	24.0	24.5	---	---	---	25.0	24.0	24.5	16.0	15.5	15.5
27	24.0	23.0	23.5	---	---	---	24.0	23.5	23.5	15.5	15.0	15.5
28	23.0	22.5	23.0	---	---	---	23.5	23.0	23.0	15.0	14.5	15.0
29	23.0	23.0	23.0	26.0	25.0	25.5	23.5	22.5	23.0	15.0	14.5	15.0
30	---	---	---	26.5	25.5	25.5	23.5	23.0	23.0	15.5	15.0	15.0
31	---	---	---	26.0	25.5	25.5	23.0	22.5	22.5	---	---	---
MONTH				29.5	23.0		26.5	20.5	24.0	24.0	14.5	19.0
YEAR	29.5	.5										

05331005 MISSISSIPPI RIVER AT INDUSTRIAL MOLLASSES, ST. PAUL, MN--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	7.9	7.5	7.7	13.3	81b.9	13.1	13.1	12.8	12.9
2	---	---	---	9.6	7.8	9.0	12.9	12.6	12.8	13.8	12.7	13.3
3	10.1	9.0	9.4	9.4	8.7	9.1	12.8	12.4	12.6	13.8	13.5	13.7
4	8.9	7.5	8.3	9.2	8.8	9.0	12.6	12.4	12.5	13.9	13.6	13.8
5	9.8	7.5	9.0	11.2	8.4	10.1	12.8	12.2	12.5	13.9	13.6	13.8
6	9.5	8.7	9.2	12.5	10.8	11.5	12.5	12.2	12.3	13.9	13.5	13.7
7	10.5	8.9	9.7	13.1	12.5	12.7	13.1	12.2	12.7	13.8	13.4	13.6
8	9.9	9.1	9.5	13.1	12.6	12.8	13.2	12.9	13.1	13.4	12.6	13.0
9	9.4	8.5	9.0	13.0	12.4	12.7	13.2	13.0	13.1	12.9	12.3	12.6
10	10.8	10.3	9.3	13.3	12.7	13.0	13.3	13.0	13.2	12.8	12.5	12.6
11	10.8	9.9	10.3	13.6	13.3	13.4	13.3	13.1	13.2	12.7	12.3	12.5
12	11.1	9.3	10.3	13.5	13.1	13.2	13.4	13.0	13.2	13.0	12.3	12.6
13	11.4	10.2	10.8	13.6	12.9	13.3	13.5	13.0	13.2	12.4	12.1	12.3
14	11.7	10.5	11.1	13.7	13.3	13.5	14.0	13.0	13.4	12.8	12.0	12.3
15	12.7	10.9	11.9	13.9	13.5	13.7	14.1	13.7	13.9	12.9	12.3	12.6
16	12.8	11.3	12.2	13.9	13.0	13.5	14.3	13.8	14.0	12.6	12.2	12.4
17	13.8	10.7	12.1	14.0	13.0	13.6	14.2	13.7	14.1	12.5	12.2	12.4
18	13.2	10.0	12.0	13.6	13.0	13.3	14.0	11.1	13.7	13.2	12.2	12.8
19	10.4	8.6	9.5	13.2	12.8	13.0	14.2	13.8	14.0	13.4	12.8	13.1
20	8.7	8.1	8.3	12.9	12.2	12.6	14.4	13.3	13.7	13.3	12.7	13.0
21	8.6	8.2	8.4	12.6	12.2	12.5	13.8	13.3	13.6	13.2	12.4	12.6
22	10.9	8.4	10.1	12.7	12.2	12.5	13.9	13.5	13.8	12.8	12.3	12.6
23	10.7	10.2	10.5	12.5	12.3	12.4	13.8	13.6	13.7	12.6	12.1	12.4
24	10.7	10.3	10.6	12.7	12.4	12.6	13.8	13.5	13.6	12.4	11.9	12.2
25	11.0	10.5	10.8	12.8	12.4	12.6	13.6	13.4	13.5	12.4	12.1	12.3
26	10.8	10.3	10.6	13.2	12.5	12.9	13.4	13.0	13.2	12.5	12.1	12.3
27	10.5	9.7	10.1	13.5	13.0	13.2	13.4	13.1	13.2	12.3	11.8	12.0
28	9.8	9.2	9.5	13.6	13.3	13.5	13.3	13.1	13.2	13.8	11.7	12.2
29	10.8	8.9	9.6	13.8	13.6	13.7	13.4	13.1	13.3	12.5	12.0	12.3
30	10.8	9.9	10.4	13.6	12.9	13.2	13.4	13.2	13.3	12.6	12.0	12.3
31	10.2	8.0	8.9	---	---	---	13.3	12.9	13.1	12.7	12.1	12.4
MONTH				14.0	7.5	12.3	14.4	11.1	13.3	13.9	11.7	12.7

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	13.0	12.2	12.6	12.6	12.2	12.5	13.3	12.7	12.9	---	---	---
2	13.2	12.5	12.8	12.5	12.3	12.5	13.4	12.5	12.9	---	---	---
3	12.8	12.5	12.7	12.3	11.7	11.9	13.2	12.6	12.9	---	---	---
4	15.0	12.4	12.8	12.0	11.6	11.8	13.3	12.3	12.8	---	---	---
5	12.8	12.4	12.6	12.1	11.6	11.9	13.1	12.8	12.9	---	---	---
6	12.8	12.4	12.7	12.1	11.2	11.6	12.9	12.2	12.5	---	---	---
7	12.9	12.4	12.6	11.8	11.4	11.6	12.4	11.8	12.2	---	---	---
8	13.0	12.2	12.6	12.0	11.6	11.8	12.9	12.0	12.5	---	---	---
9	13.1	12.4	12.8	11.8	11.5	11.6	12.5	11.8	12.2	---	---	---
10	13.0	12.2	12.6	12.4	10.1	11.8	12.8	12.4	12.7	---	---	---
11	12.6	12.0	12.4	12.8	12.2	12.5	12.9	12.5	12.7	---	---	---
12	12.4	11.9	12.3	13.1	12.2	12.5	13.3	12.8	13.0	---	---	---
13	12.2	12.0	12.1	13.2	12.7	13.0	13.0	12.3	12.6	---	---	---
14	12.4	12.0	12.2	13.4	12.7	13.0	12.9	12.1	12.6	---	---	---
15	12.2	11.8	12.0	13.4	12.8	13.1	12.1	11.7	11.9	---	---	---
16	12.3	12.0	12.1	13.5	13.0	13.3	11.9	10.8	11.5	13.0	11.2	12.0
17	12.2	11.8	12.0	13.2	12.2	12.8	12.9	10.5	11.7	12.9	10.8	11.9
18	12.0	11.5	11.8	12.9	12.0	12.4	12.7	11.7	12.1	13.0	10.3	11.7
19	12.0	10.3	11.3	12.3	11.7	12.0	11.7	11.2	11.4	13.3	10.1	11.8
20	11.1	10.7	10.9	11.8	11.2	11.5	11.1	10.6	10.9	11.1	8.1	9.8
21	10.9	10.4	10.7	11.0	10.2	10.7	10.6	9.8	10.2	9.1	7.0	8.1
22	10.8	10.0	10.6	10.2	9.7	9.9	10.8	9.1	9.9	7.5	6.6	7.2
23	10.7	10.4	10.6	9.9	9.6	9.7	10.0	9.2	9.7	8.3	6.3	7.1
24	10.9	10.4	10.6	11.5	9.8	10.8	10.4	9.2	9.8	9.7	8.1	8.7
25	10.9	10.4	10.7	11.9	11.3	11.7	9.8	8.3	8.9	8.3	7.1	7.7
26	10.8	10.4	10.6	12.0	11.6	11.8	8.2	7.7	8.0	8.3	6.4	7.2
27	10.8	10.2	10.5	12.0	11.5	11.7	8.1	7.4	7.7	6.6	4.2	5.5
28	12.4	10.4	11.5	12.3	11.8	12.0	10.0	7.4	8.9	6.1	3.9	4.6
29	12.7	11.8	12.4	12.7	12.1	12.4	8.0	7.4	7.7	6.3	4.5	5.3
30	---	---	---	12.9	12.5	12.6	---	---	---	11.3	5.2	6.0
31	---	---	---	13.5	12.5	12.9	---	---	---	6.2	5.3	5.9
MONTH	15.0	10.0	11.9	13.5	9.6	12.0						

05331005 MISSISSIPPI RIVER AT INDUSTRIAL MOLLASSES, ST. PAUL, MN--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.0	6.2	6.8	8.3	8.1	8.2	8.5	4.2	6.1	5.6	4.2	4.8
2	7.5	7.0	7.2	8.4	7.7	7.9	7.0	4.9	5.8	10.2	4.5	6.3
3	7.1	6.6	6.9	8.1	7.3	7.7	6.3	4.4	5.3	6.9	5.8	6.2
4	7.6	6.7	7.2	7.3	6.0	6.7	6.0	4.1	4.9	8.7	5.3	6.9
5	7.8	7.1	7.4	5.9	5.0	5.5	5.1	3.9	4.5	7.6	6.8	7.2
6	7.3	7.0	7.1	5.2	4.6	4.9	4.3	3.6	4.0	7.5	6.5	6.9
7	7.6	7.0	7.4	4.9	4.3	4.6	6.1	3.3	4.6	6.8	6.0	6.4
8	8.2	6.9	7.5	8.2	3.9	5.6	5.9	4.6	5.3	8.6	5.9	6.8
9	8.0	7.7	7.9	7.3	6.1	6.6	5.2	3.9	4.3	7.4	6.5	7.0
10	8.0	7.4	7.6	7.8	5.9	6.6	4.8	3.8	4.2	7.7	5.9	6.6
11	7.4	7.0	7.2	7.0	5.6	6.4	5.1	4.1	4.6	7.1	6.0	6.6
12	6.7	6.2	6.5	5.9	4.7	5.4	8.5	6.4	7.1	6.2	5.7	6.0
13	6.5	6.1	6.3	4.8	4.1	4.3	6.4	4.9	5.9	6.5	5.5	6.0
14	7.2	6.1	6.9	5.4	3.8	4.6	5.2	4.2	4.6	6.3	6.1	6.2
15	7.0	6.7	6.8	6.3	3.9	5.0	4.5	3.9	4.2	8.1	6.1	7.3
16	6.7	6.2	6.6	5.8	4.5	5.3	4.2	3.2	3.8	8.9	7.6	8.2
17	8.1	5.8	6.9	5.6	3.9	4.4	3.5	2.9	3.2	8.9	8.5	8.7
18	8.4	7.5	7.9	6.8	4.1	5.4	6.7	3.1	4.9	8.7	8.4	8.5
19	8.5	7.9	8.2	5.7	4.6	4.9	7.9	7.0	7.4	10.2	8.3	9.1
20	8.4	7.9	8.1	4.4	3.1	3.8	6.9	6.2	6.5	9.5	8.9	9.2
21	8.3	7.5	7.9	6.2	3.0	5.2	7.2	6.0	6.6	9.0	8.5	8.8
22	8.0	7.2	7.7	8.0	4.6	6.6	6.2	5.3	5.7	9.2	8.3	8.8
23	7.9	6.9	7.4	8.7	6.9	7.7	5.5	4.9	5.2	8.8	8.0	8.5
24	7.4	7.0	7.2	---	---	---	4.6	3.1	3.7	8.8	7.9	8.4
25	7.4	6.6	6.9	---	---	---	7.3	2.9	5.6	8.4	7.8	8.1
26	7.1	6.2	6.7	---	---	---	6.1	4.6	5.4	8.0	7.6	7.8
27	6.9	6.2	6.6	---	---	---	5.3	4.6	4.9	8.1	7.4	7.7
28	6.8	6.1	6.6	---	---	---	5.9	4.4	5.1	7.6	7.1	7.3
29	8.3	6.0	6.3	7.2	6.3	6.8	7.3	5.3	6.2	8.9	6.8	7.5
30	---	---	---	7.1	5.5	6.0	7.2	6.0	6.5	10.2	8.1	9.0
31	---	---	---	5.8	4.7	5.1	6.0	4.3	5.2	---	---	---
MONTH							8.5	2.9	5.2	10.2	4.2	7.4
YEAR	15.0	2.9										

05331545 MISSISSIPPI RIVER AT FIFTH STREET AT NEWPORT, MN

LOCATION.--Lat 44°51'37", long 93°00'24", in NE¼NE¼ sec.2, T.27 N., R.22 W., Washington County, Hydrologic Unit 07010206, on left bank at the end of Fifth Street, and at mile 830.6 (1,337 km) upstream from Ohio River.

PERIOD OF RECORD.--December 1978 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: December 1978 to current year
pH: December 1978 to current year.
WATER TEMPERATURES: December 1978 to current year.
DISSOLVED OXYGEN: December 1978 to current year.

INSTRUMENTATION.--Water-quality monitor since December 1978.

REMARKS.--Water is pumped to a monitor that is inside a heated shelter. Malfunctions of the monitor resulted in less than 80 percent of the days of record for the period. Extremes will be published for those years with 80 percent or more days of record.

COOPERATION.--Water-quality monitor is operated by the Metropolitan Waste Control Commission, St. Paul, MN.

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1							---	---	---	558	527	544
2							---	---	---	554	521	533
3							---	---	---	531	512	523
4							---	---	---	535	510	522
5							---	---	---	525	495	509
6							---	---	---	525	498	508
7							---	---	---	527	513	520
8							---	---	---	---	---	---
9							---	---	---	---	---	---
10							---	---	---	---	---	---
11							---	---	---	---	---	---
12							---	---	---	---	---	---
13							---	---	---	---	---	---
14							---	---	---	---	---	---
15							---	---	---	---	---	---
16							---	---	---	---	---	---
17							454	436	448	---	---	---
18							456	437	445	---	---	---
19							455	444	451	---	---	---
20							484	449	461	---	---	---
21							514	482	498	---	---	---
22							515	495	505	---	---	---
23							529	510	519	---	---	---
24							520	502	511	---	---	---
25							533	510	521	---	---	---
26							538	511	522	---	---	---
27							554	511	535	---	---	---
28							555	539	545	---	---	---
29							569	542	559	---	---	---
30							561	543	557	---	---	---
31							---	---	---	---	---	---

05331545 MISSISSIPPI RIVER AT FIFTH STREET AT NEWPORT, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	659	630	644	744	621	648	581	468	503
2	---	---	---	665	641	655	762	613	675	518	486	508
3	---	---	---	697	643	663	729	606	671	533	502	517
4	---	---	---	671	632	643	739	612	640	596	467	490
5	---	---	---	636	575	605	720	627	653	489	461	468
6	---	---	---	615	594	604	798	645	691	518	473	496
7	---	---	---	654	559	603	709	694	701	584	444	488
8	---	---	---	599	564	576	688	529	621	558	441	483
9	---	---	---	671	579	637	545	494	523	484	420	464
10	---	---	---	689	659	674	547	511	537	588	443	493
11	---	---	---	727	679	709	582	476	491	564	442	474
12	576	565	569	719	645	688	536	479	507	459	368	403
13	609	561	578	797	654	712	597	477	526	419	370	403
14	643	606	621	799	679	742	591	468	503	399	331	358
15	658	641	646	703	642	693	558	522	541	328	301	316
16	688	661	671	706	564	612	---	---	---	341	317	327
17	708	687	699	562	472	514	---	---	---	344	330	335
18	718	698	709	729	548	645	658	597	609	337	300	315
19	704	665	680	620	518	576	677	601	646	389	315	355
20	679	658	667	706	547	592	663	599	631	409	340	362
21	661	651	656	599	535	576	594	481	546	399	346	371
22	659	632	641	592	527	566	620	481	506	409	374	396
23	639	626	632	569	559	562	676	508	535	413	393	405
24	636	626	629	780	656	687	540	510	524	418	411	414
25	652	628	638	654	548	601	567	497	539	440	415	424
26	667	630	655	599	551	583	588	491	550	452	415	434
27	673	635	652	718	591	654	542	505	560	562	449	509
28	674	611	636	728	609	652	566	523	543	554	417	485
29	649	624	634	729	615	638	583	503	540	556	425	479
30	660	630	644	729	608	650	596	509	549	573	454	471
31	---	---	---	720	599	639	576	444	496	---	---	---
MONTH				799	472	632				596	300	432

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1							---	---	---	8.5	8.4	8.4
2							---	---	---	8.5	8.4	8.5
3							---	---	---	8.4	8.4	8.4
4							---	---	---	8.4	8.3	8.4
5							---	---	---	8.5	8.3	8.4
6							---	---	---	8.4	8.3	8.4
7							---	---	---	8.4	8.3	8.4
8							---	---	---	---	---	---
9							---	---	---	---	---	---
10							---	---	---	---	---	---
11							---	---	---	---	---	---
12							---	---	---	---	---	---
13							---	---	---	---	---	---
14							---	---	---	---	---	---
15							---	---	---	---	---	---
16							---	---	---	---	---	---
17							8.3	8.2	8.2	---	---	---
18							8.2	8.2	8.2	---	---	---
19							8.3	8.2	8.2	---	---	---
20							8.2	8.2	8.2	---	---	---
21							8.3	8.2	8.3	---	---	---
22							8.4	8.3	8.3	---	---	---
23							8.4	8.3	8.4	---	---	---
24							8.5	8.3	8.4	---	---	---
25							8.4	8.3	8.4	---	---	---
26							8.4	8.3	8.3	---	---	---
27							8.4	8.3	8.3	---	---	---
28							8.4	8.3	8.4	---	---	---
29							8.4	8.4	8.4	---	---	---
30							8.5	8.4	8.4	---	---	---
31							---	---	---	---	---	---

05331545 MISSISSIPPI RIVER AT FIFTH STREET AT NEWPORT, MN--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	8.2	8.1	8.2	7.9	7.8	7.9	7.8	7.6	7.7
2	---	---	---	8.3	8.1	8.1	7.9	7.8	7.9	7.9	7.5	7.7
3	---	---	---	8.2	8.1	8.1	7.9	7.7	7.8	7.9	7.7	7.8
4	---	---	---	8.2	8.1	8.1	8.0	7.7	7.8	8.2	7.9	8.0
5	---	---	---	8.2	8.1	8.1	8.0	7.8	7.9	8.2	8.0	8.1
6	---	---	---	8.1	7.9	8.0	7.8	7.7	7.8	8.1	8.0	8.0
7	---	---	---	8.2	7.9	8.0	7.8	7.8	7.8	8.0	7.6	7.7
8	---	---	---	---	---	---	7.9	7.7	7.8	8.2	7.6	7.9
9	---	---	---	---	---	---	8.0	7.8	7.9	8.2	8.1	8.1
10	---	---	---	8.1	8.0	8.1	7.9	7.7	7.8	8.2	7.8	7.9
11	---	---	---	8.1	7.9	8.0	8.0	7.8	7.8	8.0	7.6	7.8
12	8.1	8.0	8.0	8.1	7.9	8.0	8.0	7.8	7.9	7.7	7.5	7.6
13	8.1	8.0	8.1	8.0	7.7	7.8	7.9	7.8	7.8	7.7	7.5	7.6
14	8.1	8.1	8.1	8.0	7.6	7.8	7.9	7.5	7.7	7.7	7.6	7.6
15	8.2	8.1	8.1	8.0	7.8	7.9	7.6	7.5	7.5	7.6	7.5	7.6
16	8.1	8.1	8.1	7.9	7.7	7.7	---	---	---	7.7	7.6	7.6
17	8.1	8.0	8.1	7.7	7.6	7.6	---	---	---	7.7	7.6	7.6
18	8.3	8.0	8.1	7.7	7.5	7.6	7.6	7.4	7.6	7.8	7.7	7.7
19	8.3	8.2	8.2	7.7	7.6	7.7	7.7	7.4	7.6	7.8	7.7	7.7
20	8.3	8.2	8.2	7.7	7.6	7.7	7.7	7.5	7.6	7.7	7.5	7.6
21	8.3	8.1	8.2	7.7	7.6	7.6	7.8	7.6	7.7	7.6	7.5	7.6
22	8.2	8.1	8.2	7.8	7.5	7.7	7.8	7.5	7.8	7.7	7.5	7.6
23	8.2	8.1	8.1	7.9	7.8	7.9	8.0	7.6	7.8	7.7	7.6	7.7
24	8.1	8.1	8.1	7.9	7.8	7.9	7.9	7.8	7.9	7.7	7.6	7.6
25	8.2	8.0	8.1	8.0	7.8	7.9	7.9	7.6	7.8	7.8	7.7	7.7
26	---	---	---	7.9	7.8	7.9	7.9	7.8	7.8	7.8	7.7	7.8
27	---	---	---	7.8	7.6	7.7	8.0	7.7	7.8	7.9	7.7	7.8
28	---	---	---	7.7	7.5	7.6	7.9	7.8	7.8	7.9	7.8	7.8
29	8.3	8.2	8.2	7.7	7.5	7.6	7.8	7.7	7.7	7.9	7.8	7.8
30	8.2	8.1	8.2	7.6	7.5	7.5	7.9	7.8	7.8	7.8	7.7	7.8
31	---	---	---	8.0	7.5	7.7	8.0	7.8	7.9	---	---	---
MONTH										8.2	7.5	7.8

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1							---	---	---	16.5	15.0	15.5
2							---	---	---	16.5	16.0	16.0
3							---	---	---	17.0	16.5	16.5
4							---	---	---	17.5	16.5	17.0
5							---	---	---	17.5	17.0	17.0
6							---	---	---	17.0	16.5	17.0
7							---	---	---	17.0	16.0	16.5
8							---	---	---	16.5	14.5	15.5
9							---	---	---	19.0	14.5	16.5
10							---	---	---	16.5	14.0	15.5
11							---	---	---	---	---	---
12							---	---	---	---	---	---
13							---	---	---	---	---	---
14							---	---	---	---	---	---
15							---	---	---	---	---	---
16							---	---	---	---	---	---
17							9.5	9.0	9.0	---	---	---
18							10.5	9.0	9.5	---	---	---
19							11.5	10.0	10.5	---	---	---
20							12.0	10.5	11.0	---	---	---
21							12.5	11.5	12.0	---	---	---
22							19.0	12.5	14.0	---	---	---
23							13.5	13.0	13.0	---	---	---
24							15.0	12.5	13.5	---	---	---
25							15.0	14.5	14.5	---	---	---
26							14.5	14.0	14.5	---	---	---
27							15.0	14.0	14.5	---	---	---
28							15.0	14.0	14.5	---	---	---
29							15.0	14.5	14.5	---	---	---
30							15.5	14.5	15.0	---	---	---
31							---	---	---	---	---	---

05331545 MISSISSIPPI RIVER AT FIFTH STREET AT NEWPORT, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	24.5	23.5	24.0	27.0	26.0	26.5	24.0	23.5	23.5
2	---	---	---	29.5	23.5	24.0	27.0	26.0	26.5	24.0	23.0	23.5
3	---	---	---	29.0	24.0	25.0	27.0	26.0	26.5	24.0	23.0	23.0
4	---	---	---	29.5	24.0	25.0	26.5	26.0	26.0	28.5	23.0	24.0
5	---	---	---	25.5	24.5	25.0	26.5	25.5	26.0	24.0	23.0	23.5
6	---	---	---	25.5	24.5	25.0	26.5	26.0	26.0	23.5	23.5	23.5
7	---	---	---	26.0	25.0	25.5	26.5	26.0	26.0	29.5	23.5	25.0
8	---	---	---	26.5	25.5	26.0	26.5	26.0	26.0	29.5	23.5	25.0
9	---	---	---	27.0	25.5	26.0	26.0	26.0	26.0	24.5	24.0	24.0
10	---	---	---	27.5	26.0	26.5	26.0	25.5	26.0	24.0	23.0	23.5
11	---	---	---	27.5	26.5	27.0	26.0	25.5	25.5	23.0	22.0	22.5
12	22.0	21.0	22.0	27.5	27.0	27.0	26.0	25.0	25.5	22.0	21.5	21.5
13	22.0	21.0	22.0	27.5	27.0	27.0	26.0	25.5	25.5	21.5	21.0	21.0
14	22.0	21.0	21.5	28.0	27.0	27.0	26.0	25.0	25.5	26.0	20.0	23.0
15	22.0	21.5	21.5	28.0	27.0	27.5	25.5	25.0	25.0	25.5	20.0	22.0
16	22.0	21.5	22.0	27.5	27.0	27.0	---	---	---	20.0	19.5	20.0
17	22.5	21.5	22.0	27.5	26.5	27.0	---	---	---	20.0	19.5	19.5
18	22.5	22.0	22.0	27.5	26.5	27.0	25.0	24.0	24.5	19.5	19.0	19.0
19	22.5	21.5	22.0	27.0	26.5	27.0	25.0	23.5	24.5	19.0	16.0	17.5
20	22.5	22.0	22.0	26.5	26.5	26.5	25.5	24.5	24.5	16.5	16.0	16.0
21	22.5	21.5	22.0	27.0	26.0	26.5	25.0	24.0	24.5	16.5	16.0	16.0
22	22.5	22.0	22.5	26.0	25.5	26.0	25.0	24.0	24.5	16.0	16.0	16.0
23	23.0	22.5	23.0	25.5	25.0	25.5	25.0	24.5	24.5	16.5	15.5	16.0
24	23.5	23.0	23.0	26.5	25.5	26.0	25.0	24.5	24.5	16.5	15.5	16.0
25	25.5	23.0	24.0	26.5	26.0	26.0	25.5	24.0	25.0	16.0	15.5	16.0
26	26.0	25.5	25.5	26.5	25.5	26.0	25.0	25.0	25.0	16.0	15.5	15.5
27	26.0	25.0	25.5	26.5	25.5	26.0	25.0	24.0	24.5	16.0	15.0	15.5
28	25.5	24.5	25.0	26.5	25.5	26.0	24.5	24.0	24.0	15.5	15.0	15.0
29	25.0	24.0	24.0	26.5	26.0	26.0	29.0	23.5	25.0	15.5	15.0	15.0
30	24.5	23.5	24.0	27.0	26.0	26.0	29.0	23.5	24.5	16.0	15.0	15.5
31	---	---	---	27.0	26.0	26.5	29.0	23.5	24.5	---	---	---
MONTH				29.5	23.5	26.0				29.5	15.0	20.0

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1							---	---	---	12.7	11.0	11.8
2							---	---	---	13.0	11.5	12.2
3							---	---	---	13.0	11.9	12.4
4							---	---	---	12.9	11.1	12.2
5							---	---	---	12.6	10.4	11.6
6							---	---	---	12.2	10.9	11.4
7							---	---	---	11.3	9.4	10.8
8							---	---	---	10.6	5.9	8.1
9							---	---	---	9.4	4.5	7.4
10							---	---	---	14.6	5.9	8.3
11							---	---	---	15.2	11.9	13.6
12							---	---	---	15.2	11.0	13.0
13							---	---	---	14.8	13.5	14.2
14							---	---	---	---	---	---
15							---	---	---	---	---	---
16							---	---	---	---	---	---
17							12.6	12.0	12.3	---	---	---
18							12.5	11.4	12.0	---	---	---
19							11.6	10.8	11.2	---	---	---
20							11.1	10.2	10.6	---	---	---
21							11.5	9.8	10.6	---	---	---
22							11.1	8.1	10.3	---	---	---
23							10.8	10.1	10.6	---	---	---
24							11.1	10.5	10.8	---	---	---
25							11.1	10.7	10.9	---	---	---
26							11.0	10.6	10.8	---	---	---
27							10.9	10.5	10.7	---	---	---
28							11.0	10.4	10.7	---	---	---
29							10.7	9.7	10.3	---	---	---
30							11.2	8.9	10.0	---	---	---
31							---	---	---	---	---	---

05331545 MISSISSIPPI RIVER AT FIFTH STREET AT NEWPORT, MN--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	8.0	7.7	7.8	3.9	3.4	3.6	6.2	5.3	5.5
2	---	---	---	7.9	7.2	7.5	3.6	2.9	3.4	8.7	5.1	6.4
3	---	---	---	7.7	7.1	7.4	2.8	1.6	2.3	8.6	6.6	7.9
4	---	---	---	7.3	6.5	7.0	2.7	1.3	2.0	7.8	6.2	6.9
5	---	---	---	6.7	5.9	6.2	2.1	1.5	1.8	6.1	4.9	5.5
6	---	---	---	5.8	4.9	5.3	4.6	1.4	3.1	5.1	4.4	4.7
7	---	---	---	7.2	5.5	6.2	5.9	4.5	5.4	4.6	3.3	3.9
8	---	---	---	6.9	6.4	6.6	6.2	3.6	4.9	5.8	3.4	4.4
9	---	---	---	7.0	6.0	6.5	6.0	4.3	4.7	5.9	5.5	5.7
10	---	---	---	6.3	5.5	5.9	6.1	3.5	4.2	6.6	5.9	5.8
11	---	---	---	5.8	4.9	5.3	6.0	4.6	5.3	6.6	5.5	6.4
12	7.6	7.4	7.5	5.1	4.2	4.6	6.7	5.7	6.3	6.2	4.5	5.2
13	7.7	6.9	7.5	4.2	3.5	4.0	7.9	6.7	7.3	6.7	5.5	6.0
14	7.5	7.2	7.4	7.1	3.5	4.2	7.1	3.6	5.5	7.0	6.7	6.8
15	7.3	6.9	7.0	5.1	4.5	4.7	4.6	4.2	4.3	9.0	6.9	7.8
16	6.8	6.1	6.5	5.0	3.9	4.6	---	---	---	9.2	8.8	9.0
17	6.1	5.5	5.7	6.0	4.0	4.4	---	---	---	9.4	9.0	9.2
18	7.7	5.1	6.2	6.2	3.7	4.3	5.3	4.0	4.7	9.6	9.4	9.5
19	7.8	7.0	7.5	4.7	4.0	4.4	5.4	4.9	5.1	9.9	8.8	9.4
20	7.8	7.2	7.4	4.0	3.8	3.9	5.1	4.5	4.9	9.3	8.7	9.0
21	7.8	7.3	7.5	3.8	3.3	3.6	5.0	4.5	4.8	9.2	8.9	9.1
22	7.4	6.8	7.1	6.6	3.9	4.9	5.5	4.2	4.9	9.5	9.0	9.2
23	7.7	6.6	7.1	5.0	4.6	4.8	6.0	5.2	5.5	9.5	9.3	9.4
24	7.6	6.9	7.2	5.0	4.4	4.7	5.6	4.6	5.1	9.6	9.3	9.5
25	7.8	6.4	7.0	6.3	4.0	4.6	5.0	3.3	4.1	9.8	9.4	9.6
26	7.6	7.2	7.4	6.2	3.1	4.0	4.7	3.9	4.4	10.0	9.7	9.8
27	7.2	6.5	6.9	3.1	2.6	2.8	7.2	3.1	4.3	10.6	10.0	10.2
28	6.4	5.9	6.1	4.1	2.4	3.1	5.8	5.5	5.7	10.7	10.4	10.6
29	6.0	5.8	5.9	4.2	3.5	3.8	6.8	5.6	6.2	10.6	10.1	10.4
30	8.4	5.2	6.4	3.5	3.2	3.4	7.5	6.7	7.1	10.3	9.7	9.9
31	---	---	---	4.4	2.9	3.5	7.4	6.2	6.9	---	---	---
MONTH				8.0	2.4	5.0				10.7	3.3	7.8

05331560 MISSISSIPPI RIVER AT GREY CLOUD ISLAND NEAR COTTAGE GROVE, MN

WATER-QUALITY RECORDS

LOCATION.--Lat 44°48'13", long 93°00'43", in NW¼NE¼ sec.26, T.27 N., R.22 W., Washington County, Hydrologic Unit 07010206, on left bank at the J. L. Shiely Co. loading dock, and at mile 826.2 (1,330 km) upstream from Ohio River.

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

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: September 1977 to current year.
pH: September 1977 to current year.
WATER TEMPERATURES: September 1977 to current year.
DISSOLVED OXYGEN: September 1977 to current year.

INSTRUMENTATION.--Water-quality monitor since September 1977.

REMARKS.--Water-discharge records for Mississippi River at St. Paul (station 05331000), adjusted for diversion through the Metropolitan Waste Treatment Plant, ungaged drainage area, and travel time are used for computing streamflow. Extremes are published for those years with 80 percent or more record. Malfunctions of the monitor resulted in less than 80 percent recorded daily record for specific conductance, pH, temperature, and dissolved oxygen.

COOPERATION.--Water-quality monitor is operated by the Metropolitan Waste Control Commission, St. Paul, MN.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW (CFS) (00060)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	FLUO-RIDE, TOTAL (MG/L AS F) (00951)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)
DEC													
11...	0830	11000	670	7.9	2.0	13.9	103	.1	6	100	10	50	1
FEB													
05...	1030	6270	625	7.8	.0	12.3	87	.6	1	100	10	80	0
APR													
02...	1030	20200	460	7.7	4.5	12.5	99	.1	2	100	0	60	1
JUN													
04...	0815	11100	511	7.5	20.5	7.5	85	.4	4	<50	0	90	1
AUG													
25...	0920	5320	500	7.9	23.0	6.5	77	.4	5	100	0	80	0

DATE	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
DEC												
11...	18	8	1900	5	210	.1	2	8	0	0	30	.01
FEB												
05...	11	4	220	0	90	<.1	1	5	0	0	20	.01
APR												
02...	16	4	810	3	140	.1	3	10	0	0	10	.01
JUN												
04...	0	4	700	2	280	.1	2	1	2	0	10	.00
AUG												
25...	13	5	730	4	200	<.1	3	9	1	0	10	.00

DATE	TIME	STREAM-FLOW (CFS) (00060)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	FLUO-RIDE, TOTAL (MG/L AS F) (00951)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)
SEP													
17...	0915	10200	330	7.8	16.5	8.4	88	.2	2	100	0	110	0

DATE	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, HEXA-VALENT, DIS. (UG/L AS CR) (01032)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
SEP											
17...	6	0	8	60	0	20	.1	16	0	0	0

05331560 MISSISSIPPI RIVER AT GREY CLOUD ISLAND NEAR COTTAGE GROVE MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1							---	---	---	518	494	508
2							---	---	---	514	494	504
3							---	---	---	504	490	499
4							---	---	---	508	494	499
5							---	---	---	500	480	490
6							---	---	---	500	484	490
7							---	---	---	500	488	495
8							---	---	---	500	490	495
9							---	---	---	504	490	496
10							---	---	---	514	504	507
11							---	---	---	518	488	504
12							---	---	---	494	480	484
13							---	---	---	500	484	491
14							---	---	---	500	458	488
15							---	---	---	494	480	488
16							---	---	---	510	480	496
17							---	---	---	510	480	494
18							---	---	---	518	500	508
19							---	---	---	514	500	508
20							---	---	---	518	498	504
21							---	---	---	514	494	519
22							---	---	---	514	488	500
23							---	---	---	548	494	513
24							490	488	489	548	500	516
25							500	494	497	558	504	525
26							504	490	496	554	514	537
27							510	494	503	554	510	538
28							518	510	514	551	541	547
29							518	500	508	554	509	526
30							518	500	508	554	501	524
31							---	---	---	551	504	519
MONTH										558	458	507

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	580	540	548	619	600	609	544	514	530	510	454	488
2	619	559	594	611	600	608	554	544	548	494	488	491
3	559	541	550	650	600	622	558	540	547	---	---	---
4	555	501	521	641	601	614	544	518	539	---	---	---
5	514	440	478	615	589	602	554	540	548	---	---	---
6	519	481	500	605	590	600	558	540	547	---	---	---
7	559	505	546	618	589	606	590	540	578	---	---	---
8	558	540	548	591	559	585	584	518	560	---	---	---
9	548	540	542	614	559	595	516	490	498	---	---	---
10	554	540	544	644	600	623	498	454	484	---	---	---
11	590	549	567	659	610	631	496	440	461	---	---	---
12	619	594	604	659	640	649	454	440	444	---	---	---
13	619	600	603	651	608	634	486	450	465	---	---	---
14	641	608	620	655	645	651	480	440	451	---	---	---
15	659	640	647	658	649	655	480	440	463	---	---	---
16	658	640	644	---	---	---	488	454	475	---	---	---
17	655	615	633	---	---	---	510	458	488	---	---	---
18	641	611	624	---	---	---	544	498	516	---	---	---
19	615	610	612	---	---	---	554	500	520	---	---	---
20	611	608	610	---	---	---	554	518	543	---	---	---
21	611	605	609	---	---	---	550	500	535	---	---	---
22	611	604	606	---	---	---	514	488	498	---	---	---
23	608	604	605	---	---	---	518	500	506	---	---	---
24	615	601	609	---	---	---	518	504	511	---	---	---
25	619	600	608	---	---	---	518	494	503	---	---	---
26	615	600	610	---	---	---	540	500	511	---	---	---
27	619	600	613	---	---	---	558	498	519	---	---	---
28	619	601	611	---	---	---	518	500	508	---	---	---
29	---	---	---	---	---	---	544	500	516	---	---	---
30	619	600	611	---	---	---	544	500	516	---	---	---
31	---	---	---	546	514	538	504	448	473	---	---	---
MONTH							590	440	510			

05331560 MISSISSIPPI RIVER AT GREY CLOUD ISLAND NEAR COTTAGE GROVE MN--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1							---	---	---	8.5	8.0	8.2
2							---	---	---	8.5	8.4	8.4
3							---	---	---	8.5	8.1	8.3
4							---	---	---	8.5	8.1	8.3
5							---	---	---	8.4	8.0	8.2
6							---	---	---	8.4	8.0	8.2
7							---	---	---	8.2	8.0	8.1
8							---	---	---	8.4	8.0	8.1
9							---	---	---	8.2	8.0	8.1
10							---	---	---	8.2	8.0	8.1
11							---	---	---	8.2	8.0	8.0
12							---	---	---	8.2	8.0	8.1
13							---	---	---	8.1	8.0	8.1
14							---	---	---	8.1	7.9	8.0
15							---	---	---	8.2	8.0	8.1
16							---	---	---	8.2	8.0	8.1
17							---	---	---	8.2	8.0	8.1
18							---	---	---	8.1	8.0	8.1
19							---	---	---	8.1	8.0	8.1
20							---	---	---	8.5	8.0	8.2
21							---	---	---	8.5	8.0	8.2
22							---	---	---	8.2	8.0	8.0
23							---	---	---	8.5	7.9	8.1
24							8.1	8.0	8.1	8.4	8.0	8.1
25							8.2	8.0	8.0	8.1	7.8	7.9
26							8.2	8.1	8.1	8.1	8.0	8.1
27							8.1	8.0	8.1	8.1	8.0	8.1
28							8.1	8.0	8.1	8.1	8.0	8.1
29							8.1	8.0	8.1	8.1	8.1	8.1
30							8.2	8.0	8.1	8.1	7.9	8.0
31							---	---	---	7.9	7.9	7.9
MONTH										8.5	7.8	8.1

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	8.0	7.9	8.0	8.1	8.0	8.0	8.0	7.9	7.9			
2	8.2	8.0	8.0	8.1	7.9	8.0	7.9	7.9	7.9			
3	8.1	8.0	8.0	7.9	7.8	7.9	7.9	7.8	7.9			
4	8.1	8.0	8.0	8.0	7.8	7.9	7.9	7.8	7.9			
5	8.1	7.9	8.0	8.0	7.9	8.0	7.9	7.9	7.9			
6	8.1	8.0	8.1	7.9	7.8	7.9	7.9	7.8	7.9			
7	8.1	8.0	8.0	8.0	7.8	7.9	7.9	7.9	7.9			
8	8.1	8.0	8.0	8.0	7.9	7.9	7.9	7.9	7.9			
9	8.1	8.0	8.0	8.0	7.9	8.0	7.9	7.9	7.9			
10	8.2	8.0	8.0	8.0	7.8	7.9	7.9	7.9	7.9			
11	8.2	8.0	8.1	7.9	7.8	7.8	7.9	7.9	7.9			
12	8.2	8.0	8.0	7.8	7.6	7.7	7.9	7.8	7.9			
13	8.1	8.0	8.0	7.8	7.5	7.6	---	---	---			
14	8.1	8.0	8.0	7.6	7.5	7.5	---	---	---			
15	8.1	8.0	8.1	7.8	7.5	7.6	---	---	---			
16	8.1	7.9	8.0	---	---	---	---	---	---			
17	8.0	7.9	8.0	---	---	---	---	---	---			
18	7.9	7.9	7.9	---	---	---	---	---	---			
19	7.9	7.8	7.9	---	---	---	---	---	---			
20	7.9	7.8	7.9	---	---	---	---	---	---			
21	8.0	7.8	7.9	---	---	---	---	---	---			
22	8.0	7.9	8.0	---	---	---	---	---	---			
23	8.0	7.8	7.9	---	---	---	---	---	---			
24	7.9	7.9	7.9	---	---	---	---	---	---			
25	7.9	7.8	7.9	---	---	---	---	---	---			
26	7.9	7.8	7.8	---	---	---	---	---	---			
27	7.9	7.6	7.8	---	---	---	---	---	---			
28	8.0	7.5	7.8	---	---	---	---	---	---			
29	---	---	---	---	---	---	---	---	---			
30	8.1	8.0	8.0	---	---	---	---	---	---			
31	---	---	---	8.0	7.9	8.0	---	---	---			

05331560 MISSISSIPPI RIVER AT GREY CLOUD ISLAND NEAR COTTAGE GROVE MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1							---	---	---	17.5	15.0	16.5
2							---	---	---	18.0	15.0	16.5
3							---	---	---	20.0	15.5	17.5
4							---	---	---	19.5	17.0	18.0
5							---	---	---	19.5	17.0	18.0
6							---	---	---	18.0	15.5	17.5
7							---	---	---	16.0	15.0	15.5
8							---	---	---	16.0	14.5	15.0
9							---	---	---	15.5	14.0	15.0
10							---	---	---	15.0	12.5	14.5
11							---	---	---	15.0	12.0	14.0
12							---	---	---	15.0	12.5	14.0
13							---	---	---	14.5	12.0	13.5
14							---	---	---	15.5	12.0	14.0
15							---	---	---	16.0	14.0	15.0
16							---	---	---	15.5	15.0	15.5
17							---	---	---	16.0	15.0	15.5
18							---	---	---	15.5	15.0	15.5
19							---	---	---	18.0	14.5	16.0
20							---	---	---	20.0	15.0	16.5
21							---	---	---	20.0	17.0	18.0
22							---	---	---	22.0	18.0	20.0
23							---	---	---	23.0	20.0	21.0
24							17.0	15.0	16.0	24.5	20.5	22.0
25							16.0	15.0	15.5	25.0	22.5	23.5
26							15.5	14.5	15.0	25.0	22.0	23.5
27							17.0	13.0	15.0	25.0	22.0	23.5
28							17.0	12.5	15.0	25.0	22.0	23.0
29							16.0	14.5	15.0	24.5	22.0	23.0
30							18.0	15.0	16.0	23.0	22.0	22.5
31							---	---	---	22.0	22.0	23.0
MONTH										25.0	12.0	18.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	23.0	22.0	22.5	23.0	20.5	21.5	27.5	25.0	26.0	23.0	20.0	21.0
2	22.5	20.5	22.0	23.0	20.0	21.5	27.5	25.0	25.5	22.5	20.0	21.0
3	22.5	20.0	21.0	23.0	20.5	22.0	27.5	25.0	25.5	---	---	---
4	22.0	20.0	20.5	24.5	22.0	23.0	26.0	24.5	25.0	---	---	---
5	21.0	20.0	20.5	25.0	22.0	23.0	25.5	24.0	25.0	---	---	---
6	22.5	20.0	21.5	25.5	22.0	24.0	27.0	24.5	25.5	---	---	---
7	22.0	19.5	20.5	26.0	23.0	25.0	26.0	24.5	25.5	---	---	---
8	21.0	19.5	20.5	26.0	24.0	25.0	26.0	24.5	25.0	---	---	---
9	22.5	20.0	21.0	27.5	24.5	25.5	25.5	24.5	25.0	---	---	---
10	20.5	19.5	20.0	27.5	25.0	26.0	26.0	23.0	25.0	---	---	---
11	21.0	20.0	20.5	28.0	25.5	26.5	25.5	23.0	24.5	---	---	---
12	23.0	20.0	21.0	27.5	25.5	26.5	25.5	22.5	24.5	---	---	---
13	22.5	20.0	21.0	28.0	25.5	27.0	24.5	22.0	23.0	---	---	---
14	23.0	20.0	21.5	28.0	26.0	27.0	25.0	22.0	23.0	---	---	---
15	23.0	20.0	21.5	29.0	27.0	27.5	24.5	22.0	23.0	---	---	---
16	23.0	20.5	22.0	---	---	---	23.0	20.0	21.0	---	---	---
17	23.0	20.0	21.5	---	---	---	22.0	20.0	20.5	---	---	---
18	22.5	20.5	21.5	---	---	---	23.0	20.0	21.5	---	---	---
19	23.0	20.0	21.5	---	---	---	24.5	20.5	22.0	---	---	---
20	22.5	22.0	22.5	---	---	---	23.0	22.0	22.5	---	---	---
21	25.0	22.0	23.5	---	---	---	23.0	20.5	22.0	---	---	---
22	24.5	22.5	24.0	---	---	---	24.0	20.5	22.0	---	---	---
23	25.5	22.5	24.5	---	---	---	23.0	22.0	22.5	---	---	---
24	25.5	24.0	25.0	---	---	---	22.5	22.0	22.5	---	---	---
25	25.0	22.0	23.0	---	---	---	24.5	22.0	23.5	---	---	---
26	25.0	22.0	23.5	---	---	---	23.0	22.0	22.0	---	---	---
27	22.5	20.5	22.0	---	---	---	22.5	22.0	22.5	---	---	---
28	22.5	20.0	20.5	---	---	---	23.0	22.0	22.5	---	---	---
29	---	---	---	---	---	---	24.5	22.0	23.0	---	---	---
30	23.0	22.0	22.5	---	---	---	23.0	20.5	22.0	---	---	---
31	---	---	---	27.5	25.0	26.0	21.0	20.0	20.0	---	---	---
MONTH							27.5	20.0	23.5			

05331560 MISSISSIPPI RIVER AT GREY CLOUD ISLAND NEAR COTTAGE GROVE MN--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1							---	---	---	13.2	9.0	10.9
2							---	---	---	13.0	10.1	11.6
3							---	---	---	13.2	10.8	11.8
4							---	---	---	12.4	10.3	11.4
5							---	---	---	12.2	10.9	11.7
6							---	---	---	11.6	9.8	10.3
7							---	---	---	10.0	8.8	9.1
8							---	---	---	11.2	7.9	9.2
9							---	---	---	12.2	10.1	11.0
10							---	---	---	12.2	10.9	11.7
11							---	---	---	11.7	10.0	10.8
12							---	---	---	10.2	8.8	9.4
13							---	---	---	8.8	7.0	8.1
14							---	---	---	12.1	6.0	8.8
15							---	---	---	12.1	10.0	11.1
16							---	---	---	11.6	10.0	10.7
17							---	---	---	10.0	8.0	9.1
18							---	---	---	8.4	6.2	7.2
19							---	---	---	6.4	5.9	6.2
20							---	---	---	9.1	4.8	7.2
21							---	---	---	10.0	7.7	8.9
22							---	---	---	9.0	6.8	7.9
23							---	---	---	7.1	4.1	5.4
24							12.2	10.8	11.9	6.7	2.6	4.1
25							12.1	11.1	11.9	4.7	3.2	3.8
26							11.6	10.8	11.0	5.7	4.6	5.0
27							11.1	10.0	10.4	6.6	5.6	5.9
28							11.8	10.0	10.8	6.9	6.4	6.7
29							11.6	10.1	10.9	5.6	4.0	4.4
30							11.0	8.9	10.0	4.4	2.3	3.5
31							---	---	---	2.4	1.8	2.1
MONTH										13.2	1.8	7.8

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	5.6	1.8	3.8	8.2	6.8	7.4	4.9	2.9	4.1	5.1	2.0	3.7
2	8.0	4.1	5.6	7.0	6.0	6.4	5.8	3.0	4.0	5.0	3.7	4.2
3	4.4	3.0	3.9	6.1	4.8	5.2	3.8	2.0	2.6	---	---	---
4	5.6	4.0	4.9	6.3	4.1	5.5	5.2	2.0	2.8	---	---	---
5	6.0	4.8	5.2	5.8	4.8	5.2	6.2	3.6	4.4	---	---	---
6	7.8	5.0	6.2	5.0	3.0	4.2	8.4	2.0	4.1	---	---	---
7	7.8	6.3	7.1	4.9	2.8	3.8	6.3	4.0	5.4	---	---	---
8	7.1	6.1	6.7	4.4	2.8	4.4	5.2	2.2	4.2	---	---	---
9	6.4	5.9	6.1	6.4	2.8	3.7	3.0	1.8	2.4	---	---	---
10	7.1	5.9	6.7	4.9	3.3	4.2	3.2	2.1	2.8	---	---	---
11	6.8	5.9	6.2	4.1	2.9	3.2	4.4	2.0	3.3	---	---	---
12	6.3	5.8	6.1	3.4	2.3	2.6	5.1	2.9	3.9	---	---	---
13	5.9	5.0	5.4	3.1	2.3	2.9	5.1	3.0	4.1	---	---	---
14	6.3	4.2	5.1	4.7	2.7	3.5	5.7	4.0	4.5	---	---	---
15	6.4	4.9	5.7	4.6	3.8	4.2	4.3	2.9	3.7	---	---	---
16	6.4	4.8	5.6	---	---	---	4.9	3.1	4.1	---	---	---
17	6.3	5.1	5.9	---	---	---	5.1	3.8	4.6	---	---	---
18	5.8	4.8	5.1	---	---	---	4.8	3.8	4.1	---	---	---
19	5.1	4.0	4.7	---	---	---	6.3	3.8	4.9	---	---	---
20	4.3	3.9	4.1	---	---	---	5.1	4.0	4.4	---	---	---
21	6.2	3.1	4.9	---	---	---	4.3	3.7	4.0	---	---	---
22	6.4	4.8	5.4	---	---	---	5.6	3.0	4.0	---	---	---
23	7.1	4.2	5.7	---	---	---	3.1	2.3	2.8	---	---	---
24	6.2	5.6	6.0	---	---	---	3.7	2.1	2.7	---	---	---
25	5.1	4.1	4.8	---	---	---	6.1	2.2	4.5	---	---	---
26	4.4	3.9	4.1	---	---	---	5.2	3.8	4.5	---	---	---
27	4.3	3.7	4.0	---	---	---	4.3	2.8	3.6	---	---	---
28	7.0	4.2	5.0	---	---	---	3.7	2.8	3.1	---	---	---
29	---	---	---	---	---	---	3.8	2.3	3.0	---	---	---
30	8.4	8.0	8.2	---	---	---	3.2	2.1	2.8	---	---	---
31	---	---	---	5.2	4.1	4.6	3.2	2.0	2.7	---	---	---
MONTH							8.4	1.8	3.8			

05331570 MISSISSIPPI RIVER AT NININGER, MN
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Lat 44°46'22", long 92°54'07", in NW¼NE¼ sec.18, T.115 N., R.17 W., Dakota County, Hydrologic Unit 07010206, on right bank at the end of Jason Avenue, and at mile 817.8 (1,316 km) upstream from Ohio River.

DRAINAGE AREA.--37,000 mi^2 (95,800 km^2), approximately.

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

REMARKS.--Water discharge estimated on the basis of discharge for Mississippi River at St. Paul (station 05331000) adjusted for diversion through the Metropolitan Waste Treatment Plant, ungaged drainage area, and travel time. Letter K indicates non-ideal colony count. Letter E indicates estimated value.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW (CFS) (00060)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE, WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)
NOV												
07...	1115	24100	580	8.1	3.5	4.5	3.0	11.5	92	K740	31	290
JAN												
22...	0930	7770	640	--	-8.0	.0	1.0	12.6	89	K2	<4	320
FEB												
27...	1030	6010	670	7.9	-3.0	.0	.80	--	--	<1	K1	260
APR												
08...	0945	26600	440	8.2	4.0	6.5	1.2	10.8	90	66	170	220
MAY												
14...	1130	8760	522	8.8	19.0	15.5	8.0	--	--	24	E21	220
JUL												
16...	1000	6170	711	8.3	24.5	22.0	26	6.0	71	K14	42	290
AUG												
25...	1100	5430	595	8.1	24.5	23.0	6.2	--	--	--	K23	230
SEP												
24...	1100	7340	440	8.1	14.0	15.0	5.5	8.8	88	>600	33	190

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY (MG/L AS CACO3) (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
NOV												
07...	84	75	26	13	.3	4.0	210	72	21	.3	14	403
JAN												
22...	93	80	30	24	.6	2.8	230	73	27	.3	14	421
FEB												
27...	50	68	22	24	.6	3.2	210	51	39	.2	13	365
APR												
08...	66	55	19	9.3	.3	5.2	150	48	13	.2	11	279
MAY												
14...	65	52	23	18	.5	3.1	160	59	21	.3	.7	313
JUL												
16...	80	70	28	22	.6	4.6	210	91	28	.3	13	422
AUG												
25...	40	56	22	22	.6	3.9	190	54	30	.4	14	358
SEP												
24...	--	46	17	14	.4	3.0	--	45	21	.2	12	--

05331570 - MISSISSIPPI RIVER AT NINNINGER, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
NOV												
07...	375	26200	5.2	5.2	.240	.240	1.4	1.4	.970	.080	0	--
JAN												
22...	402	8830	2.8	2.8	.750	.740	1.5	1.4	.120	.100	0	14
FEB												
27...	352	5920	1.1	1.1	1.000	1.000	1.4	1.4	.170	.130	1	--
APR												
08...	259	20000	1.7	1.7	.630	.620	2.0	1.7	.270	.190	0	--
MAY												
14...	277	7400	1.0	.85	--	.150	--	.95	.250	.030	0	11
JUL												
16...	388	7030	1.5	1.2	.450	.450	1.5	1.3	.330	.170	0	20
AUG												
25...	323	5250	1.4	1.4	.640	.580	1.7	1.5	.220	.150	0	7.7
SEP												
24...	--	--	.90	.90	.250	.250	1.2	1.2	.220	.120	0	--

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD) (01027)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOVERABLE (UG/L AS CO) (01037)
NOV										
07...	1115	4	3	100	70	0	0	20	17	1
FEB										
27...	1030	3	3	100	70	1	1	40	30	0
APR										
08...	0945	2	2	50	50	0	0	30	10	0
SEP										
24...	1100	2	2	100	100	0	0	40	20	0

DATE	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)
NOV										
07...	1	4	3	950	20	0	0	140	20	<.1
FEB										
27...	0	3	3	330	10	5	1	130	130	<.1
APR										
08...	0	3	3	880	120	3	0	110	60	.1
SEP										
24...	0	6	5	950	10	5	0	150	10	.3

DATE	MERCURY DISSOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	SELENIUM, TOTAL (UG/L AS SE) (01147)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SILVER, DISSOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED (MG/L AS C) (00689)
NOV										
07...	<.1	9	3	2	2	0	70	0	12	.1
FEB										
27...	<.1	4	3	0	0	0	500	280	11	.3
APR										
08...	.1	2	2	0	0	0	10	10	8.8	.1
SEP										
24...	<.1	7	4	0	0	0	40	10	9.9	1.2

05331570 MISSISSIPPI RIVER AT NINNINGER, MN--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1979 TO SEPTEMBER 1980

DATE	JAN 22,80		FEB 27,80		APR 8,80		JUL 16,80		AUG 25,80		SEP 24,80	
TIME	0930		1030		0945		1000		1100		1100	
TOTAL CELLS/ML	6200		730		4300		54000		45000		51000	
DIVERSITY: DIVISION	1.6		1.4		1.6		1.8		1.2		1.1	
.CLASS	1.6		1.4		1.6		1.8		1.2		1.1	
..ORDER	2.1		1.9		2.5		2.4		1.9		1.9	
...FAMILY	2.3		2.0		3.1		2.6		2.1		2.0	
....GENUS	2.6		2.1		3.3		3.2		3.2		2.3	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)												
.CHLOROPHYCEAE												
..CHLOROCOCCALES												
...CHARACIACEAE												
....SCHROEDERIA	--	-	--	-	250	6	--	-	--	-	--	-
...COELASTRACEAE												
....COELASTRUM	--	-	--	-	--	-	--	-	1200	3	--	-
...HYDRODICTYACEAE												
....PEDIASTRUM	160	3	--	-	--	-	--	-	--	-	--	-
...MICRACTINIACEAE												
....GOLENKINIA	--	-	--	-	--	-	--	-	--	-	*	0
....MICRACTINIUM	--	-	--	-	92	2	--	-	--	-	--	-
...OOCYSTACEAE												
....ANKISTRODESMUS	240	4	14	2	1100#	25	340	1	770	2	480	1
....CHLORELLA	120	2	--	-	--	-	--	-	--	-	--	-
....CHODATELLA	41	1	--	-	--	-	*	0	*	0	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	--	-	310	1	970	2
....KIRCHNERIELLA	320	5	--	-	--	-	1000	2	--	-	--	-
....OOCYSTIS	160	3	--	-	--	-	*	0	--	-	*	0
....SELENASTRUM	--	-	--	-	--	-	--	-	540	1	--	-
....TETRAEDRON	--	-	--	-	--	-	*	0	--	-	--	-
...SCENEDESMACEAE												
....CRUCIGENIA	--	-	57	8	--	-	11000#	20	310	1	280	1
....SCENEDESMUS	--	-	--	-	--	-	2100	4	1500	3	1900	4
....TETRASTRUM	--	-	--	-	--	-	--	-	1200	3	1100	2
..VOLVOCALES												
...CHLAMYDOMONADACEAE												
....CARTERIA	--	-	14	2	--	-	--	-	--	-	--	-
....CHLAMYDOMONAS	81	1	14	2	550	13	690	1	620	1	*	0
...PHACOTACEAE												
....PTEROMONAS	--	-	--	-	--	-	*	0	--	-	--	-
..ZYGNEMATALES												
...DESMIDIACEAE												
....CLOSTERIUM	--	-	--	-	--	-	*	0	--	-	--	-
CHRYSOPHYTA												
.BACILLARIOPHYCEAE												
..CENTRALES												
...COSCINODISCACEAE												
....COSCINODISCUS	--	-	--	-	340	8	--	-	--	-	--	-
....CYCLOTELLA	--	-	260#	35	250	6	7200	13	1800	4	3400	7
....MELOSIRA	--	-	--	-	--	-	6200	11	2500	5	4400	9
....STEPHANODISCUS	--	-	--	-	120	3	*	0	--	-	*	0
....THALASSIOSIRA	2600#	42	--	-	--	-	--	-	--	-	--	-
..PENNALES												
...FRAGILARIACEAE												
....ASTERIONELLA	41	1	--	-	--	-	--	-	--	-	--	-
....FRAGILARIA	--	-	--	-	370	9	--	-	--	-	--	-
....SYNEDRA	120	2	29	4	--	-	340	1	*	0	*	0
...GOMPHONEMATACEAE												
....GOMPHONEMA	--	-	--	-	31	1	--	-	--	-	--	-
...NAVICULACEAE												
....GYROSIGMA	--	-	--	-	--	-	*	0	--	-	--	-
....NAVICULA	--	-	14	2	150	4	*	0	--	-	--	-
...NITZSCHIACEAE												
....NITZSCHIA	41	1	14	2	92	2	340	1	*	0	--	-
.CHRYSOPHYCEAE												
..CHRYSOMONADALES												
...CHROMULINACEAE												
....CHRYSOCOCCUS	--	-	--	-	31	1	--	-	--	-	--	-
...OCHROMONADACEAE												
....DINOBRYON	41	1	--	-	--	-	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)												
.CRYPTOPHYCEAE												
..CRYPTOMONADALES												
...CRYPTOCHRYSIDACEAE												
....CHROOMONAS	--	-	--	-	--	-	--	-	310	1	--	-
...CRYPTOMONADACEAE												
....CRYPTOMONAS	--	-	--	-	--	-	1000	2	230	1	*	0

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

05331570 MISSISSIPPI RIVER AT NINNINGER, MN--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1979 TO SEPTEMBER 1980--Continued

DATE TIME	JAN 22,80 0930		FEB 27,80 1030		APR 8,80 0945		JUL 16,80 1000		AUG 25,80 1100		SEP 24,80 1100	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CYANOPHYTA (BLUE-GREEN ALGAE)												
.CYANOPHYCEAE												
..CHROOCOCCALES												
...CHROOCOCCACEAE												
....AGMENELLUM	--	-	--	-	--	-	12000#	23	9900#	22	--	-
....ANACYSTIS	1600#	26	--	-	340	8	2100	4	9000#	20	16000#	32
....COCCOCHLORIS	--	-	--	-	--	-	--	-	4700	10	550	1
..HORMOGONALES												
...OSCILLATORIACEAE												
....LYNGBYA	--	-	--	-	550	13	--	-	--	-	--	-
....OSCILLATORIA	--	-	320#	43	--	-	6900	13	10000#	22	21000#	41
....SCHIZOTHRIX	320	5	--	-	--	-	--	-	--	-	--	-
....SPIRULINA	160	3	--	-	--	-	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)												
.EUGLENOPHYCEAE												
..EUGLENALES												
...EUGLENACEAE												
....EUGLENA	--	-	--	-	--	-	340	1	*	0	--	-
....TRACHELOMONAS	81	1	--	-	31	1	340	1	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)												
.DINOPHYCEAE												
..GYMNODINIALES												
...GYMNODINIACEAE												
....GYMNODINIUM	--	-	--	-	--	-	340	1	--	-	--	-
..PERIDINIALES												
...GLENODINIACEAE												
....GLENODINIUM	--	-	--	-	--	-	--	-	*	0	*	0

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

05331570 MISSISSIPPI RIVER AT NINNINGER, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	LENGTH OF EXPO-SURE (DAYS) (00022)	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70958)
MAR						
17...	1200	19	.080	.080	2.13	.000
MAY						
14...	1130	37	14.6	13.0	14.9	.620
SEP						
24...	1100	30	13.6	9.06	64.1	9.94

DATE	TIME	STREAM-FLOW (CFS) (00060)	TEMPER-ATURE, WATER (DEG C) (00010)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
NOV						
07...	1115	24100	4.5	17	1110	100
JAN						
22...	0930	7770	.0	4	84	--
FEB						
27...	1030	6010	.0	3	49	--
APR						
08...	0945	26600	6.5	23	1650	94
MAY						
14...	1130	8760	15.5	29	686	100
JUL						
16...	1000	6170	22.0	12	200	97
AUG						
25...	1100	5430	23.0	36	528	98
SEP						
24...	1100	7340	15.0	39	773	93

05331578 MISSISSIPPI RIVER AT LOCK AND DAM 2 AT HASTINGS, MN

LOCATION.--Lat 44°45'37", long 92°52'02", in SE¼SW¼ sec.16, T.115 N., R.17 W., Dakota County, Hydrologic Unit 07010206, in old lock house at lock and dam and at mile 815.2 (1,312 km) upstream from Ohio River.

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

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1974 to current year.
pH: October 1974 to current year.
WATER TEMPERATURES: October 1974 to current year.
DISSOLVED OXYGEN: October 1974 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1974.

REMARKS.--Water discharge computed on the basis of discharge for Mississippi River at St. Paul (station 05331000) adjusted for inflow and travel time. Extremes are published for those years with 80 percent or more record.

COOPERATION.--Samples collected and water-quality monitor operated by the Metropolitan Waste Control Commission, St. Paul, MN.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water year 1980): Maximum, 799 micromhos June 27, July 6, 20, 1980; minimum, 341 micromhos Aug. 3, 1980.
pH (water year 1980): Maximum, 8.9 units Aug. 1, 1980; minimum, 7.3 units May 27, 28, 30, 31, June 1-7, 1980.
WATER TEMPERATURES (water year 1980): Maximum, 32.5°C July 10, 1980; minimum, 0.0°C several days during winter period of 1980 water year.
DISSOLVED OXYGEN (water year 1980): Maximum, 19.2 mg/L Oct. 16, 1979; minimum, 1.7 mg/L June 4, 1980.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 799 micromhos June 27, July 6, 20; minimum, 341 micromhos Aug. 3.
pH: Maximum, 8.9 units Aug. 1; minimum, 7.3 units May 27, 28, 30, 31, June 1-7.
WATER TEMPERATURES: Maximum, 32.5°C July 10; minimum, 0.0°C several days during winter.
DISSOLVED OXYGEN: Maximum, 19.2 mg/L Oct. 16; minimum, 1.7 mg/L June 4.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW (CFS) (00060)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	FLUO-RIDE, TOTAL (MG/L AS F) (00951)
OCT								
26...	0900	8320	556	8.2	7.5	9.8	84	.2
DEC								
10...	1200	10200	660	7.9	2.0	17.4	129	.0
FEB								
05...	1120	6390	620	7.8	.5	13.6	96	.6
APR								
02...	0920	20600	440	7.8	4.0	12.3	96	.1
JUN								
05...	0900	16100	550	7.7	20.0	7.2	81	.6

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
OCT									
26...	4	0	0	190	0	8	5	540	4
DEC									
10...	5	100	20	40	0	4	4	300	0
FEB									
05...	1	100	0	90	0	16	5	380	4
APR									
02...	2	100	0	60	2	14	4	530	29
JUN									
05...	2	100	0	90	1	15	7	1400	5

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
OCT								
26...	160	.2	2	7	0	0	20	.00
DEC								
10...	600	<.1	0	7	1	0	10	.01
FEB								
05...	120	<.1	2	6	0	0	20	.01
APR								
02...	120	<.1	2	2	0	1	20	.00
JUN								
05...	220	.1	4	7	1	0	20	.01

05331578 MISSISSIPPI RIVER AT LOCK AND DAM 2 AT HASTINGS, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW (CFS) (00060)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, DIS-SOLVED (UG/L AS B) (01020)
SEP 18...	0915	10400	382	8.0	15.0	8.3	84	.2	3	200	0	130

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, HEXA-VALENT, DIS. (UG/L AS CR) (01032)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
SEP 18...	1	0	0	4	30	1	10	<.1	4	0	0	0

05331578 MISSISSIPPI RIVER AT LOCK AND DAM 2 AT HASTINGS, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	619	603	611	612	603	607	594	589	591
2	---	---	---	603	588	597	619	606	614	589	586	588
3	---	---	---	589	580	585	629	619	625	589	587	588
4	---	---	---	586	577	582	626	622	625	590	587	588
5	626	617	619	589	579	582	625	615	619	589	587	588
6	619	605	612	584	576	580	624	615	621	587	584	586
7	613	603	606	580	572	574	627	613	618	588	584	586
8	617	603	612	586	571	576	622	613	618	594	588	591
9	609	592	600	580	572	576	636	627	632	598	593	595
10	596	586	591	585	572	579	660	646	651	600	598	598
11	590	581	585	596	579	587	661	654	658	607	598	601
12	612	569	577	603	592	596	643	634	638	613	608	612
13	575	565	569	596	590	593	629	621	624	612	603	607
14	573	561	564	596	591	593	624	617	621	606	596	602
15	581	564	572	602	591	596	608	597	600	595	590	592
16	608	578	588	607	597	601	601	597	600	595	587	590
17	618	580	588	610	599	602	600	590	596	587	582	585
18	610	579	584	611	592	601	601	597	599	586	582	584
19	618	584	595	615	601	608	606	596	602	588	584	586
20	619	590	600	610	602	606	608	599	601	592	588	590
21	618	591	599	614	603	610	603	600	602	595	590	593
22	587	557	572	606	600	603	602	595	598	590	577	586
23	559	547	551	601	597	599	596	593	594	593	579	588
24	556	544	550	596	589	593	595	593	594	594	591	593
25	557	550	553	593	586	590	596	594	595	600	599	599
26	556	549	552	603	597	600	596	593	594	613	599	602
27	564	544	554	601	590	594	597	594	595	615	607	609
28	572	552	561	590	584	589	599	596	597	611	607	609
29	582	572	577	589	583	586	604	596	601	614	612	613
30	592	578	586	597	586	591	602	596	599	619	614	617
31	606	591	597	---	---	---	596	592	594	618	613	615
MONTH				619	571	593	661	590	611	619	577	596

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	620	615	618	622	618	619	391	385	389	525	510	516
2	623	617	619	624	619	622	399	387	394	521	504	515
3	616	613	614	620	618	619	392	381	388	521	506	514
4	623	616	618	619	616	617	465	373	411	524	510	517
5	617	615	616	622	611	614	465	451	478	518	510	515
6	633	614	624	613	611	612	454	443	451	520	507	514
7	618	614	617	614	608	610	452	446	450	513	495	503
8	618	616	617	614	610	613	447	442	444	503	492	497
9	619	617	618	615	610	613	436	430	433	509	490	501
10	619	616	617	617	614	615	433	429	431	508	493	502
11	619	611	614	619	615	617	436	425	431	505	494	499
12	611	605	608	618	614	615	433	426	429	520	493	501
13	608	605	606	617	611	614	422	420	421	509	500	504
14	608	603	606	613	604	609	434	420	427	501	494	499
15	604	600	603	610	605	608	446	434	440	520	495	502
16	609	604	606	608	603	606	447	439	443	504	495	500
17	610	604	606	617	611	614	461	446	453	504	499	502
18	608	605	606	619	613	615	469	457	463	527	493	502
19	608	604	606	---	---	---	474	464	470	536	499	512
20	609	603	605	---	---	---	483	471	477	534	517	525
21	610	608	609	595	565	578	498	477	486	542	520	530
22	611	607	609	563	542	552	507	490	498	538	528	532
23	614	608	610	541	529	535	503	496	499	542	530	536
24	624	614	619	529	523	527	500	492	497	552	535	544
25	630	624	625	527	522	524	498	493	496	570	547	559
26	632	628	629	535	527	532	498	492	494	580	568	574
27	633	628	632	535	366	430	501	492	496	600	574	584
28	628	622	624	373	366	368	506	494	499	594	586	588
29	622	616	618	381	370	375	505	499	502	590	584	587
30	---	---	---	386	376	381	514	502	508	585	576	581
31	---	---	---	390	381	385	---	---	---	591	574	581
MONTH	633	600	614				514	373	457	600	490	527

05331578 MISSISSIPPI RIVER AT LOCK AND DAM 2 AT HASTINGS, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	583	569	579	713	693	706	775	667	676	574	557	563
2	586	570	579	693	676	683	764	659	683	572	546	559
3	613	583	597	786	678	704	679	341	652	548	539	544
4	609	582	596	798	674	694	675	654	659	556	542	549
5	586	553	569	743	690	701	656	650	653	554	541	547
6	551	535	542	799	679	705	688	653	657	552	543	546
7	553	534	543	795	685	706	664	660	662	542	534	538
8	559	543	551	792	678	696	679	653	660	545	525	535
9	593	555	570	782	678	690	665	658	662	540	515	530
10	592	573	581	798	688	728	679	659	668	525	510	517
11	593	581	587	793	685	718	665	655	660	507	499	503
12	588	580	583	792	692	704	657	644	651	500	492	495
13	602	580	590	713	703	707	669	599	634	502	492	497
14	626	601	613	739	708	721	621	587	596	492	469	480
15	629	617	623	739	716	725	593	579	583	470	462	465
16	675	622	648	732	705	714	579	561	571	463	440	451
17	691	668	675	738	707	718	579	553	557	443	430	435
18	731	676	686	739	718	725	578	554	560	432	407	420
19	701	674	683	739	706	718	575	550	562	412	406	409
20	715	677	683	799	685	727	619	558	566	432	407	411
21	714	676	683	788	680	698	584	574	579	409	403	405
22	691	680	684	783	676	701	580	570	575	405	398	401
23	691	678	684	792	674	691	601	572	585	403	398	400
24	688	684	686	691	685	687	593	572	579	407	398	402
25	797	682	704	788	682	697	580	561	569	408	400	403
26	719	692	702	779	677	693	591	562	570	407	400	403
27	799	680	705	779	675	696	568	554	560	411	400	406
28	779	675	701	776	672	681	560	553	556	414	407	410
29	784	664	686	681	665	670	593	559	569	437	414	418
30	789	676	696	692	666	673	582	575	579	439	418	422
31	---	---	---	772	664	679	593	561	574	---	---	---
MONTH	799	534	634	799	664	702	775	341	609	574	398	469

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	8.0	7.9	8.0	8.0	8.0	8.0	7.9	7.9	7.9
2	---	---	---	8.0	7.9	8.0	8.1	7.9	7.9	7.9	7.9	7.9
3	---	---	---	8.0	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
4	---	---	---	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
5	8.3	8.1	8.2	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
6	8.3	8.1	8.2	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
7	8.5	8.2	8.3	7.9	7.8	7.9	8.0	7.9	8.0	7.9	7.8	7.9
8	8.4	8.2	8.3	7.9	7.9	7.9	8.2	8.0	8.0	7.9	7.8	7.8
9	8.5	8.3	8.4	7.9	7.8	7.9	8.1	8.0	8.0	7.8	7.8	7.8
10	8.4	8.2	8.3	7.9	7.9	7.9	8.1	8.1	8.1	7.8	7.8	7.8
11	8.3	8.2	8.2	7.9	7.9	7.9	8.1	8.1	8.1	7.8	7.8	7.8
12	8.3	8.2	8.3	8.0	7.9	7.9	8.1	8.0	8.1	7.8	7.8	7.8
13	8.3	8.2	8.2	8.0	7.9	7.9	8.0	8.0	8.0	7.8	7.8	7.8
14	8.4	8.3	8.3	7.9	7.9	7.9	8.0	8.0	8.0	7.9	7.8	7.8
15	8.4	8.2	8.3	7.9	7.9	7.9	8.0	8.0	8.0	7.9	7.8	7.8
16	8.6	8.2	8.4	8.0	7.9	7.9	8.0	8.0	8.0	7.9	7.8	7.8
17	8.5	8.3	8.4	8.0	7.9	8.0	8.0	8.0	8.0	7.8	7.8	7.8
18	8.3	8.2	8.3	7.9	7.9	7.9	8.0	8.0	8.0	7.8	7.8	7.8
19	8.2	8.1	8.2	8.0	7.9	7.9	8.0	8.0	8.0	7.8	7.7	7.7
20	8.3	8.1	8.2	8.0	8.0	8.0	8.0	8.0	8.0	7.8	7.7	7.7
21	8.2	8.0	8.1	8.0	8.0	8.0	8.0	8.0	8.0	7.8	7.7	7.8
22	8.0	7.9	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.8	7.7	7.7
23	8.0	7.9	8.0	8.0	7.9	8.0	8.0	8.0	8.0	7.8	7.7	7.7
24	8.0	7.8	7.9	7.9	7.9	7.9	8.0	8.0	8.0	7.7	7.7	7.7
25	7.9	7.8	7.8	7.9	7.9	7.9	8.0	8.0	8.0	7.7	7.7	7.7
26	7.9	7.7	7.8	8.0	7.9	8.0	8.0	8.0	8.0	7.7	7.7	7.7
27	7.8	7.8	7.8	8.0	8.0	8.0	8.0	8.0	8.0	7.7	7.6	7.6
28	7.9	7.8	7.9	8.0	8.0	8.0	8.0	7.9	7.9	7.7	7.6	7.6
29	8.0	7.9	7.9	8.0	8.0	8.0	7.9	7.9	7.9	7.7	7.6	7.7
30	8.0	7.9	7.9	8.0	8.0	8.0	7.9	7.9	7.9	7.7	7.6	7.6
31	7.9	7.9	7.9	---	---	---	7.9	7.9	7.9	7.6	7.6	7.6
MONTH				8.0	7.8	7.9	8.2	7.9	8.0	7.9	7.6	7.8

05331578 MISSISSIPPI RIVER AT LOCK AND DAM 2 AT HASTINGS, MN--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	7.6	7.6	7.6	7.8	7.8	7.8	7.9	7.8	7.8	8.7	8.3	8.5
2	7.6	7.6	7.6	7.8	7.8	7.8	7.9	7.9	7.9	8.7	8.4	8.5
3	7.6	7.6	7.6	7.8	7.8	7.8	8.0	7.9	7.9	8.7	8.4	8.5
4	7.6	7.6	7.6	7.8	7.8	7.8	8.0	8.0	8.0	8.6	8.3	8.5
5	7.6	7.6	7.6	7.8	7.7	7.8	8.0	8.0	8.0	8.6	8.3	8.5
6	7.7	7.6	7.6	7.8	7.7	7.8	8.1	8.0	8.0	8.5	8.3	8.4
7	7.7	7.7	7.7	7.7	7.7	7.7	8.0	8.0	8.0	8.5	8.2	8.4
8	7.7	7.7	7.7	7.8	7.7	7.8	8.1	8.0	8.0	8.4	8.1	8.3
9	7.7	7.6	7.6	7.8	7.8	7.8	8.2	8.1	8.1	8.4	8.1	8.3
10	7.7	7.7	7.7	7.8	7.7	7.8	8.1	8.0	8.1	8.4	8.1	8.2
11	7.7	7.7	7.7	7.8	7.7	7.8	8.0	8.0	8.0	8.4	8.0	8.2
12	7.7	7.7	7.7	7.8	7.8	7.8	8.1	8.0	8.0	8.5	8.1	8.3
13	7.7	7.7	7.7	7.8	7.8	7.8	8.1	8.0	8.0	8.4	8.2	8.3
14	7.7	7.7	7.7	7.8	7.8	7.8	8.1	8.0	8.0	8.6	8.2	8.4
15	7.7	7.7	7.7	7.8	7.8	7.8	8.2	8.1	8.1	8.6	8.1	8.3
16	7.7	7.6	7.7	7.9	7.8	7.8	8.2	8.1	8.1	8.4	8.2	8.3
17	7.6	7.6	7.6	7.9	7.8	7.8	8.2	8.1	8.2	8.2	8.0	8.1
18	7.6	7.6	7.6	7.9	7.9	7.9	8.2	8.0	8.1	8.2	7.9	8.1
19	7.7	7.7	7.7	---	---	---	8.3	8.1	8.2	8.5	8.0	8.2
20	7.7	7.7	7.7	---	---	---	8.2	8.0	8.1	8.5	8.1	8.3
21	7.7	7.7	7.7	7.8	7.7	7.7	8.4	8.1	8.2	8.5	8.1	8.3
22	7.7	7.7	7.7	7.7	7.6	7.6	8.4	8.1	8.2	8.5	8.1	8.3
23	7.8	7.7	7.7	7.5	7.5	7.5	8.4	8.2	8.3	8.3	8.1	8.2
24	7.8	7.8	7.8	7.5	7.5	7.5	8.4	8.1	8.3	8.3	8.0	8.1
25	7.8	7.8	7.8	7.5	7.5	7.5	8.5	8.1	8.3	8.1	7.8	8.0
26	7.8	7.8	7.8	7.6	7.5	7.5	8.4	8.1	8.3	7.9	7.4	7.6
27	7.8	7.8	7.8	7.6	7.6	7.6	8.4	8.1	8.3	7.8	7.3	7.5
28	7.8	7.8	7.8	7.7	7.6	7.6	8.4	8.1	8.3	7.8	7.3	7.4
29	7.8	7.8	7.8	7.7	7.7	7.7	8.5	8.2	8.4	7.6	7.4	7.4
30	---	---	---	7.8	7.7	7.7	8.5	8.2	8.4	7.5	7.3	7.4
31	---	---	---	7.8	7.8	7.8	---	---	---	7.8	7.3	7.5
MONTH	7.8	7.6	7.7				8.5	7.8	8.1	8.7	7.3	8.1

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.8	7.3	7.4	8.4	8.2	8.3	8.9	8.0	8.4	7.8	7.7	7.8
2	7.5	7.3	7.4	8.4	8.0	8.2	8.7	8.1	8.4	8.0	7.7	7.8
3	7.5	7.3	7.4	8.2	7.9	8.0	8.3	7.9	8.0	8.1	8.0	8.1
4	7.4	7.3	7.3	8.3	7.9	8.1	8.1	7.8	7.9	8.1	8.0	8.1
5	7.4	7.3	7.4	8.1	7.9	8.0	7.8	7.7	7.7	8.2	8.0	8.1
6	7.4	7.3	7.3	8.0	7.8	7.9	7.8	7.7	7.8	8.2	8.0	8.1
7	7.5	7.3	7.4	8.4	7.9	8.0	8.2	8.1	8.1	8.6	8.2	8.3
8	7.6	7.4	7.4	8.3	7.9	8.0	8.1	7.9	8.0	8.5	8.3	8.4
9	7.8	7.5	7.5	8.6	7.9	8.2	7.9	7.8	7.8	8.5	8.3	8.4
10	7.7	7.5	7.5	8.6	8.1	8.4	8.0	7.7	7.8	8.3	8.1	8.2
11	7.7	7.4	7.5	8.4	8.0	8.2	7.9	7.6	7.7	8.2	7.8	8.0
12	7.7	7.4	7.5	8.1	7.9	8.0	7.8	7.5	7.6	7.8	7.8	7.8
13	7.5	7.5	7.5	7.9	7.7	7.7	8.2	7.6	7.8	7.9	7.7	7.8
14	7.8	7.5	7.6	8.2	7.6	7.8	8.2	8.0	8.1	7.7	7.5	7.6
15	7.8	7.6	7.6	8.2	7.6	7.9	8.2	8.0	8.0	7.7	7.6	7.6
16	8.1	7.6	7.9	8.1	7.7	7.9	8.1	8.1	8.1	8.0	7.7	7.7
17	8.1	8.0	8.1	8.3	7.8	8.0	8.1	8.1	8.1	8.0	7.9	8.0
18	8.3	8.1	8.2	8.2	7.9	8.0	8.1	8.0	8.1	8.1	7.9	8.0
19	8.3	8.1	8.2	8.0	7.8	7.9	8.2	7.9	8.1	8.1	8.0	8.1
20	8.3	8.2	8.2	8.0	7.9	7.9	8.1	7.9	8.0	8.1	8.0	8.1
21	8.4	8.2	8.3	8.0	7.8	7.9	8.1	7.9	8.0	8.0	7.9	8.0
22	8.5	8.2	8.3	8.1	7.8	7.9	8.3	7.9	8.1	8.1	7.8	7.9
23	8.6	8.2	8.4	8.5	7.9	8.2	8.2	8.0	8.1	8.1	7.9	8.0
24	8.5	8.3	8.4	8.2	8.0	8.1	8.0	7.9	8.0	8.2	8.0	8.1
25	8.5	8.2	8.4	8.2	7.9	8.0	8.4	7.8	8.0	8.2	8.1	8.1
26	8.5	8.3	8.4	8.3	7.8	8.0	8.0	7.8	7.9	8.1	8.0	8.1
27	8.3	8.2	8.3	8.2	7.7	7.9	7.9	7.7	7.8	8.1	8.0	8.0
28	8.3	8.2	8.2	7.9	7.7	7.8	7.9	7.9	7.9	8.1	8.0	8.0
29	8.3	8.2	8.3	7.8	7.6	7.7	8.0	7.9	7.9	8.0	8.0	8.0
30	8.3	8.2	8.2	8.1	7.7	7.9	8.1	7.9	8.0	8.3	7.9	8.1
31	---	---	---	8.4	7.8	8.1	8.1	7.8	7.9	---	---	---
MONTH	8.6	7.3	7.9	8.6	7.6	8.0	8.9	7.5	8.0	8.6	7.5	8.0

05331578 MISSISSIPPI RIVER AT LOCK AND DAM 2 AT HASTINGS, MN--Continued

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

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	.0	.0	.0	1.0	.5	1.0	4.5	3.5	4.0	20.0	16.5	18.0
2	.0	.0	.0	1.0	1.0	1.0	5.5	4.0	4.5	22.0	17.5	19.5
3	.0	.0	.0	1.0	1.0	1.0	5.5	4.0	5.0	22.0	18.5	20.0
4	.0	.0	.0	1.0	1.0	1.0	5.5	3.0	4.0	24.0	19.5	21.0
5	.5	.0	.0	1.0	.5	1.0	7.5	4.5	6.0	21.0	20.0	20.5
6	.5	.0	.5	1.0	.5	1.0	7.5	5.5	6.5	20.0	18.5	19.0
7	.5	.5	.5	1.0	.5	1.0	8.0	7.0	7.5	18.5	16.0	17.0
8	.5	.5	.5	1.0	.5	1.0	7.5	6.0	7.0	16.5	15.0	16.0
9	.5	.5	.5	1.0	1.0	1.0	5.5	4.5	5.0	18.0	15.5	16.5
10	.5	.5	.5	1.0	1.0	1.0	5.5	4.5	5.0	17.5	16.5	17.0
11	.5	.5	.5	1.0	1.0	1.0	6.5	5.0	6.0	17.0	15.5	16.0
12	.5	.5	.5	1.0	1.0	1.0	6.5	5.5	6.0	17.5	15.5	16.5
13	.5	.5	.5	1.0	1.0	1.0	6.5	5.0	5.5	16.5	16.0	16.0
14	.5	.5	.5	1.0	1.0	1.0	7.0	5.0	6.0	17.0	15.5	16.0
15	.5	.5	.5	1.5	1.0	1.0	8.0	6.5	7.5	21.0	15.5	17.5
16	.5	.5	.5	1.5	1.0	1.0	9.0	7.5	8.5	19.0	16.5	17.0
17	.5	.5	.5	2.0	1.5	1.5	11.0	8.5	10.0	17.0	16.0	16.5
18	.5	.5	.5	2.0	1.5	2.0	12.5	10.5	11.5	16.0	15.5	16.0
19	.5	.5	.5	---	---	---	13.5	11.5	12.5	21.0	15.5	17.5
20	1.0	.5	1.0	---	---	---	15.0	13.0	14.0	21.5	18.0	19.0
21	1.0	1.0	1.0	2.0	2.0	2.0	16.5	14.0	15.5	23.5	19.0	21.0
22	1.0	1.0	1.0	2.0	1.5	1.5	18.0	15.5	17.0	25.0	20.0	22.0
23	1.0	1.0	1.0	1.5	1.0	1.5	17.0	15.5	16.5	23.0	21.0	22.0
24	1.5	1.0	1.5	1.5	1.0	1.5	16.0	14.5	15.5	24.0	22.0	23.0
25	1.5	1.0	1.5	2.5	1.5	2.0	16.0	15.0	15.5	24.5	23.0	23.5
26	1.5	1.0	1.0	3.0	2.0	2.5	15.5	14.5	15.0	24.5	24.0	24.0
27	1.5	1.0	1.0	2.5	2.0	2.0	16.5	14.0	15.0	27.5	23.5	25.0
28	1.0	1.0	1.0	2.0	1.5	2.0	16.5	14.5	15.5	25.5	24.5	25.0
29	1.0	.5	1.0	3.0	1.5	2.0	16.0	15.0	15.5	25.0	24.5	25.0
30	---	---	---	3.5	2.0	3.0	17.5	15.0	16.0	24.5	23.5	24.0
31	---	---	---	4.5	2.5	3.5	---	---	---	25.5	23.0	24.0
MONTH	1.5	.0	.5				18.0	3.0	10.0	27.5	15.0	19.5

05331578 MISSISSIPPI RIVER AT LOCK AND DAM 2 AT HASTINGS, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	24.5	23.0	23.5	24.5	23.0	24.0	30.0	26.0	27.5	22.0	21.0	21.5
2	23.5	22.5	23.0	27.5	23.0	24.5	28.5	26.5	27.0	24.0	21.0	22.0
3	24.5	22.5	23.5	26.0	24.0	25.0	27.0	26.0	26.5	22.0	21.0	21.5
4	24.0	23.0	23.5	27.5	24.0	25.5	26.5	25.5	26.0	22.0	21.5	22.0
5	23.0	21.5	22.5	26.5	24.5	25.5	25.5	24.5	25.0	22.0	20.5	21.5
6	23.5	21.5	22.5	25.5	24.5	25.0	24.5	24.5	24.5	21.5	21.0	21.5
7	23.0	21.5	22.5	30.0	25.5	27.0	26.0	25.5	25.5	24.0	21.5	22.5
8	21.5	20.0	21.0	28.5	26.0	27.0	26.0	25.0	25.5	24.5	23.0	23.5
9	22.0	20.5	21.0	31.5	26.0	28.0	26.0	25.0	25.5	24.0	22.5	23.0
10	23.0	21.0	22.0	32.5	27.5	29.0	25.5	24.5	25.0	22.5	21.5	22.0
11	23.0	21.5	22.5	30.5	28.5	29.0	25.0	24.0	24.5	22.0	20.0	20.5
12	22.5	21.5	21.5	29.5	28.5	29.0	25.5	24.0	25.0	20.0	19.0	19.5
13	23.5	21.5	22.0	29.0	28.0	28.5	26.0	24.5	25.0	20.0	19.5	20.0
14	25.0	23.0	24.0	32.0	28.0	29.0	25.5	24.0	24.5	19.5	18.5	19.0
15	24.0	22.5	23.0	31.0	29.0	30.0	24.5	24.0	24.5	18.5	17.5	18.0
16	24.0	21.5	22.5	29.0	28.0	28.5	24.5	21.5	23.0	18.0	16.5	17.0
17	24.0	23.0	23.5	29.5	27.5	28.0	21.5	20.5	20.5	16.5	16.0	16.0
18	25.5	23.0	24.0	28.5	27.5	28.0	22.5	20.0	21.0	16.0	15.0	15.5
19	24.5	22.5	23.5	28.0	27.5	28.0	24.5	22.0	23.0	16.5	15.0	15.5
20	24.5	23.0	24.0	27.5	26.5	27.0	24.0	23.5	23.5	17.0	16.0	16.5
21	25.5	23.5	24.0	26.5	26.0	26.5	24.0	23.0	23.5	16.5	15.5	16.0
22	26.5	24.5	25.0	26.0	25.5	26.0	23.5	22.5	23.0	16.0	15.0	15.5
23	27.0	24.5	25.5	29.0	25.0	26.0	23.5	23.0	23.0	15.5	14.5	15.0
24	26.5	25.5	26.0	26.5	25.5	26.0	23.0	22.5	22.5	15.5	14.5	15.0
25	27.0	25.0	26.5	27.0	26.0	26.5	26.5	22.5	23.5	15.5	14.0	14.5
26	28.5	26.5	27.5	26.5	25.5	26.0	24.5	23.0	23.5	14.0	13.5	14.0
27	27.5	24.0	26.0	27.5	25.0	26.0	22.5	21.5	22.0	14.5	13.0	14.0
28	24.5	23.0	23.5	27.0	26.0	26.0	21.5	21.0	21.5	14.0	13.5	14.0
29	24.0	21.5	22.0	28.5	25.5	26.0	23.5	21.5	22.5	14.5	13.5	14.0
30	23.5	21.5	22.5	26.5	25.5	26.0	24.0	23.0	23.5	17.0	14.0	15.0
31	---	---	---	28.0	25.5	26.5	23.5	21.5	22.5	---	---	---
MONTH	28.5	20.0	23.5	32.5	23.0	27.0	30.0	20.0	24.0	24.5	13.0	18.0

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	10.5	9.8	10.1	12.9	12.6	12.8	13.0	12.8	12.9
2	---	---	---	10.3	9.8	10.1	12.9	12.4	12.6	13.0	12.8	12.9
3	---	---	---	10.6	9.9	10.3	13.1	12.5	12.7	13.1	12.8	13.0
4	---	---	---	10.9	10.2	10.5	12.9	12.2	12.5	13.0	12.7	12.8
5	11.0	8.1	9.4	10.7	10.2	10.4	13.2	12.5	12.9	12.9	12.7	12.8
6	10.2	8.4	9.0	10.7	10.1	10.3	13.3	12.3	13.1	12.9	12.5	12.7
7	12.6	8.7	10.1	10.7	10.0	10.3	12.4	12.1	12.3	12.7	12.2	12.4
8	11.0	9.4	10.2	10.7	10.3	10.6	12.7	12.3	12.5	12.8	12.4	12.6
9	11.6	8.8	9.7	11.2	10.2	11.1	12.8	12.4	12.6	13.2	12.4	12.8
10	11.5	9.0	10.4	11.2	10.7	11.0	12.8	12.5	12.6	13.8	13.1	13.3
11	11.3	10.1	10.8	11.4	10.8	11.1	12.7	12.5	12.6	13.7	13.2	13.4
12	10.9	9.8	10.3	11.5	11.0	11.2	13.1	12.7	12.9	13.4	13.2	13.3
13	11.2	9.3	10.2	11.3	10.9	11.1	13.2	12.9	13.0	13.4	12.8	13.0
14	12.4	10.2	11.0	13.0	10.7	11.9	13.4	13.0	13.2	13.2	12.6	12.9
15	13.4	11.3	11.9	13.0	12.4	12.8	13.3	13.0	13.2	12.7	11.8	12.3
16	19.2	12.7	15.0	13.8	12.7	13.2	13.1	12.8	13.0	11.8	10.7	11.2
17	16.7	12.6	14.4	14.9	13.6	14.2	13.2	12.9	13.1	10.9	10.5	10.6
18	15.0	12.3	13.2	14.7	13.3	14.3	13.6	13.0	13.3	10.5	10.1	10.2
19	12.6	10.5	11.4	14.7	13.7	14.1	14.5	12.9	13.7	10.2	9.8	10.0
20	13.8	10.2	11.7	14.5	14.1	14.3	14.6	13.7	14.2	10.2	9.8	10.0
21	11.6	9.2	10.8	14.4	12.6	13.4	13.9	13.4	13.7	10.4	9.8	10.2
22	9.1	7.6	8.3	12.6	12.0	12.4	13.5	13.1	13.3	10.5	10.1	10.3
23	8.2	7.1	7.7	12.4	12.0	12.2	13.3	13.1	13.2	10.5	10.1	10.3
24	11.8	7.1	8.8	12.4	11.8	12.0	13.3	13.1	13.2	10.5	10.0	10.2
25	10.7	9.2	10.0	12.5	11.8	12.1	13.1	13.0	13.0	10.1	9.9	10.0
26	10.5	9.0	9.6	13.1	12.2	12.5	13.1	12.9	13.0	10.0	9.5	9.8
27	10.6	9.5	10.0	12.7	12.0	12.3	13.3	12.9	13.1	9.6	9.1	9.4
28	10.8	9.7	10.2	12.6	12.1	12.4	13.2	12.9	13.1	10.6	9.1	9.9
29	10.8	9.8	10.3	12.7	7.7	12.2	13.1	13.0	13.0	10.7	10.2	10.4
30	10.6	9.5	10.0	13.0	12.4	12.7	13.1	12.9	13.0	10.5	10.2	10.4
31	10.8	9.0	9.8	---	---	---	13.1	12.9	13.0	10.5	10.2	10.3
MONTH				14.9	7.7	11.9	14.6	12.1	13.0	13.8	9.1	11.5

05331578 MISSISSIPPI RIVER AT LOCK AND DAM 2 AT HASTINGS, MN--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	10.9	10.2	10.6	11.7	11.3	11.5	14.6	13.1	13.8			
2	10.9	10.5	10.7	11.7	11.2	11.5	15.3	13.5	14.4			
3	10.8	10.5	10.6	11.7	11.3	11.6	14.3	13.7	14.0			
4	10.7	10.5	10.6	11.7	11.1	11.5	14.1	12.5	13.5			
5	10.6	10.2	10.4	11.6	11.0	11.3	13.9	12.5	13.0			
6	10.3	10.0	10.2	11.5	10.9	11.2	13.2	12.2	12.8			
7	10.1	9.8	9.9	11.1	10.9	11.0	12.9	12.2	12.5			
8	9.8	9.2	9.4	11.1	10.9	11.0	12.3	11.6	12.0			
9	9.5	9.1	9.3	11.0	10.7	10.9	11.7	11.4	11.5			
10	9.6	9.4	9.5	10.9	10.6	10.7	12.0	11.2	11.5			
11	9.5	9.3	9.4	11.0	10.7	10.9	12.4	11.6	12.0			
12	9.5	9.3	9.4	11.7	11.0	11.3	12.3	11.7	12.0			
13	9.9	9.3	9.6	11.8	11.2	11.5	12.0	11.5	11.7			
14	9.7	9.4	9.5	11.5	11.0	11.2	12.5	11.4	12.0			
15	9.6	9.3	9.5	11.5	11.1	11.3	12.9	11.9	12.4			
16	9.3	9.0	9.2	11.8	11.4	11.6	---	---	---			
17	9.2	8.9	9.1	12.0	11.2	11.5	---	---	---			
18	9.1	8.9	9.1	12.3	11.5	12.0	---	---	---			
19	9.0	8.9	9.0	---	---	---	---	---	---			
20	9.8	8.9	9.2	---	---	---	---	---	---			
21	9.6	9.4	9.5	11.9	10.4	11.2	---	---	---			
22	9.6	9.4	9.5	10.4	8.7	9.4	---	---	---			
23	10.0	9.6	9.7	9.0	8.2	8.5	---	---	---			
24	10.2	9.9	10.0	9.7	8.7	9.1	---	---	---			
25	10.2	9.8	10.1	9.5	9.1	9.2	---	---	---			
26	10.5	10.0	10.2	10.6	9.3	9.9	---	---	---			
27	12.0	10.4	11.0	11.1	10.4	10.7	---	---	---			
28	12.0	11.6	11.8	11.5	10.6	11.0	---	---	---			
29	11.7	11.3	11.5	12.1	11.0	11.5	---	---	---			
30	---	---	---	12.9	11.4	12.2	---	---	---			
31	---	---	---	13.8	12.3	13.0	---	---	---			
MONTH	12.0	8.9	9.9									

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	9.7	3.1	5.7	6.3	3.1	4.9	---	---	---	7.6	5.1	6.3
2	7.4	3.1	5.0	---	---	---	---	---	---	---	---	---
3	7.3	2.1	4.5	---	---	---	---	---	---	9.1	7.3	7.9
4	6.4	1.7	4.2	---	---	---	---	---	---	8.0	6.7	7.4
5	7.5	5.3	6.5	---	---	---	---	---	---	10.4	6.8	8.0
6	7.3	5.2	6.2	---	---	---	---	---	---	9.4	6.8	8.0
7	9.0	5.0	7.4	---	---	---	10.6	6.7	7.9	---	---	---
8	10.3	7.5	8.7	---	---	---	10.3	6.0	8.0	---	---	---
9	10.2	8.1	9.0	---	---	---	8.3	5.4	6.6	---	---	---
10	9.3	7.4	8.4	---	---	---	10.8	3.9	5.7	---	---	---
11	8.7	6.7	7.7	---	---	---	9.0	5.2	7.0	10.2	6.1	7.6
12	8.1	6.5	7.3	---	---	---	12.3	3.5	6.8	7.0	4.1	6.2
13	7.7	6.4	7.1	---	---	---	10.6	6.0	8.3	6.7	3.0	4.0
14	8.7	6.0	7.2	---	---	---	12.9	6.0	8.8	4.3	2.6	3.2
15	9.2	6.8	8.1	---	---	---	12.6	7.0	9.2	6.7	3.2	4.7
16	9.6	6.0	8.1	9.5	4.2	6.2	11.5	9.6	10.6	8.1	5.6	6.6
17	8.8	6.1	7.7	10.3	2.6	5.0	10.5	6.3	8.7	7.9	4.7	6.5
18	10.3	6.3	8.0	8.1	3.8	5.2	11.3	8.7	9.6	7.5	6.7	7.0
19	10.6	6.4	8.6	---	---	---	14.2	7.4	9.9	6.7	4.1	5.5
20	9.9	6.1	8.0	---	---	---	11.0	8.2	9.4	4.8	3.4	4.0
21	10.3	5.3	7.3	---	---	---	10.5	7.4	8.7	3.8	3.2	3.5
22	12.4	5.7	7.8	---	---	---	13.9	8.3	10.6	7.6	3.2	4.3
23	12.1	5.2	8.0	---	---	---	13.1	8.7	10.0	7.7	5.2	6.1
24	9.3	6.1	7.4	---	---	---	9.5	7.3	8.5	7.5	5.6	6.4
25	14.6	3.9	10.6	---	---	---	9.5	6.4	7.9	7.4	4.9	6.7
26	11.3	6.3	8.6	---	---	---	11.2	4.8	7.7	6.5	5.4	6.0
27	6.6	3.9	4.9	---	---	---	8.0	3.5	5.5	6.8	5.3	6.0
28	6.2	2.8	4.5	---	---	---	7.8	5.4	6.6	6.3	2.8	5.5
29	8.0	5.4	6.2	---	---	---	8.6	6.0	7.1	3.6	2.8	3.2
30	7.0	3.5	5.5	---	---	---	11.2	6.6	8.7	9.6	2.4	4.6
31	---	---	---	---	---	---	9.6	5.7	7.4	---	---	---
MONTH	14.6	1.7	7.1									

05336700 KETTLE RIVER BELOW SANDSTONE, MN

LOCATION.--Lat 46°06'20", long 92°51'50", in NW¼SW¼ sec.22, T.42 N., R.20 W., Pine County, Hydrologic Unit 07030003, on Sandstone Federal Correctional Institution property, on left bank about 900 ft (274 m) downstream from abandoned powerplant dam, 1.8 mi (2.9 km) south of Sandstone.

DRAINAGE AREA.--863 mi^2 (2,240 km^2).

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 931.50 ft (283.921 m) National Geodetic Vertical Datum of 1929. (Minnesota Department of Transportation bench mark).

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

AVERAGE DISCHARGE.--13 years, 692 ft^3/s (19.60 m^3/s), 10.89 in/yr (277 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,200 ft^3/s (487 m^3/s) July 23, 1972, gage height, 15.38 ft (4.688 m); minimum, 25 ft^3/s (0.71 m^3/s) Nov. 11-12, 1977, gage height, 3.37 ft (1.027 m) result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in April 1965 reached a stage of 12.96 ft (3.950 m) from flood marks, discharge, 13,400 ft^3/s (379 m^3/s).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,970 ft^3/s (84.1 m^3/s) Sept. 5, gage height, 7.16 ft (2.182 m), no peak above base of 3,600 ft^3/s (102 m^3/s); minimum, 87 ft^3/s (2.46 m^3/s) Aug. 6, gage height, 3.88 ft (1.183 m).

PEAK DISCHARGE FOR WATER YEARS 1968 TO 1979.--Peak discharge above base of 3,600 ft^3/s (102 m^3/s) and maximum (*):

Water year	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
1968	Apr. 25, 1968	0100	3880	110	7.72	2.353
	June 11, 1968	2130	4390	124	8.05	2.454
	June 22, 1968	0500	*5180	147	8.56	2.609
1969	Oct. 18, 1968	2315	9530	270	10.92	3.328
	Apr. 14, 1969	1000	*11300	320	11.84	3.609
	Apr. 28, 1969	1845	4400	125	8.04	2.451
1970	Apr. 9, 1970	1530	4360	123	8.02	2.444
	Apr. 25, 1970	2115	*5510	156	8.84	2.694
1971	Apr. 12, 1971	2200	*12100	343	12.36	3.767
	May 25, 1971	1500	3730	106	7.63	2.326
1972	Nov. 1, 1971	0530	6730	191	9.59	2.923
	Nov. 19, 1971	0130	4160	118	7.98	2.432
	Apr. 19, 1972	unknown	9740	276	unknown	
	May 7, 1972	0045	3710	105	7.62	2.323
	May 21, 1972	2100	3990	113	7.80	2.377
	July 23, 1972	1700	*17200	487	15.38	4.688
	Aug. 23, 1972	0500	4670	132	8.24	2.512
	Sept.21, 1972	2045	6960	197	9.66	2.944
1973	Mar. 16, 1973	0630	4810	136	8.33	2.539
1974	Oct. 13, 1973	0045	*6170	175	9.20	2.804
	Apr. 18, 1974	2045	5540	157	8.80	2.682
	June 11, 1974	1045	5340	151	8.66	2.640
1975	Apr. 24, 1975	0900	*11600	329	12.34	3.761
	July 3, 1975	2145	6200	176	9.22	2.810
1976	Apr. 2, 1976	1915	7010	199	9.92	3.024
1977	Sept.26, 1977	1730	2920	82.7	7.07	2.155
1978	Aug. 24, 1978	2100	3650	103	7.58	2.310
1979	Apr. 21, 1979	1930	*13700	388	13.40	4.084
	May 11, 1979	1030	12000	340	12.49	3.807

05336700 KETTLE RIVER BELOW SANDSTONE, MN--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	137	1070	259	160	150	122	796	406	163	117	116	163
2	136	1500	246	160	152	123	1190	377	193	111	109	185
3	138	1250	240	156	153	127	1590	354	214	107	102	225
4	135	1080	250	154	152	129	1540	333	219	100	109	1580
5	135	989	243	154	151	130	1620	313	219	98	111	2870
6	136	896	233	142	150	130	2040	287	220	98	95	2430
7	142	802	234	128	148	128	2230	263	195	98	91	2000
8	141	709	217	114	147	123	2260	244	213	96	98	1660
9	138	634	218	114	145	120	2110	231	214	90	101	1430
10	136	484	219	114	143	120	1810	232	196	87	102	1260
11	137	468	214	114	140	118	1600	242	180	87	103	1040
12	135	467	208	114	138	114	1460	250	183	92	124	942
13	136	406	195	114	134	112	1330	254	191	91	130	876
14	139	408	198	116	132	110	1180	249	207	90	127	856
15	145	369	195	119	130	110	1090	235	203	93	118	784
16	148	355	197	120	133	110	1030	224	191	110	109	694
17	142	348	198	121	141	110	975	213	182	113	109	624
18	148	346	197	122	138	110	950	205	197	128	109	563
19	189	365	190	122	135	110	930	195	222	164	122	522
20	233	376	183	124	131	112	907	192	226	212	132	491
21	255	396	180	126	130	118	878	177	214	231	176	458
22	278	388	177	127	128	123	837	167	195	242	200	424
23	330	375	174	128	125	128	770	159	176	224	232	387
24	365	346	173	130	123	131	705	149	161	197	255	369
25	358	308	173	132	120	134	650	141	149	176	225	370
26	350	350	173	135	120	140	603	135	138	155	209	400
27	336	329	173	138	120	147	561	134	130	147	196	401
28	330	295	173	142	120	157	522	126	128	132	184	386
29	328	278	172	144	120	187	475	128	128	124	171	361
30	319	256	166	148	---	255	438	138	118	126	167	335
31	362	---	160	149	---	471	---	142	---	127	161	---
TOTAL	6537	16643	6228	4081	3949	4359	35077	6895	5565	4063	4393	25086
MEAN	211	555	201	132	136	141	1169	222	186	131	142	836
MAX	365	1500	259	160	153	471	2260	406	226	242	255	2870
MIN	135	256	160	114	120	110	438	126	118	87	91	163
CFSM	.24	.64	.23	.15	.16	.16	1.36	.26	.22	.15	.17	.97
IN.	.28	.72	.27	.18	.17	.19	1.51	.30	.24	.18	.19	1.08
AC-FT	12970	33010	12350	8090	7830	8650	69580	13680	11040	8060	8710	49760

CAL YR 1979 TOTAL 289096 MEAN 792 MAX 13000 MIN 128 CFSM .92 IN 12.46 AC-FT 573400
WTR YR 1980 TOTAL 122876 MEAN 336 MAX 2870 MIN 87 CFSM .39 IN 5.30 AC-FT 243700

05337050 KETTLE RIVER NEAR CLOVERDALE, MN

LOCATION.--Lat 45°54'13", long 92°43'47", in SW¼SW¼ sec.33, T.40 N., R.19 W., Pine County, Hydrologic Unit 07030003, St. Croix National Scenic Riverway, 200 ft (61 m) west of Town Road, 8.0 mi (12.9 km) south of Cloverdale, and 9.0 mi (14.5 km) northwest of Grantsburg, Wisconsin.

DRAINAGE AREA.--1,025 mi^2 (2,655 km^2), approximately.

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	ALKA-LINITY (MG/L AS CACO3) (00410)
APR										
10...	1500	2000	93	6.7	1.8	12.8	96	K11	63	33
JUL										
09...	1350	118	184	7.5	26.5	9.0	115	23	730	83

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	NITRO-GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR										
10...	2.5	.24	.010	.160	.66	.050	.030	2	11	99
JUL										
09...	6.2	.01	.000	.030	.37	.030	.000	2	.64	99

05337400 KNIFE RIVER NEAR MORA, MN

LOCATION.--Lat 45°55'12", long 93°18'26", in SW¼SW¼ sec.26, T.40 N., R.24 W., Kanabec County, Hydrologic Unit 07030004, on left bank 400 ft (122 m) upstream from bridge on County Highway 77, 1.1 mi (1.8 km) upstream from mouth and 2.5 mi (4.0 km) north of Mora.
DRAINAGE AREA.--102 mi^2 (264 km^2).
PERIOD OF RECORD.--Occasional low-flow measurements, water years 1969-74; July 1974 to current year.
GAGE.--Water-stage recorder. Datum of gage is 991.20 ft (302.118 m) National Geodetic Vertical Datum of 1929. (Kanabec County bench mark).
REMARKS.--Records good except those for winter periods and periods of no gage-height record, Feb. 10-20, and Aug. 14-20, which are fair.
AVERAGE DISCHARGE.--6 years, 52.7 ft^3/s (1.492 m^3/s), 7.02 in/yr (178 mm/yr).
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,840 ft^3/s (52.1 m^3/s) May 10, 1979, gage height, 6.31 ft (1.923 m); maximum gage height, 6.69 ft (2.039 m) Nov. 24, 1977, from floodmark (backwater from ice); minimum daily discharge, 1.1 ft^3/s (0.031 m^3/s) Jan. 12 to Feb. 9, 1977.
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 26, 1972, reached a stage of 14.0 ft (4.267 m), from information by local resident (discharge not determined). Result of dam failure and backwater from collapsed bridge.
EXTREMES FOR CURRENT YEAR.--Maximum discharge, 279 ft^3/s (7.90 m^3/s) Apr. 8, gage height, 3.76 ft (1.146 m), no peak above base of 500 ft^3/s (14.2 m^3/s); minimum, 3.1 ft^3/s (0.088 m^3/s) July 14, 15, gage height, 1.56 ft (0.475 m).
PEAK DISCHARGE FOR WATER YEARS 1975 to 1979.--Peak discharge above base of 500 ft^3/s (14.2 m^3/s) and maximum (*):

Water year	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
1975	Apr. 23, 1975	1630	1340	37.9	5.86	1.786
	Apr. 28, 1975	0145	*1470	41.6	6.02	1.835
	July 3, 1975	1200	1320	37.4	5.78	1,762
1976	Mar. 30, 1976	0900	*897	25.4	5.00	1.524
1977	July 4, 1977	1330	*261	7.39	3.77	1.149
1978	Nov. 11, 1977	0015	715	20.2	4.53	1.381
	Apr. 7, 1978	0530	847	24.0	4.93	1.503
	July 6, 1978	2330	*1280	36.2	5.33	1.625
1979	Apr. 19, 1979	0715	894	25.3	5.19	1.582
	May 10, 1979	2045	*1840	52.1	6.31	1.923

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.9	86	30	13	10	8.0	111	27	26	6.0	6.3	29
2	9.3	113	28	13	10	8.0	131	25	32	5.8	5.6	37
3	8.9	115	27	13	10	8.0	171	23	33	4.7	5.1	50
4	8.5	115	24	13	10	8.0	202	21	27	4.2	4.6	56
5	8.2	109	23	13	10	8.0	204	20	29	4.4	3.9	53
6	8.0	97	22	12	10	8.0	225	18	31	3.9	5.0	47
7	7.7	85	21	12	10	8.0	264	15	32	3.8	19	42
8	7.4	78	21	11	10	8.0	276	11	26	3.3	21	35
9	7.2	72	21	10	11	8.0	270	10	20	3.4	18	31
10	7.2	62	20	10	11	8.0	230	12	17	3.2	16	25
11	7.2	47	19	10	11	8.0	197	17	13	3.2	17	24
12	7.2	45	19	11	11	8.0	176	15	26	3.6	15	46
13	7.2	37	18	11	11	8.3	165	15	28	3.3	13	85
14	6.9	34	17	12	11	8.7	144	13	23	3.2	12	115
15	6.7	31	17	12	11	9.1	129	13	19	3.1	11	116
16	6.7	30	19	12	11	9.5	115	12	14	3.3	10	109
17	6.7	29	20	12	11	9.9	107	12	13	3.6	10	95
18	7.2	28	19	12	11	10	98	13	13	5.3	12	83
19	21	28	17	12	11	11	86	11	17	6.6	10	71
20	21	28	17	11	11	11	80	10	13	17	12	62
21	20	28	17	11	11	12	74	8.4	12	22	41	54
22	25	27	18	11	11	12	68	7.4	12	23	38	48
23	27	28	18	11	11	12	64	7.4	8.8	20	39	41
24	27	28	17	10	10	11	57	6.2	8.2	17	43	39
25	26	28	16	10	9.8	13	51	5.4	8.2	17	43	38
26	24	26	16	10	9.4	16	45	4.8	8.8	11	43	35
27	23	25	15	9.8	8.9	19	41	4.1	9.7	8.4	38	34
28	22	29	14	9.8	8.5	29	39	3.6	9.6	8.1	34	33
29	22	30	14	9.9	8.2	42	34	4.7	6.7	8.0	30	35
30	22	32	13	9.9	---	53	31	10	6.2	7.1	29	37
31	49	---	13	10	---	82	---	14	---	7.2	27	---
TOTAL	465.1	1550	590	347.4	299.8	474.5	3885	389.0	542.2	243.7	631.5	1605
MEAN	15.0	51.7	19.0	11.2	10.3	15.3	130	12.5	18.1	7.86	20.4	53.5
MAX	49	115	30	13	11	82	276	27	33	23	43	116
MIN	6.7	25	13	9.8	8.2	8.0	31	3.6	6.2	3.1	3.9	24
CFSM	.15	.51	.19	.11	.10	.15	1.28	.12	.18	.08	.20	.53
IN.	.17	.57	.22	.13	.11	.17	1.42	.14	.20	.09	.23	.59
AC-FT	923	3070	1170	689	595	941	7710	772	1080	483	1250	3180

CAL YR 1979	TOTAL	24910.0	MEAN 68.2	MAX 1400	MIN 6.7	CFSM .67	IN 9.08	AC-FT 49410			
WTR YR 1980	TOTAL	11023.2	MEAN 30.1	MAX 276	MIN 3.1	CFSM .30	IN 4.02	AC-FT 21860			

05338500 SNAKE RIVER NEAR PINE CITY, MN

LOCATION.--Lat 45°50'30", long 92°56'00", in SE¼NW¼ sec.26, T.39 N., R.21 W., Pine County, Hydrologic Unit 07030004, on left bank at site of former powerplant and dam, 0.5 mi (0.8 km) downstream from Cross Lake and 1.5 mi (2.4 km) northeast of Pine City.

DRAINAGE AREA.--958 mi^2 (2,480 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1913 to September 1917, July 1951 to current year.

GAGE.--Water-stage recorder. Datum of gage is 919.00 ft (280.111 m) National Geodetic Vertical Datum of 1929. June 25, 1913, to Sept. 30, 1917, nonrecording gage at site 500 ft (152 m) downstream at different datum. July 1 to Oct. 28, 1951, nonrecording gage at present site and datum.

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

AVERAGE DISCHARGE.--33 years (water years 1914-17, 1952-80), 596 ft^3/s (16.88 m^3/s), 8.45 in/yr (215 mm/yr); median of yearly mean discharges 530 ft^3/s (15.01 m^3/s), 7.51 in/yr (191 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,300 ft^3/s (405 m^3/s) July 27, 1972, gage height, 10.38 ft (3.164 m); minimum, 5.5 ft^3/s (0.16 m^3/s) Oct. 1, 1964, gage height, 2.57 ft (0.783 m), result of dam rehabilitation 0.5 mi (0.8 km) upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--A discharge measurement of 12,500 ft^3/s (354 m^3/s) was made May 9, 1950.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 1,920 ft^3/s (54.4 m^3/s) Apr. 10, gage height, 5.07 ft (1.545 m); minimum, 40 ft^3/s (1.13 m^3/s) Aug. 6, gage height, 2.78 ft (0.847 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	112	404	275	136	118	109	1010	439	258	155	82	208
2	100	566	247	136	117	108	1160	411	318	142	75	203
3	112	800	234	136	116	107	1330	384	384	133	61	186
4	98	966	234	132	114	105	1650	358	417	122	60	290
5	91	1050	240	132	112	104	1860	329	470	114	65	254
6	89	1070	227	147	110	103	1810	294	501	98	55	254
7	82	1040	234	153	109	102	1760	252	505	110	123	275
8	88	948	208	153	109	101	1760	231	509	103	203	297
9	85	883	197	151	109	100	1860	215	480	96	217	290
10	75	763	197	146	109	99	1910	223	435	98	228	247
11	89	663	203	143	109	98	1900	243	395	79	224	234
12	94	619	203	140	109	98	1850	227	354	80	197	297
13	75	575	170	136	109	98	1740	229	345	68	183	357
14	76	517	159	133	109	99	1650	234	335	73	167	420
15	80	476	159	133	109	100	1550	229	314	78	138	517
16	86	436	152	132	109	101	1440	220	328	90	114	592
17	85	404	148	132	109	102	1340	217	320	69	128	575
18	89	380	145	131	109	104	1230	236	282	83	121	566
19	164	388	136	132	109	107	1150	223	285	79	125	500
20	173	388	132	134	109	117	1050	209	272	118	131	468
21	180	357	132	134	109	132	982	199	265	120	157	436
22	208	365	132	134	109	153	928	185	274	117	125	396
23	228	404	132	133	109	173	845	168	263	120	137	341
24	234	404	136	132	109	183	755	164	242	121	154	319
25	256	380	136	132	109	193	699	150	234	139	170	304
26	258	372	136	130	109	214	644	150	199	121	170	275
27	291	352	136	128	109	269	599	149	171	116	159	254
28	279	315	136	127	109	352	542	134	205	114	164	261
29	261	278	136	125	109	488	498	158	173	94	170	282
30	251	240	136	123	---	668	468	202	138	90	186	297
31	276	---	136	121	---	860	---	222	---	92	170	---
TOTAL	4665	16803	5384	4187	3194	5747	37970	7284	9671	3232	4459	10195
MEAN	150	560	174	135	110	185	1266	235	322	104	144	340
MAX	291	1070	275	153	118	860	1910	439	509	155	228	592
MIN	75	240	132	121	109	98	468	134	138	68	55	186
CFSM	.16	.59	.18	.14	.12	.19	1.32	.25	.34	.11	.15	.36
IN.	.18	.65	.21	.16	.12	.22	1.47	.28	.38	.13	.17	.40
AC-FT	9250	33330	10680	8300	6340	11400	75310	14450	19180	6410	8840	20220

CAL YR 1979 TOTAL 291098 MEAN 798 MAX 7230 MIN 75 CFSM .83 IN 11.30 AC-FT 577400
WTR YR 1980 TOTAL 112791 MEAN 308 MAX 1910 MIN 55 CFSM .32 IN 4.38 AC-FT 223700

05338500 SNAKE RIVER NEAR PINE CITY, MN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1963, 1965, 1967-68, 1975 to current year.

REMARKS.--Letter K indicates non-ideal colony count.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	COLOR (PLAT-INUM COBALT UNITS) (00080)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)
FEB												
21...	0945	109	317	6.9	1.0	40	2.0	10.6	78	K18	K16	140
APR												
11...	0715	1900	160	6.8	2.0	60	1.5	11.9	90	K21	120	52
JUL												
09...	1610	97	196	8.4	29.3	35	4.5	7.9	107	200	4600	110

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY (MG/L AS CACO3) (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
FEB												
21...	2	37	12	5.0	.2	1.5	140	4.1	4.8	.2	14	176
APR												
11...	9	13	4.8	2.3	.1	2.5	43	5.5	2.8	.1	7.3	100
JUL												
09...	6	26	9.8	4.6	.2	1.8	99	2.3	3.5	.1	2.3	133

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
FEB											
21...	163	51.8	.29	.010	.210	.82	.050	.030	2	.59	67
APR											
11...	64	513	.24	.010	.160	.75	.080	.010	1	5.1	99
JUL											
09...	110	34.8	.03	.000	.090	1.2	.060	.010	1	.26	99

05340050 SUNRISE RIVER NEAR LINDSTROM, MN

LOCATION.--Lat 45°27'00", long 92°53'10", in SW¼NE¼ sec.7, T.34 N., R.20 W., Chisago County, Hydrologic Unit 07030005, on left bank 20 ft (6 m) downstream from highway bridge and 4.5 mi (7.2 km) northwest of Lindstrom.

DRAINAGE AREA.--231 mi^2 (598 km^2).

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

GAGE.--Water-stage recorder. Datum of gage is 846.10 ft (257.891 m) National Geodetic Vertical Datum of 1929. (Chisago County bench mark).

REMARKS.--Records good except those for winter period, which are fair. Some regulation by Minnesota Game and Fish Wildlife Refuge ponds above the station. At high stages a small part of flow discharges into the Rum River and Coon Creek basins from West Arm of Coon Lake and South Coon Lake, respectively.

AVERAGE DISCHARGE.--15 years, 94.4 ft^3/s (2.673 m^3/s), 5.55 in/yr (141 mm/yr); median of yearly mean discharges, 101 ft^3/s (2.86 m^3/s), 5.94 in/yr (151 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 745 ft^3/s (21.1 m^3/s) July 3, 1975, gage height, 7.65 ft (2.332 m); minimum, 1.9 ft^3/s (0.054 m^3/s) Sept. 19, 20, 21, 1976; minimum gage height, 1.98 ft (0.604 m) Oct. 3, 1971.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 303 ft^3/s (8.58 m^3/s) Sept. 21, gage height, 5.91 ft (1.801 m); minimum, 9.8 ft^3/s (0.28 m^3/s) July 30, gage height, 2.29 ft (0.698 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	108	89	49	47	43	134	110	63	61	10	100
2	68	111	85	48	46	43	137	101	77	58	11	98
3	66	109	83	46	45	44	140	96	70	56	12	99
4	64	108	83	46	45	44	141	91	65	54	14	164
5	63	109	82	46	44	44	144	87	82	57	15	169
6	61	110	81	43	43	45	148	83	133	54	15	164
7	60	112	83	40	43	46	154	79	146	52	23	167
8	60	114	81	39	42	46	158	76	144	61	80	176
9	58	112	79	38	42	47	164	74	143	58	92	123
10	58	109	79	39	41	48	167	74	171	59	93	105
11	59	106	79	40	41	48	171	74	186	62	84	140
12	58	102	75	41	40	49	180	70	190	52	58	186
13	58	99	73	42	40	49	183	68	192	44	58	221
14	57	96	70	43	39	50	182	68	186	41	60	246
15	57	97	69	44	39	51	181	66	174	51	61	262
16	56	100	66	44	39	58	180	62	162	28	65	282
17	55	102	64	45	39	65	181	58	151	25	72	285
18	55	101	61	46	40	75	158	61	140	25	74	280
19	68	102	58	47	40	80	148	58	134	25	74	282
20	67	102	55	47	40	82	151	54	122	31	77	297
21	67	102	54	48	40	87	153	52	113	30	80	301
22	71	103	53	48	40	80	153	49	104	29	77	294
23	83	105	52	49	40	74	151	47	97	34	75	283
24	83	104	52	49	40	75	148	45	90	86	80	282
25	83	102	51	50	40	81	145	43	84	74	81	283
26	84	100	51	50	40	86	145	41	76	54	78	263
27	85	98	50	50	41	97	143	40	76	44	79	239
28	86	95	50	50	42	104	139	44	73	34	77	216
29	87	94	49	49	43	111	135	46	67	11	76	201
30	86	91	49	48	---	122	129	63	63	10	83	188
31	91	---	49	48	---	131	---	56	---	10	86	---
TOTAL	2123	3103	2055	1412	1201	2105	4643	2036	3574	1370	1920	6396
MEAN	68.5	103	66.3	45.5	41.4	67.9	155	65.7	119	44.2	61.9	213
MAX	91	114	89	50	47	131	183	110	192	86	93	301
MIN	55	91	49	38	39	43	129	40	63	10	10	98
CFSM	.30	.45	.29	.20	.18	.29	.67	.28	.52	.19	.27	.92
IN.	.34	.50	.33	.23	.19	.34	.75	.33	.58	.22	.31	1.03

CAL YR 1979 TOTAL 44689 MEAN 122 MAX 418 MIN 11 CFSM .53 IN 7.20
WTR YR 1980 TOTAL 31938 MEAN 87.3 MAX 301 MIN 10 CFSM .38 IN 5.14

05340500 ST. CROIX RIVER AT ST. CROIX FALLS, WI
(National stream-quality accounting network station)

LOCATION.--Lat 45°24'25", long 92°38'49", in NW¼ sec.30, T.34 N., R.18 W., Polk County, Hydrologic Unit 07030005, St. Croix National Scenic Riverway, on left bank, 1,800 ft (550 m) downstream from powerplant of Northern States Power Co., in St. Croix Falls, and at mile 52.2 (84.0 km).

DRAINAGE AREA.--5,930 mi^2 (15,360 km^2), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1902 to current year. Prior to January 1910, monthly discharge only, published in WSP 1308. Prior to October 1939, published as "near St. Croix Falls."

REVISED RECORDS.--WSP 1115: 1929.

GAGE.--Water-stage recorder. Datum of gage is 689.94 ft (210.294 m) National Geodetic Vertical Datum of 1929. Prior to July 1905, gage heights and discharge measurements were used by Loweth and Wolff, Consulting Engineers of St. Paul, Minn., to determine the flow. July 1905 to February 1940, records were computed from power generation at the St. Croix Falls powerplant.

REMARKS.--Records are good. Diurnal fluctuation caused by St. Croix Falls powerplant 1,800 ft (550 m) upstream.

AVERAGE DISCHARGE.--78 years, 4,194 ft^3/s (118.8 m^3/s), 9.60 in/yr (244 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 54,900 ft^3/s (1,550 m^3/s) May 8, 1950, gage height, 25.19 ft (7.678 m); minimum daily, 75 ft^3/s (2.12 m^3/s) July 17, 1910.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,400 ft^3/s (379 m^3/s) Apr. 7, gage height, 7.10 ft (2.164 m); minimum daily, 1,320 ft^3/s (37.4 m^3/s) July 15.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2190	3980	1940	2190	2210	2000	5840	3400	2540	1780	1730	2570
2	2180	4470	1600	2370	1840	2060	6250	3080	2950	1770	1670	3140
3	2130	5660	2360	2180	1850	1910	7270	3110	3050	1740	1590	2760
4	2250	5680	2230	2160	1850	1730	9090	2790	3130	1670	1660	4030
5	2600	5730	2670	2040	2000	1920	10300	2940	3470	1690	1470	5120
6	2060	5450	3040	2210	2200	1860	10100	2710	4020	1720	1570	5630
7	2180	5190	3250	2240	1790	1880	9370	2460	3760	1600	1730	5610
8	2410	5060	2990	1900	1850	1830	9810	2500	3590	1550	3910	5980
9	2000	4600	2850	1810	1880	1720	10300	2500	3760	1620	3030	5590
10	2200	4090	2660	1870	2000	1850	10100	2420	3130	1440	2740	5450
11	2150	3560	2590	2230	2010	1730	9540	2350	3110	1450	2630	4710
12	2180	3500	2410	1860	1930	1820	9230	2410	2520	1460	2720	5650
13	2190	3580	2250	2140	2090	1740	8370	2760	3470	1440	2450	6190
14	1860	3760	1910	2250	2080	2080	7860	2600	2570	1380	2620	5650
15	2030	3480	2240	2160	2060	1550	7640	2680	2470	1320	2160	6130
16	2250	3400	1880	2280	1880	2110	7180	2650	2980	1590	2270	6030
17	2030	3680	1900	2370	1980	1930	7030	2730	2720	1350	2550	5690
18	2070	2880	1980	2460	2130	2200	5910	2440	2570	1550	2110	5930
19	2620	3340	1980	2220	1960	2190	5760	2630	2680	1550	2560	5030
20	2940	3490	2310	2330	2110	2640	5460	2420	2520	1710	1940	5000
21	3030	3630	2420	2280	2060	3730	5300	2720	2600	2120	2140	4460
22	3220	3530	2120	2310	2060	3100	5290	1900	2320	2030	1980	4880
23	3520	3510	2300	2230	2150	2980	5490	2530	2340	2160	2320	4390
24	4350	3660	2340	2260	2170	3050	4810	2120	2290	2130	2480	4330
25	3920	3360	2260	2100	2060	2660	4460	1920	2330	2720	2650	4800
26	3580	3590	2440	2200	1990	3120	4260	1700	2080	1790	2880	4930
27	3560	3580	2340	2190	2130	3680	3920	1700	1720	2540	3000	4430
28	3600	3030	2330	2190	2020	3630	3720	1700	1720	2880	2340	4330
29	3640	2530	2320	2070	2090	4070	3830	1880	1720	2020	3020	4010
30	3500	2070	2460	2210	---	4500	3550	2000	1890	1790	2730	4060
31	4040	---	2340	2010	---	5560	---	2110	---	1700	2700	---
TOTAL	84480	117070	72710	67320	58430	78830	207040	75860	82020	55260	73350	146510
MEAN	2725	3902	2345	2172	2015	2543	6901	2447	2734	1783	2366	4884
MAX	4350	5730	3250	2460	2210	5560	10300	3400	4020	2880	3910	6190
MIN	1860	2070	1600	1810	1790	1550	3550	1700	1720	1320	1470	2570
CFSM	.46	.66	.40	.37	.34	.43	1.16	.41	.46	.30	.40	.82
IN.	.53	.73	.46	.42	.37	.49	1.30	.48	.51	.35	.46	.92

CAL YR 1979 TOTAL 1971170 MEAN 5400 MAX 33900 MIN 1600 CFSM .91 IN 12.37
WTR YR 1980 TOTAL 1118880 MEAN 3057 MAX 10300 MIN 1320 CFSM .52 IN 7.02

05340500 ST. CROIX RIVER AT ST. CROIX FALLS, WI--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967-68, 1974 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: March 1975 to current year.
WATER TEMPERATURES: March 1975 to current year.

REMARKS.--Letter K indicates non-ideal colony count.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SECIFIC CONDUCTANCE: Maximum daily, 340 micromhos Feb. 23, 1977; minimum daily, 65 micromhos May 16, 17, 1979.
WATER TEMPERATURES: Maximum daily, 27.0°C July 11, 1976, Aug. 14, 1978; minimum daily, 0.0°C on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 325 micromhos Oct. 13; minimum daily, 115 micromhos Apr. 10.
WATER TEMPERATURES: Maximum daily, 26.5°C July 19; minimum daily, 0.0°C on several days during winter period.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)
OCT												
10...	1145	3240	192	7.1	9.5	2.0	10.5	96	K10	K2000	90	6
NOV												
29...	1100	6160	195	7.4	1.0	20	12.7	93	K13	K11	99	24
DEC												
19...	1510	1600	215	6.9	1.0	2.0	12.6	93	K9	K6	98	6
JAN												
08...	1300	1560	223	7.2	.0	.50	12.4	89	K5	30	100	9
FEB												
04...	1140	3770	220	7.0	.0	1.5	9.4	68	K12	K1	60	11
MAR												
20...	0945	4190	212	7.0	.0	.70	9.6	69	K11	210	95	1
APR												
11...	0945	9790	118	7.2	2.5	.50	12.3	95	K9	35	50	2
MAY												
12...	1230	1720	183	7.1	13.5	1.5	9.2	91	K7	25	80	6
JUN												
09...	1330	5400	166	7.4	19.0	.60	8.7	98	39	26	78	1
JUL												
10...	0930	1310	175	7.9	25.5	.90	8.5	106	29	200	90	7
AUG												
13...	1415	3060	165	7.3	23.0	2.4	7.9	95	200	140	83	2
SEP												
08...	1320	6250	140	6.9	20.5	.60	7.7	90	100	100	75	17

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY (MG/L AS CACO3) (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)
OCT												
10...	24	7.3	3.1	.1	.9	84	3.9	3.7	.1	12	115	106
NOV												
29...	26	8.2	3.8	.2	.9	75	13	3.6	.0	13	130	115
DEC												
19...	26	8.1	3.8	.2	1.0	92	5.3	3.3	.1	15	133	119
JAN												
08...	27	8.3	3.9	.2	1.2	93	6.2	3.3	.1	16	130	124
FEB												
04...	14	6.1	3.1	.2	3.9	49	12	5.7	.1	12	96	91
MAR												
20...	25	7.8	3.8	.2	1.1	94	3.7	3.3	.1	17	133	120
APR												
11...	13	4.2	2.0	.1	1.7	48	5.6	2.4	.1	8.9	97	68
MAY												
12...	21	6.8	3.3	.2	1.0	74	4.1	2.9	.1	8.5	111	93
JUN												
09...	20	6.8	3.3	.2	.9	77	4.3	2.9	.1	8.3	122	93
JUL												
10...	23	7.9	3.7	.2	.9	83	2.3	2.7	.1	10	105	101
AUG												
13...	21	7.3	3.1	.1	1.0	81	3.7	2.6	.1	14	127	102
SEP												
08...	20	6.1	2.7	.1	1.2	58	5.3	2.5	.1	13	117	.86

05340500 ST. CROIX RIVER AT ST. CROIX FALLS, WI--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
OCT											
10...	1010	.08	.11	.080	.070	.81	.40	.020	.010	0	--
NOV											
29...	2160	.11	.12	.010	.000	.60	.45	.030	.010	0	--
DEC											
19...	575	.34	.30	.060	.010	.48	.33	.020	.010	0	5.9
JAN											
08...	548	.50	.43	.050	.030	.43	.57	.020	.020	--	4.7
FEB											
04...	977	.87	.87	.250	.250	.66	.67	.160	.120	0	--
MAR											
20...	1510	.45	.46	.110	.120	.33	.36	.050	.040	0	4.4
APR											
11...	2560	.30	.26	.110	.060	.65	.49	.060	.030	--	9.0
MAY											
12...	515	.11	.13	.360	.010	.47	.32	.040	.010	0	--
JUN											
09...	1780	.07	.06	.100	.020	.72	.66	.060	.010	0	9.2
JUL											
10...	371	.00	.02	.050	.030	.48	.45	.040	.010	--	5.3
AUG											
13...	1050	.04	.04	.040	.030	.75	.39	.060	.020	0	--
SEP											
08...	1970	.13	.14	.050	.000	.54	.48	.030	.020	0	19

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOV-ERABLE (UG/L AS CO) (01037)
OCT										
10...	1145	1	1	0	30	1	0	20	10	0
NOV										
29...	1100	1	1	0	40	0	1	10	10	0
FEB										
04...	1140	1	1	200	50	0	0	10	<10	0
MAY										
12...	1230	1	1	<50	20	0	0	<10	<10	0
AUG										
13...	1415	1	1	100	100	1	0	<10	20	2

05340500 ST. CROIX RIVER AT ST. CROIX FALLS, WI--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)
OCT										
10...	0	2	3	700	90	7	1	50	20	<.5
NOV										
29...	1	5	8	1400	660	11	11	30	20	.2
FEB										
04...	1	2	2	730	430	1	0	100	100	.2
MAY										
12...	0	6	3	460	190	11	5	110	60	.3
AUG										
13...	9	2	4	450	100	6	0	120	10	.2

DATE	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED (MG/L AS C) (00689)
OCT										
10...	<.5	1	0	0	0	0	0	0	5.9	.5
NOV										
29...	.1	3	0	0	0	0	10	6	11	.4
FEB										
04...	.2	2	0	0	0	0	20	30	5.0	.5
MAY										
12...	.3	0	19	0	0	0	20	0	11	.4
AUG										
13...	<.1	2	0	0	0	0	10	10	7.1	1.0

DATE	TIME	PERI-PHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERI-PHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	CHLOR-A PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERI-PHYTON CHROMO-GRAPHIC FLUOROM (MG/M2) (70958)
JUN					
09...	1330	11.0	7.90	13.4	1.20
JUL					
10...	0930	8.40	8.40	11.0	2.13
AUG					
13...	1415	9.80	6.61	8.60	2.60
SEP					
08...	1320	6.70	5.12	12.0	1.02

05340500 ST. CROIX RIVER AT ST. CROIX FALLS, WI--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1979 TO SEPTEMBER 1980

DATE	NOV 29,79		MAR 20,80		MAY 12,80		JUN 9,80	
TIME	1100		0945		1230		1330	
TOTAL CELLS/ML	110		65		3600		25000	
DIVERSITY: DIVISION	1.0		0.0		1.7		0.9	
.CLASS	1.0		0.0		2.0		0.9	
..ORDER	1.0		0.0		2.4		1.7	
...FAMILY	1.0		0.7		3.0		1.8	
....GENUS	1.0		0.7		3.6		2.5	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...CHARACIACEAE								
....SCHROEDERIA	--	-	--	-	--	-	*	0
...COELASTRACEAE								
....COELASTRUM	--	-	--	-	--	-	340	1
...HYDRODICTYACEAE								
....PEDIASTRUM	--	-	--	-	--	-	--	-
...MICRACTINIACEAE								
....GOLENKINIA	--	-	--	-	--	-	--	-
....MICRACTINIUM	--	-	--	-	--	-	--	-
...OOCYSTACEAE								
....ANKISTRODESMUS	--	-	--	-	290	8	*	0
....CHLORELLA	--	-	--	-	--	-	*	0
....DICTYOSPHAERIUM	--	-	--	-	350	10	670	3
....KIRCHNERIELLA	--	-	--	-	22	1	--	-
....OOCYSTIS	--	-	--	-	270	7	--	-
....SELENASTRUM	--	-	--	-	--	-	170	1
....TETRAEDRON	--	-	--	-	22	1	--	-
....TREUBARIA	--	-	--	-	--	-	--	-
....WESTELLA	--	-	--	-	--	-	--	-
...SCENEDESMACEAE								
....CRUCIGENIA	--	-	--	-	--	-	--	-
....SCENEDESMUS	20#	19	--	-	490	13	470	2
....TETRASTRUM	--	-	--	-	--	-	--	-
..TETRASPORALES								
...COCCOMYXACEAE								
....ELAKATOTHRIX	--	-	--	-	--	-	--	-
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	--	-	44	1	340	1
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
....CYCLOTELLA	5	5	--	-	710#	20	1100	5
....MELOSIRA	--	-	--	-	180	5	770	3
..PENNALES								
...ACHNANTHACEAE								
....COCCONEIS	--	-	--	-	22	1	--	-
...CYMBELLACEAE								
....CYMBELLA	--	-	--	-	44	1	--	-
...FRAGILARIACEAE								
....FRAGILARIA	--	-	52#	80	--	-	--	-
....SYNEDRA	--	-	--	-	44	1	*	0
...NAVICULACEAE								
....GYROSIGMA	--	-	--	-	22	1	--	-
....NAVICULA	--	-	13#	20	22	1	--	-
...NITZSCHIACEAE								
....NITZSCHIA	--	-	--	-	240	7	130	1
.CHRYSOPHYCEAE								
..CHRYSOMONADALES								
...CHROMULINACEAE								
....CHRYSOCOCCUS	--	-	--	-	290	8	--	-
CRYPTOPHYTA (CRYPTOMONADS)								
.CRYPTOPHYCEAE								
..CRYPTOMONADALES								
...CRYPTOCHRYSIDACEAE								
....CHROOMONAS	--	-	--	-	200	6	*	0
...CRYPTOMONADACEAE								
....CRYPTOMONAS	--	-	--	-	22	1	*	0
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..CHROOCOCCALES								
...CHROOCOCCACEAE								
....AGMENELLUM	--	-	--	-	--	-	--	-
....ANACYSTIS	--	-	--	-	270	7	5800#	23

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

05340500 ST. CROIX RIVER AT ST. CROIX FALLS, WI--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1979 TO SEPTEMBER 1980--Continued

DATE	NOV 29,79		MAR 20,80		MAY 12,80		JUN 9,80	
TIME	1100		0945		1230		1330	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
..HORMOGONALES								
...NOSTOCACEAE								
....ANABAENA	--	-	--	-	--	-	8700#	35
....APHANIZOMENON	--	-	--	-	--	-	6100#	24
...OSCILLATORIACEAE								
....OSCILLATORIA	--	-	--	-	--	-	--	-
....SCHIZOTHRIX	81#	76	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)								
.EUGLENOPHYCEAE								
..EUGLENALES								
...EUGLENACEAE								
....LEPOCINCLIS	--	-	--	-	22	1	--	-
....TRACHELOMONAS	--	-	--	-	44	1	130	1
PYRRHOPHYTA (FIRE ALGAE)								
.DINOPHYCEAE								
..PERIDINIALES								
...GLENODINIACEAE								
....GLENODINIUM	--	-	--	-	--	-	--	-

DATE	JUL 10,80		AUG 13,80		SEP 8,80	
TIME	0930		1415		1320	
TOTAL CELLS/ML	8500		22000		7500	
DIVERSITY: DIVISION	1.4		0.8		1.2	
.CLASS	1.4		0.8		1.2	
..ORDER	1.6		1.5		2.1	
...FAMILY	2.0		1.6		2.8	
....GENUS	2.3		1.8		3.2	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...CHARACIACEAE						
....SCHROEDERIA	50	1	*	0	--	-
...COELASTRACEAE						
....COELASTRUM	--	-	660	3	--	-
...HYDRODICTYACEAE						
....PEDIASTRUM	250	3	--	-	--	-
...MICRACTINIACEAE						
....GOLENKINIA	--	-	*	0	*	0
....MICRACTINIUM	--	-	--	-	40	1
...OOCYSTACEAE						
....ANKISTRODESMUS	250	3	150	1	60	1
....CHLORELLA	--	-	--	-	--	-
....DICTYOSPHAERIUM	350	4	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	40	1
....OOCYSTIS	300	4	--	-	*	0
....SELENASTRUM	--	-	--	-	480	6
....TETRAEDRON	--	-	--	-	*	0
....TREUBARIA	--	-	*	0	--	-
....WESTELLA	--	-	--	-	81	1
...SCENEDESMACEAE						
....CRUCIGENIA	800	9	--	-	160	2
....SCENEDESMUS	500	6	1500	7	160	2
....TETRASTRUM	--	-	--	-	240	3
..TETRASPORALES						
...COCCOMYXACEAE						
....ELAKATOTHRIX	--	-	--	-	81	1
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	200	2	--	-	100	1
CHRYSOPHYTA						
.BACILLARIOPHYCEAE						
..CENTRALES						
...COSCINODISCACEAE						
....CYCLOTELLA	600	7	440	2	280	4
....MELOSIRA	--	-	--	-	280	4
..PENNALES						
...ACHNANTHACEAE						
....COCCONEIS	--	-	--	-	--	-
...CYMBELLACEAE						

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

05340500 ST. CROIX RIVER AT ST. CROIX FALLS, WI--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1979 TO SEPTEMBER 1980--Continued

DATE TIME	JUL 10,80 0930		AUG 13,80 1415		SEP 8,80 1320	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
....CYMBELLA	--	-	--	-	*	0
...FRAGILARIACEAE						
....FRAGILARIA	--	-	--	-	--	-
....SYNEDRA	--	-	--	-	--	-
...NAVICULACEAE						
....GYROSIGMA	--	-	--	-	--	-
....NAVICULA	--	-	--	-	40	1
...NITZSCHIACEAE						
....NITZSCHIA	400	5	220	1	60	1
.CHRYSOPHYCEAE						
..CHRYSOMONADALES						
...CHROMULINACEAE						
....CHRYSOCOCCUS	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)						
.CRYPTOPHYCEAE						
..CRYPTOMONADALES						
...CRYPTOCHRYSIDACEAE						
....CHROOMONAS	--	-	150	1	--	-
...CRYPTOMONADACEAE						
....CRYPTOMONAS	--	-	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..CHROOCOCCALES						
...CHROOCOCCACEAE						
....AGMENELLUM	--	-	--	-	160	2
....ANACYSTIS	4800#	56	14000#	65	1700#	22
..HORMOGONALES						
...NOSTOCACEAE						
....ANABAENA	--	-	1000	5	--	-
....APHANIZOMENON	--	-	3300#	15	1400#	18
...OSCILLATORIACEAE						
....OSCILLATORIA	--	-	--	-	2000#	27
....SCHIZOTHRIX	--	-	--	-	--	-
EUGLENOPHYTA (EUGLENOIDS)						
.EUGLENOPHYCEAE						
..EUGLENALES						
...EUGLENACEAE						
....LEPOCINCLIS	--	-	--	-	--	-
....TRACHELOMONAS	--	-	--	-	81	1
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%

05340500 ST. CROIX RIVER AT ST. CROIX FALLS, WI--Continued

SUSPENDED SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE, WATER (DEG C) (00010)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV						
29...	1100	6160	1.0	6	100	87
DEC						
19...	1510	1600	1.0	2	8.6	100
JAN						
08...	1300	1560	.0	4	17	83
FEB						
04...	1140	3770	.0	2	20	77
MAR						
20...	0945	4190	.0	2	23	100
APR						
11...	0945	9790	2.5	12	317	100
MAY						
12...	1230	1720	13.5	4	19	65
JUN						
09...	1330	5400	19.0	12	175	94
JUL						
10...	0930	1310	25.5	6	21	88
AUG						
13...	1415	3060	23.0	2	17	100
SEP						
08...	1320	6250	20.5	13	219	73

05341550 ST. CROIX RIVER AT STILLWATER, MN

LOCATION.--Lat 45°03'22", long 92°48'11", in NE¼SE¼ sec.28, T.30 N., R.20 W., Washington County, Hydrologic Unit 07030005, on Interstate Bridge at Stillwater.

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

REMARKS.--Water discharge estimated on the basis of discharge for St. Croix River at St. Croix Falls and Apple River near Somerset and adjusted for travel time.

COOPERATION.--Samples were collected by the Metropolitan Waste Control Commission, St. Paul, MN, and analyzed by the U.S. Geological Survey. Water-discharge data for St. Croix and Apple Rivers furnished by the Corps of Engineers.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW (CFS) (00060)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	FLUO-RIDE, TOTAL (MG/L AS F) (00951)
NOV 15...	0815	4040	200	8.0	1.0	13.2	96	.0
FEB 04...	0850	2160	240	7.9	.0	7.7	54	.0
MAY 20...	0900	2760	195	8.0	18.0	9.6	103	.1
AUG 08...	0910	2010	201	8.0	23.3	8.2	98	.2

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
NOV 15...	4	0	0	20	1	9	1	540	8
FEB 04...	0	100	20	10	0	14	1	640	4
MAY 20...	1	<50	0	10	1	10	1	570	2
AUG 08...	1	100	0	40	0	15	0	800	1

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
NOV 15...	40	.3	0	5	0	0	10	.00
FEB 04...	40	<.1	0	1	0	0	10	.01
MAY 20...	110	.1	3	0	0	0	10	.00
AUG 08...	130	<.1	2	0	0	0	20	.00

DATE	TIME	STREAM-FLOW (CFS) (00060)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, DIS-SOLVED (UG/L AS B) (01020)
SEP 16...	0900	6290	160	7.5	16.0	7.0	72	.1	1	0	0	110

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, HEXA-VALENT, DIS. (UG/L AS CR) (01032)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
SEP 16...	0	0	0	4	430	2	30	<.1	0	0	0	10

05341770 ST. CROIX RIVER AT AFTON, MN

LOCATION.--Lat 44°54'00", long 92°46'45", in SW¼NW¼ sec.23, T.28 N., R.20 W., Washington County, Hydrologic Unit 07030005. Sampling site is in the city of Afton 11.5 mi (18.5 km) upstream from mouth.

PERIOD OF RECORD.--December 1976 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: December 1976 to current year.
pH: December 1976 to current year.
WATER TEMPERATURES: December 1976 to current year.
DISSOLVED OXYGEN: December 1976 to current year.

INSTRUMENTATION.--Water-quality monitor since December 1976.

REMARKS.--Water is pumped to a monitor that is inside a heated shelter; water temperature during the winter period may be affected. Extremes are for those years with 80 percent or more record.

COOPERATION.--Water-quality monitor is operated by the Metropolitan Waste Control Commission.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1978, 1980): Maximum, 221 micromhos Aug. 14, 15, 18, 1980; minimum, 61 micromhos Apr. 18, 19, 1978.
pH (water years 1978, 1980): Maximum, 9.1 units May 2, 3, 1980; minimum, 7.1 units Apr. 29, 1978.
WATER TEMPERATURES (water years 1978, 1980): Maximum, 28.0°C June 29, 1978; minimum, 0.5°C many days during winter periods.
DISSOLVED OXYGEN (water years 1978, 1980): Maximum, 16.8 mg/L May 1, 1980; minimum, 2.1 mg/L June 11, Sept. 17, 1978.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 221 micromhos Aug. 14, 15, 18; minimum, 97 micromhos Oct. 10.
pH: Maximum, 9.1 units May 2 and 3; minimum, 7.2 units April 1 and 2.
WATER TEMPERATURES: Maximum, 27.5°C June 19, July 15; minimum, 0.5°C Jan. 27-31, Feb. 1.
DISSOLVED OXYGEN: Maximum, 16.8 mg/L May 1; minimum, 4.7 mg/L June 19.

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	197	171	182	201	187	194	188	179	184	195	194	194
2	202	173	175	204	196	198	190	184	186	196	192	194
3	199	114	186	201	159	194	189	183	185	195	192	193
4	197	107	181	185	143	154	189	183	184	198	192	194
5	201	196	197	201	150	188	185	181	183	196	192	193
6	198	196	197	201	144	180	189	183	185	198	189	194
7	198	197	198	199	144	181	186	182	184	201	191	196
8	200	198	199	170	156	162	188	182	185	203	198	200
9	199	197	198	194	144	178	186	182	183	203	194	199
10	199	97	142	193	190	191	192	183	185	202	196	199
11	179	133	159	196	187	193	188	182	184	202	197	198
12	165	127	144	194	189	192	187	184	185	206	198	200
13	163	122	134	197	191	193	188	183	186	208	198	203
14	151	117	130	198	192	194	190	185	187	203	191	196
15	202	121	160	193	188	190	188	183	185	197	190	193
16	201	121	195	199	185	192	190	185	187	196	190	192
17	203	198	200	191	184	186	190	186	188	195	191	192
18	206	197	201	195	184	187	188	185	186	197	191	194
19	210	192	198	189	181	184	189	184	186	195	194	194
20	197	189	193	190	182	184	190	185	187	200	194	196
21	194	190	192	196	183	187	190	185	187	200	195	197
22	192	188	190	190	184	186	194	186	189	196	193	195
23	201	188	195	186	183	185	189	186	188	200	195	197
24	198	196	197	191	182	185	188	188	188	203	195	197
25	201	102	155	185	183	184	---	---	---	209	196	200
26	171	142	152	184	181	182	191	191	191	210	199	203
27	173	159	166	186	182	183	---	---	---	211	203	207
28	191	155	177	184	180	182	191	190	190	211	203	208
29	199	173	187	183	180	182	194	190	191	210	200	205
30	210	198	204	184	181	182	194	191	192	211	199	205
31	209	184	201	---	---	---	194	192	193	207	199	203
MONTH	210	97	180	204	143	185				211	189	198

05341770 ST. CROIX RIVER AT AFTON, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	208	197	202	203	197	199	132	130	131	146	136	141
2	202	192	197	205	198	202	132	129	131	148	139	144
3	205	193	199	208	198	202	130	129	130	149	142	145
4	200	194	197	207	199	202	165	127	147	148	143	145
5	202	195	197	208	198	202	167	161	164	148	142	145
6	201	194	197	203	195	200	169	160	163	146	136	141
7	201	195	198	204	197	200	160	157	159	152	137	140
8	199	194	197	201	195	198	159	156	158	141	136	138
9	205	195	199	200	193	196	158	152	156	143	135	138
10	203	196	199	202	194	198	153	148	150	145	136	139
11	205	195	199	202	194	198	150	145	148	140	135	137
12	204	197	200	198	194	196	147	143	145	140	136	137
13	202	195	198	197	191	194	144	140	142	139	136	138
14	198	195	196	195	191	193	141	138	140	139	136	137
15	212	196	201	195	190	192	140	136	139	143	137	139
16	204	199	201	193	189	190	140	136	137	146	139	143
17	205	200	202	189	187	188	139	134	136	144	138	140
18	209	202	205	191	186	187	139	134	136	141	138	140
19	206	201	202	188	184	187	137	133	135	144	139	141
20	204	200	202	188	185	186	138	133	135	148	140	144
21	204	201	202	186	140	158	139	134	136	149	145	146
22	202	200	201	141	140	140	140	135	137	152	145	147
23	202	200	201	143	140	141	139	136	137	152	145	148
24	205	201	203	143	137	141	139	135	137	156	148	151
25	206	202	204	143	140	141	143	135	138	156	151	153
26	211	201	205	144	138	140	143	138	140	157	150	153
27	205	201	202	139	136	138	145	138	141	162	148	152
28	206	201	203	137	126	129	143	136	139	159	152	154
29	203	198	201	135	124	129	144	137	139	157	147	152
30	---	---	---	135	131	133	144	137	140	152	142	147
31	---	---	---	134	131	132	---	---	---	151	145	147
MONTH	212	192	200	208	124	175	169	127	142	162	135	144

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	152	147	149	207	205	206	202	200	201	207	206	206
2	151	148	149	209	205	207	203	200	201	208	206	207
3	153	147	149	---	---	---	204	199	201	209	205	207
4	149	147	148	---	---	---	203	200	201	207	206	207
5	149	146	148	---	---	---	201	199	200	208	206	207
6	203	146	154	---	---	---	204	201	201	209	207	207
7	204	201	202	---	---	---	206	181	201	210	206	208
8	205	202	203	---	---	---	199	198	198	208	206	207
9	205	202	203	209	208	209	199	198	199	207	206	207
10	204	201	203	213	207	209	200	198	199	207	206	207
11	204	201	203	214	210	212	202	198	200	207	205	206
12	209	202	205	214	210	212	201	200	200	206	205	205
13	207	203	204	215	211	213	220	199	209	199	197	198
14	209	203	206	214	210	212	221	218	219	199	198	198
15	211	206	208	216	211	213	221	218	220	200	196	198
16	211	207	209	212	210	210	219	213	217	197	196	196
17	204	202	202	214	211	213	218	214	216	202	195	196
18	206	202	203	210	204	205	221	216	217	195	176	185
19	204	201	203	204	203	203	219	210	217	179	175	177
20	206	202	203	204	201	202	216	209	210	177	175	176
21	208	203	204	203	201	202	211	206	208	176	175	175
22	207	203	205	204	201	202	218	206	207	177	174	175
23	209	204	206	204	201	202	217	207	208	179	175	176
24	216	205	208	206	200	201	209	207	208	178	173	175
25	210	205	207	202	200	200	209	206	207	176	174	174
26	212	207	208	203	200	201	209	206	207	175	172	173
27	211	206	208	202	200	201	208	206	206	174	172	173
28	209	205	207	202	200	201	207	206	206	177	172	174
29	208	205	206	203	200	201	209	206	207	180	173	174
30	210	204	205	202	199	201	208	205	206	179	172	174
31	---	---	---	202	200	201	207	205	207	---	---	---
MONTH	216	146	194				221	181	207	210	172	192
YEAR	221	97										

05341770 ST. CROIX RIVER AT AFTON, MN--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	---	---	---	8.0	7.8	7.9				---	---	---
2	---	---	---	8.0	7.9	7.9				---	---	---
3	---	---	---	8.1	7.9	7.9				---	---	---
4	7.6	7.5	7.5	8.2	7.9	8.0				---	---	---
5	8.0	7.5	7.6	8.0	7.9	8.0				---	---	---
6	7.7	7.5	7.6	8.0	8.0	8.0				---	---	---
7	7.8	7.5	7.6	8.1	8.0	8.0				---	---	---
8	7.6	7.5	7.5	8.0	8.0	8.0				---	---	---
9	7.6	7.5	7.5	8.0	7.7	7.9				---	---	---
10	7.8	7.5	7.6	7.9	7.8	7.8				---	---	---
11	7.5	7.4	7.5	8.1	7.8	7.9				---	---	---
12	7.6	7.4	7.5	7.9	7.7	7.8				---	---	---
13	7.6	7.4	7.5	7.8	7.7	7.8				---	---	---
14	8.0	7.5	7.6	7.8	7.7	7.8				7.7	7.7	7.7
15	7.8	7.5	7.6	7.8	7.7	7.7				7.7	7.7	7.7
16	7.8	7.5	7.6	8.0	7.7	7.8				7.7	7.6	7.7
17	8.0	7.6	7.7	7.9	7.7	7.7				7.7	7.6	7.7
18	7.9	7.6	7.7	8.0	7.7	7.8				7.7	7.7	7.7
19	7.8	7.5	7.6	7.7	7.6	7.6				7.7	7.6	7.6
20	7.7	7.5	7.6	7.7	7.6	7.6				7.8	7.7	7.7
21	7.6	7.5	7.5	7.8	7.6	7.7				7.7	7.7	7.7
22	7.6	7.5	7.6	7.7	7.7	7.7				7.7	7.6	7.6
23	7.7	7.6	7.6	7.7	7.6	7.7				7.7	7.6	7.7
24	7.7	7.6	7.6	7.9	7.6	7.7				7.7	7.6	7.7
25	7.7	7.6	7.6	7.7	7.6	7.6				7.7	7.6	7.7
26	7.8	7.6	7.7	7.7	7.6	7.6				7.7	7.7	7.7
27	7.7	7.5	7.5	7.7	7.6	7.6				7.7	7.6	7.7
28	7.6	7.5	7.5	7.8	7.6	7.6				7.7	7.7	7.7
29	7.7	7.5	7.6	7.7	7.7	7.7				7.7	7.6	7.7
30	8.1	7.8	7.9	7.7	7.7	7.7				7.7	7.6	7.6
31	7.9	7.8	7.9	---	---	---				7.7	7.6	7.6
MONTH				8.2	7.6	7.8						

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	7.7	7.6	7.7	7.7	7.7	7.7	7.3	7.2	7.3	8.9	8.3	8.7
2	7.7	7.7	7.7	7.8	7.7	7.8	7.3	7.2	7.3	9.1	8.6	9.0
3	7.7	7.7	7.7	7.8	7.8	7.8	7.3	7.3	7.3	9.1	8.9	9.0
4	7.7	7.7	7.7	7.8	7.8	7.8	7.3	7.3	7.3	9.0	8.9	9.0
5	7.7	7.6	7.7	7.8	7.7	7.8	7.4	7.3	7.3	9.0	8.8	8.9
6	7.7	7.6	7.6	7.8	7.7	7.8	7.5	7.3	7.4	8.8	8.2	8.6
7	7.6	7.6	7.6	7.8	7.8	7.8	7.4	7.4	7.4	8.6	8.4	8.5
8	7.6	7.6	7.6	7.8	7.7	7.7	7.4	7.4	7.4	8.6	8.2	8.4
9	7.7	7.6	7.6	7.8	7.7	7.7	7.5	7.4	7.4	8.5	8.2	8.3
10	7.7	7.6	7.6	7.8	7.7	7.7	7.4	7.4	7.4	8.3	7.9	8.1
11	7.7	7.6	7.6	7.8	7.7	7.7	7.4	7.4	7.4	8.3	7.9	8.0
12	7.7	7.6	7.6	7.8	7.7	7.8	7.5	7.4	7.4	8.5	8.0	8.2
13	7.6	7.6	7.6	7.8	7.7	7.8	7.5	7.4	7.4	8.5	8.1	8.3
14	7.6	7.6	7.6	7.8	7.7	7.8	7.5	7.4	7.5	8.4	8.0	8.2
15	7.8	7.6	7.7	7.9	7.7	7.8	7.5	7.4	7.5	8.4	8.0	8.2
16	7.7	7.7	7.7	7.8	7.7	7.8	7.5	7.5	7.5	8.5	8.2	8.4
17	7.7	7.7	7.7	7.8	7.7	7.7	7.6	7.4	7.5	8.2	7.8	8.0
18	7.8	7.7	7.8	7.8	7.7	7.8	7.6	7.5	7.5	8.2	7.9	8.0
19	7.8	7.7	7.7	7.8	7.7	7.7	7.7	7.5	7.5	8.1	7.8	7.9
20	7.7	7.7	7.7	7.8	7.7	7.8	8.5	7.7	8.0	7.9	7.8	7.9
21	7.8	7.7	7.7	7.8	7.7	7.7	8.2	7.6	7.7	8.1	7.9	8.0
22	7.7	7.7	7.7	7.8	7.7	7.7	8.4	7.6	8.0	8.1	7.8	8.0
23	7.7	7.7	7.7	7.8	7.7	7.8	8.5	8.1	8.3	8.2	7.9	8.0
24	7.7	7.7	7.7	7.8	7.7	7.8	8.4	8.0	8.2	8.2	8.0	8.0
25	7.7	7.6	7.7	7.8	7.7	7.8	8.3	8.0	8.1	8.1	7.7	8.0
26	7.7	7.6	7.7	8.0	7.8	7.8	8.3	8.0	8.2	---	---	---
27	7.7	7.6	7.6	7.8	7.4	7.6	8.5	8.0	8.2	---	---	---
28	7.7	7.6	7.6	7.4	7.3	7.4	8.6	8.0	8.3	---	---	---
29	7.7	7.6	7.7	7.4	7.3	7.3	8.6	8.2	8.3	---	---	---
30	---	---	---	7.3	7.3	7.3	8.7	8.2	8.4	---	---	---
31	---	---	---	7.3	7.3	7.3	---	---	---	---	---	---
MONTH	7.8	7.6	7.7	8.0	7.3	7.7	8.7	7.2	7.7			

05341770 ST. CROIX RIVER AT AFTON, MN--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	8.2	7.8	8.0	8.4	8.3	8.4	7.9	7.6	7.7
2	8.2	7.9	8.1	8.3	8.0	8.1	8.4	8.3	8.3	8.0	7.5	7.7
3	8.1	7.7	7.8	---	---	---	8.4	8.3	8.4	8.1	7.6	7.8
4	8.1	7.8	7.9	---	---	---	8.3	8.2	8.2	8.0	7.4	7.6
5	8.3	8.0	8.2	---	---	---	8.2	8.1	8.1	7.7	7.3	7.5
6	8.4	8.1	8.2	---	---	---	---	---	---	7.9	7.6	7.7
7	8.4	8.1	8.2	---	---	---	---	---	---	7.9	7.4	7.7
8	8.1	7.8	8.0	---	---	---	8.0	8.0	8.0	8.0	7.4	7.7
9	8.4	7.9	8.2	8.4	8.3	8.3	8.0	7.9	8.0	7.9	7.6	7.8
10	8.6	8.2	8.4	8.3	8.2	8.3	7.9	7.8	7.9	8.1	7.5	7.8
11	8.5	8.3	8.4	8.3	8.1	8.2	7.8	7.6	7.7	7.6	7.3	7.4
12	8.4	8.1	8.2	8.3	8.1	8.3	7.8	7.6	7.7	7.3	7.3	7.3
13	8.4	8.1	8.3	8.3	8.1	8.2	8.3	7.5	7.9	7.7	7.6	7.6
14	8.4	8.1	8.3	8.2	8.0	8.1	8.4	7.9	8.2	7.7	7.5	7.6
15	8.3	8.1	8.2	8.3	8.1	8.2	8.7	8.2	8.4	7.9	7.4	7.6
16	8.2	7.9	8.1	8.3	8.2	8.3	8.5	8.2	8.3	7.5	7.4	7.4
17	---	---	---	8.3	8.3	8.3	8.3	7.9	8.1	7.8	7.3	7.4
18	---	---	---	8.4	8.0	8.1	8.2	7.8	8.0	7.8	7.3	7.6
19	---	---	---	8.2	8.0	8.1	8.1	7.7	7.9	8.1	7.7	7.8
20	---	---	---	8.2	8.0	8.1	8.1	7.7	7.9	7.8	7.7	7.7
21	---	---	---	8.3	8.0	8.2	7.8	7.6	7.7	7.8	7.7	7.8
22	---	---	---	8.4	8.2	8.3	8.4	7.6	7.8	7.8	7.6	7.7
23	8.3	8.1	8.2	8.5	8.2	8.3	8.4	7.7	7.9	8.0	7.8	7.9
24	8.3	7.9	8.1	8.4	8.1	8.3	8.0	7.7	7.8	7.9	7.7	7.8
25	8.2	7.8	8.0	8.4	8.1	8.2	8.0	7.6	7.8	7.8	7.7	7.8
26	8.4	8.0	8.2	8.5	8.3	8.4	7.9	7.6	7.8	8.2	7.7	7.8
27	8.4	8.1	8.3	8.5	8.3	8.4	8.0	7.7	7.8	7.9	7.7	7.8
28	8.2	8.0	8.1	8.4	8.2	8.3	7.9	7.6	7.7	8.2	7.8	7.9
29	8.0	7.7	7.9	8.4	8.2	8.4	7.9	7.6	7.8	8.2	7.7	7.8
30	8.1	7.9	8.0	8.4	8.3	8.4	7.9	7.5	7.7	8.1	7.7	7.9
31	---	---	---	8.5	8.3	8.4	7.9	7.7	7.8	---	---	---
MONTH										8.2	7.3	7.7
YEAR	9.1	7.2										

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	20.0	19.5	19.5	10.0	9.5	9.5	2.0	1.5	2.0	2.0	2.0	2.0
2	20.0	19.5	19.5	9.5	9.5	9.5	2.0	1.5	2.0	2.0	2.0	2.0
3	19.5	19.5	19.5	9.5	9.5	9.5	2.0	1.5	2.0	2.0	1.5	2.0
4	19.0	17.0	19.0	9.0	8.5	8.5	2.0	1.5	2.0	2.0	1.5	2.0
5	19.0	18.0	19.0	8.5	8.0	8.0	2.0	1.5	2.0	2.0	1.5	2.0
6	19.0	18.5	18.5	8.0	8.0	8.0	2.0	1.5	2.0	2.0	1.5	2.0
7	19.0	18.5	18.5	7.5	7.0	7.0	2.0	2.0	2.0	2.0	1.5	2.0
8	18.5	18.5	18.5	6.5	6.5	6.5	2.0	1.5	2.0	2.0	1.5	2.0
9	18.5	18.0	18.0	6.0	6.0	6.0	2.0	1.5	1.5	2.0	1.5	1.5
10	18.0	17.5	18.0	6.5	6.0	6.0	2.0	1.5	1.5	2.0	1.5	1.5
11	18.0	14.5	16.5	6.0	5.5	6.0	1.5	1.5	1.5	2.0	1.5	2.0
12	14.5	14.5	14.5	6.0	5.5	6.0	1.5	1.5	1.5	2.0	1.5	1.5
13	14.5	14.0	14.0	6.0	5.5	6.0	1.5	1.5	1.5	2.0	1.5	2.0
14	14.5	14.0	14.0	6.0	5.5	5.5	2.0	1.5	1.5	1.0	1.0	1.0
15	14.5	14.0	14.5	5.5	4.5	5.0	1.5	1.5	1.5	1.0	1.0	1.0
16	15.0	14.0	14.5	5.0	4.5	4.5	1.5	1.5	1.5	1.0	1.0	1.0
17	14.5	14.0	14.0	4.5	4.0	4.5	1.5	1.5	1.5	1.5	1.0	1.0
18	14.0	14.0	14.0	5.5	4.5	4.5	2.0	1.5	1.5	1.0	1.0	1.0
19	14.5	14.0	14.0	5.0	4.0	4.5	2.0	1.5	1.5	1.5	1.0	1.0
20	14.5	14.0	14.5	4.5	4.0	4.0	2.0	1.5	2.0	1.0	1.0	1.0
21	14.0	13.5	14.0	4.0	4.0	4.0	2.0	1.5	2.0	1.0	1.0	1.0
22	13.5	13.0	13.5	4.0	4.0	4.0	2.0	1.5	2.0	1.0	1.0	1.0
23	13.5	13.0	13.0	4.0	3.5	4.0	2.0	2.0	2.0	1.0	1.0	1.0
24	13.5	13.0	13.0	4.0	3.5	4.0	2.0	2.0	2.0	1.0	1.0	1.0
25	13.0	13.0	13.0	4.0	3.5	4.0	2.0	2.0	2.0	1.0	1.0	1.0
26	13.0	12.0	12.5	4.0	3.5	4.0	2.0	2.0	2.0	1.0	1.0	1.0
27	13.0	12.5	12.5	3.5	3.5	3.5	2.0	2.0	2.0	1.0	.5	1.0
28	13.0	12.5	12.5	3.5	3.5	3.5	2.0	2.0	2.0	1.0	.5	1.0
29	13.0	12.5	12.5	3.5	3.5	3.5	2.0	2.0	2.0	1.0	.5	1.0
30	12.5	10.0	12.0	3.5	3.0	3.0	2.0	2.0	2.0	1.0	.5	1.0
31	10.5	10.0	10.0	---	---	---	2.0	2.0	2.0	1.0	.5	1.0
MONTH	20.0	10.0	15.0	10.0	3.0	5.5	2.0	1.5	2.0	2.0	.5	1.5

05341770 ST. CROIX RIVER AT AFTON, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1.0	.5	1.0	1.5	1.5	1.5	2.5	2.0	2.0	14.5	12.0	13.5
2	1.5	1.0	1.0	1.5	1.5	1.5	2.5	2.0	2.5	17.0	13.0	15.0
3	1.0	1.0	1.0	2.0	1.5	1.5	2.0	2.0	2.0	17.5	15.5	16.5
4	1.5	1.0	1.0	1.5	1.5	1.5	4.0	2.0	3.0	17.5	16.0	17.0
5	1.5	1.0	1.0	1.5	1.5	1.5	4.0	3.0	3.5	17.0	16.0	16.5
6	1.5	1.0	1.0	1.5	1.5	1.5	4.5	3.0	3.5	16.0	14.5	15.0
7	1.5	1.0	1.0	1.5	1.5	1.5	3.5	3.0	3.5	15.0	14.0	14.5
8	1.5	1.0	1.0	1.5	1.5	1.5	3.5	3.0	3.0	14.5	14.0	14.5
9	1.0	1.0	1.0	1.5	1.5	1.5	3.0	3.0	3.0	14.5	14.0	14.5
10	1.5	1.0	1.0	1.5	1.5	1.5	3.5	3.0	3.0	14.5	14.0	14.0
11	1.5	1.0	1.0	1.5	1.5	1.5	3.5	3.0	3.0	14.0	13.5	14.0
12	1.0	1.0	1.0	1.5	1.5	1.5	3.5	3.0	3.5	15.0	14.0	14.5
13	1.5	1.0	1.0	2.0	1.5	1.5	3.5	3.5	3.5	14.5	14.0	14.5
14	1.5	1.0	1.5	2.0	1.5	1.5	4.0	3.0	3.5	14.5	14.0	14.5
15	1.5	1.0	1.5	2.0	1.5	1.5	4.5	3.5	4.0	16.0	14.0	15.0
16	1.5	1.5	1.5	2.0	1.5	1.5	4.5	4.0	4.0	15.5	15.0	15.5
17	1.5	1.0	1.5	2.0	1.5	2.0	5.0	4.0	4.5	15.0	14.5	14.5
18	1.5	1.5	1.5	2.0	1.5	2.0	5.5	4.5	5.0	15.0	14.5	14.5
19	1.5	1.5	1.5	2.0	1.5	2.0	6.5	5.0	5.5	15.5	14.0	15.0
20	1.5	1.5	1.5	2.5	2.0	2.0	8.5	7.0	7.5	16.0	14.5	15.5
21	1.5	1.5	1.5	2.5	1.5	2.0	8.5	7.0	8.0	16.0	15.0	15.5
22	1.5	1.5	1.5	2.0	2.0	2.0	10.0	8.0	9.0	17.0	15.5	16.0
23	2.0	1.5	1.5	2.5	2.0	2.5	10.5	10.0	10.5	18.5	16.0	17.0
24	2.0	1.5	1.5	2.5	2.0	2.5	11.0	10.5	10.5	18.5	17.0	17.5
25	1.5	1.5	1.5	3.0	2.0	2.5	11.5	11.0	11.0	19.0	17.5	18.5
26	1.5	1.0	1.5	3.0	2.0	2.5	11.5	11.5	11.5	18.5	18.0	18.5
27	2.0	1.5	1.5	2.5	2.0	2.0	12.0	11.5	12.0	19.0	17.0	18.0
28	1.5	1.5	1.5	2.0	2.0	2.0	12.5	11.5	12.0	19.5	18.0	18.5
29	1.5	1.5	1.5	2.5	2.0	2.0	12.5	11.5	12.0	19.0	18.0	18.5
30	---	---	---	2.5	2.0	2.0	13.0	12.0	12.5	18.0	17.5	18.0
31	---	---	---	2.5	2.0	2.0	---	---	---	19.0	17.5	18.0
MONTH	2.0	.5	1.5	3.0	1.5	2.0	13.0	2.0	6.0	19.5	12.0	16.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	18.0	17.5	18.0	22.5	21.5	22.0	26.5	25.5	26.0	22.5	22.0	22.0
2	20.5	19.5	20.0	23.5	21.5	22.5	26.0	25.5	26.0	22.5	22.0	22.0
3	20.0	19.5	20.0	---	---	---	26.5	25.5	26.0	23.0	22.0	22.0
4	20.5	20.0	20.0	---	---	---	26.0	25.5	25.5	22.0	22.0	22.0
5	21.5	20.5	20.5	---	---	---	25.5	25.0	25.0	22.5	21.5	22.0
6	21.0	20.0	20.5	---	---	---	---	---	---	22.5	22.0	22.0
7	21.0	20.0	20.5	---	---	---	---	---	---	22.5	22.0	22.0
8	20.5	20.0	20.5	---	---	---	25.0	24.0	24.0	22.5	22.0	22.0
9	21.0	20.0	20.5	27.0	26.0	26.5	24.5	24.0	24.0	22.0	22.0	22.0
10	21.5	20.5	21.0	26.5	26.0	26.0	24.5	24.0	24.0	22.5	21.5	22.0
11	21.0	20.5	21.0	27.0	25.5	26.0	24.5	24.0	24.0	21.5	21.5	21.5
12	21.0	20.0	20.5	27.0	26.0	26.5	24.5	23.5	24.0	21.5	21.5	21.5
13	21.5	20.5	21.0	27.0	26.0	26.5	24.0	23.5	24.0	21.0	21.0	21.0
14	23.0	21.0	22.0	27.0	25.5	26.0	24.5	23.5	24.0	21.0	20.5	21.0
15	23.0	22.0	22.5	27.5	26.0	26.5	24.5	24.0	24.5	21.0	20.0	20.5
16	23.0	22.0	22.5	26.5	25.5	26.0	24.0	23.0	23.5	20.5	20.5	20.5
17	22.5	21.5	22.0	26.5	26.0	26.0	23.5	23.0	23.0	20.5	19.5	20.0
18	24.5	20.0	22.0	26.5	26.0	26.0	24.0	23.0	23.5	19.5	19.5	19.5
19	27.5	23.5	25.5	26.5	26.0	26.0	24.0	23.5	23.5	20.0	18.5	19.5
20	25.5	22.0	23.5	26.0	26.0	26.0	24.5	24.0	24.5	19.5	19.0	19.5
21	21.0	20.0	21.0	26.0	25.5	26.0	24.0	23.5	24.0	19.0	19.0	19.0
22	21.5	21.0	21.5	26.0	25.5	26.0	24.5	23.5	24.0	19.0	18.5	19.0
23	23.0	21.0	22.0	26.5	25.5	26.0	24.0	23.5	24.0	19.5	18.5	19.0
24	23.0	22.0	22.5	26.5	25.0	26.0	24.0	23.0	23.5	19.0	18.0	18.5
25	23.0	22.0	22.5	26.0	25.5	25.5	24.0	23.5	24.0	18.5	18.0	18.5
26	24.0	22.5	23.0	26.0	25.5	25.5	24.0	23.5	24.0	18.0	16.0	17.0
27	23.5	22.0	23.0	26.0	25.5	26.0	23.5	23.5	23.5	16.5	16.0	16.5
28	22.5	22.0	22.5	26.0	25.5	25.5	23.5	23.5	23.5	16.5	16.0	16.0
29	22.0	21.5	22.0	27.0	25.5	26.0	23.0	22.5	22.5	16.5	16.0	16.0
30	22.5	21.5	22.0	26.5	25.0	26.0	22.5	22.0	22.5	17.0	16.0	16.5
31	---	---	---	26.5	25.5	26.0	22.5	22.0	22.0	---	---	---
MONTH	27.5	17.5	21.5							23.0	16.0	20.0
YEAR	27.5	.5										

05341770 ST. CROIX RIVER AT AFTON, MN--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	7.7	6.3	6.8	9.1	7.7	8.1	12.4	11.6	11.8	13.0	12.6	12.8
2	8.7	6.0	6.7	8.3	7.9	10.1	12.2	11.7	11.9	12.8	12.3	12.5
3	8.1	6.2	7.0	9.2	8.2	8.5	12.4	11.7	12.0	12.7	12.2	12.5
4	7.5	6.7	7.0	10.1	8.6	9.2	12.8	11.8	12.3	13.1	12.4	12.7
5	9.2	6.6	7.3	9.2	8.8	9.0	12.2	11.8	12.0	13.3	12.7	13.0
6	7.4	6.5	6.8	9.7	9.3	9.4	14.0	11.9	12.7	12.8	12.0	12.3
7	8.0	6.4	6.9	10.8	9.4	10.1	12.6	12.0	12.3	12.5	12.0	12.2
8	6.8	6.3	6.5	10.1	9.6	9.9	12.8	12.0	12.3	12.9	12.2	12.5
9	7.4	6.1	6.7	10.2	9.8	10.0	12.9	12.3	12.6	13.2	12.3	12.6
10	8.4	6.6	7.2	11.0	9.9	10.3	13.5	12.1	12.5	13.1	12.7	12.9
11	7.5	6.5	6.9	11.8	10.2	10.9	12.2	11.5	11.9	13.1	12.0	12.5
12	8.0	6.8	7.2	11.2	10.1	10.6	12.4	11.6	12.1	12.8	11.9	12.5
13	8.3	7.1	7.7	11.2	10.5	10.8	12.7	12.2	12.4	12.9	12.4	12.6
14	10.0	7.4	8.0	11.6	11.1	11.4	12.8	12.2	12.5	13.4	12.5	13.0
15	9.6	7.0	8.2	11.3	10.4	10.8	12.5	11.8	12.2	13.2	12.7	12.9
16	9.2	7.4	8.2	12.5	10.6	11.5	12.3	11.7	11.9	13.1	12.4	2.7
17	9.9	7.9	8.8	12.4	11.1	11.5	13.1	12.0	12.7	13.0	12.2	12.6
18	9.4	7.8	8.6	12.6	10.9	11.6	13.1	12.6	12.8	13.4	12.7	13.0
19	8.8	7.6	8.2	11.4	11.1	11.3	13.2	12.6	12.8	13.2	12.3	12.7
20	8.6	7.4	7.9	11.5	10.8	11.2	13.0	12.6	12.7	13.6	12.6	13.0
21	7.8	7.3	7.6	11.7	11.2	11.4	13.1	12.6	12.7	13.2	12.5	12.9
22	7.8	7.4	7.7	11.9	11.6	11.8	12.7	12.3	12.6	13.1	12.1	12.4
23	7.9	7.3	7.6	11.9	11.4	11.7	12.5	12.4	12.5	13.0	12.2	12.6
24	8.1	7.3	7.6	13.0	11.4	11.7	12.9	12.9	12.9	12.7	12.4	12.5
25	8.1	7.4	7.7	11.7	11.3	11.5	---	---	---	12.3	12.0	12.2
26	9.8	8.0	9.0	12.0	11.2	11.5	12.7	12.5	12.6	12.2	11.9	12.0
27	9.0	7.8	8.3	11.7	11.2	11.4	---	---	---	12.2	11.8	11.9
28	8.6	8.0	8.3	12.3	11.2	11.6	12.8	12.7	12.7	12.1	11.4	11.8
29	9.4	8.0	8.5	11.9	11.4	11.6	12.9	12.5	12.7	11.4	11.1	11.3
30	8.7	8.0	8.3	11.8	11.6	11.6	13.1	12.6	12.8	11.6	11.1	11.3
31	9.0	7.8	8.3	---	---	---	12.9	12.7	12.8	11.5	10.9	11.2
MONTH	10.0	6.0	7.7	13.0	7.7	10.7				13.6	10.9	12.4

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	11.9	11.0	11.5	11.4	10.4	10.7	8.3	7.6	7.9	16.8	12.3	14.8
2	11.8	11.5	11.6	12.4	10.7	11.6	8.8	7.6	8.2	15.8	13.6	15.0
3	11.8	11.3	11.6	12.3	11.2	11.7	9.3	8.3	8.8	15.1	13.5	14.3
4	11.6	11.3	11.5	11.7	11.0	11.4	9.1	7.9	8.5	13.9	12.4	13.2
5	11.4	11.2	11.3	12.1	10.5	11.1	9.2	8.2	8.7	13.4	11.0	12.2
6	11.5	11.0	11.2	12.4	10.6	11.5	10.2	8.6	9.3	11.1	9.9	10.6
7	11.3	10.8	11.1	12.2	11.3	11.8	10.2	9.1	9.8	10.4	9.3	9.8
8	11.3	10.8	11.0	11.6	10.7	11.0	10.3	9.7	10.0	11.6	8.7	10.4
9	11.4	10.9	11.1	11.3	10.5	10.8	10.7	10.1	10.4	11.9	10.2	10.9
10	11.4	11.0	11.2	11.2	10.2	10.6	11.2	10.2	10.7	10.4	8.9	9.8
11	11.1	10.6	10.9	11.7	10.6	11.0	11.2	10.6	10.9	10.3	8.9	9.5
12	11.2	10.6	10.9	12.2	10.8	11.3	11.6	10.9	11.2	12.7	9.8	11.4
13	11.0	10.6	10.8	12.2	11.3	11.8	11.4	11.1	11.3	12.4	10.8	11.5
14	10.9	10.4	10.6	12.6	11.7	12.1	12.4	11.1	11.8	12.0	10.6	11.3
15	11.0	10.4	10.7	13.3	11.7	12.4	12.4	11.8	12.1	12.8	10.5	11.6
16	11.2	10.4	10.8	12.6	11.2	12.0	12.4	11.7	12.1	12.8	11.3	12.0
17	11.2	10.4	10.8	12.0	10.9	11.3	13.0	11.8	12.3	11.5	10.2	10.8
18	11.6	10.8	11.2	12.3	11.2	11.6	13.4	11.9	12.5	11.1	9.7	10.2
19	11.2	10.6	11.0	11.7	11.1	11.4	13.5	12.0	12.5	12.1	9.7	11.0
20	10.8	10.2	10.6	12.1	11.0	11.7	15.6	13.2	14.2	12.2	10.1	11.2
21	11.0	10.5	10.8	12.2	11.3	11.7	14.7	12.8	13.4	12.4	10.2	11.4
22	10.9	10.1	10.5	12.5	11.5	11.9	14.9	12.8	13.8	11.8	9.9	10.9
23	10.1	9.7	9.8	12.2	11.5	11.9	14.1	12.7	13.6	11.3	10.1	10.8
24	10.2	9.5	9.9	12.7	11.8	12.3	14.1	12.5	13.2	11.2	9.8	10.5
25	10.0	9.4	9.7	12.9	12.0	12.4	14.7	12.6	13.4	10.4	9.0	9.9
26	10.7	9.5	10.0	13.8	11.9	12.6	14.1	13.2	13.7	10.1	8.5	9.2
27	10.5	9.8	10.1	12.1	9.5	11.2	14.5	12.7	13.6	11.7	8.1	10.0
28	10.5	10.1	10.3	9.6	8.8	9.2	14.7	12.3	13.2	11.3	9.4	10.1
29	10.7	10.4	10.5	9.7	8.5	9.0	14.1	12.4	13.0	10.7	8.6	9.7
30	---	---	---	9.2	8.1	8.6	14.4	12.1	13.1	10.9	8.7	9.3
31	---	---	---	8.3	7.8	8.0	---	---	---	10.6	8.5	9.2
MONTH	11.9	9.4	10.8	13.8	7.8	11.2	15.6	7.6	11.6	16.8	8.1	11.1

05341770 ST. CROIX RIVER AT AFTON, MN--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	9 0	8 2	8 6	7.9	6.2	7.0	10.5	8.7	9.6	8.8	7.4	8.0
2	10.8	8.8	9.9	9.0	6.7	7.7	10.1	8.0	8.9	9.2	6.9	7.9
3	10.1	8.2	9.2	---	---	---	9.7	6.8	8.5	9.4	7.4	8.3
4	10.2	8 9	9.6	---	---	---	8.5	5.7	7.3	9.4	6.2	7.2
5	11.5	9 3	10.4	---	---	---	---	---	---	7.9	5.6	6.8
6	11.2	8.7	9.8	---	---	---	---	---	---	9.3	7.4	8.2
7	10.3	8.4	9.2	---	---	---	---	---	---	9.3	6.5	8.1
8	8.5	7.3	7.9	---	---	---	7.8	6.4	7.5	9.6	6.4	8.1
9	9.7	7.4	8.4	9.3	8.6	9.0	7.9	6.6	7.4	8.6	7.4	8.1
10	10.1	7.9	9.0	9.3	6.6	8.4	7.5	5.5	6.5	10.0	6.7	8.2
11	9.7	8.5	9.0	10.8	8.0	10.1	7.8	5.8	6.8	7.3	5.8	6.2
12	8.6	7.5	8.0	10.3	8.2	9.4	7.8	6.9	7.4	6.0	5.7	5.9
13	9.2	7.4	8.4	9.0	6.1	7.8	6.9	6.2	6.5	7.2	6.3	6.7
14	9.5	8.1	8.8	9.9	5.7	8.1	10.0	6.5	8.1	7.3	6.1	6.8
15	9.6	8.2	8.9	10.7	8.4	9.4	11.4	8.4	9.9	8.9	5.7	7.0
16	8.5	7.0	7.9	10.2	9.0	9.6	10.1	8.0	8.6	6.5	5.1	5.6
17	8.7	5.5	7.3	8.6	8.5	8.5	8.9	6.9	7.8	8.7	5.2	6.2
18	6.8	5.3	6.0	8.1	7.0	7.5	8.8	6.6	7.5	7.3	5.4	6.3
19	6.7	4.7	5.4	8.0	6.6	7.1	8.8	7.1	7.6	9.1	6.2	7.3
20	7.7	6.8	7.3	7.3	6.5	6.8	8.9	6.8	8.0	8.1	6.5	7.1
21	8.7	7.6	8.0	10.5	5.9	8.2	7.8	6.7	7.2	7.8	7.0	7.4
22	8.8	7.2	8.1	10.9	9.1	10.0	9.3	7.3	8.2	7.7	6.3	7.0
23	9.6	7.2	8.7	11.8	8.8	10.0	9.1	7.7	8.3	9.4	7.4	8.3
24	9.2	7.0	8.0	9.8	6.9	9.1	9.2	7.3	8.0	9.0	7.3	8.0
25	8.1	6.4	7.4	10.2	7.7	8.9	9.0	7.3	8.1	8.2	7.3	7.8
26	9.6	6.6	8.1	10.9	8.8	9.7	8.4	7.1	7.9	10.7	7.4	8.4
27	9.4	7.0	8.1	10.3	8.9	9.7	9.1	7.5	7.9	9.5	7.9	8.6
28	7.7	6.7	7.2	10.8	8.0	9.5	---	---	---	10.7	8.3	9.3
29	6.9	5.7	6.3	11.7	8.1	10.7	8.9	7.2	8.0	10.9	8.3	8.7
30	7.6	5.9	6.7	11.0	8.0	9.7	8.8	6.6	7.6	10.2	8.2	9.0
31	---	---	---	11.5	9.0	10.1	8.6	7.8	8.3	---	---	---
MONTH	11.5	4.7	8.2							10.9	5.1	7.6
YEAR	16.8	4.7										

05344490 ST. CROIX RIVER AT PRESCOTT, WI

LOCATION.--Lat 44°44'57", long 92°48'16", in SE¼SE¼ sec.9, T.27 N., R.23 W., Pierce County, Hydrologic Unit 07030005. Sampling site at U.S. Highway 10 bridge, 1,000 ft (305 m) upstream from mouth.

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

REMARKS.--Water discharge estimated on the basis of discharge for St. Croix River at St. Croix Falls and Apple River near Somerset and adjusted for travel time.

COOPERATION.--Samples were collected by the Metropolitan Waste Control Commission, St. Paul, MN, and analyzed by the U.S. Geological Survey. Water-discharge data for St. Croix and Apple Rivers furnished by Corps of Engineers, St. Paul.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW (CFS) (00060)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	FLUO-RIDE, TOTAL (MG/L AS F) (00951)
NOV 14...	0830	3850	225	8.0	6.0	10.0	83	.0
FEB 08...	0855	2150	260	7.7	.5	11.7	84	.0
MAY 08...	0900	2940	161	7.8	13.0	9.8	95	.8
AUG 05...	0930	1850	218	8.5	23.0	8.4	100	.1

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
NOV 14...	3	0	0	20	0	4	1	200	1
FEB 08...	1	<50	10	20	1	3	1	290	0
MAY 08...	2	<50	0	60	0	15	1	260	0
AUG 05...	2	<50	0	40	0	11	0	150	1

DATE	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MOLYB-DENUM, TOTAL RECOV-ERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
NOV 14...	150	.3	0	1	0	0	10	.00
FEB 08...	50	.2	0	2	0	0	10	.01
MAY 08...	50	<.1	1	1	0	0	10	--
AUG 05...	30	<.1	1	1	0	0	20	.00

DATE	TIME	STREAM-FLOW (CFS) (00060)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, DIS-SOLVED (UG/L AS B) (01020)
SEP 18...	0840	6020	198	7.7	18.0	6.5	70	.1	1	100	0	60

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	CHRO-MIUM, HEXA-VALENT, DIS. (UG/L AS CR) (01032)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
SEP 18...	0	0	0	2	10	0	0	<.1	0	0	0	0

05344500 MISSISSIPPI RIVER AT PRESCOTT, WI

LOCATION.--Lat 44°44'45", long 92°48'00", in sec.9, T.26 N., R.20 W., Pierce County, Hydrologic Unit 07010206, on left bank at Prescott, 200 ft (61 m) downstream from St. Croix River, 300 ft (91 m) south of Chicago, Burlington & Quincy Railroad bridge, 800 ft (244 m) south of bridge on U.S. Highway 10, and at mile 811.4 (1,306 km) upstream from Ohio River.

DRAINAGE AREA.--44,800 mi^2 (116,000 km^2), approximately.

PERIOD OF RECORD.--June 1928 to current year.

REVISED RECORDS.--WSP 1508: 1941. WRD MN-74: 1973.

GAGE.--Water-stage recorder. Datum of gage is 649.50 ft (197.968 m) National Geodetic Vertical Datum of 1929. Prior to Aug.2, 1932, nonrecording gage at railroad bridge 300 ft (91 m) upstream at following datums: June 3, 1928, to Sept. 30, 1929, 19.27 ft (5.873 m) higher; Oct.1, 1929, to Sept. 30, 1930, 17.68 ft (5.389 m) higher; Oct. 1, 1930, to Aug. 1, 1932, 19.28 ft (5.877 m) higher. Aug. 2, 1932, to Oct. 30, 1938, water-stage recorder at present site at datum 19.28 ft (5.877 m) higher; Nov. 1, 1938, to Sept. 7, 1971, water-stage recorder at present site at datum 50.00 ft (15.240 m) lower. Auxiliary water-stage recorder 10.7 mi (17.2 km) downstream from base gage.

REMARKS.--Records good. Some regulation by reservoirs, navigation dams, and powerplants at low and medium stages. Flood flow not materially affected by artificial storage.

AVERAGE DISCHARGE.--52 years, 16,300 ft^3/s (461.6 m^3/s), 4.94 in/yr (125 mm/yr); median of yearly mean discharges, 14,600 ft^3/s (413.5 m^3/s), 4.43 in/yr (113 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 228,000 ft^3/s (6,460 m^3/s) Apr. 18, 1965, gage height, 43.11 ft (13.140 m); minimum daily, 1,380 ft^3/s (39.1 m^3/s) July 13, 1940; minimum gage height, 15.08 ft (4.596 m) Aug. 29, 1934, present datum.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 43,100 ft^3/s (1,220 m^3/s) Apr. 11, maximum gage height 29.78 ft (9.077 m) Apr. 12; minimum daily, 5,360 ft^3/s (152 m^3/s) Aug. 6-7; minimum gage height, 24.50 ft (7.468 m) Feb. 27.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11200	15400	16200	12600	9690	8810	25200	18400	8130	11900	6080	8730
2	11700	17200	13700	12200	9250	8770	27200	18100	9550	11400	5670	8690
3	11300	20700	12000	12100	9040	8670	28400	17100	13300	10500	5830	8780
4	11000	24200	12500	11800	8700	9210	29900	16300	14600	10100	5440	9380
5	10800	26100	12900	11000	8700	8980	32200	16400	19300	9780	5440	11000
6	10900	28600	13600	10900	9340	8710	35200	15300	23700	9080	5360	11800
7	10100	30200	15500	10800	9510	8590	36400	14800	24600	9440	5360	13700
8	9910	30200	16100	9000	8980	8840	37400	13500	27300	9710	5990	13300
9	10400	29900	14400	7660	9070	8830	39000	12600	27800	8590	8880	14100
10	9650	29500	13600	8600	9350	8960	42000	11800	28500	8070	9040	13100
11	9760	28600	14600	9330	9000	9130	43100	11200	27400	7530	8570	12600
12	10100	27200	15000	9240	9460	8780	41400	11900	27000	7480	8510	12100
13	9010	27000	14100	9270	9130	8870	41200	12200	27400	7180	8170	13900
14	9340	25200	12300	9490	9400	8760	39100	11500	27900	6870	7900	16300
15	8640	24000	11900	11200	9430	9180	38400	11700	27700	7120	8000	16900
16	8670	22900	12000	10800	9210	9310	36800	11300	26700	7750	7210	17900
17	9020	22700	11800	11200	9610	10000	35000	10800	25000	7340	6770	17400
18	8740	23100	10800	11100	8390	9130	32500	10300	21500	7200	7110	16600
19	8920	22000	11200	11500	9390	9560	30500	11600	20600	6490	6730	17100
20	9890	21400	12700	11000	9600	12100	29500	11200	19600	6740	7000	16300
21	9760	21100	13300	10400	9970	18500	26900	10700	18400	7140	7290	15800
22	10500	21700	13200	10500	9740	21800	25200	11000	17400	7160	7730	13300
23	11700	21300	13500	10400	10000	21000	24800	9440	16500	7510	8250	13300
24	12100	20900	13600	9460	9540	21400	24500	10200	15400	7350	8410	12600
25	12800	20300	12900	9590	9110	22000	23200	9190	15100	7600	8400	12700
26	13200	20300	12500	10500	9330	22100	22600	8870	14100	7660	8740	12800
27	12500	20800	13100	9450	8240	23100	22000	8310	13100	6820	9350	12200
28	12800	20300	13200	8630	9210	24500	20300	8660	12500	6740	9100	12300
29	14100	21100	13200	9820	9110	23500	19900	8090	11800	7510	8870	12400
30	14700	17700	12900	9510	---	24700	18600	8260	11600	7180	9300	12500
31	14500	---	12800	9560	---	25000	---	8120	---	6340	9590	---
TOTAL	337710	701600	411100	318610	268500	430790	928400	368840	593480	249280	234090	399580
MEAN	10890	23390	13260	10280	9259	13900	30950	11900	19780	8041	7551	13320
MAX	14700	30200	16200	12600	10000	25000	43100	18400	28500	11900	9590	17900
MIN	8640	15400	10800	7660	8240	8590	18600	8090	8130	6340	5360	8690
CFSM	.24	.52	.30	.23	.21	.31	.69	.27	.44	.18	.17	.30
IN.	.28	.58	.34	.26	.22	.36	.77	.31	.49	.21	.19	.33

CAL YR 1979 TOTAL 9790580 MEAN 26820 MAX 100000 MIN 6520 CFSM .60 IN 8.13
WTR YR 1980 TOTAL 5241980 MEAN 14320 MAX 43100 MIN 5360 CFSM .32 IN 4.35

05344980 MISSISSIPPI RIVER AT LOCK AND DAM 3 NEAR RED WING, MN

LOCATION.--Lat 44°36'36", long 92°36'36", in SW¼NW¼ sec.10, T.113 N., R.15 W., Goodhue County, Hydrologic Unit 07040001, on right bank on downstream side of dam, 5 mi (8 km) northwest of Red Wing, and at mile 796.7 (1,282 km) upstream from Ohio River.

DRAINAGE AREA.--46,600 mi^2 (120,700 km^2), approximately.

PERIOD OF RECORD.--Water years 1969 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: May 1976 to current year.
pH: May 1976 to current year.
WATER TEMPERATURES: August 1969 to current year.
DISSOLVED OXYGEN: May 1976 to current year.

INSTRUMENTATION.--Water-quality monitor since May 1976.

REMARKS.- -Extremes are published for those years with 80 percent or more record. Malfunctions of the monitor resulted in less than 80 percent daily record. Water is pumped to a monitor that is inside a heated shelter; water temperature during the winter period may be affected.

COOPERATION.--Discharge data furnished by the St. Paul District, Corps of Engineers. Water-quality monitor is operated by the Metropolitan Waste Control Commission, St. Paul, Minn.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water year 1980): Maximum, 562 micromhos Dec. 21, 1979; minimum, 307 micromhos Mar. 26, 1980.
pH (water year 1980): Maximum, 8.8 units May 2-4, 6, 7, 1980; minimum, 7.2 units Sept. 15 and 24, 1980.
WATER TEMPERATURES (water years 1970-78, 1980): Maximum, 30.5°C July 19, 1977; minimum, 0.0°C several days during winter.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 562 micromhos Dec. 21; minimum, 307 micromhos Mar. 26.
pH: Maximum, 8.8 units May 2-4, 6, 7; minimum, 7.2 units Sept. 15 and 24.
WATER TEMPERATURES: Maximum, 29.0°C July 10, 15, 17; minimum, 0.0°C Dec. 8 and 11.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW (CFS) (00060)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	FLUO-RIDE, TOTAL (MG/L AS F) (00951)
OCT								
22...	0955	12500	454	8.4	12.0	9.8	93	.2
DEC								
10...	0915	14600	441	7.8	1.5	13.2	97	--
FEB								
07...	1230	8700	498	7.7	.5	12.9	92	.2
APR								
04...	1000	28800	323	7.6	4.0	12.4	96	--
JUN								
05...	1030	26600	517	7.8	21.0	7.7	88	.7
AUG								
07...	0930	6400	465	8.2	25.5	8.6	106	--

DATE	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)	BORON, TOTAL RECOV-ERABLE (UG/L AS B) (01022)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)
OCT									
22...	4	100	0	60	0	7	5	1100	4
DEC									
10...	4	100	20	--	0	3	3	440	0
FEB									
07...	1	100	0	50	0	12	4	320	0
APR									
04...	2	--	--	--	0	--	--	--	--
JUN									
05...	3	100	0	130	0	16	7	1600	7
AUG									
07...	3	100	0	90	0	10	2	830	3

05344980 MISSISSIPPI RIVER AT LOCK AND DAM 3 NEAR RED WING, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	MOLYBDENUM, TOTAL RECOVERABLE (UG/L AS MO) (01062)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	SELENIUM, TOTAL (UG/L AS SE) (01147)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
OCT 22...	160	.1	2	4	0	0	20	.00
DEC 10...	90	<.1	0	5	0	0	70	.00
FEB 07...	70	<.1	0	6	1	0	10	.01
APR 04...	20	.1	--	--	0	--	--	.00
JUN 05...	350	.2	4	5	1	0	50	.01
AUG 07...	200	<.1	3	3	0	0	50	.00

DATE	TIME	STREAMFLOW (CFS) (00060)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BERYLLIUM, DISSOLVED (UG/L AS BE) (01010)	BORON, DISSOLVED (UG/L AS B) (01020)
SEP 18...	1015	15900	306	7.4	17.0	8.8	93	.2	2	200	0	70

DATE	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	CHROMIUM, HEXAVALENT, DIS. (UG/L AS CR) (01032)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY DISSOLVED (UG/L AS HG) (71890)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SILVER, DISSOLVED (UG/L AS AG) (01075)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
SEP 18...	0	1	0	3	10	0	0	<.1	2	0	0	10

DATE	TIME	STREAMFLOW (CFS) (00060)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	GROSS ALPHA, DISSOLVED (UG/L AS U-NAT) (80030)
SEP 26...	1035	13600	360	8.0	17.0	8.0	84	<3.7

DATE	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS ALPHA, DISSOLVED (PCI/L AS U-NAT) (01515)	GROSS ALPHA, SUSP. TOTAL (PCI/L AS U-NAT) (01516)	GROSS BETA, DISSOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DISSOLVED (PCI/L AS SR/YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90) (80060)	URANIUM NATURAL DISSOLVED (UG/L AS U) (22703)
SEP 26...	<.5	<2.5	<.3	3.5	.8	3.4	.7	1.2

05344980 MISSISSIPPI RIVER AT LOCK AND DAM 3 NEAR RED WING, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	531	518	525	505	467	493	453	412	432	504	496	500
2	529	519	523	506	492	500	465	436	450	494	479	486
3	522	505	515	494	485	489	478	414	436	479	476	477
4	503	484	494	496	489	494	452	400	435	478	474	476
5	484	444	460	489	480	485	504	455	481	478	466	470
6	472	455	468	502	487	497	---	---	---	478	467	469
7	473	467	471	503	491	499	---	---	---	491	480	485
8	473	459	468	499	493	496	---	---	---	518	489	505
9	463	457	459	503	497	500	---	---	---	506	455	480
10	468	463	464	518	502	510	---	---	---	454	445	449
11	482	467	475	528	518	523	---	---	---	452	446	449
12	480	461	472	532	478	508	---	---	---	465	451	456
13	463	456	460	492	464	479	509	498	504	500	467	486
14	455	425	434	507	483	492	505	499	502	496	479	488
15	466	435	449	489	472	480	508	503	506	478	470	475
16	459	438	453	482	470	477	512	499	504	469	453	460
17	448	438	443	491	480	485	556	514	542	454	445	448
18	444	439	441	493	480	490	547	541	544	455	444	450
19	446	440	443	483	454	466	546	510	526	460	446	455
20	460	438	452	449	434	441	521	505	510	446	441	443
21	458	451	455	458	435	444	562	526	551	442	441	442
22	454	433	441	461	456	459	555	518	532	448	441	444
23	432	422	425	459	451	455	518	514	516	465	440	452
24	426	422	424	454	443	448	519	514	515	465	448	453
25	427	424	426	445	440	443	514	511	513	447	427	434
26	432	427	430	---	---	---	519	515	517	432	427	429
27	434	429	431	---	---	---	517	514	516	470	432	453
28	439	430	434	---	---	---	518	516	517	475	470	472
29	441	436	439	466	455	459	518	514	517	470	458	464
30	453	441	446	472	407	447	513	509	511	458	452	454
31	465	453	459	---	---	---	511	505	508	---	---	---
MONTH	531	422	457									

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	412	406	409	333	325	329	364	350	358
2	---	---	---	412	406	409	336	328	331	362	351	357
3	---	---	---	409	401	405	337	326	333	351	335	343
4	---	---	---	402	395	398	329	323	326	353	343	348
5	---	---	---	397	393	395	330	324	327	366	356	363
6	---	---	---	403	396	399	328	315	321	372	352	364
7	---	---	---	400	397	399	317	314	316	366	351	352
8	407	401	404	408	399	402	323	316	320	378	364	371
9	410	407	409	409	399	404	325	320	322	383	377	379
10	412	409	410	406	400	403	333	325	330	387	378	383
11	410	406	408	402	394	397	---	---	---	388	381	384
12	407	402	405	403	396	400	---	---	---	388	377	384
13	402	396	399	406	398	401	---	---	---	378	373	376
14	397	394	396	406	399	402	---	---	---	386	378	382
15	396	391	394	401	392	396	---	---	---	386	371	378
16	393	389	391	394	383	390	---	---	---	373	368	372
17	398	394	396	406	382	395	351	338	346	372	365	370
18	396	391	393	410	404	406	356	348	352	378	368	372
19	392	389	391	407	397	403	357	350	354	394	375	386
20	389	387	388	432	401	422	355	351	353	393	375	384
21	389	387	388	434	397	422	362	331	349	381	371	374
22	395	389	393	398	348	372	338	325	332	382	369	375
23	405	394	400	346	324	334	348	339	345	376	369	372
24	409	400	405	325	313	318	356	349	352	382	369	376
25	404	389	397	316	312	313	359	354	356	380	377	378
26	402	389	394	316	307	312	358	352	355	382	377	380
27	402	398	400	326	313	318	362	347	357	409	378	390
28	409	399	407	328	324	326	356	344	352	434	411	425
29	412	407	409	322	315	318	360	343	355	431	403	418
30	---	---	---	335	321	329	365	347	357	427	400	411
31	---	---	---	335	332	334	---	---	---	436	401	420
MONTH				434	307	378				436	335	378

05344980 MISSISSIPPI RIVER AT LOCK AND DAM 3 NEAR RED WING, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	410	390	397	477	465	470	408	401	405	418	413	415
2	444	393	420	476	466	468	406	400	403	425	417	420
3	470	442	454	477	472	475	400	386	392	427	419	424
4	477	469	474	476	466	471	399	390	394	421	413	417
5	472	453	460	472	455	464	407	399	404	426	417	421
6	456	425	444	453	441	448	411	404	408	418	393	405
7	425	398	413	459	441	448	409	404	406	396	389	392
8	434	416	427	468	444	455	408	383	396	397	388	393
9	451	424	435	484	460	472	417	376	400	395	380	390
10	463	450	456	472	442	456	390	361	361	380	373	375
11	466	455	461	456	438	446	393	377	377	383	377	380
12	468	460	464	447	420	430	415	401	401	395	372	379
13	480	467	473	443	419	430	427	410	410	396	389	392
14	486	478	482	459	443	448	423	415	418	391	380	386
15	496	481	488	458	437	446	419	409	414	382	379	381
16	509	496	502	454	440	447	414	409	411	384	378	381
17	507	494	502	511	449	481	418	410	413	378	358	370
18	532	492	517	512	435	472	427	413	419	361	323	340
19	540	525	533	442	420	429	436	409	418	331	325	329
20	540	517	531	434	418	426	412	409	411	335	330	334
21	524	517	520	447	416	432	414	408	411	332	328	329
22	524	513	518	451	439	446	412	407	410	331	314	323
23	517	506	512	442	429	435	420	411	415	314	308	311
24	523	505	509	441	420	432	438	420	427	314	308	311
25	518	507	514	434	416	426	448	432	442	326	313	316
26	521	499	515	451	429	440	435	423	431	331	323	327
27	522	492	499	434	387	409	428	419	423	334	328	331
28	497	484	490	428	381	398	423	419	421	332	327	329
29	514	496	509	404	387	394	422	420	421	339	313	333
30	512	463	486	408	386	397	425	413	420	341	327	338
31	---	---	---	410	405	407	416	407	412	---	---	---
MONTH	540	390	480	512	381	442	448	361	409	427	308	366

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	8.1	7.9	8.0	8.0	7.9	8.0	8.1	8.0	8.1	7.9	7.8	7.8
2	8.0	7.9	8.0	8.0	8.0	8.0	8.1	8.0	8.0	7.9	7.8	7.9
3	8.1	7.9	8.0	8.0	8.0	8.0	8.0	7.9	7.9	7.9	7.8	7.9
4	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.9	8.0	7.9	7.8	7.8
5	8.0	7.9	8.0	8.0	7.9	7.9	8.0	8.0	8.0	7.9	7.9	7.9
6	8.0	7.9	8.0	8.0	7.9	8.0	8.0	7.9	7.9	7.9	7.8	7.8
7	8.1	8.0	8.0	8.0	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
8	8.1	8.0	8.1	8.0	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
9	8.2	8.1	8.1	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
10	8.2	8.1	8.1	8.0	7.9	7.9	8.0	7.8	7.9	7.9	7.8	7.8
11	8.3	8.1	8.2	8.0	7.9	7.9	8.0	7.9	7.9	7.8	7.8	7.8
12	8.3	8.2	8.2	7.9	7.9	7.9	8.0	7.9	7.9	7.8	7.8	7.8
13	8.3	8.2	8.2	8.0	7.9	7.9	8.0	7.9	7.9	7.8	7.8	7.8
14	8.3	8.1	8.2	8.0	7.9	8.0	7.9	7.9	7.9	7.8	7.8	7.8
15	8.4	8.2	8.3	8.0	8.0	8.0	7.9	7.9	7.9	7.8	7.8	7.8
16	8.6	8.3	8.4	8.0	8.0	8.0	8.0	7.9	7.9	7.8	7.7	7.8
17	---	---	---	8.0	8.0	8.0	7.9	7.9	7.9	7.8	7.7	7.7
18	---	---	---	8.0	8.0	8.0	7.9	7.9	7.9	7.7	7.7	7.7
19	---	---	---	8.0	7.9	7.9	8.0	7.9	8.0	7.8	7.7	7.8
20	---	---	---	8.0	7.9	8.0	8.0	8.0	8.0	7.8	7.7	7.7
21	---	---	---	8.0	8.0	8.0	8.0	8.0	8.0	7.7	7.7	7.7
22	---	---	---	8.0	8.0	8.0	8.0	7.9	7.9	7.8	7.7	7.8
23	---	---	---	8.0	8.0	8.0	7.9	7.9	7.9	7.8	7.8	7.8
24	---	---	---	8.0	8.0	8.0	7.9	7.9	7.9	7.8	7.8	7.8
25	8.0	7.9	8.0	8.0	8.0	8.0	7.9	7.9	7.9	7.8	7.8	7.8
26	8.0	7.9	8.0	8.0	7.9	7.9	7.9	7.9	7.9	7.8	7.8	7.8
27	8.0	7.9	7.9	8.0	8.0	8.0	7.9	7.9	7.9	7.8	7.8	7.8
28	7.9	7.9	7.9	8.1	8.0	8.0	7.9	7.9	7.9	7.8	7.7	7.8
29	7.9	7.8	7.9	8.1	8.0	8.1	7.9	7.8	7.9	7.8	7.7	7.8
30	7.9	7.9	7.9	8.1	8.0	8.1	7.9	7.8	7.9	7.8	7.7	7.8
31	7.9	7.9	7.9	---	---	---	7.9	7.8	7.9	7.8	7.7	7.7
MONTH				8.1	7.9	8.0	8.1	7.8	7.9	7.9	7.7	7.8

05344980 MISSISSIPPI RIVER AT LOCK AND DAM 3 NEAR RED WING, MN--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	7.9	7.8	7.9	7.8	7.8	7.8	8.6	8.5	8.6
2	---	---	---	7.9	7.8	7.8	7.9	7.8	7.8	8.8	8.5	8.6
3	---	---	---	7.9	7.8	7.8	7.9	7.9	7.9	8.8	8.6	8.7
4	---	---	---	7.9	7.8	7.9	8.0	7.6	7.9	8.8	8.6	8.7
5	---	---	---	7.9	7.8	7.8	8.0	7.9	7.9	8.7	8.5	8.6
6	---	---	---	7.8	7.8	7.8	8.0	7.8	7.9	8.8	8.6	8.7
7	7.9	7.7	7.8	7.8	7.7	7.8	7.9	7.8	7.9	8.8	8.5	8.6
8	7.8	7.8	7.8	7.8	7.7	7.8	8.0	7.8	7.9	8.6	8.5	8.5
9	7.8	7.8	7.8	7.8	7.8	7.8	8.1	7.9	8.0	8.7	8.5	8.6
10	7.8	7.8	7.8	---	---	---	8.0	8.0	8.0	8.6	8.5	8.5
11	7.8	7.8	7.8	---	---	---	---	---	---	8.7	8.4	8.6
12	7.9	7.8	7.8	---	---	---	---	---	---	8.7	8.6	8.6
13	8.0	7.8	7.9	---	---	---	---	---	---	8.7	8.5	8.6
14	8.0	7.9	7.9	---	---	---	---	---	---	8.7	8.5	8.6
15	8.0	7.8	7.9	---	---	---	---	---	---	8.7	8.5	8.6
16	7.9	7.9	7.9	---	---	---	---	---	---	8.6	8.3	8.4
17	7.9	7.8	7.9	---	---	---	---	---	---	8.3	8.2	8.3
18	7.9	7.8	7.9	---	---	---	---	---	---	8.3	8.1	8.2
19	8.0	7.7	7.9	---	---	---	---	---	---	8.4	8.1	8.2
20	7.9	7.8	7.9	7.9	7.9	7.9	---	---	---	8.4	8.1	8.2
21	7.9	7.8	7.9	7.9	7.8	7.9	---	---	---	8.6	8.2	8.4
22	7.9	7.9	7.9	7.8	7.7	7.8	---	---	---	8.6	8.3	8.5
23	8.0	7.9	7.9	7.7	7.6	7.6	---	---	---	8.5	8.4	8.4
24	8.0	7.8	8.0	7.6	7.6	7.6	8.7	8.2	8.5	8.5	8.3	8.4
25	8.0	7.9	8.0	7.6	7.6	7.6	8.7	8.5	8.6	8.3	8.1	8.2
26	8.0	7.9	8.0	7.6	7.6	7.6	8.7	8.5	8.6	8.1	8.0	8.0
27	8.0	7.9	7.9	7.7	7.6	7.7	8.7	8.4	8.6	8.0	7.7	7.8
28	7.9	7.7	7.8	7.7	7.7	7.7	8.7	8.5	8.6	7.8	7.6	7.7
29	7.9	7.7	7.8	7.7	7.7	7.7	8.6	8.5	8.6	7.9	7.6	7.7
30	---	---	---	7.8	7.7	7.7	8.6	8.4	8.5	7.9	7.6	7.7
31	---	---	---	7.8	7.6	7.8	---	---	---	7.8	7.5	7.6
MONTH										8.8	7.5	8.4

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.8	7.5	7.6	8.2	8.0	8.1	8.2	8.0	8.1	8.0	7.8	7.8
2	7.7	7.6	7.6	8.4	8.1	8.2	8.2	7.9	8.1	8.0	7.8	7.8
3	7.8	7.6	7.6	8.2	8.1	8.1	8.0	7.8	7.9	7.9	7.7	7.8
4	7.6	7.6	7.6	8.4	8.1	8.2	7.8	7.6	7.7	8.1	8.0	8.0
5	7.8	7.6	7.6	8.2	8.1	8.2	7.7	7.5	7.6	8.1	8.0	8.0
6	7.6	7.5	7.5	8.2	8.1	8.1	8.1	7.4	7.8	8.1	8.0	8.1
7	7.6	7.5	7.5	8.4	8.1	8.2	8.0	7.9	7.9	8.1	7.9	8.0
8	7.6	7.5	7.6	8.3	8.1	8.2	8.0	7.8	7.9	8.1	8.0	8.0
9	7.6	7.6	7.6	8.4	8.0	8.2	7.9	7.7	7.8	8.3	8.0	8.1
10	7.6	7.6	7.6	8.5	8.1	8.3	7.7	7.6	7.7	8.2	7.8	8.0
11	7.7	7.6	7.6	8.3	8.1	8.2	7.7	7.5	7.6	7.8	7.6	7.7
12	7.6	7.6	7.6	8.3	8.1	8.2	7.5	7.4	7.4	7.6	7.5	7.6
13	7.6	7.5	7.6	8.3	8.1	8.1	7.9	7.4	7.7	7.5	7.4	7.5
14	7.6	7.6	7.6	8.2	8.0	8.1	8.0	7.7	7.9	7.4	7.3	7.3
15	7.7	7.6	7.6	8.2	8.0	8.1	8.0	7.8	7.9	7.5	7.2	7.3
16	7.7	7.7	7.7	8.2	8.0	8.1	7.9	7.8	7.8	7.5	7.4	7.5
17	7.7	7.7	7.7	8.3	8.0	8.2	7.9	7.7	7.8	7.5	7.4	7.5
18	8.1	7.7	7.9	8.2	8.0	8.1	7.8	7.7	7.7	7.5	7.4	7.4
19	8.2	8.1	8.1	8.1	8.0	8.0	8.2	7.7	7.9	7.5	7.4	7.5
20	8.2	8.1	8.2	8.3	8.0	8.1	8.1	7.9	8.0	7.5	7.4	7.5
21	8.2	8.1	8.1	8.4	8.1	8.2	8.1	7.9	8.0	7.5	7.4	7.4
22	8.2	8.1	8.2	8.2	8.0	8.1	8.1	7.9	8.0	7.4	7.3	7.3
23	8.3	8.1	8.2	8.4	8.0	8.2	8.0	8.0	8.0	7.3	7.3	7.3
24	8.3	8.2	8.2	8.3	8.0	8.1	8.0	7.9	8.0	7.5	7.2	7.4
25	8.4	8.1	8.2	8.2	8.0	8.1	8.2	7.9	8.0	7.5	7.4	7.4
26	8.4	8.2	8.3	8.2	7.9	8.1	8.1	7.9	8.0	7.5	7.5	7.5
27	8.3	8.1	8.2	8.2	7.9	8.0	8.0	7.8	7.9	7.6	7.4	7.5
28	8.2	8.1	8.2	8.3	7.8	8.1	7.9	7.9	7.9	7.5	7.4	7.4
29	8.2	8.1	8.1	8.3	8.0	8.1	8.0	7.8	7.9	7.5	7.4	7.4
30	8.2	8.0	8.1	8.3	7.9	8.1	8.0	7.9	7.9	7.5	7.4	7.4
31	---	---	---	8.3	8.1	8.2	7.9	7.8	7.8	---	---	---
MONTH	8.4	7.5	7.8	8.5	7.8	8.1	8.2	7.4	7.9	8.3	7.2	7.6

05344980 MISSISSIPPI RIVER AT LOCK AND DAM 3 NEAR RED WING, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	18.0	17.5	18.0	10.5	9.0	9.5	1.0	.5	1.0	1.0	1.0	1.0
2	17.5	17.0	17.0	9.0	8.5	8.5	1.5	.5	1.0	1.0	.5	1.0
3	17.0	16.0	16.5	8.5	8.0	8.0	2.0	.5	1.0	1.0	.5	.5
4	16.0	14.5	15.0	9.0	8.0	8.5	1.5	1.0	1.5	1.0	.5	.5
5	15.0	14.5	14.5	9.5	8.0	9.0	1.5	1.0	1.5	.5	.5	.5
6	14.5	13.5	14.0	8.0	7.0	7.5	1.5	1.0	1.5	1.0	.5	.5
7	13.5	13.0	13.0	7.5	6.5	7.0	1.5	1.5	1.5	.5	.5	.5
8	13.5	13.5	13.5	6.5	5.5	6.0	1.0	.0	.5	.5	.5	.5
9	13.5	12.5	13.0	6.5	5.0	5.5	1.0	.5	1.0	.5	.5	.5
10	12.5	12.0	12.0	5.5	4.5	5.0	1.5	1.0	1.0	.5	.5	.5
11	12.0	11.0	11.5	5.5	4.5	5.0	1.0	.0	.5	.5	.5	.5
12	11.0	10.5	10.5	5.5	5.0	5.0	1.5	.5	1.0	.5	.5	.5
13	10.5	10.0	10.0	5.5	4.5	5.0	1.0	.5	1.0	1.0	.5	.5
14	11.0	10.5	10.5	5.5	3.0	4.0	1.0	1.0	1.0	.5	.5	.5
15	11.0	10.5	10.5	4.0	3.5	3.5	1.0	1.0	1.0	1.0	.5	.5
16	13.5	10.5	11.5	5.5	3.5	4.5	1.0	.5	.5	1.5	.5	1.0
17	12.0	11.5	11.5	6.0	4.5	5.0	1.0	.5	1.0	1.0	1.0	1.0
18	12.0	11.5	12.0	6.5	5.0	6.0	1.0	.5	1.0	1.0	1.0	1.0
19	12.5	12.0	12.0	7.0	6.0	6.5	.5	.5	.5	1.0	1.0	1.0
20	13.5	12.5	12.5	7.0	6.0	6.5	1.0	.5	1.0	1.0	1.0	1.0
21	13.5	13.0	13.0	6.0	4.5	5.0	1.5	1.0	1.0	1.5	1.0	1.0
22	12.5	11.0	12.0	4.5	4.5	4.5	1.0	.5	.5	1.5	1.0	1.0
23	11.0	10.0	10.5	4.5	4.0	4.0	1.0	.5	.5	1.5	1.0	1.0
24	10.5	10.0	10.0	4.0	3.5	3.5	1.0	1.0	1.0	1.0	1.0	1.0
25	10.5	10.0	10.0	4.0	3.5	3.5	1.0	.5	1.0	1.5	1.0	1.0
26	10.0	9.5	10.0	4.0	3.5	3.5	1.0	.5	.5	1.0	1.0	1.0
27	10.0	9.5	9.5	3.0	2.0	3.0	1.0	.5	.5	1.5	1.0	1.0
28	10.5	9.5	10.0	2.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0
29	10.5	10.0	10.0	1.5	1.0	1.0	1.0	.5	1.0	1.0	1.0	1.0
30	10.5	10.5	10.5	1.5	.5	1.0	1.0	.5	.5	1.5	1.0	1.0
31	10.5	10.5	10.5	---	---	---	1.0	1.0	1.0	1.0	1.0	1.0
MONTH	18.0	9.5	12.0	10.5	.5	5.0	2.0	.0	1.0	1.5	.5	1.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	1.0	1.0	1.0	5.0	3.5	4.0	23.5	14.5	17.0
2	---	---	---	1.0	1.0	1.0	6.0	4.0	4.5	18.5	15.5	16.5
3	---	---	---	1.5	1.0	1.0	5.5	4.0	5.0	20.0	16.5	18.0
4	---	---	---	1.5	1.0	1.0	5.5	3.5	4.5	22.5	17.5	19.5
5	---	---	---	1.0	1.0	1.0	7.0	4.5	5.5	20.5	18.5	19.0
6	---	---	---	1.0	1.0	1.0	7.0	5.5	6.0	18.5	17.0	18.0
7	1.0	.5	1.0	1.0	1.0	1.0	7.0	6.0	6.5	17.5	15.5	16.5
8	1.0	1.0	1.0	1.0	1.0	1.0	7.0	5.5	6.0	18.0	16.0	16.5
9	1.0	1.0	1.0	1.0	1.0	1.0	5.5	4.5	4.5	19.0	16.0	17.0
10	1.0	1.0	1.0	1.5	1.0	1.0	5.0	4.0	4.5	17.5	16.5	17.0
11	1.0	1.0	1.0	1.0	1.0	1.0	---	---	---	17.0	16.5	17.0
12	1.0	1.0	1.0	1.0	1.0	1.0	---	---	---	19.0	16.5	17.5
13	1.0	1.0	1.0	1.5	1.0	1.0	---	---	---	18.0	17.0	17.5
14	1.0	1.0	1.0	1.5	1.0	1.5	---	---	---	18.5	16.5	17.0
15	1.0	1.0	1.0	2.0	1.5	1.5	---	---	---	17.5	16.5	17.0
16	1.0	1.0	1.0	2.0	1.5	2.0	---	---	---	17.5	17.0	17.0
17	1.0	1.0	1.0	2.0	1.5	1.5	10.0	7.0	8.5	17.5	16.5	17.0
18	1.0	1.0	1.0	2.5	1.5	2.0	11.0	8.0	9.5	18.5	17.0	17.5
19	1.0	1.0	1.0	3.0	2.0	2.5	12.0	9.5	10.5	19.5	16.5	17.5
20	1.5	1.0	1.0	2.5	2.0	2.5	12.5	10.5	11.5	19.0	17.5	18.0
21	1.5	1.0	1.0	3.0	2.0	2.5	13.0	11.5	12.5	21.0	18.5	19.5
22	1.5	1.0	1.0	2.5	2.0	2.0	14.5	12.0	13.0	22.5	19.5	20.5
23	1.0	1.0	1.0	2.0	1.5	2.0	15.0	12.5	14.0	22.5	20.5	21.0
24	1.0	1.0	1.0	2.5	1.5	2.0	14.0	13.0	13.5	23.5	21.0	22.0
25	1.0	1.0	1.0	2.5	1.5	2.0	14.0	13.0	13.5	24.0	21.5	22.5
26	1.0	1.0	1.0	3.0	2.0	2.5	13.5	13.0	13.0	23.0	22.5	22.5
27	1.0	1.0	1.0	3.0	2.5	2.5	15.0	12.5	13.5	25.5	22.0	23.0
28	1.5	1.0	1.5	2.5	2.5	2.5	15.5	13.0	14.0	24.5	23.0	24.0
29	1.5	1.0	1.0	3.5	2.5	3.0	15.5	13.5	14.0	24.5	23.5	24.0
30	---	---	---	4.5	3.0	3.5	17.5	13.5	15.0	26.0	23.5	24.0
31	---	---	---	4.5	3.5	4.0	---	---	---	24.5	23.0	23.5
MONTH				4.5	1.0	2.0				26.0	14.5	19.0

05344980 MISSISSIPPI RIVER AT LOCK AND DAM 3 NEAR RED WING, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	24.5	22.5	23.0	24.0	22.0	23.0	27.5	25.0	26.5	23.5	21.5	22.0
2	23.0	22.5	22.5	25.5	22.5	23.5	27.5	25.0	26.0	23.5	22.0	22.0
3	24.0	22.5	23.0	24.5	23.5	24.0	26.0	24.5	25.5	22.0	21.5	22.0
4	24.0	23.0	23.5	26.0	24.0	24.0	26.0	24.0	25.0	22.5	22.0	22.5
5	23.0	22.0	22.5	25.5	24.5	24.5	25.0	23.5	24.0	22.5	21.5	22.0
6	23.5	22.0	23.0	24.5	24.0	24.5	25.5	23.5	24.0	22.0	21.5	22.0
7	23.5	22.0	23.0	28.5	24.5	25.5	25.0	24.0	24.5	22.5	22.0	22.0
8	22.0	21.0	21.5	27.0	25.0	25.5	26.0	23.5	25.0	23.5	22.0	22.5
9	22.0	21.0	21.5	28.5	25.0	26.5	24.5	23.5	24.0	23.0	22.0	22.5
10	23.0	21.5	22.0	29.0	26.5	28.0	24.0	23.0	23.5	22.0	21.5	22.0
11	23.5	21.5	22.5	28.0	27.0	27.5	24.5	23.0	23.5	22.0	20.5	21.0
12	23.0	22.0	22.0	28.0	26.5	27.5	24.0	22.5	23.0	20.5	20.0	20.0
13	23.0	22.0	22.5	27.5	26.5	27.0	26.0	23.0	24.5	20.5	20.0	20.0
14	25.0	23.0	24.0	28.5	27.0	27.5	26.0	23.5	25.0	20.0	19.5	19.5
15	24.5	23.5	24.0	29.0	27.0	27.5	24.5	24.0	24.5	19.5	19.0	19.0
16	24.0	22.5	23.0	27.5	26.5	27.0	24.0	22.5	23.5	19.5	18.0	18.5
17	24.0	22.5	23.5	29.0	27.0	27.5	22.5	21.5	22.0	18.0	17.5	18.0
18	23.5	22.0	23.0	28.0	26.5	27.0	23.0	21.5	22.0	18.0	17.5	17.5
19	23.5	22.0	22.5	27.0	26.0	26.5	26.0	22.5	23.0	18.0	17.0	17.5
20	23.0	22.0	22.5	26.5	26.0	26.0	24.5	23.0	23.5	19.0	18.0	18.0
21	24.0	22.5	23.0	27.5	25.5	26.0	24.5	23.0	23.5	18.5	17.5	18.0
22	24.5	23.0	23.5	27.0	25.0	26.0	24.0	23.0	23.0	18.0	17.5	17.5
23	25.0	23.5	24.0	27.5	25.0	26.0	23.5	22.5	23.0	17.5	17.0	17.0
24	27.5	24.0	24.5	27.0	24.5	25.5	23.0	22.5	22.5	18.0	17.0	17.5
25	26.0	24.0	25.0	28.0	25.0	26.5	25.5	22.5	23.5	17.0	16.0	16.5
26	28.5	24.5	26.0	27.5	25.0	26.0	25.0	23.0	23.5	16.0	15.5	16.0
27	28.0	25.0	25.5	27.5	25.0	25.5	23.0	22.0	22.5	16.0	15.5	15.5
28	25.0	24.0	24.5	27.5	25.5	26.0	22.5	22.0	22.0	16.0	15.5	15.5
29	24.0	22.0	22.5	28.5	25.0	26.0	23.0	22.0	22.0	17.0	15.5	15.5
30	22.5	21.5	22.0	28.5	25.0	26.0	25.0	22.5	23.5	17.5	16.0	16.0
31	---	---	---	28.0	25.5	26.5	22.5	22.0	22.0	---	---	---
MONTH	28.5	21.0	23.0	29.0	22.0	26.0	27.5	21.5	23.5	23.5	15.5	19.0

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	7.1	5.8	6.3	9.4	8.7	9.1	13.2	12.5	12.8	13.2	12.9	13.0
2	8.5	5.5	6.6	9.7	9.2	9.4	---	---	---	13.3	13.0	13.2
3	9.8	8.0	8.9	9.9	9.2	9.5	---	---	---	13.2	13.0	13.1
4	9.1	8.3	8.8	9.9	9.2	9.6	---	---	---	13.4	13.0	13.3
5	9.8	7.6	8.6	9.9	9.2	9.5	---	---	---	13.2	12.9	13.1
6	9.9	8.8	9.3	10.5	9.9	10.3	---	---	---	13.1	12.7	12.9
7	10.6	9.2	9.8	11.4	10.1	10.9	---	---	---	13.1	12.6	12.8
8	10.9	9.4	10.1	11.8	11.5	11.7	---	---	---	13.7	12.8	13.3
9	10.8	9.3	10.0	11.7	11.4	11.5	---	---	---	13.5	12.9	13.2
10	10.4	9.5	10.0	11.9	11.5	11.7	---	---	---	13.2	12.9	13.0
11	11.4	9.5	10.4	12.1	11.9	12.0	---	---	---	13.2	12.9	13.0
12	11.4	10.0	10.6	---	---	---	---	---	---	13.2	12.9	13.0
13	11.8	9.5	10.5	---	---	---	13.0	12.7	12.8	13.3	12.8	13.1
14	11.2	9.5	10.4	---	---	---	13.0	12.5	12.7	12.9	12.6	12.8
15	12.5	10.1	11.2	13.4	12.8	13.1	12.7	12.5	12.6	12.8	12.6	12.7
16	15.1	11.5	13.0	12.9	12.3	12.5	12.9	12.5	12.7	13.1	12.7	12.9
17	14.4	12.6	13.6	12.6	12.2	12.4	13.5	12.9	13.2	13.1	12.7	12.9
18	14.0	11.1	12.3	12.8	12.0	12.5	14.0	13.6	13.8	12.9	12.6	12.8
19	11.4	9.9	10.6	12.4	11.8	12.0	14.3	13.3	13.8	13.0	12.6	12.8
20	10.9	9.5	10.1	12.2	11.5	11.7	14.4	14.0	14.2	13.0	12.7	12.8
21	10.3	9.1	9.5	12.4	11.7	12.0	14.7	14.3	14.5	13.0	12.7	12.9
22	9.8	7.7	8.2	12.2	11.9	12.1	14.3	13.8	14.0	13.2	12.8	13.0
23	8.7	7.8	8.2	12.0	11.7	11.8	14.1	13.8	13.9	13.3	12.8	13.0
24	9.2	8.3	8.8	11.9	11.6	11.8	14.0	13.8	13.9	13.2	12.7	12.9
25	9.4	8.6	9.0	12.1	11.8	11.9	14.2	14.0	14.1	12.6	11.9	12.2
26	9.3	8.5	8.9	13.0	10.4	11.9	14.2	14.0	14.1	12.1	11.8	12.0
27	8.6	8.1	8.4	14.2	12.8	13.4	14.1	13.3	13.6	12.5	12.0	12.3
28	8.5	8.0	8.3	15.1	12.5	13.3	13.5	13.2	13.4	12.5	12.3	12.4
29	8.8	8.1	8.4	13.4	12.7	13.0	13.5	13.3	13.4	12.3	12.2	12.2
30	8.7	8.3	8.5	13.4	12.5	13.0	13.4	13.2	13.3	12.5	12.2	12.3
31	9.1	7.9	8.6	---	---	---	13.2	12.9	13.1	13.1	11.7	12.0
MONTH	15.1	5.5	9.6							13.7	11.7	12.8

05344980 MISSISSIPPI RIVER AT LOCK AND DAM 3 NEAR RED WING, MN--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	---	---	---	12.0	11.4	11.7	---	---	---			
2	---	---	---	11.8	11.3	11.6	---	---	---			
3	---	---	---	11.8	11.2	11.5	---	---	---			
4	---	---	---	11.6	11.2	11.4	---	---	---			
5	---	---	---	12.2	11.2	11.8	---	---	---			
6	---	---	---	12.1	11.6	11.8	---	---	---			
7	---	---	---	11.7	11.0	11.5	---	---	---			
8	10.8	10.6	10.7	11.7	11.0	11.4	---	---	---			
9	10.8	10.5	10.7	11.5	11.2	11.3	---	---	---			
10	10.7	10.5	10.6	11.5	10.8	11.2	---	---	---			
11	10.6	10.4	10.5	11.7	11.0	11.2	---	---	---			
12	10.5	10.4	10.4	11.7	10.9	11.4	---	---	---			
13	10.6	9.6	10.1	11.7	11.3	11.5	---	---	---			
14	9.8	9.5	9.6	11.4	11.0	11.2	---	---	---			
15	9.8	9.1	9.5	11.8	10.9	11.3	---	---	---			
16	9.5	9.1	9.3	11.8	11.0	11.5	---	---	---			
17	9.5	9.1	9.3	11.9	11.1	11.6	12.7	10.5	11.4			
18	9.4	9.1	9.3	11.9	11.4	11.7	12.2	10.5	11.4			
19	9.3	8.8	9.0	---	---	---	11.7	9.8	10.8			
20	9.2	8.8	9.0	---	---	---	12.0	9.3	10.6			
21	9.2	8.7	9.0	---	---	---	11.4	9.0	10.2			
22	9.3	9.1	9.2	---	---	---	11.2	8.6	9.6			
23	10.6	9.6	10.1	---	---	---	---	---	---			
24	11.1	10.7	11.0	---	---	---	---	---	---			
25	11.3	11.0	11.2	---	---	---	---	---	---			
26	11.4	11.1	11.2	---	---	---	---	---	---			
27	11.6	11.4	11.6	---	---	---	---	---	---			
28	11.6	11.3	11.4	---	---	---	---	---	---			
29	11.9	11.4	11.7	---	---	---	---	---	---			
30	---	---	---	---	---	---	---	---	---			
31	---	---	---	---	---	---	---	---	---			

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	7.9	7.0	7.4	8.8	5.4	7.1	6.8	6.2	6.4
2	---	---	---	11.4	6.7	8.4	8.3	6.5	7.1	7.2	6.3	6.6
3	---	---	---	9.1	7.9	8.4	7.7	5.8	6.4	7.0	6.1	6.5
4	---	---	---	9.3	7.0	7.9	7.4	5.7	6.6	7.6	6.5	6.9
5	---	---	---	8.0	7.0	7.5	7.2	5.3	6.4	7.1	6.2	6.6
6	---	---	---	7.2	6.4	6.8	8.0	6.0	7.0	6.6	5.9	6.2
7	---	---	---	9.2	6.1	7.2	7.4	6.0	6.8	6.3	6.0	6.1
8	---	---	---	8.0	5.9	6.6	6.9	6.0	6.4	6.3	5.5	5.8
9	---	---	---	11.4	5.1	8.1	5.9	5.0	5.4	7.6	5.0	6.3
10	---	---	---	12.8	7.9	9.8	5.6	4.3	5.2	7.5	6.8	7.1
11	---	---	---	9.4	6.9	8.2	6.4	5.6	5.9	7.3	5.9	6.4
12	---	---	---	8.8	7.2	7.8	7.7	6.0	6.6	6.3	5.9	6.1
13	7.9	6.8	7.4	7.2	5.6	6.3	6.8	6.2	6.5	6.1	5.4	5.8
14	8.6	7.0	7.7	8.1	4.8	6.2	7.4	5.3	6.2	5.8	5.0	5.4
15	9.3	7.6	8.5	7.4	4.9	6.0	8.9	5.5	7.2	7.7	5.0	6.4
16	9.5	8.1	8.8	8.5	5.2	7.1	7.9	7.3	7.5	8.5	7.8	8.1
17	9.2	8.5	8.8	9.7	6.4	7.6	8.2	7.5	7.7	8.8	8.3	8.6
18	8.7	7.0	7.9	7.8	5.7	6.7	8.4	7.1	7.6	8.8	8.7	8.7
19	9.0	7.2	8.0	6.6	4.8	5.8	9.8	7.1	8.1	9.2	8.3	8.7
20	8.8	7.4	8.1	4.6	3.5	4.0	8.1	7.1	7.5	9.0	7.9	8.4
21	8.7	7.5	8.1	9.1	3.8	6.3	8.1	6.6	7.4	8.2	7.8	8.0
22	9.1	7.7	8.3	7.7	6.1	6.8	9.1	6.9	7.7	8.0	7.1	7.5
23	10.6	8.7	9.4	9.6	5.6	7.5	8.0	7.4	7.7	7.4	6.9	7.2
24	10.0	7.8	8.8	8.5	6.5	7.4	7.6	7.0	7.3	9.5	6.6	8.0
25	10.1	6.9	8.5	7.3	5.4	6.3	9.1	6.5	7.3	9.0	8.4	8.7
26	10.7	8.6	9.4	6.4	4.6	5.3	7.3	6.2	6.7	8.9	8.4	8.7
27	10.1	8.1	8.7	7.3	4.9	6.0	6.6	5.8	6.2	9.5	8.5	9.0
28	8.9	7.8	8.4	8.5	4.7	6.4	6.3	5.4	5.8	9.1	8.1	8.5
29	8.5	7.8	8.1	7.6	5.7	6.3	6.1	4.3	5.7	9.3	7.8	8.1
30	8.5	7.2	7.7	8.0	5.6	6.5	6.4	5.5	5.8	9.3	7.3	7.7
31	---	---	---	8.1	5.7	6.8	6.2	5.7	5.9	---	---	---
MONTH				12.8	3.5	7.0	9.8	4.3	6.7	9.5	5.0	7.3

05345000 VERMILLION RIVER NEAR EMPIRE, MN

LOCATION.--Lat 44°40'00", long 93°03'17", in SW¼NW¼ sec.24, T.114 N., R.19 W., Dakota County, Hydrologic Unit 07040001, on right bank and just downstream from County Road 79, 2 mi (3.2 km) west of Empire and 4 mi (6.4 km) northeast of Farmington.

DRAINAGE AREA.--110 mi^2 (285 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1942 to June 1945 (no record during July, August, and September 1944), September 1969 to September 1973 (discharge measurements only), October 1973 to current year. Prior to October 1975 published as "near Empire City".

GAGE.--Water-stage recorder. Datum of gage is 851.99 ft (259.687 m) National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). April 12, 1942, to June 30, 1944, and October 1, 1944, to July 7, 1945, nonrecording gage at same site and present datum.

REMARKS.--Records good except those for winter period and May 10-14, which are fair, and period of no gage-height record, June 3-21, which are poor.

AVERAGE DISCHARGE.--8 years (water years 1943, 1974-80), 44.3 ft^3/s (1.255 m^3/s), 5.47 in/yr (139 mm/yr), 32,100 acre-ft/yr (39.6 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,030 ft^3/s (57.5 m^3/s) Sept. 18, 1942; maximum gage height observed, 6.40 ft (1.951 m) Mar. 13, 1945 (backwater from ice); minimum daily discharge, 8.4 ft^3/s (0.24 m^3/s) Jan. 15, 1975; minimum gage height, 1.63 ft (0.497 m) Oct. 14, 1976.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in April 1965, reached a stage of 7.5 ft (2.286 m) from information by local resident, discharge 6,200 ft^3/s (176 m^3/s) from rating extended above 2,100 ft^3/s (59.5 m^3/s).

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 200 ft^3/s (5.66 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Mar. 20	0700	*1170	33.1	*7.16	2.182	June 8	0530	575	16.3	6.55	1.996

Minimum discharge, 20 ft^3/s (0.57 m^3/s) July 31, gage height, 2.06 ft (0.628 m).

PEAK DISCHARGE FOR WATER YEARS 1974 TO 1979.--Peak discharge above base of 200 ft^3/s (5.66 m^3/s) and maximum (*):

Water year	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
1974	Apr. 7, 1974	0345	233	6.60	4.91	1.497
	June 12, 1974	0030	*236	6.68	*4.92	1.500
1975	Apr. 18, 1975	1645	264	7.48	5.01	1.527
	Apr. 24, 1975	unknown	222	6.29	unknown	---
	Apr. 28, 1975	about 0400	*1390	39.4	*6.18	1.884
	June 13, 1975	1645	418	11.8	5.75	1.753
	June 16, 1975	2030	251	7.11	5.19	1.582
	June 23, 1975	0415	310	8.78	5.54	1.689
1976	Feb. 16, 1976	0930	200	5.66	4.73	1.442
	Mar. 13, 1976	0945	*664	18.8	*5.66	1.725
	Mar. 31, 1976	1345	230	6.51	4.90	1.494
1977	Mar. 11, 1977	1900	*224	6.34	*5.06	1.542
1978	July 2, 1978	1600	*670	19.0	*5.80	1.768
1979	Mar. 31, 1979	0900	850	24.1	5.97	1.820
	Aug. 30, 1979	2400	*1010	28.6	*5.98	1.823

05345000 VERMILLION RIVER NEAR EMPIRE, MN--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	63	44	32	27	24	82	53	49	32	21	40
2	48	63	41	32	27	24	78	51	47	30	23	36
3	45	57	42	32	27	24	75	48	44	29	23	37
4	42	54	42	32	26	23	76	47	40	28	26	40
5	41	52	43	32	26	23	87	46	47	28	25	36
6	40	53	43	32	26	23	93	44	63	27	23	33
7	40	52	46	32	25	22	96	43	133	27	23	33
8	39	52	43	32	25	21	96	42	432	26	37	32
9	38	50	43	32	25	22	98	43	159	25	31	30
10	37	48	43	32	24	22	94	43	86	23	29	29
11	37	47	44	32	24	24	92	43	67	23	47	37
12	37	47	45	32	27	22	104	42	60	32	37	54
13	36	46	38	32	23	21	110	43	61	26	33	59
14	35	45	36	32	23	21	107	42	56	25	30	54
15	36	46	35	32	24	22	99	41	51	24	28	48
16	36	45	35	32	24	39	91	40	49	38	28	44
17	35	45	35	32	24	79	85	40	48	33	31	42
18	36	46	35	31	24	164	84	41	48	29	30	39
19	42	46	32	30	23	501	82	41	47	28	29	39
20	42	43	32	30	23	835	80	39	46	27	43	44
21	42	47	33	31	23	452	79	38	44	27	52	90
22	50	59	33	31	24	244	76	37	43	25	43	106
23	72	67	33	31	24	152	72	37	42	24	35	74
24	70	65	33	30	25	110	69	36	40	23	33	58
25	62	60	32	29	25	89	66	35	39	24	32	50
26	57	58	32	29	25	91	63	34	38	22	31	47
27	54	55	32	29	25	94	61	35	37	21	33	45
28	52	52	32	28	24	104	59	35	37	23	31	44
29	50	49	32	28	24	99	57	39	34	23	31	44
30	48	46	33	28	---	90	55	56	34	21	46	43
31	52	---	33	28	---	86	---	53	---	21	47	---
TOTAL	1399	1558	1155	957	716	3567	2466	1307	2021	814	1011	1407
MEAN	45.1	51.9	37.3	30.9	24.7	115	82.2	42.2	67.4	26.3	32.6	46.9
MAX	72	67	46	32	27	835	110	56	432	38	52	106
MIN	35	43	32	28	23	21	55	34	34	21	21	29
CFSM	.41	.47	.34	.28	.23	1.05	.75	.38	.61	.24	.30	.43
IN.	.47	.53	.39	.32	.24	1.21	.83	.44	.68	.28	.34	.48
AC-FT	2770	3090	2290	1900	1420	7080	4890	2590	4010	1610	2010	2790

CAL YR 1979 TOTAL 21570 MEAN 59.1 MAX 718 MIN 19 CFSM .54 IN 7.29 AC-FT 42780
WTR YR 1980 TOTAL 18378 MEAN 50.2 MAX 835 MIN 21 CFSM .46 IN 6.22 AC-FT 36450

05345000 VERMILLION RIVER NEAR EMPIRE, MN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1973 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: February 1974 to current year.
pH: February 1974 to current year.
WATER TEMPERATURES: February 1974 to current year.
DISSOLVED OXYGEN: February 1974 to current year.

INSTRUMENTATION.--Water quality monitor since February 1974.

REMARKS.--Water is pumped to a monitor that is inside a heated shelter; water temperature during the winter may be affected. Extremes are for those years with 80 percent or more record.

COOPERATION.--Water-quality monitor is operated by the Metropolitan Waste Control Commission, St. Paul, MN.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE (water years 1979-80): Maximum, 994 micromhos Mar. 10, 1980; minimum, 236 micromhos June 8, 1980.
pH (water years 1979-80): Maximum, 9.3 units Nov. 11, 1978; minimum, 6.7 units Mar. 20, 1980.
WATER TEMPERATURES (water years 1979-80): Maximum, 27.0°C Aug. 6, 1979; minimum 0.0°C many days during winter.
DISSOLVED OXYGEN (water years 1979-80): Maximum, 12.9 mg/L May 7, 8, 1980; minimum, 1.5 mg/L Nov. 14, 1979.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum, 994 micromhos Mar. 10; minimum, 236 micromhos June 8.
pH: Maximum, 8.2 units Sept. 9, 10; minimum, 6.7 units Mar. 20.
WATER TEMPERATURES: Maximum, 25.5°C July 15; minimum, 0.0°C Mar. 20-23.
DISSOLVED OXYGEN: Maximum, 12.9 mg/L May 7, 8; minimum, 1.5 mg/L Nov. 14.

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	674	585	628	562	499	530	674	578	617	737	630	682
2	652	586	629	532	476	508	672	595	637	735	616	688
3	648	545	612	563	483	511	659	548	607	734	638	683
4	665	572	620	572	503	530	672	595	636	698	608	660
5	675	546	629	581	498	542	680	616	650	738	608	658
6	692	575	627	570	505	542	688	562	626	726	574	648
7	668	573	632	611	519	559	676	558	610	876	656	765
8	662	563	626	591	529	561	658	550	600	708	604	670
9	685	561	625	584	523	560	659	573	608	747	572	660
10	643	552	614	628	529	567	667	588	622	735	629	690
11	640	547	603	608	529	573	676	588	630	758	607	648
12	635	543	596	608	525	570	712	617	661	804	659	719
13	672	554	603	585	515	560	701	619	666	763	574	661
14	658	551	609	597	513	559	727	634	679	710	552	642
15	653	538	614	608	541	572	740	606	674	708	585	646
16	664	480	606	610	508	568	732	664	703	772	595	688
17	646	560	614	641	540	578	756	700	725	719	610	666
18	649	552	605	630	550	590	676	594	654	690	587	638
19	623	541	587	618	546	584	703	607	629	771	572	649
20	647	549	600	618	552	593	696	600	651	738	609	674
21	656	554	610	603	546	575	692	598	648	725	630	673
22	634	530	575	603	540	569	749	598	653	718	632	683
23	562	526	545	570	522	542	726	597	656	780	647	718
24	563	500	530	603	541	561	735	613	659	752	644	706
25	580	533	559	616	555	582	718	608	654	756	629	696
26	585	531	568	623	570	599	711	605	652	828	685	750
27	591	531	566	612	556	586	732	630	681	832	673	762
28	619	524	572	637	549	582	716	622	676	779	641	724
29	610	532	578	623	567	595	745	628	674	770	661	722
30	592	523	563	646	579	608	733	619	676	780	628	713
31	601	508	561	---	---	---	742	618	672	785	678	736
MONTH	692	480	597	646	476	565	756	548	651	876	552	688

05345000 VERMILLION RIVER NEAR EMPIRE, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	781	675	740	847	656	760	506	466	488	648	594	620
2	826	682	740	823	651	756	529	477	501	654	591	622
3	862	704	776	799	664	741	596	487	514	654	576	621
4	827	678	760	818	662	748	541	500	516	654	596	629
5	774	636	712	800	719	751	526	468	498	675	594	636
6	813	650	730	838	708	768	514	470	488	660	598	633
7	803	697	755	855	711	778	503	471	488	708	601	648
8	818	683	748	879	686	777	508	481	496	703	622	663
9	824	667	737	933	695	795	551	472	497	698	618	660
10	810	650	727	994	560	760	525	481	502	716	611	657
11	764	617	717	802	598	695	525	490	507	711	628	669
12	757	669	714	758	581	664	522	485	504	706	603	655
13	769	649	713	732	604	670	509	478	491	667	591	636
14	786	656	730	887	616	720	518	452	484	677	598	642
15	763	653	723	847	618	716	516	480	495	683	603	646
16	878	672	763	826	438	616	548	487	512	684	609	651
17	868	679	788	---	---	---	553	510	531	700	598	648
18	811	676	737	---	---	---	553	513	536	686	602	648
19	813	686	758	---	---	---	558	526	541	692	613	657
20	900	701	784	---	---	---	567	544	555	688	604	654
21	876	714	786	---	---	---	582	541	562	687	612	658
22	952	732	815	---	---	---	584	544	565	704	617	664
23	982	714	829	328	244	270	622	548	571	716	623	670
24	879	708	783	379	309	340	615	576	595	712	617	661
25	805	681	747	435	359	387	618	579	598	710	621	669
26	778	680	734	456	376	415	633	578	602	729	623	667
27	790	653	722	448	394	420	632	581	610	735	631	696
28	788	661	728	433	387	403	636	582	612	734	643	694
29	828	698	757	443	382	408	645	587	615	716	592	656
30	---	---	---	454	425	438	658	576	621	651	539	609
31	---	---	---	492	431	465	---	---	---	666	587	625
MONTH	982	617	750				658	452	537	735	539	650

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	676	604	637	803	703	768	887	761	836	752	667	694
2	677	612	648	822	717	772	882	747	824	767	691	742
3	661	622	642	820	732	784	845	763	805	766	701	729
4	731	651	696	822	718	775	828	712	774	742	644	708
5	717	585	664	820	707	757	816	734	767	780	695	734
6	705	575	636	809	721	772	833	716	778	802	709	748
7	404	270	320	840	731	789	859	732	801	800	710	759
8	368	236	279	844	738	805	828	572	715	799	705	759
9	564	377	466	841	728	799	796	696	732	795	718	766
10	623	558	589	858	751	809	780	705	753	793	711	763
11	648	605	625	833	744	801	718	542	633	787	603	711
12	656	615	636	809	550	698	773	625	693	691	592	647
13	672	609	637	799	706	747	799	728	764	685	579	630
14	707	628	649	814	714	771	804	733	763	690	632	661
15	676	625	650	802	728	765	805	708	756	761	685	716
16	747	650	690	762	692	727	814	699	763	766	696	739
17	749	686	723	786	685	748	803	691	732	780	719	752
18	757	684	721	795	689	747	830	715	774	785	713	759
19	761	691	727	846	717	782	820	706	763	798	727	763
20	758	687	729	822	719	780	791	614	689	763	702	728
21	765	690	724	845	713	782	719	638	680	688	508	576
22	753	686	723	849	727	790	756	685	710	578	503	532
23	766	691	732	829	728	788	788	697	742	601	542	571
24	759	691	732	858	743	802	790	712	751	661	595	621
25	784	667	738	855	696	792	799	712	763	674	613	645
26	773	709	746	874	730	800	812	616	745	687	637	667
27	765	696	743	867	735	810	777	694	730	690	630	662
28	797	706	744	834	718	785	790	702	758	682	634	662
29	796	714	757	863	705	805	802	719	761	689	624	658
30	793	704	753	879	755	821	777	509	653	679	628	658
31	---	---	---	876	753	830	700	615	644	---	---	---
MONTH	797	236	659	879	550	781	887	509	744	802	503	692
YEAR	994	236										

05345000 VERMILLION RIVER NEAR EMPIRE, MN--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	7.9	7.8	7.8	7.9	7.8	7.9	8.1	8.1	8.1	7.8	7.7	7.8
2	7.9	7.8	7.8	8.0	7.9	7.9	8.1	8.1	8.1	7.8	7.8	7.8
3	7.9	7.5	7.8	8 0	7.9	7.9	8.1	8.1	8 1	7 9	7.8	7.8
4	8 0	7.9	7.9	7.9	7.9	7.9	8.1	8.0	8.0	7.8	7.8	7.8
5	8.0	7.9	8.0	8.0	7.9	7.9	8.0	8.0	8.0	7.8	7.8	7.8
6	8 0	7.9	7.9	8.0	7.9	8.0	8.1	8.0	8.0	7.9	7.8	7.8
7	8.0	7.9	8.0	8.0	7.9	8.0	8.1	8.0	8.0	7.9	7.6	7.5
8	7.9	7.9	7.9	8.0	8.0	8.0	8.1	8.1	8.1	7.6	7.5	7.5
9	8.0	7.9	7.9	8.0	8.0	8.0	8.1	8.0	8.1	7.5	7.5	7.5
10	8.0	7.9	8.0	8.1	8.0	8.0	8.0	7.8	7.9	7.6	7.5	7.6
11	8.0	7.9	7.9	8.0	7.9	8.0	8.0	7.8	7.9	7.6	7.6	7.6
12	8.0	7.9	8.0	8.0	7.9	7.9	8.0	7.8	7.9	7.6	7.5	7.6
13	8.0	7.9	8.0	8.0	7.9	8.0	7.9	7.9	7.9	7.6	7.5	7.5
14	8.0	7.9	8.0	7.9	7.9	7.9	7.9	7.8	7.8	7.7	7.6	7.6
15	7.9	7.8	7.9	7.9	7.9	7.9	7.9	7.8	7.8	7.6	7.5	7.5
16	7.9	7.8	7.9	7.9	7.9	7.9	7.9	7.8	7.9	7.6	7.5	7.5
17	7.9	7.8	7.9	7.9	7.9	7.9	7.9	7.8	7.8	7.6	7.5	7.6
18	7.9	7.8	7.9	7.9	7.8	7.9	7.8	7.7	7.7	7.6	7.6	7.6
19	7.8	7.8	7.8	7.9	7.8	7.8	7.8	7.7	7.7	7.7	7.6	7.6
20	7.8	7.8	7.8	7.9	7.9	7.9	7.8	7.8	7.8	7.7	7.7	7.7
21	7.9	7.8	7.9	8.0	7.9	7.9	7.8	7.8	7.8	7.7	7.6	7.6
22	7.9	7.9	7.9	8.0	7.9	7.9	7.8	7.8	7.8	7.7	7.6	7.6
23	7.9	7.9	7.9	8.0	7.9	8.0	7.8	7.8	7.8	7.8	7.6	7.6
24	7.9	7.9	7.9	8.0	8.0	8.0	7.8	7.7	7.8	7.7	7.6	7.6
25	8.0	7.9	7.9	8.0	8.0	8.0	7.8	7.8	7.8	7.7	7.6	7.6
26	8.0	7.9	8.0	8.0	7.9	8.0	7.8	7.8	7.8	7.6	7.5	7.6
27	8.0	7.9	7.9	8.0	8.0	8.0	7.8	7.8	7.8	7.6	7.5	7.6
28	7.9	7.9	7.9	8.1	8.0	8.1	7.8	7.8	7.8	7.6	7.5	7.5
29	7.9	7.8	7.9	8.1	8.1	8.1	7.8	7.8	7.8	7.6	7.5	7.5
30	7.9	7.8	7.9	8.1	8.0	8.1	7.8	7.8	7.8	7.6	7.5	7.5
31	7.8	7.8	7.8	---	---	---	7.8	7.7	7.8	7.6	7.5	7.5
MONTH	8.0	7.5	7.9	8.1	7.8	8.0	8.1	7.7	7.9	7.9	7.5	7.6

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	7.7	7.5	7.6	7.7	7.6	7.7	7.8	7.7	7.7	8.0	7.8	7.9
2	7.7	7.6	7.6	7.7	7.6	7.7	7.8	7.7	7.7	8.0	7.8	7.9
3	7.7	7.6	7.6	7.7	7.6	7.6	7.8	7.7	7.7	8.0	7.8	7.9
4	7.7	7.6	7.7	7.8	7.6	7.7	7.7	7.6	7.7	8.0	7.8	7.9
5	7.7	7.6	7.7	7.8	7.7	7.7	7.8	7.6	7.7	8.0	7.8	7.9
6	7.7	7.6	7.6	7.8	7.7	7.7	7.7	7.6	7.7	8.1	7.9	8.0
7	7.7	7.6	7.6	7.7	7.6	7.7	7.7	7.7	7.7	8.1	7.9	8.0
8	7.7	7.6	7.6	7.7	7.6	7.7	7.9	7.7	7.8	8.0	7.9	8.0
9	7.7	7.5	7.6	7.7	7.6	7.6	7.9	7.8	7.9	8.0	7.9	7.9
10	7.7	7.6	7.6	7.8	7.6	7.7	7.8	7.8	7.8	7.9	7.8	7.9
11	7.7	7.6	7.7	7.8	7.6	7.7	7.8	7.7	7.8	8.0	7.8	7.9
12	7.7	7.6	7.6	7.7	7.6	7.7	7.8	7.7	7.7	7.9	7.8	7.9
13	7.7	7.6	7.6	7.8	7.6	7.7	7.8	7.7	7.8	7.9	7.8	7.8
14	7.7	7.6	7.6	7.8	7.6	7.7	7.8	7.7	7.8	7.9	7.8	7.8
15	7.7	7.6	7.6	7.7	7.6	7.7	7.8	7.7	7.7	7.9	7.8	7.8
16	7.7	7.6	7.6	7.6	7.4	7.5	7.8	7.7	7.8	7.9	7.8	7.8
17	7.6	7.5	7.6	7.4	7.2	7.3	7.8	7.7	7.7	7.8	7.7	7.8
18	7.6	7.5	7.5	7.2	6.9	7.1	7.8	7.7	7.8	7.8	7.7	7.8
19	7.5	7.5	7.5	7.0	6.8	6.9	7.8	7.7	7.7	7.8	7.7	7.8
20	7.5	7.4	7.5	6.9	6.7	6.8	7.8	7.7	7.7	7.8	7.8	7.8
21	7.5	7.4	7.5	7.0	6.9	7.0	7.8	7.7	7.8	7.8	7.8	7.8
22	7.5	7.4	7.4	7.3	7.2	7.2	7.9	7.8	7.8	7.8	7.8	7.8
23	7.5	7.5	7.5	7.5	7.4	7.4	8.0	7.8	7.9	7.8	7.8	7.8
24	7.5	7.5	7.5	7.7	7.6	7.6	8.0	7.9	7.9	7.8	7.8	7.8
25	7.7	7.5	7.6	7.8	7.7	7.8	8.0	7.9	7.9	7.8	7.7	7.8
26	7.7	7.6	7.7	7.9	7.8	7.8	8.0	7.9	7.9	7.8	7.8	7.8
27	7.7	7.6	7.7	7.9	7.9	7.9	8.0	7.9	7.9	7.8	7.8	7.8
28	7.7	7.7	7.7	7.9	7.9	7.9	8.0	7.9	7.9	7.8	7.8	7.8
29	7.8	7.6	7.7	7.9	7.8	7.9	8.0	7.8	7.9	7.8	7.6	7.7
30	---	---	---	7.9	7.8	7.9	8.0	7.8	7.9	7.7	7.5	7.6
31	---	---	---	7.9	7.6	7.8	---	---	---	7.7	7.6	7.7
MONTH	7.8	7.4	7.6	7.9	6.7	7.6	8.0	7.6	7.8	8.1	7.5	7.8

05345000 VERMILLION RIVER NEAR EMPIRE, MN--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.7	7.6	7.7	7.9	7.8	7.9	7.8	7.7	7.8	8.1	8.0	8.0
2	7.8	7.7	7.7	7.9	7.9	7.9	7.8	7.6	7.7	8.1	8.0	8.1
3	7.8	7.7	7.7	7.9	7.8	7.9	7.7	7.6	7.7	8.1	8.0	8.0
4	7.9	7.9	7.9	7.9	7.8	7.9	7.8	7.7	7.8	8.1	7.9	8.0
5	7.9	7.6	7.8	7.9	7.8	7.9	7.8	7.8	7.8	8.1	8.1	8.1
6	7.8	7.7	7.8	7.9	7.8	7.9	7.8	7.8	7.8	8.1	8.1	8.1
7	7.6	7.3	7.4	7.9	7.8	7.8	7.8	7.8	7.8	8.1	8.0	8.1
8	7.4	7.2	7.3	7.9	7.9	7.9	7.8	7.5	7.7	8.1	8.0	8.0
9	7.6	7.4	7.5	7.9	7.9	7.9	7.8	7.7	7.7	8.2	8.0	8.1
10	7.8	7.7	7.7	7.9	7.8	7.9	7.8	7.8	7.8	8.2	8.1	8.1
11	7.8	7.8	7.8	7.9	7.8	7.8	7.8	7.6	7.6	8.0	7.8	8.0
12	7.9	7.8	7.9	7.9	7.5	7.7	7.8	7.6	7.6	7.7	7.6	7.7
13	7.8	7.8	7.8	7.8	7.7	7.7	7.8	7.7	7.8	7.5	7.3	7.4
14	7.9	7.8	7.8	7.8	7.7	7.8	7.9	7.8	7.8	7.4	7.3	7.3
15	8.0	7.9	7.9	7.8	7.8	7.8	7.9	7.8	7.8	7.3	7.2	7.3
16	8.0	7.8	7.9	7.7	7.6	7.7	7.9	7.9	7.9	7.3	7.2	7.2
17	7.8	7.7	7.8	7.7	7.6	7.6	7.9	7.7	7.8	7.3	7.3	7.3
18	7.8	7.7	7.8	7.8	7.7	7.7	7.8	7.7	7.8	7.3	7.3	7.3
19	7.8	7.8	7.8	7.8	7.7	7.8	7.7	7.6	7.7	7.4	7.2	7.3
20	7.8	7.8	7.8	7.8	7.8	7.8	7.7	7.5	7.6	7.3	7.2	7.2
21	7.8	7.8	7.8	7.9	7.8	7.8	7.9	7.5	7.7	7.2	7.1	7.2
22	7.8	7.8	7.8	7.9	7.8	7.8	7.9	7.9	7.9	7.4	7.1	7.3
23	7.8	7.8	7.8	7.9	7.8	7.8	7.9	7.9	7.9	7.5	7.4	7.5
24	7.8	7.8	7.8	7.9	7.8	7.8	8.0	7.9	7.9	7.5	7.5	7.5
25	7.9	7.8	7.8	7.8	7.7	7.8	8.0	8.0	8.0	7.6	7.5	7.6
26	7.9	7.8	7.8	7.8	7.8	7.8	8.1	8.0	8.1	7.6	7.6	7.6
27	7.9	7.8	7.9	7.8	7.8	7.8	8.1	8.0	8.1	7.6	7.6	7.6
28	7.9	7.9	7.9	7.9	7.8	7.8	8.1	8.1	8.1	7.6	7.6	7.6
29	8.0	7.9	7.9	7.8	7.7	7.8	8.1	8.0	8.1	7.7	7.6	7.7
30	8.0	7.8	7.9	7.8	7.7	7.8	8.1	7.8	7.9	7.7	7.7	7.7
31	---	---	---	7.8	7.8	7.8	8.0	7.9	8.0	---	---	---
MONTH	8.0	7.2	7.8	7.9	7.5	7.8	8.1	7.5	7.8	8.2	7.1	7.7
YEAR	8.2	6.7	7.8									

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

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

05345000 VERMILLION RIVER NEAR EMPIRE, MN--Continued

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1.0	1.0	1.0	2.5	1.0	1.0	6.0	4.5	5.0	16.5	11.5	14.0
2	1.0	1.0	1.0	3.0	1.0	1.5	8.0	4.0	6.0	16.5	12.0	14.0
3	1.0	1.0	1.0	5.0	1.5	3.0	6.5	3.5	4.5	17.0	12.0	14.5
4	1.0	1.0	1.0	4.0	2.0	3.0	7.5	3.0	5.5	17.0	12.5	14.5
5	1.0	1.0	1.0	3.0	1.0	1.5	8.5	5.0	6.5	16.5	13.0	14.5
6	2.5	1.0	1.5	2.5	1.0	1.5	10.0	6.5	8.0	14.5	11.0	12.5
7	2.5	1.0	1.5	5.0	1.0	2.5	8.5	7.5	8.0	11.0	9.0	10.0
8	2.5	1.0	1.5	5.0	1.0	3.0	7.5	3.0	5.5	12.5	8.0	10.0
9	2.0	1.0	1.5	5.5	2.0	3.5	3.5	2.5	3.0	15.0	9.0	12.0
10	3.0	1.5	2.0	4.5	1.0	3.0	5.5	2.5	4.0	13.0	10.5	12.0
11	3.0	1.0	2.0	4.0	1.0	2.0	8.0	4.0	6.0	14.0	9.0	11.5
12	2.5	1.0	1.5	4.0	1.5	2.5	8.0	4.5	6.5	14.0	9.5	12.0
13	4.5	1.5	3.0	5.5	2.5	3.5	6.0	4.5	5.0	12.0	10.5	11.0
14	4.0	2.0	3.0	7.0	2.5	4.5	7.5	3.0	5.5	12.5	9.5	11.0
15	4.0	1.5	3.0	7.0	3.5	5.0	9.5	6.0	7.5	15.0	9.0	12.0
16	1.5	1.0	1.0	5.0	2.5	4.5	9.5	7.0	8.5	14.0	10.5	12.0
17	2.5	1.0	1.0	3.5	.5	2.0	12.5	8.5	10.5	11.5	11.0	11.0
18	4.0	1.0	2.5	2.0	.5	1.0	13.5	9.5	11.5	12.0	10.5	11.0
19	5.0	3.5	4.5	2.5	.5	1.0	14.5	10.0	12.0	17.0	10.0	13.0
20	6.5	4.5	5.5	3.5	.0	1.5	14.5	10.5	12.5	18.5	13.0	15.5
21	5.5	5.0	5.5	3.0	.0	1.5	16.5	11.5	14.0	19.5	13.0	16.0
22	6.0	5.0	5.5	1.0	.0	.5	17.0	13.0	15.0	20.0	14.0	17.0
23	5.0	3.0	4.0	2.5	.0	1.5	14.0	11.0	13.0	20.0	14.5	17.0
24	4.5	2.5	3.5	3.0	1.0	1.5	12.5	9.0	11.0	20.0	14.5	17.0
25	3.5	1.0	2.0	5.0	1.0	3.0	11.0	10.0	10.5	21.0	15.0	18.0
26	2.5	1.0	1.5	5.0	2.5	3.5	10.5	9.0	9.5	20.5	15.5	18.0
27	4.0	1.0	2.0	4.0	3.0	3.5	14.0	9.0	11.0	19.0	15.5	17.5
28	4.0	1.5	2.5	3.5	3.0	3.5	14.0	10.0	12.0	21.0	15.5	18.0
29	1.5	1.0	1.0	6.0	2.5	4.0	12.5	10.5	11.5	19.0	16.0	17.5
30	---	---	---	7.0	3.5	5.0	15.0	10.5	12.5	17.5	15.5	16.5
31	---	---	---	7.5	4.0	5.5	---	---	---	18.5	14.0	16.0
MONTH	6.5	1.0	2.5	7.5	.0	2.5	17.0	2.5	8.5	21.0	8.0	14.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	17.5	15.5	16.5	22.0	17.0	19.0	24.0	18.5	21.0	19.5	16.0	17.0
2	16.0	14.0	15.0	21.5	16.0	18.5	22.5	19.5	21.0	19.5	15.5	17.5
3	15.5	13.0	14.0	21.5	16.0	18.5	23.5	18.0	20.5	20.5	17.0	18.5
4	20.0	15.5	17.5	22.0	17.0	19.5	21.5	19.0	20.0	20.0	17.5	18.5
5	19.0	15.5	17.0	22.5	18.0	20.0	23.0	17.5	20.0	20.0	15.5	17.5
6	20.0	16.0	18.0	23.5	17.5	20.0	24.0	18.0	21.0	19.5	15.5	17.5
7	18.0	17.0	17.5	24.5	19.5	22.0	22.0	20.5	21.5	21.5	17.5	19.0
8	18.5	14.5	16.5	23.0	18.5	21.0	22.5	19.0	20.5	22.0	17.5	20.0
9	18.0	15.5	16.5	24.0	18.0	21.0	20.0	18.0	19.0	20.0	17.0	18.5
10	18.5	15.0	16.5	25.0	18.5	21.5	19.5	17.0	18.0	18.5	14.0	16.5
11	19.0	14.5	16.5	25.0	20.5	22.5	20.0	17.5	18.5	16.0	14.5	15.0
12	17.0	15.5	16.0	25.0	20.5	22.5	21.0	17.0	19.0	16.5	14.0	15.0
13	19.0	15.5	17.5	23.0	19.5	21.0	19.5	17.5	18.5	17.0	16.0	16.0
14	21.5	17.0	19.0	25.0	20.5	22.5	21.0	16.5	18.5	16.0	14.5	15.0
15	19.0	16.5	17.5	25.5	20.0	22.0	21.0	17.0	19.0	16.5	14.0	15.0
16	19.0	14.0	16.5	25.0	21.0	22.0	18.5	15.5	16.5	16.0	13.5	14.5
17	18.5	15.0	17.0	24.0	19.0	21.0	18.0	15.5	16.5	14.0	11.5	13.0
18	20.0	15.5	17.5	23.5	19.5	21.5	21.5	15.5	18.5	14.5	12.5	13.0
19	19.5	15.0	17.5	23.0	18.5	20.5	23.5	18.5	20.0	16.5	12.5	14.5
20	18.5	15.0	17.0	20.5	18.5	19.5	21.5	19.5	20.5	16.0	14.5	15.0
21	20.5	14.5	17.5	22.5	17.5	19.5	21.5	18.0	19.5	15.0	14.0	14.5
22	20.0	17.5	18.5	21.5	17.5	19.5	21.0	17.0	19.0	15.0	13.5	14.5
23	22.0	16.5	19.0	23.0	16.5	19.5	20.0	17.5	19.0	13.5	11.5	13.0
24	20.0	18.0	18.5	24.0	17.5	20.5	20.0	17.5	19.0	15.0	12.0	13.5
25	22.5	16.5	19.0	22.5	19.5	21.0	22.5	18.0	20.0	13.5	12.0	13.0
26	23.5	19.0	21.0	22.5	18.0	20.0	20.5	17.0	18.5	12.0	10.5	11.5
27	21.0	17.0	18.5	23.0	16.5	19.5	17.5	16.0	17.0	14.0	11.0	12.5
28	21.0	15.5	18.0	21.0	18.5	19.5	19.0	16.5	17.5	14.0	11.5	12.5
29	19.0	16.0	17.0	23.5	17.5	20.0	22.0	17.0	19.5	14.0	13.0	13.5
30	19.5	14.0	16.5	23.0	18.5	20.5	20.5	18.5	19.5	16.0	13.0	14.5
31	---	---	---	23.5	18.5	21.0	18.0	16.0	16.5	---	---	---
MONTH	23.5	13.0	17.5	25.5	16.0	20.5	24.0	15.5	19.0	22.0	10.5	15.5
YEAR	25.5	.0	10.0									

05345000 VERMILLION RIVER NEAR EMPIRE, MN--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	4.6	3.8	4.2	7.9	5.4	7.1	4.2	3.2	3.8	10.7	9.9	10.3
2	4.8	3.8	4.3	9.1	7.7	8.4	3.2	2.4	2.8	11.2	10.0	10.5
3	5.2	3.7	4.5	7.6	4.9	6.6	10.6	2.2	7.0	11.3	10.7	11.0
4	6.4	4.6	5.7	9.3	4.0	7.1	10.1	8.9	9.8	11.0	10.5	10.8
5	6.9	5.5	6.1	8.6	7.6	8.0	8.8	4.8	7.0	11.3	10.4	10.7
6	6.4	5.3	6.0	9.3	7.8	8.5	9.2	3.5	7.3	11.1	10.3	10.6
7	6.9	5.8	6.4	9.3	7.4	8.2	9.0	7.9	8.5	11.8	9.5	10.6
8	6.1	5.3	5.7	10.0	8.6	9.2	10.5	8.7	9.3	10.3	8.4	9.4
9	7.1	5.7	6.3	9.7	8.8	9.2	9.9	8.7	9.4	10.5	9.1	9.6
10	6.7	5.7	6.1	10.2	8.3	9.1	10.0	8.3	9.2	10.7	9.9	10.2
11	7.6	5.5	6.3	9.7	8.2	9.2	10.7	9.3	10.0	11.0	10.0	10.4
12	8.0	6.1	7.1	9.1	7.9	8.4	11.0	9.8	10.4	11.4	9.9	10.5
13	8.1	6.9	7.5	7.8	3.6	6.1	11.0	10.5	10.8	10.9	9.6	10.1
14	7.8	6.4	7.1	8.6	1.5	3.6	10.5	9.8	10.2	10.9	10.2	10.6
15	7.1	5.6	6.3	8.8	7.6	8.2	10.6	9.8	10.1	10.2	9.5	9.9
16	7.5	5.1	5.8	9.1	7.7	8.1	10.7	9.9	10.3	10.1	9.6	9.8
17	6.0	5.0	5.3	8.5	6.7	7.5	10.0	9.5	9.7	10.6	9.8	10.2
18	6.3	5.4	5.8	8.0	6.6	7.5	10.4	9.8	10.1	10.5	10.0	10.2
19	5.3	4.2	4.7	7.9	5.8	7.5	10.8	9.5	10.1	11.3	10.1	10.7
20	4.7	3.6	4.0	8.8	7.1	7.9	11.1	10.5	10.7	11.6	11.0	11.2
21	5.3	4.0	4.7	8.5	8.0	8.3	10.6	10.1	10.4	10.9	10.2	10.6
22	7.6	4.8	6.1	10.5	7.6	9.6	10.9	10.3	10.5	11.2	9.9	10.5
23	8.2	7.2	7.7	11.3	10.2	10.6	11.1	10.2	10.6	11.2	10.3	10.7
24	8.6	7.6	8.0	11.1	10.2	10.7	10.9	10.0	10.3	11.0	10.3	10.6
25	8.4	7.3	7.8	10.2	6.1	8.7	11.0	10.4	10.6	11.2	10.3	10.7
26	8.1	6.1	7.5	11.2	3.6	8.6	10.9	10.1	10.4	11.4	10.3	10.8
27	6.1	2.9	4.5	11.7	10.7	11.2	10.9	10.3	10.5	11.2	10.3	10.7
28	6.4	1.9	3.3	10.7	8.5	9.8	10.6	10.0	10.3	11.0	10.3	10.5
29	7.9	6.0	6.8	8.3	6.1	7.2	11.4	9.8	10.6	11.0	10.2	10.6
30	7.0	5.9	6.5	6.0	4.2	5.0	11.2	10.5	10.8	10.9	10.3	10.6
31	6.1	5.3	5.6	---	---	---	10.6	10.0	10.3	11.5	10.6	10.9
MONTH	8.6	1.9	5.9	11.7	1.5	8.2	11.4	2.2	9.4	11.8	8.4	10.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	11.3	10.6	11.0	12.7	11.6	12.0	10.5	9.4	10.0	12.3	8.2	10.0
2	11.7	10.7	11.1	12.5	11.6	11.9	9.8	9.1	9.5	12.1	8.0	9.8
3	11.8	10.7	11.2	12.0	11.0	11.3	10.2	8.8	9.6	11.4	7.5	9.4
4	11.6	10.8	11.2	12.1	10.8	11.3	9.9	8.4	9.2	12.0	8.0	9.8
5	11.5	10.8	11.0	12.1	11.2	11.8	9.9	8.8	9.4	12.0	7.8	9.7
6	11.2	10.7	10.9	12.2	11.4	11.7	10.0	8.8	9.6	11.9	8.2	10.0
7	11.5	11.0	11.2	11.8	10.6	11.1	9.3	8.7	8.9	12.9	8.6	10.4
8	11.5	10.8	11.1	11.2	10.6	10.9	9.5	8.6	9.0	12.9	9.6	11.2
9	11.7	10.5	11.1	10.9	10.5	10.7	10.1	9.5	9.8	12.2	9.1	10.5
10	11.3	10.9	11.1	10.9	9.9	10.4	9.8	8.9	9.5	10.5	7.8	9.2
11	11.3	10.8	11.1	10.8	9.8	10.4	9.1	6.5	8.5	12.4	7.6	10.4
12	11.5	10.9	11.2	10.6	10.1	10.4	9.8	5.8	7.1	10.8	8.2	9.5
13	11.3	10.4	10.7	10.4	9.9	10.1	10.6	9.2	10.0	10.1	7.6	8.8
14	10.9	10.4	10.6	10.2	9.8	10.0	10.6	9.4	10.0	10.3	7.6	8.9
15	10.8	10.3	10.5	10.2	9.7	9.9	9.5	8.2	9.0	10.8	8.2	9.4
16	11.6	10.2	10.8	10.4	9.1	9.7	10.0	7.2	8.1	11.0	8.1	9.4
17	11.4	10.5	10.9	10.9	9.9	10.5	9.3	7.9	8.7	9.5	7.9	8.7
18	11.0	10.1	10.4	11.1	10.1	10.6	8.8	7.0	8.0	9.8	7.7	8.7
19	10.1	9.4	9.6	11.7	10.0	10.7	7.1	5.6	6.5	9.9	7.9	9.0
20	9.6	8.9	9.2	11.3	9.4	10.5	9.3	5.0	7.3	9.1	7.4	8.3
21	10.1	9.0	9.5	10.0	8.7	9.4	10.5	6.8	8.6	8.6	7.1	7.8
22	10.1	9.3	9.7	10.5	9.1	9.8	10.0	7.5	8.6	8.6	6.7	7.7
23	10.7	9.5	10.1	11.0	10.3	10.7	11.0	7.5	9.1	8.1	6.9	7.5
24	11.0	10.2	10.6	11.2	10.7	11.1	12.2	9.1	10.5	7.4	6.4	6.9
25	12.3	10.4	11.3	11.7	10.4	11.0	12.0	9.0	10.4	7.8	6.4	7.1
26	12.3	11.4	11.8	11.0	10.2	10.6	11.5	9.1	10.1	7.6	6.2	6.8
27	11.9	11.4	11.6	10.9	10.6	10.7	12.3	8.4	10.4	6.6	5.6	6.2
28	12.1	11.5	11.8	10.8	10.1	10.6	12.3	9.1	10.5	6.6	5.1	5.6
29	12.7	11.2	12.1	10.0	7.4	9.0	12.2	8.4	10.0	7.0	5.0	6.1
30	---	---	---	10.1	6.7	9.1	12.0	8.4	10.0	6.4	5.3	5.9
31	---	---	---	10.1	9.6	9.8	---	---	---	6.1	5.2	5.6
MONTH	12.7	8.9	10.8	12.7	6.7	10.6	12.3	5.0	9.2	12.9	5.0	8.5

05345000 VERMILLION RIVER NEAR EMPIRE, MN--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.3	5.1	6.5	7.6	6.5	7.1	6.9	6.0	6.4	7.6	7.1	7.4
2	7.8	6.7	7.3	7.8	6.7	7.2	6.4	5.3	6.0	7.4	6.7	7.1
3	7.7	2.8	7.1	8.3	7.1	7.8	6.7	5.7	6.3	7.3	6.5	6.8
4	7.5	6.9	7.2	7.8	6.9	7.3	8.8	6.4	7.8	7.0	6.3	6.7
5	7.4	5.0	6.9	7.4	6.2	6.7	8.9	8.0	8.4	7.2	6.4	6.9
6	6.7	5.7	6.2	7.7	6.3	7.1	8.7	7.4	8.2	7.6	6.3	7.0
7	5.6	4.4	4.8	6.6	5.6	6.2	8.1	7.7	7.9	7.2	6.7	7.0
8	5.8	4.6	5.3	6.6	5.7	6.1	8.5	7.1	7.8	8.0	6.6	7.3
9	6.5	4.6	5.8	6.9	5.2	5.9	8.2	7.8	8.0	8.3	7.0	7.9
10	7.2	6.3	6.8	7.0	5.9	6.4	9.6	8.0	9.0	8.8	7.9	8.3
11	7.6	6.9	7.2	6.2	5.2	5.7	9.1	8.1	8.5	9.3	7.8	8.6
12	7.4	6.4	7.1	6.4	4.2	5.4	8.6	8.0	8.3	8.8	7.9	8.3
13	6.6	5.9	6.3	6.5	5.6	6.1	9.1	7.9	8.3	8.1	7.1	7.6
14	6.0	5.4	5.8	7.3	5.4	6.5	9.3	7.1	7.9	8.9	7.9	8.4
15	6.3	5.5	6.0	7.3	6.6	6.9	7.4	6.7	7.1	8.7	6.9	7.9
16	8.4	6.0	7.2	---	---	---	7.6	6.7	7.2	7.7	6.7	7.3
17	7.9	7.0	7.5	6.8	6.1	6.5	7.8	6.6	7.3	7.5	5.8	7.1
18	7.4	6.5	7.0	7.1	6.7	6.9	7.4	5.9	6.9	5.7	3.6	4.6
19	7.8	7.0	7.3	7.7	2.3	6.4	6.1	4.9	5.9	3.5	2.3	3.0
20	7.5	6.9	7.2	8.0	6.2	7.5	6.3	5.0	5.5	7.4	2.0	3.6
21	7.3	5.7	6.6	8.0	7.4	7.7	6.2	5.4	5.9	7.1	6.4	6.8
22	7.4	5.4	6.6	7.4	3.2	6.8	6.3	5.9	6.1	7.8	6.2	7.1
23	7.8	6.8	7.2	7.6	6.6	7.1	5.7	5.1	5.4	8.7	7.6	8.2
24	7.7	6.7	7.2	8.0	5.2	7.0	7.0	5.1	6.2	8.3	6.7	7.6
25	7.7	6.7	7.2	6.9	6.4	6.7	6.8	6.2	6.6	8.4	7.8	8.1
26	7.0	6.4	6.6	7.4	6.4	6.8	6.9	6.1	6.5	---	---	---
27	7.6	6.2	6.9	8.0	7.2	7.6	7.9	6.3	7.0	---	---	---
28	7.7	6.6	7.1	7.4	7.0	7.2	7.7	7.2	7.5	---	---	---
29	8.7	7.3	8.1	7.3	5.9	6.7	7.2	6.2	6.9	---	---	---
30	8.9	7.5	8.3	6.8	5.5	6.1	6.9	5.4	6.0	---	---	---
31	---	---	---	7.1	6.1	6.7	7.7	7.0	7.4	---	---	---
MONTH	8.9	2.8	6.8				9.6	4.9	7.1			
YEAR	12.9	1.5										

05353800 STRAIGHT RIVER NEAR FARIBAULT, MN

LOCATION.--Lat 44°15'29", long 93°13'51", in W½SE¼ sec.9, T.109 N., R.20 W., Rice County, Hydrologic Unit 07040002, on right bank 15 ft (5 m) downstream from highway bridge, 2.8 mi (4.5 km) upstream from Falls Creek and 3.2 mi (5.1 km) southeast of Faribault.

DRAINAGE AREA.--442 mi^2 (1,145 km^2).

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

GAGE.--Water-stage recorder. Datum of gage is 1,034.58 ft (315.340 m) National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--15 years, 231 ft^3/s (6.542 m^3/s), 7.10 in/yr (180 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,990 ft^3/s (170 m^3/s) May 1, 1973, gage height, 11.20 ft (3.414 m); maximum gage height, 12.74 ft (3.883 m) Mar. 5, 1974 (backwater from ice); minimum discharge, 10 ft^3/s (0.28 m^3/s) Oct. 27, 1976; minimum gage height, 3.66 ft (1.116 m) Nov. 27, 1976.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,140 ft^3/s (117 m^3/s) Mar. 19, gage height, 9.93 ft (3.027 m); maximum gage height, 10.77 ft (3.283 m) Mar. 18 (ice jam), no other peak above base of 1,500 ft^3/s (42.5 m^3/s); minimum, 28 ft^3/s (0.79 m^3/s) Aug. 1, 2, gage height, 3.79 ft (1.155 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	132	340	267	89	56	46	386	191	268	209	30	152
2	126	353	236	85	56	45	354	179	230	140	60	139
3	126	320	254	81	55	45	332	169	196	105	54	136
4	119	280	325	76	55	45	332	160	164	88	47	326
5	112	270	245	73	54	45	505	152	162	88	47	199
6	109	356	228	72	54	45	890	144	190	72	39	167
7	104	494	225	70	53	45	1070	133	493	64	37	137
8	101	495	184	69	53	45	974	125	686	60	54	115
9	100	429	208	69	53	45	836	120	550	55	46	98
10	98	355	285	70	52	45	695	117	384	54	45	83
11	97	307	197	73	52	45	600	120	271	52	44	78
12	96	278	177	75	51	45	630	112	215	47	50	77
13	90	260	168	78	51	45	705	136	202	42	97	72
14	89	258	158	82	51	45	630	138	175	40	87	68
15	87	239	149	85	50	47	560	131	150	42	126	64
16	87	257	142	110	50	530	500	122	134	40	103	64
17	55	236	135	150	50	1700	450	116	121	37	122	61
18	79	229	132	105	50	2400	420	114	113	36	143	58
19	91	201	128	95	52	3090	410	114	119	35	158	58
20	93	202	125	87	53	2980	395	115	119	36	124	71
21	95	226	123	84	54	1970	381	106	123	38	117	553
22	159	290	122	80	53	1290	372	98	105	41	100	543
23	464	400	120	74	52	908	345	93	90	35	84	478
24	627	431	117	69	50	605	314	88	77	33	73	379
25	597	411	115	66	47	495	296	78	75	37	66	303
26	514	398	112	62	47	480	278	72	78	37	93	247
27	427	357	108	59	46	470	255	68	72	32	90	213
28	360	326	105	58	46	475	204	66	89	31	130	191
29	310	292	102	58	46	445	212	66	201	33	144	176
30	275	299	98	57	---	445	202	111	273	31	152	169
31	288	---	94	56	---	420	---	237	---	31	131	---
TOTAL	6107	9589	5184	2417	1492	19381	14533	3791	6125	1721	2693	5475.
MEAN	197	320	167	78.0	51.4	625	484	122	204	55.5	86.9	183
MAX	627	495	325	150	56	3090	1070	237	686	209	158	553
MIN	55	201	94	56	46	45	202	66	72	31	30	58
CFSM	.45	.72	.38	.18	.12	1.41	1.10	.28	.46	.13	.20	.41
IN.	.51	.81	.44	.20	.13	1.63	1.22	.32	.52	.14	.23	.46

CAL YR 1979 TOTAL 140375 MEAN 385 MAX 4010 MIN 23 CFSM .87 IN 11.81
WTR YR 1980 TOTAL 78508 MEAN 215 MAX 3090 MIN 30 CFSM .49 IN 6.61

05373000 SOUTH FORK ZUMBRO RIVER NEAR ROCHESTER, MN

LOCATION.--Lat 44°04'00", long 92°27'55", in SE¼ sec.14, T.107 N., R.14 W., Olmsted County, Hydrologic Unit 07040004, on left bank 0.2 mi (0.3 km) downstream from sewage plant, 1.6 mi (2.6 km) north of Rochester, 2 mi (3 km) downstream from Cascade Creek, and 2.5 mi (4.0 km) downstream from Silver Lake Dam.

DRAINAGE AREA.--304 mi^2 (787 km^2).

PERIOD OF RECORD.--January 1952 to current year.

GAGE.--Water-stage recorder. Datum of gage is 949.56 ft (289.426 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Slight regulation at times from Silver Lake and at very low flows from sewage-plant effluent.

AVERAGE DISCHARGE.--28 years, 153 ft^3/s (4.333 m^3/s), 6.83 in/yr (173 mm/yr); median of yearly mean discharges, 134 ft^3/s (3.795 m^3/s), 5.99 in/yr (152 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,500 ft^3/s (864 m^3/s) July 6, 1978, gage height, 23.36 ft (7.120 m) from floodmarks; minimum, 8.4 ft^3/s (0.24 m^3/s) Dec. 7, 1955.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 21, 1951, reached a stage of about 17.5 ft (5.33 m), discharge, 15,000 ft^3/s (425 m^3/s), from information by sewage plant superintendent. This is the highest known stage outside the period of record since at least 1908.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,240 ft^3/s (120 m^3/s) Mar. 19, gage height, 11.11 ft (3.386 m), no other peak above base of 1,300 ft^3/s (36.8 m^3/s); minimum, 48 ft^3/s (1.36 m^3/s) Aug. 1, 2, gage height, 2.51 ft (0.765 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	122	294	208	119	79	70	150	149	270	84	53	144
2	107	248	167	118	77	69	139	142	218	80	58	123
3	100	218	196	109	75	74	150	136	186	77	53	108
4	92	199	201	112	75	73	161	131	174	76	86	183
5	89	301	209	110	76	66	208	128	192	75	61	134
6	86	613	200	108	76	67	778	121	248	72	57	119
7	82	540	199	74	75	68	728	116	315	71	69	104
8	86	393	170	91	76	68	424	113	336	67	84	98
9	83	342	168	86	73	69	376	114	248	68	63	90
10	82	301	188	88	75	72	293	122	206	69	83	80
11	83	272	185	102	75	64	253	118	179	68	69	80
12	82	263	138	96	74	69	262	112	162	93	65	136
13	81	247	155	95	79	69	367	127	153	82	140	117
14	78	238	153	101	77	71	306	114	151	72	97	106
15	79	232	152	109	77	110	255	107	133	68	83	97
16	85	229	114	390	68	1680	243	103	126	63	112	92
17	82	226	122	713	69	1840	229	101	119	60	94	86
18	87	217	133	330	73	1420	227	101	151	60	94	82
19	139	215	138	219	77	3140	232	102	231	56	105	106
20	104	204	137	157	79	1650	234	99	140	135	86	130
21	98	243	136	153	92	509	232	95	118	96	80	185
22	444	337	133	142	107	306	225	80	111	74	74	273
23	716	402	145	115	103	225	214	85	105	66	74	198
24	600	350	141	122	99	191	199	81	100	64	65	162
25	464	296	133	118	88	164	187	77	96	65	63	156
26	367	281	130	97	78	174	178	75	93	58	136	133
27	319	267	129	96	84	179	168	79	89	55	157	121
28	281	251	127	91	79	179	163	101	86	55	155	113
29	254	235	120	86	67	168	157	137	82	55	128	110
30	234	209	113	83	---	179	153	404	85	56	161	105
31	257	---	127	81	---	168	---	365	---	54	150	---
TOTAL	5863	8663	4767	4511	2302	13251	7891	3935	4903	2194	2855	3771
MEAN	189	289	154	146	79.4	427	263	127	163	70.8	92.1	126
MAX	716	613	209	713	107	3140	778	404	336	135	161	273
MIN	78	199	113	74	67	64	139	75	82	54	53	80
CFSM	.62	.95	.51	.48	.26	1.41	.87	.42	.54	.23	.30	.41
IN.	.72	1.06	.58	.55	.28	1.62	.97	.48	.60	.27	.35	.46

CAL YR 1979 TOTAL 87236 MEAN 239 MAX 2010 MIN 53 CFSM .79 IN 10.67
WTR YR 1980 TOTAL 64906 MEAN 177 MAX 3140 MIN 53 CFSM .58 IN 7.94

05374000 ZUMBRO RIVER AT ZUMBRO FALLS, MN

LOCATION.--Lat 44°17'12", long 92°25'56", in sec.36, T.110 N., R.14 W., Wabasha County, Hydrologic Unit 07040004, on left bank in Zumbro Falls, 1,000 ft (305 m) downstream from Cold Creek, 0.7 mi (1.1 km) upstream from bridge on U.S. Highway 63, and 6.3 mi (10.1 km) downstream from North Fork.

DRAINAGE AREA.--1,130 mi^2 (2,930 km^2), approximately.

PERIOD OF RECORD.--June 1909 to September 1917, April to November 1929, March 1930 to September 1980 (discontinued). Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 811.26 ft (247.27 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 11, 1933, nonrecording gage on bridge 800 ft (244 m) downstream at same datum.

REMARKS.--Records good except Mar. 22 to July 17, which are fair.

AVERAGE DISCHARGE.--58 years (water years 1910-17, 1931-80), 517 ft^3/s (14.64 m^3/s), 6.21 in/yr (158 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,900 ft^3/s (1,020 m^3/s) July 22, 1951, gage height, 30.80 ft (9.388 m) from floodmark; minimum, 27 ft^3/s (0.76 m^3/s) Jan. 12, 1935; minimum gage height, 5.96 ft (1.817 m) Nov. 27, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of April 1888 reached a stage of about 30.5 ft (9.30 m) at present site or 29.7 ft (9.05 m) original site, discharge, 35,100 ft^3/s (994 m^3/s). Flood in 1859 is known to have exceeded that of 1888, gage height and discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,300 ft^3/s (433 m^3/s) Mar. 19, gage height, 20.82 ft (6.346 m); minimum, 76 ft^3/s (2.15 m^3/s) Jan. 7, gage height, 6.20 ft (1.890 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	400	909	861	396	264	279	894	583	582	254	143	437
2	361	910	840	356	267	273	724	545	562	229	245	333
3	332	891	838	372	268	280	673	541	587	173	255	305
4	384	880	716	369	272	241	850	503	518	228	169	476
5	354	876	294	315	269	367	847	500	567	213	157	478
6	338	897	784	365	249	716	1270	360	744	255	162	457
7	311	923	834	215	261	720	1670	383	502	283	165	360
8	348	957	824	237	317	539	1820	546	665	191	212	432
9	316	1060	813	283	256	157	1570	550	760	286	380	353
10	388	1030	725	352	299	319	1330	361	803	302	283	163
11	411	960	432	235	274	311	1150	426	714	229	289	394
12	299	910	197	237	284	259	1080	396	599	244	232	429
13	308	906	194	281	267	309	1190	492	422	221	416	423
14	300	916	278	339	335	272	1310	489	517	274	336	347
15	392	877	362	368	274	394	1280	455	472	294	149	293
16	488	868	363	529	266	1150	1180	388	467	282	216	322
17	349	861	403	898	266	3430	1090	415	448	157	262	301
18	452	857	378	836	287	5130	1020	384	390	239	246	274
19	369	854	421	812	339	11600	980	462	487	242	285	292
20	390	849	407	776	305	10500	958	430	534	233	320	403
21	381	846	430	532	398	4370	939	375	379	239	306	882
22	557	872	289	405	303	2070	923	361	324	222	264	915
23	991	939	495	400	298	1390	833	374	353	207	323	892
24	1060	962	441	377	297	1130	814	326	370	242	260	667
25	1100	935	405	379	280	1030	873	349	339	199	252	668
26	1180	913	441	318	327	1090	630	354	335	241	522	505
27	1090	863	354	275	243	1050	638	291	302	221	326	507
28	1000	868	407	270	287	1120	648	362	304	154	449	481
29	945	885	354	264	236	999	628	446	323	146	351	443
30	912	868	362	262	---	960	596	642	270	230	313	404
31	898	---	390	260	---	926	---	664	---	169	437	---
TOTAL	17404	27142	15332	12313	8288	53381	30408	13753	14639	7099	8725	13636
MEAN	561	905	495	397	286	1722	1014	444	488	229	281	455
MAX	1180	1060	861	898	398	11600	1820	664	803	302	522	915
MIN	299	846	194	215	236	157	596	291	270	146	143	163
CFSM	.50	.80	.44	.35	.25	1.52	.90	.39	.43	.20	.25	.40
IN.	.57	.89	.50	.41	.27	1.76	1.00	.45	.48	.23	.29	.45

CAL YR 1979 TOTAL 293797 MEAN 805 MAX 8640 MIN 131 CFSM .71 IN 9.67
WTR YR 1980 TOTAL 222120 MEAN 607 MAX 11600 MIN 143 CFSM .54 IN 7.31

05374900 ZUMBRO RIVER AT KELLOGG, MN

LOCATION.--Lat 44°18'43", long 92°00'14", in SW¼ sec.22, T.110 N., R.10 W., Wabasha County, Hydrologic Unit 07040004, on right bank at downstream side of bridge on U.S. Highway 61, and 4 mi (6.4 km) above mouth.

DRAINAGE AREA.--1,400 mi^2 (3,630 km^2).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 669.47 ft (204.054 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for winter period, which are fair. Some regulation by powerplant upstream from station.

AVERAGE DISCHARGE.--5 years, 667 ft^3/s (18.89 m^3/s), 6.57 in/yr (167 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,800 ft^3/s (476 m^3/s) July 8, 1978, gage height, 13.70 ft (4.176 m); minimum daily, 155 ft^3/s (4.39 m^3/s) Dec. 8, 12, 14, 1976; minimum gage height, 2.10 ft (0.640 m) Sept. 4, 1976.

EXTREMES OUTSIDE PERIOD OF RECORD.--A discharge of 33,000 ft^3/s (935 m^3/s) occurred on July 22, 1951, at station 05374500, 20 mi (32 km) upstream and this was the greatest since 1938.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,400 ft^3/s (408 m^3/s) Mar. 20, gage height, 12.57 ft (3.831 m); minimum daily, 276 ft^3/s (7.82 m^3/s) Aug. 2; minimum gage height, 1.77 ft (0.539 m) Aug. 2.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	538	1020	1040	470	420	391	971	754	614	390	319	562
2	589	1010	971	470	420	390	914	665	621	386	284	576
3	494	1000	998	460	419	390	818	660	636	368	306	514
4	498	1010	1030	460	418	390	818	658	600	328	363	540
5	526	1010	834	460	416	389	964	595	612	395	341	598
6	503	1010	633	440	413	420	1420	605	742	359	302	616
7	487	1000	585	400	412	780	1480	494	778	413	302	759
8	486	997	630	400	410	800	1950	518	670	386	319	585
9	499	1080	650	400	409	600	1860	600	723	323	323	603
10	477	1080	620	400	408	382	1490	576	828	446	422	570
11	521	1050	500	400	408	382	1270	501	853	395	409	438
12	525	1010	390	410	405	382	1300	503	738	363	416	607
13	451	976	365	430	402	382	1320	477	655	368	394	628
14	435	990	365	450	401	384	1390	551	619	354	495	611
15	443	1010	430	490	400	392	1400	498	597	409	483	558
16	491	987	480	540	400	500	1300	498	598	395	372	521
17	558	983	490	1000	400	1100	1220	459	557	372	378	512
18	491	993	500	980	398	2500	1160	456	539	315	393	494
19	562	1010	500	960	397	8270	1160	452	573	332	396	487
20	510	1000	500	920	397	13700	1120	499	637	377	425	579
21	512	1010	500	880	397	10600	1050	469	592	359	455	851
22	596	1050	500	700	396	3930	1020	420	496	345	444	1040
23	868	1100	500	540	396	2290	984	435	492	354	418	1070
24	1150	1150	500	480	395	1480	859	431	500	341	458	1040
25	1190	1150	500	460	395	1270	939	406	490	363	417	884
26	1280	1130	490	440	394	1410	958	414	486	354	510	835
27	1290	1110	490	430	393	1350	765	419	463	341	633	714
28	1190	1040	480	425	392	1370	771	396	431	345	509	698
29	1110	1080	480	420	391	1200	777	460	439	319	555	665
30	1050	1060	480	423	---	1100	771	522	443	297	531	638
31	1030	---	480	423	---	1020	---	697	---	302	492	---
TOTAL	21350	31106	17911	16561	11702	59944	34219	16088	18022	11194	12864	19793
MEAN	689	1037	578	534	404	1934	1141	519	601	361	415	660
MAX	1290	1150	1040	1000	420	13700	1950	754	853	446	633	1070
MIN	435	976	365	400	391	382	765	396	431	297	284	438
CFSM	.49	.74	.41	.38	.29	1.38	.82	.37	.43	.26	.30	.47
IN.	.57	.83	.48	.44	.31	1.59	.91	.43	.48	.30	.34	.53

CAL YR 1979 TOTAL 348893 MEAN 956 MAX 8290 MIN 287 CFSM .68 IN 9.27
WTR YR 1980 TOTAL 270754 MEAN 740 MAX 13700 MIN 284 CFSM .53 IN 7.19

05374900 ZUMBRO RIVER AT KELLOGG, MN--Continued

WATER-QUALITY RECORDS

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

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

REMARKS.--During the winter period, daily sediment concentrations were estimated on the basis of water records and weekly sediment samples. Water temperatures were obtained when sediment samples were collected.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum daily, 29.0°C July 10, 1976, July 5, 1977; minimum daily, 0.0°C on many days each year.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 6,670 mg/L May 31, 1979; minimum daily mean, 2 mg/L Nov. 29, 1976.
SEDIMENT LOADS: Maximum daily, 63,700 tons (57,800 tonnes) July 1, 1978; minimum daily, 1.7 tons (1.5 tonnes) Nov. 29, 30, 1976.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum daily, 28.0°C July 24; minimum daily, 0.0°C on many days.
SEDIMENT CONCENTRATIONS: Maximum daily mean 2,200 mg/L Apr. 6; minimum daily mean, 14 mg/L Feb. 24.
SEDIMENT LOADS: Maximum daily, 25,300 tons (23,000 tonnes) Mar. 20; minimum daily, 15 tons (14 tonnes) Feb. 24.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.0	8.0	1.0	---	---	1.0	7.0	15.5	19.5	21.0	22.5	21.0
2	12.0	---	1.0	2.0	1.0	---	7.0	17.0	19.0	22.0	22.5	18.0
3	---	7.0	.5	---	---	---	5.0	16.0	17.5	24.0	21.0	19.5
4	11.5	6.0	2.0	---	---	---	5.0	17.0	19.0	22.0	22.5	18.0
5	10.0	---	2.5	1.0	---	---	7.0	18.0	22.5	23.0	19.5	21.5
6	12.0	6.0	5.0	---	---	---	7.0	15.0	24.0	21.5	21.0	21.0
7	8.5	5.0	2.0	---	---	---	9.0	13.0	20.0	25.0	22.5	20.0
8	11.0	5.0	1.0	---	---	---	7.5	12.5	19.0	24.0	22.5	19.5
9	9.5	3.0	1.5	---	1.0	2.0	4.5	16.5	21.0	24.5	21.0	20.0
10	8.5	3.0	4.0	---	---	.5	5.0	14.0	22.0	25.0	21.0	21.0
11	8.5	3.5	2.0	---	---	---	5.0	15.0	---	26.5	22.0	---
12	7.5	4.0	1.0	---	---	---	6.0	14.5	21.0	25.5	25.5	15.0
13	10.0	2.5	1.0	1.0	---	---	6.5	14.0	23.0	25.0	20.5	18.0
14	6.5	2.0	1.5	2.0	---	---	5.0	13.0	22.0	24.5	21.0	---
15	7.0	3.5	2.0	---	---	1.5	6.0	13.0	21.0	25.0	23.0	15.0
16	10.0	4.0	---	---	---	---	7.0	13.0	22.0	25.0	15.5	15.0
17	10.0	6.0	---	---	---	---	9.0	13.0	19.5	25.0	17.0	12.5
18	10.0	4.5	---	---	---	3.0	11.5	14.0	20.5	25.0	16.0	13.5
19	12.0	6.5	---	1.0	.5	3.0	12.0	14.0	21.0	22.5	23.0	14.0
20	15.5	6.0	---	---	---	3.5	14.5	15.5	22.0	22.5	24.0	18.5
21	14.0	4.5	---	---	---	2.0	14.0	18.5	21.0	22.0	21.0	16.5
22	10.0	4.5	.0	---	---	1.0	15.0	19.0	25.5	21.5	21.0	15.5
23	7.0	5.0	---	---	---	1.0	14.0	24.0	23.0	22.0	23.0	14.0
24	8.0	4.5	1.0	---	1.5	3.5	11.0	19.0	25.0	28.0	20.0	17.0
25	5.0	3.5	---	---	---	4.0	12.0	23.0	25.5	23.0	20.0	15.0
26	7.0	4.0	---	---	---	3.5	11.5	23.0	24.5	26.0	22.0	12.0
27	7.0	3.5	---	---	---	3.5	13.0	21.0	23.0	19.0	19.0	14.0
28	8.0	2.0	---	.0	---	3.5	14.0	24.5	20.5	21.0	19.0	14.0
29	6.0	2.0	2.0	---	---	4.0	14.5	21.0	21.0	24.0	20.0	16.0
30	9.0	2.0	2.5	---	---	5.0	16.5	20.0	18.5	22.0	21.5	16.0
31	11.0	---	2.0	.0	---	5.0	---	18.5	---	22.5	21.0	---
MEAN							9.5	17.0		23.5	21.0	

05374900 ZUMBRO RIVER AT KELLOGG, MN--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	59	86	70	193	76	213	52	66	28	32	25	26
2	100	159	57	155	95	249	50	63	21	24	25	26
3	87	116	51	138	57	154	50	62	25	28	25	26
4	87	117	49	134	102	284	50	62	25	28	25	26
5	99	141	61	166	97	218	89	111	25	28	25	26
6	117	159	80	218	99	169	80	95	25	28	25	28
7	96	126	85	229	250	395	65	70	25	28	24	51
8	98	129	86	232	203	345	60	65	25	28	23	50
9	76	102	132	385	114	200	60	65	25	28	21	34
10	68	88	81	236	207	347	60	65	25	28	25	26
11	77	108	52	147	168	227	60	65	25	28	26	27
12	82	116	51	139	145	153	60	66	25	27	27	28
13	92	112	38	100	108	106	60	70	25	27	28	29
14	89	105	48	128	53	52	60	73	25	27	29	30
15	70	84	40	109	45	52	60	79	25	27	40	42
16	86	114	42	112	45	58	90	131	25	27	270	364
17	125	188	93	247	45	60	315	850	22	24	550	1630
18	123	163	114	306	45	61	130	344	18	19	525	3540
19	113	171	42	115	45	61	50	130	15	16	863	20600
20	85	117	38	103	45	61	36	89	15	16	685	25300
21	97	134	41	112	45	61	38	90	15	16	525	15000
22	118	190	57	162	44	59	39	74	15	16	565	6000
23	177	415	123	365	52	70	42	61	15	16	660	4080
24	175	543	73	227	108	146	45	58	14	15	430	1720
25	144	463	53	165	86	116	48	60	15	16	287	984
26	138	477	62	189	68	90	55	65	17	18	360	1370
27	98	341	48	144	62	82	63	73	23	24	317	1160
28	82	263	65	183	60	78	72	83	25	26	322	1190
29	81	243	58	169	58	75	71	81	25	26	322	1040
30	63	179	60	172	56	73	56	64	---	---	220	653
31	73	203	---	---	54	70	42	48	---	---	157	432
TOTAL	---	5952	---	5480	---	4385	---	3378	---	691	---	85538
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	132	346	90	183	88	146	87	92	89	77	128	194
2	98	242	78	140	95	159	108	113	80	61	116	180
3	112	247	90	160	118	203	80	79	65	54	90	125
4	199	440	87	155	120	194	104	92	86	84	108	157
5	285	742	81	130	141	233	118	126	84	77	128	207
6	2200	8430	82	134	350	701	107	104	58	47	126	210
7	1150	4600	52	69	560	1180	114	127	68	55	263	539
8	620	3260	60	84	320	579	112	117	78	67	147	232
9	360	1810	73	118	425	830	98	85	80	70	157	256
10	200	805	82	128	435	972	163	196	122	139	138	212
11	169	580	78	106	290	668	108	115	87	96	110	130
12	144	505	92	125	217	432	115	113	94	106	138	226
13	191	681	79	102	180	318	117	116	112	119	142	241
14	210	788	76	113	136	227	124	119	132	176	127	210
15	138	522	54	73	153	247	138	152	100	130	103	155
16	123	432	57	77	158	255	110	117	93	93	93	131
17	130	428	58	72	140	211	108	108	83	85	79	109
18	99	310	73	90	118	172	78	66	82	87	73	97
19	91	285	75	92	337	521	105	94	100	107	104	137
20	93	281	73	98	330	568	105	107	105	120	270	422
21	95	269	68	86	201	321	107	104	102	125	805	1850
22	93	256	82	93	150	201	84	78	93	111	665	1870
23	102	271	127	149	157	209	82	78	108	122	304	878
24	75	174	104	121	187	252	78	72	117	145	204	573
25	96	243	110	121	215	284	72	71	93	105	174	415
26	107	277	95	106	188	247	59	56	128	176	152	343
27	85	176	79	89	135	169	70	64	199	340	113	218
28	88	183	70	75	117	136	68	63	132	181	118	222
29	113	237	100	124	110	130	66	57	141	211	127	228
30	110	229	115	162	88	105	76	61	127	182	124	214
31	---	---	127	239	---	---	90	73	116	154	---	---
TOTAL	---	28049	---	3614	---	10870	---	3015	---	3702	---	10981

TOTAL LOAD FOR YEAR: 165655 TONS.

05376000 NORTH FORK WHITEWATER RIVER NEAR ELBA, MN
(Hydrologic bench-mark station)

LOCATION.--Lat 44°05'30", long 92°03'57", in sec.7, T.107 N., R.10 W., Winona County, Hydrologic Unit 07040003, on left bank 2.3 mi (3.7 km) upstream from Middle Fork, 2.4 mi (3.9 km) west of Elba, and 3.5 mi (5.6 km) upstream from confluence with South Fork.

DRAINAGE AREA.--101 mi^2 (262 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1939 to September 1941, July 1967 to current year.

REVISED RECORDS.--WRD MN-74: 1967(M), 1969(M), 1971(M), 1972(M), 1973(M).

GAGE.--Water-stage recorder. Datum of gage is 769.60 ft (234.574 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 12, 1939, nonrecording gage at site 2 mi (3.2 km) downstream at different datum. Oct. 12, 1939, to Sept. 30, 1941, water-stage recorder at site 600 ft (183 m) downstream at present datum. Prior to July 6, 1978, water-stage recorder at same site and present datum (gage destroyed by flood of July 1978), July 6 to Oct. 30, 1978, non-recording gage at same site and present datum.

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

AVERAGE DISCHARGE.--15 years (water years 1940-41, 1968-80), 45.2 ft^3/s (1.280 m^3/s), 6.08 in/yr (154 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,100 ft^3/s (456 m^3/s) June 21, 1974, gage height, 16.32 ft (4.974 m) from floodmark; minimum, 11 ft^3/s (0.31 m^3/s) Feb. 21, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 600 ft^3/s (17.0 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Jan. 16	1800	1580	44.7	6.68	2.036	Mar. 18	1800	2740	77.6	8.14	2.481
Mar. 16	2300	*2810	79.6	*8.21	2.502						

Minimum discharge, 22 ft^3/s (0.62 m^3/s) Mar. 14, gage height, 3.68 ft (1.122 m).

PEAK DISCHARGE FOR WATER YEARS 1968 TO 1979.--Peak discharge above base of 600 ft^3/s (17.0 m^3/s) and maximum (*):

Water year	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
1968	Sept. 8, 1968	1015	*880	24.9	*6.63	2.021
1969	Apr. 3, 1969	2100	*1940	54.9	*7.73	2.356
1970	No peak above base.					
1971	Mar. 31, 1971	2115	*1270	36.0	*6.99	2.131
1972	Mar. 17, 1972	1930	*1410	39.9	*7.12	2.170
1973	Jan. 18, 1973	1100	3420	96.9	9.23	2.813
	Mar. 3, 1973	1945	1180	33.4	6.74	2.054
	Mar. 7, 1973	0545	1410	39.9	7.20	2.195
	Mar. 11, 1973	0845	*5010	142	*10.34	3.152
	Aug. 4, 1973	0715	607	17.2	5.91	1.801
1974	Mar. 4, 1974	0030	1030	29.2	6.66	2.030
	Mar. 28, 1974	0915	1210	34.3	6.97	2.124
	Apr. 4, 1974	0130	2510	71.1	8.73	2.661
	June 4, 1974	1145	1660	47.0	7.58	2.310
	June 9, 1974	1930	771	21.8	6.06	1.847
	June 21, 1974	0500	*16100	456	a*16.32	4.974
1975	June 22, 1975	0130	625	17.7	5.07	1.545
	June 29, 1975	2200	2820	79.9	8.19	2.496
	July 5, 1975	1000	*11500	326	a*15.01	4.575
1976	Feb. 15, 1976	1700	880	24.9	4.70	1.433
	Mar. 12, 1976	1100	*2620	74.2	*7.50	2.286
	July 28, 1976	0645	1360	38.5	5.60	1.707
1977	Mar. 8, 1977	1930	777	22.0	5.04	1.536
	June 5, 1977	0500	*2550	72.2	*7.63	2.326
1978	May 31, 1978	2000	760	21.5	5.07	1.545
	July 1, 1978	0515	4920	139	10.27	3.130
	July 5, 1978	2200	*12800	362	a*15.57	4.746
	July 17, 1978	0330	3590	102	9.50	2.896
	July 22, 1978	1500	680	19.3	5.30	1.615
	Aug. 2, 1978	0645	740	21.0	5.42	1.652
	Sept.13, 1978	0500	4270	121	a9.70	2.957
1979	May 30, 1979	2230	1070	30.3	5.89	1.795
	July 3, 1979	2000	*2440	69.1	*7.77	2.368
	July 11, 1979	0115	692	19.6	5.29	1.612
	Aug. 29, 1979	0100	1150	32.6	6.04	1.841

a From high-water mark.

05376000 NORTH FORK WHITEWATER RIVER NEAR ELBA, MN--Continued

REVISIONS.--Revised daily discharge, in cubic feet per second, for the high-water period in September 1978 are given below. These figures supersede those published in the report for 1978.

Sept. 13 1360

MONTH	TOTAL	MEAN	MAX	MIN	CFSM	IN
September 1978	3167	106	1360	34	1.05	1.17
CAL YR 1978	22699	62.2	2660	18	.62	8.36
WTR YR 1978	21888	60.0	2660	18	.59	8.06

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	47	44	40	35	28	48	39	43	33	28	37
2	37	45	44	39	35	26	45	37	39	33	28	34
3	34	42	45	38	34	25	44	36	34	32	28	34
4	32	42	45	38	34	25	47	34	33	34	29	44
5	32	44	46	38	34	25	90	34	44	36	29	43
6	32	59	46	39	34	26	111	34	126	34	28	35
7	32	56	46	38	34	25	67	33	83	33	28	34
8	31	52	45	42	34	24	55	33	60	33	30	34
9	30	51	43	40	34	25	56	33	44	33	29	33
10	30	48	43	39	34	24	51	34	41	32	29	32
11	30	45	44	45	33	23	48	35	39	32	29	33
12	30	45	40	43	34	23	52	34	36	31	28	37
13	28	46	41	39	34	23	86	35	36	30	31	38
14	27	46	40	38	34	23	56	34	36	30	31	34
15	28	46	40	37	33	24	50	34	35	29	31	33
16	28	46	39	470	34	1170	50	34	33	30	29	33
17	29	48	38	320	34	1020	49	33	33	29	36	32
18	28	48	38	85	33	1140	46	33	47	29	34	32
19	30	48	39	54	33	1340	46	33	108	29	43	30
20	36	48	40	42	33	638	46	33	50	29	35	34
21	32	48	41	39	33	197	45	33	41	29	35	100
22	110	52	42	37	34	83	44	33	38	29	31	45
23	150	55	52	36	37	55	43	33	36	28	30	40
24	110	52	55	38	37	48	40	32	35	28	30	38
25	80	50	48	36	33	53	40	31	35	28	30	36
26	60	50	44	36	32	75	40	31	35	28	34	35
27	50	48	42	36	32	76	39	30	33	28	44	34
28	45	47	41	36	32	75	39	34	33	27	39	33
29	43	46	40	36	31	60	39	55	33	28	36	32
30	42	45	39	35	---	54	39	105	33	28	38	32
31	42	---	40	35	---	49	---	56	---	28	40	---
TOTAL	1383	1445	1330	1964	978	6502	1551	1158	1352	940	1000	1121
MEAN	44.6	48.2	42.9	63.4	33.7	210	51.7	37.4	45.1	30.3	32.3	37.4
MAX	150	59	55	470	37	1340	111	105	126	36	44	100
MIN	27	42	38	35	31	23	39	30	33	27	28	30
CFSM	.44	.48	.43	.63	.33	2.08	.51	.37	.45	.30	.32	.37
IN.	.51	.53	.49	.72	.36	2.39	.57	.43	.50	.35	.37	.41

CAL YR 1979 TOTAL 19122 MEAN 52.4 MAX 408 MIN 24 CFSM .52 IN 7.04
WTR YR 1980 TOTAL 20724 MEAN 56.6 MAX 1340 MIN 23 CFSM .56 IN 7.63

NOTE.--No gage-height record Oct. 22-29, Jan. 16 to Feb. 19, Sept. 16-30.

05376000 NORTH FORK WHITEWATER RIVER NEAR ELBA, MN--Continued
(Hydrologic benchmark station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967 to current year.

REMARKS.--Letter K indicates non-ideal colony count.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
OCT										
30...	1030	42	570	8.1	17.0	9.5	11.0	97	>800	420
DEC										
03...	1030	45	590	8.3	3.5	2.0	14.6	110	K42	K11
JAN										
14...	1215	37	570	8.0	-1.0	1.0	14.8	107	120	17
FEB										
20...	1430	33	550	8.0	2.0	2.5	13.3	100	150	48
APR										
09...	1345	58	542	8.1	.5	5.5	12.6	105	K9	K9
MAY										
28...	1115	32	578	8.1	26.0	17.0	9.6	97	110	99
JUL										
28...	1115	28	495	8.1	21.0	17.0	9.0	99	250	250
SEP										
08...	1345	33	500	8.3	29.5	18.5	12.7	139	K1000	210

DATE	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY (MG/L AS CACO3) (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
OCT										
30...	620	290	14	78	24	7.2	.2	2.4	280	14
DEC										
03...	71	330	51	88	27	6.9	.2	1.6	280	23
JAN										
14...	31	300	37	76	26	7.5	.2	2.5	260	21
FEB										
20...	K40	280	16	71	24	6.9	.2	1.5	260	18
APR										
09...	K64	250	36	64	21	5.3	.2	3.6	210	15
MAY										
28...	19	270	8	66	25	6.1	.2	1.4	260	15
JUL										
28...	87	280	15	69	25	5.1	.1	1.5	260	12
SEP										
08...	74	280	26	71	24	6.5	.2	2.9	250	16

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS, ORTHOPH OSPHATE DISSOL. (MG/L AS P) (00671)
OCT										
30...	12	.2	15	362	338	41.0	3.8	3.8	.170	Y0z
DEC										
03...	14	.2	16	365	369	44.3	5.7	5.5	.170	.000
JAN										
14...	12	.2	16	318	336	31.8	4.2	4.2	.210	.180
FEB										
20...	11	.2	16	328	317	29.2	2.9	2.7	.240	.160
APR										
09...	11	.1	13	287	--	44.9	6.6	3.6	.220	.170
MAY										
28...	9.4	.2	14	322	294	27.8	2.0	--	.190	.020
JUL										
28...	8.3	.1	12	327	296	24.7	1.9	1.6	.350	.050
SEP										
08...	11	.2	14	320	305	28.5	2.1	2.1	.200	.160

05376000 NORTH FORK WHITEWATER RIVER NEAR ELBA, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)
APR											
09...	1345	1	1	--	70	<1	0	<1	20	3	<3
SEP											
08...	1345	1	1	100	60	<1	1	1	10	10	<3

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)
APR											
09...	4	<10	670	8	0	<10	<4	50	46	.1	.1
SEP											
08...	2	<10	410	<3	6	<10	5	70	38	<.1	<.1

DATE	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	CYANIDE TOTAL (MG/L AS CN) (00720)
APR										
09...	<10	0	0	--	0	80	<6.0	20	<4	.00
SEP										
08...	<10	0	0	0	0	77	<6.0	10	<4	.00

DATE	TIME	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT) (01515)	GROSS ALPHA, SUSP. TOTAL (PCI/L AS U-NAT) (01516)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90) (80060)	RADIUM 226, DIS-SOLVEV, RADON METHOD (PCI/L) (09511)
APR										
09...	1345	<5.2	.5	<3.5	.3	5.5	.5	5.6	.5	.05

DATE	TIME	PCB TOTAL (UG/L) (39516)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	CHLOR-DANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)	DDT, TOTAL (UG/L) (39370)	DI-AZINON, TOTAL (UG/L) (39570)	DI-ELDRIN TOTAL (UG/L) (39380)
MAY										
28...	1115	.00	.00	.00	.0	.00	.00	.00	.00	.00

DATE	ENDO-SULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	PARA-THION, TOTAL (UG/L) (39540)	TOTAL TRI-THION (UG/L) (39786)	HEPTA-CHLOR, TOTAL (UG/L) (39410)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L) (39420)	LINDANE TOTAL (UG/L) (39340)	MALA-THION, TOTAL (UG/L) (39530)
MAY									
28...	.00	.00	.00	.00	.00	.00	.00	.00	.00

05376000 NORTH FORK WHITEWATER RIVER NEAR ELBA, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	METH-OXY-CHLOR, TOTAL (UG/L) (39480)	METHYL PARA-THION, TOTAL (UG/L) (39600)	METHYL TRI-THION, TOTAL (UG/L) (39790)	MIREX, TOTAL (UG/L) (39755)	PER-THANE TOTAL (UG/L) (39034)	TOX-APHENE, TOTAL (UG/L) (39400)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	SILVEX, TOTAL (UG/L) (39760)
MAY									
28...	.00	.00	.00	.00	.00	0	.00	.00	.00

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE, WATER (DEG C) (00010)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
OCT						
30...	1115	42	9.5	57	6.5	--
DEC						
03...	1115	45	2.0	17	2.1	--
JAN						
14...	1240	37	1.0	16	1.6	--
FEB						
20...	1250	33	2.5	52	4.6	--
APR						
09...	1315	58	5.5	23	3.6	98
MAY						
28...	1105	32	17.0	37	3.2	92
JUL						
16...	1000	30	21.0	36	2.9	90
28...	1115	28	17.0	86	6.5	--
SEP						
08...	1340	33	18.5	25	2.2	--

05376800 WHITEWATER RIVER NEAR BEAVER, MN

LOCATION.--Lat 44°09'03", long 92°00'19", in SW¼SE¼ sec.15, T.108 N., R.10 W., Winona County, Hydrologic Unit 07040003, on left bank at downstream side of bridge on County Road No. 30, 0.5 mi (0.8 km) above mouth of Beaver Creek, and 4.7 mi (7.6 km) miles north of Elba.

DRAINAGE.--271 mi^2 (702 km^2).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 692.01 ft (210.925 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1976, at datum 2.00 ft (0.610 m) higher.

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

AVERAGE DISCHARGE.--5 years (water years 1976-80), 154 ft^3/s (4.36 m^3/s), 7.72 in/yr (196 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,400 ft^3/s (436 m^3/s) July 6, 1978, gage height, 12.88 ft (3.926 m), present datum; minimum daily, 53 ft^3/s (1.50 m^3/s) Feb. 20 to Mar. 20, 1978; minimum gage height, 1.90 ft (0.579 m) Sept. 12, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1939, 19,200 ft^3/s (544 m^3/s) June 21, 1974, gage height, 13.00 ft (3.962 m), present datum, determined by contracted-opening measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft^3/s (56.6 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Jan. 16	2230	2180	61.7	9.63	2.935	Mar. 19	0100	4800	136	11.05	3.368
Mar. 16	2230	*4920	139	*11.09	3.380						

Minimum discharge, 109 ft^3/s (3.09 m^3/s) May 26, 27; minimum gage height, 1.91 ft (0.582 m) Aug. 3, 4, 7.

PEAK DISCHARGE FOR WATER YEARS 1975 TO 1979.--Peak discharge above base of 2,000 ft^3/s (56.6 m^3/s) and maximum (*):

Water year	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
1975	July 5, 1975	1530	*9860	279	*10.01	3.051
1976	Mar. 12, 1976	1845	*7180	203	*9.21	2.807
1977	June 5, 1977	1215	*4700	133	*10.70	3.261
1978	July 1, 1978	0930	10300	292	12.09	3.685
	July 6, 1978	0530	*15400	436	*12.88	3.926
	July 17, 1978	1915	4120	117	10.25	3.124
	Sept.13, 1978	0445	4680	133	10.88	3.316
1979	Aug. 22, 1979	0445	*1260	35.7	*8.36	2.548

05376800 WHITEWATER RIVER NEAR BEAVER, MN--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	137	216	164	130	136	124	178	135	233	149	112	128
2	140	210	164	130	135	124	164	135	214	140	112	121
3	138	206	164	130	134	122	161	134	197	137	112	119
4	135	198	161	130	133	121	166	130	177	137	114	134
5	134	204	161	130	132	121	251	130	225	144	115	128
6	133	238	164	130	131	121	312	127	806	138	112	121
7	133	230	164	135	130	121	226	127	475	135	112	120
8	132	217	158	135	130	121	206	126	367	129	119	119
9	131	215	147	135	130	121	208	126	301	125	115	119
10	130	210	150	140	130	121	197	126	269	126	115	118
11	130	208	154	148	130	119	180	129	248	126	115	120
12	130	206	154	147	130	118	178	126	239	125	113	125
13	130	204	150	146	130	119	208	125	222	122	120	126
14	128	198	148	145	130	118	184	125	214	122	122	120
15	128	198	147	143	130	121	170	123	203	122	117	117
16	128	196	142	719	130	1640	164	122	184	123	114	118
17	128	196	140	707	130	1730	158	122	171	118	126	117
18	128	189	138	278	130	1150	154	121	183	118	125	116
19	128	186	134	229	135	2380	154	118	323	118	133	114
20	131	181	132	199	140	790	154	118	221	146	126	138
21	131	178	132	177	140	375	152	115	206	129	138	267
22	215	198	132	170	133	284	149	115	188	122	121	172
23	367	209	153	153	132	252	148	114	182	120	118	147
24	298	201	153	166	132	232	148	112	170	119	115	140
25	257	193	143	150	131	239	148	112	167	120	117	141
26	243	189	139	139	130	239	145	110	158	120	124	133
27	233	186	137	139	128	236	142	110	160	118	134	130
28	227	181	134	138	126	229	138	114	165	117	132	127
29	220	176	134	138	123	215	136	144	162	115	125	125
30	215	164	132	138	---	207	136	530	165	114	135	125
31	213	---	130	137	---	197	---	284	---	112	132	---
TOTAL	5251	5981	4555	5831	3811	12207	5215	4385	7195	3906	3740	3945
MEAN	169	199	147	188	131	394	174	141	240	126	121	132
MAX	367	238	164	719	140	2380	312	530	806	149	138	267
MIN	128	164	130	130	123	118	136	110	158	112	112	114
CFSM	.62	.73	.54	.69	.48	1.45	.64	.52	.89	.47	.45	.49
IN.	.72	.82	.63	.80	.52	1.68	.72	.60	.99	.54	.51	.54

CAL YR 1979 TOTAL 62814 MEAN 172 MAX 713 MIN 89 CFSM .64 IN 8.62
WTR YR 1980 TOTAL 66022 MEAN 180 MAX 2380 MIN 110 CFSM .66 IN 9.06

05376800 WHITEWATER RIVER NEAR BEAVER, MN--Continued

WATER-QUALITY RECORDS

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

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

REMARKS.--During the winter period, daily sediment concentrations were estimated on the basis of water records and monthly sediment samples. Sediment loads that do not have a corresponding concentration value were determined by the water discharge-sediment load relationship for the period of record. Water temperature was obtained when sediment samples were collected.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum daily, 26.0°C July 5, 1977; minimum daily, 0.0°C on many days each year.
SEDIMENT CONCENTRATIONS: Maximum daily mean (water years 1975-79), 7,690 mg/L May 31, 1979; minimum daily mean (water years 1975-79), 5 mg/L Sept. 17, 1976, Nov. 18, 1976.
SEDIMENT LOADS: Maximum daily, 64,700 tons (58,700 tonnes) July 6, 1978; minimum daily, 1.2 tons (1.1 tonnes) Sept. 17, 1976.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum daily, 25.0°C July 10; minimum daily, 0.0°C on many days.
SEDIMENT LOADS: Maximum daily, 18,100 tons (16,400 tonnes) Mar. 16; minimum daily, 7.3 tons (6.6 tonnes) Sept. 15.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---		---	---	.0	8.0	11.0	16.0	16.0	17.0	---
2	---	---		---	---	---	11.0	11.0	14.0	22.0	---	---
3	---	---		---	---	---	7.0	17.0	---	20.0	---	22.0
4	---	---		---	---	---	4.0	14.0	14.0	16.0	18.0	17.0
5	---	---		---	---	---	10.0	13.0	17.0	---	22.0	19.0
6	---	---		---	---	---	8.0	10.0	18.0	23.0	16.0	17.5
7	---	---		---	1.0	---	6.0	11.0	---	24.0	21.0	20.0
8	---	---		---	---	---	9.0	8.0	---	---	---	22.0
9	---	---		---	---	---	---	---	13.0	19.0	18.0	17.0
10	---	---		---	---	---	6.0	11.0	14.0	25.0	---	14.0
11	---	---		---	---	---	4.0	---	12.0	19.0	---	12.0
12	---	---		---	---	---	10.0	9.0	16.0	20.0	---	17.0
13	---	---		---	---	---	9.0	11.0	15.0	---	---	15.0
14	---	---		---	---	---	4.0	12.0	21.0	24.0	---	14.0
15	---	---		2.0	---	---	10.0	9.0	16.0	21.0	21.0	15.0
16	---	---		---	---	---	8.0	11.0 ---	14.0	---	---	14.0
17	---	---		---	---	---	9.0	~~5.0~~	16.0	24.0	15.0	---
18	---	---		---	---	---	10.0	---	---	19.0	20.0	13.0
19	---	---		---	---	---	15.0	14.0	16.0	22.0	17.0	16.0
20	---	---		---	---	---	10.0	---	---	19.0	19.0	15.0
21	---	---		---	---	---	12.0	---	---	22.0	---	15.0
22	---	---		---	3.0	---	12.0	12.0	---	23.0	21.0	13.5
23	---	---		---	---	---	11.0	12.0	---	---	18.0	10.0
24	---	---		---	---	---	14.0	18.0	18.0	16.0	17.0	11.0
25	9.0	---		---	---	7.0	10.0	18.0	---	---	20.0	13.0
26	---	---		---	---	8.0	---	18.0	18.0	---	18.0	9.0
27	---	---		---	---	5.0	12.0	15.0	18.0	22.0	---	15.0
28	---	---		---	---	5.0	---	16.0	21.0	16.0	---	---
29	---	---		---	---	6.0	13.0	15.0	---	16.0	18.0	15.0
30	---	1.0		---	---	8.0	15.0	17.0	14.0	21.0	---	---
31	---	---		---	---	5.0	---	16.0	---	18.0	---	---

05376800 WHITEWATER RIVER NEAR BEAVER, MN--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1		26		120		60	---	30		34	---	22
2		28		110		60	---	30		33	---	22
3		27		100		60	---	30		33	---	21
4		24		90		56	---	30		32	---	21
5		24		100		56	---	30		31	---	21
6		23		170		60	---	30		31	---	21
7		23		150		60	---	33		30	---	21
8		22		130		54	---	33		30	---	21
9		21		120		43	---	33		30	---	21
10		21		110		46	---	37		30	---	21
11		21		110		50	---	43		30	---	20
12		21		100		50	---	43		30	---	19
13		21		100		46	---	42		30	---	20
14		20		92		44	---	41		30	---	19
15		20		92		43	122	47		30	104	34
16		20		88		39	1700	6920		30	2760	18100
17		20		88		37	1900	4470		30	1180	7680
18		20		78		35	580	435		30	2010	9320
19		20		72		32	---	170		33	2400	15500
20		22		68		31	---	110		37	1800	4320
21		22		64		31	---	76		37	590	597
22		120		92		31	---	68		32	178	136
23		760		110		49	---	49		31	93	63
24		380		98		49	---	62		31	67	42
25		230		84		39	---	46		30	83	54
26		190		78		36	---	37		30	137	88
27		160		74		34	---	37		28	160	102
28		150		68		32	---	36		27	107	66
29		130		60		32	---	36		25	110	64
30		120		48		31	---	36			70	39
31		120				30	---	35			56	30
TOTAL		2826		2864		1356	---	13155		895	---	56525

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	46	22	30	11	388	244	109	44	92	28	82	28
2	47	21	31	11	358	207	87	33	96	29	76	25
3	41	18	40	14	317	169	89	33	100	30	74	24
4	47	21	37	13	273	130	93	34	102	31	136	49
5	952	984	50	18	737	1080	100	39	74	23	67	23
6	1250	1100	31	11	4670	12900	105	39	76	23	59	19
7	300	183	37	13	1750	2410	98	36	62	19	59	19
8	114	63	30	10	821	860	96	33	81	26	62	20
9	93	52	41	14	449	365	94	32	83	26	78	25
10	79	42	38	13	367	267	83	28	75	23	51	16
11	77	37	32	11	322	216	93	32	70	22	74	24
12	67	32	32	11	292	188	83	28	65	20	55	19
13	127	71	38	13	220	132	72	24	83	27	60	20
14	78	39	32	11	160	92	63	21	65	21	37	12
15	48	22	39	13	170	93	87	29	46	15	23	7.3
16	39	17	37	12	158	78	110	37	41	13	53	17
17	51	22	37	12	141	65	119	38	56	19	41	13
18	94	39	38	12	190	102	103	33	53	18	37	12
19	89	37	41	13	4540	4410	125	40	102	37	43	13
20	74	31	45	14	970	579	317	125	91	31	317	125
21	43	18	47	15	338	188	126	44	85	32	1510	1310
22	44	18	51	16	266	135	155	51	55	18	380	176
23	38	15	71	22	222	109	155	50	62	20	160	64
24	36	14	104	31	184	84	137	44	69	21	85	32
25	58	23	121	37	147	66	128	41	55	17	62	24
26	43	17	128	38	127	54	125	40	87	29	74	27
27	37	14	133	40	128	55	125	40	107	39	72	25
28	31	12	144	44	112	50	144	45	90	32	59	20
29	25	9.2	273	106	107	39	139	43	76	26	49	17
30	21	7.7	7480	13300	113	50	125	38	82	30	52	18
31	---	---	1100	843	---	---	91	28	90	32	---	---
TOTAL	---	3000.9	---	14742	---	25417	---	1222	---	777	---	2223.3

TOTAL LOAD FOR YEAR: 125003.2 TONS.

05376800 WHITEWATER RIVER NEAR BEAVER, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE, WATER (DEG C) (00010)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
MAY										
30...	0800	653	17.0	10700	18900	50	52	60	79	99
JUN										
06...	0800	1220	18.0	6190	20400	51	54	61	72	93

DATE	TIME	NUMBER OF SAM-PLING POINTS (00063)	STREAM-FLOW, INSTAN-TANEOUS (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)
SEP											
06...	1315	4	121	0	1	36	47	85	97	99	100

05378300 STRAIGHT VALLEY CREEK NEAR ROLLINGSTONE, MN

LOCATION.--Lat 44°05'09", long 91°50'34", in SE¼NE¼ sec.12, T.107 N., R.9 W., Winona County, Hydrologic Unit 07040003, at bridge on County Highway, 0.2 mi (0.3 km) above mouth, and 1.5 mi (2.4 km) southwest of Rollingstone.

DRAINAGE AREA.--5.16 mi^2 (13.36 km^2).

PERIOD OF RECORD.--Water years 1959-66 (annual maximums), 1967-70 (peaks above base), October 1970 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 723.85 ft (220.629 m) National Geodetic Vertical Datum of 1929. Nov. 6, 1958, to Oct. 20, 1966, crest-stage gage at present site and datum.

REMARKS.--Records good, except for periods of no gage-height record, April 11 to May 18, June 6 to July 15 and Sept. 26-30, which are fair.

AVERAGE DISCHARGE.--10 years (water years 1971-80), 2.44 ft^3/s (0.069 m^3/s), 6.42 in/yr (163 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,500 ft^3/s (42.5 m^3/s) July 5, 1978, gage height, 18.10 ft (5.517 m) from high-water mark in well; minimum observed, 0.12 ft^3/s (0.003 m^3/s) Aug. 5, 1960.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft^3/s (2.83 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Jan. 16	1615	172	4.87	12.62	3.847	May 30	0030	238	6.74	13.11	3.996
Mar. 16	1345	210	5.95	12.85	3.917	June 5	2215	*1330	37.7	*17.60	5.364
Mar. 18	1700	273	7.73	13.29	4.051	June 18	1700	268	7.59	13.30	4.054
Apr. 5	1630	116	3.28	12.01	3.661	Sept.20	1230	394	11.2	14.14	4.310

Minimum discharge, 0.85 ft^3/s (0.024 m^3/s) Mar. 11, gage height, 9.59 ft (2.923 m).

PEAK DISCHARGE FOR WATER YEARS 1967 TO 1979.--Peak discharge above base of 100 ft^3/s (2.83 m^3/s) and maximum (*):

Water year	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
1967	Mar. 24, 1967	1645	*460	13.0	14.48	4.414
	Mar. 26, 1967	1430	395	11.2	14.13	4.307
1968	June 21, 1968	0230	370	10.5	13.99	4.264
	July 14, 1968	1125	*402	11.4	14.17	4.319
	Aug. 6, 1968	2230	174	4.93	12.47	3.801
1969	June 26, 1969	1900	*85	2.41	11.27	3.435
1970	Aug. 29, 1970	0715	104	2.95	11.61	3.539
1971	Mar. 31, 1971	1900	*29	0.82	9.89	3.014
1972	June 12, 1972	2030	111	3.14	11.69	3.563
	Aug. 20, 1972	1945	*224	6.34	13.11	3.996
	Sept.26, 1972	0045	109	3.09	12.18	3.712
	Sept.28, 1972	1330	180	5.10	12.92	3.938
1973	Mar. 10, 1973	2110	*470	13.3	14.50	4.420
1974	Mar. 28, 1974	0640	330	9.35	14.72	4.487
	Apr. 3, 1974	1230	140	3.96	12.32	3.755
	Apr. 3, 1974	2230	157	4.45	12.48	3.804
	June 21, 1974	0240	*364	10.3	13.93	4.246
1975	June 4, 1975	1900	*188	5.32	12.76	3.889
1976	Feb. 15, 1976	0430	119	3.37	12.10	3.688
	Mar. 12, 1976	1030	*496	14.0	14.62	4.456
1977	June 4, 1977	1230	*827	23.4	16.33	4.977
	June 16, 1977	0830	134	3.79	12.10	3.688
1978	May 28, 1978	2000	483	13.7	14.56	4.438
	June 17, 1978	0030	538	15.2	14.78	4.505
	July 1, 1978	0400	1110	31.4	17.04	5.194
	July 5, 1978	2200	*1500	42.5	18.10	5.517
	July 15, 1978	2330	377	10.7	14.01	4.270
	Aug. 2, 1978	0415	124	3.51	12.20	3.719
	Sept.12, 1978	2030	479	13.6	14.59	4.447
	Sept.29, 1978	0515	281	7.96	13.42	4.090
1979	Aug. 22, 1979	0145	*272	7.70	13.30	4.054
	Aug. 28, 1979	2100	123	3.48	12.09	3.685

05378300 STRAIGHT VALLEY CREEK NEAR ROLLINGSTONE, MN--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	2.1	1.6	1.5	1.4	1.3	2.4	1.8	2.1	1.7	1.7	1.9
2	1.8	2.0	1.5	1.7	1.3	1.3	2.2	1.8	2.0	1.8	1.8	1.7
3	1.7	2.0	1.5	1.6	1.2	1.4	2.4	1.7	2.0	1.8	1.7	1.6
4	1.6	2.0	1.6	1.6	1.2	1.3	5.0	1.7	1.9	2.6	1.8	2.7
5	1.7	2.7	1.7	1.6	1.3	1.2	18	1.6	99	2.7	1.7	1.6
6	1.6	2.7	1.7	1.6	1.3	1.0	6.8	1.6	67	1.9	1.7	1.5
7	1.6	2.2	1.7	1.5	1.2	1.0	3.0	1.5	27	1.8	1.9	4.0
8	1.7	2.1	1.6	1.5	1.2	1.0	4.2	1.5	8.0	1.8	2.3	1.7
9	1.6	2.1	1.6	1.4	1.2	1.0	3.4	1.5	6.0	1.6	1.8	1.6
10	1.6	2.0	1.6	1.5	1.2	.99	2.9	1.5	4.8	1.5	1.9	1.6
11	1.6	2.0	1.6	1.9	1.2	.97	3.0	1.5	4.0	1.5	1.7	2.7
12	1.6	2.0	1.5	1.5	1.2	.99	8.0	1.5	3.8	1.5	1.7	2.1
13	1.5	1.9	1.6	1.6	1.2	1.0	4.0	1.4	3.8	1.5	2.2	1.9
14	1.5	1.9	1.5	1.6	1.2	1.1	3.4	1.4	3.4	1.6	1.7	1.8
15	1.5	1.8	1.6	1.6	1.2	2.8	3.0	1.4	3.2	1.6	1.7	1.8
16	1.5	1.8	1.5	31	1.2	73	2.8	1.4	3.0	2.3	2.1	1.7
17	1.4	1.8	1.4	3.1	1.2	10	2.7	1.4	2.9	1.9	2.0	1.7
18	1.5	1.8	1.5	2.5	1.2	47	2.6	1.4	29	1.9	1.8	1.8
19	1.8	1.8	1.5	2.2	1.2	28	2.5	1.4	5.4	1.9	2.0	2.5
20	1.8	1.8	1.5	2.2	1.2	9.7	2.4	1.4	3.0	2.4	2.8	38
21	1.7	2.2	1.5	2.1	1.8	3.0	2.3	1.4	2.8	2.0	1.9	2.7
22	8.5	2.1	1.5	2.0	3.0	2.0	2.2	1.3	2.6	1.9	1.6	2.4
23	5.0	2.0	3.6	1.9	2.3	1.9	2.2	1.3	2.5	1.8	1.6	2.2
24	3.0	1.9	1.8	1.9	1.8	2.0	2.1	1.2	2.5	1.7	1.6	2.4
25	2.6	1.8	1.7	1.8	1.6	4.4	2.1	1.2	2.2	1.9	1.6	2.1
26	2.3	1.7	1.7	1.7	1.5	3.9	2.0	1.1	2.1	1.8	2.1	2.3
27	2.2	1.7	1.6	1.6	1.5	3.6	2.0	1.2	1.9	1.8	2.6	2.2
28	2.1	1.6	1.6	1.5	1.5	4.9	2.0	1.6	1.9	1.9	1.8	2.2
29	2.0	1.6	1.6	1.4	1.4	4.6	1.9	4.6	1.8	1.8	1.7	2.1
30	2.0	1.6	1.6	1.5	---	3.5	1.9	24	1.8	1.8	3.3	2.0
31	2.3	---	1.5	1.4	---	2.8	---	2.5	---	1.7	2.6	---
TOTAL	66.5	58.7	51.0	83.5	40.9	222.65	105.4	71.8	303.4	57.4	60.4	98.5
MEAN	2.15	1.96	1.65	2.69	1.41	7.18	3.51	2.32	10.1	1.85	1.95	3.28
MAX	8.5	2.7	3.6	31	3.0	73	18	24	99	2.7	3.3	38
MIN	1.4	1.6	1.4	1.4	1.2	.97	1.9	1.1	1.8	1.5	1.6	1.5
CFSM	.42	.38	.32	.52	.27	1.39	.68	.45	1.96	.36	.38	.64
IN.	.48	.42	.37	.60	.29	1.60	.76	.52	2.19	.41	.44	.71

CAL YR 1979 TOTAL 779.50 MEAN 2.14 MAX 36 MIN 1.2 CFSM .42 IN 5.62
WTR YR 1980 TOTAL 1220.15 MEAN 3.33 MAX 99 MIN .97 CFSM .65 IN 8.79

05378500 MISSISSIPPI RIVER AT WINONA, MN

LOCATION.--Lat 44°03'20", long 91°38'15", in sec.23, T.107 N., R.7 W., Winona County, Hydrologic Unit 07040003, on right bank at Winona pumping station in Winona, 9.5 mi (15.3 km) upstream from Trempealeau River, and at mile 725.7 (1,167.7 km) upstream from the Ohio River.

DRAINAGE AREA.--59,200 mi^2 (153,300 km^2), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1928 to current year. Gage-height records collected in this vicinity since 1878 are contained in reports of Mississippi River Commission.

GAGE.--Water-stage recorder. Datum of gage is 639.64 ft (194.962 m) National Geodetic Vertical Datum of 1929. June 10, 1928, to Apr. 15, 1931, nonrecording gage at site 800 ft (244 m) upstream. Prior to Oct. 1, 1929, at datum 0.20 ft (0.06 m) higher and Oct.1, 1929, to Apr. 15, 1931, at datum 0.12 ft (0.04 m) lower. Apr. 16, 1931, to Nov. 12, 1934, nonrecording gage at present site and datum. Since Mar. 31, 1937, auxiliary water-stage recorder 2.7 mi (4.3 km) upstream at tailwater of navigation dam 5A.

REMARKS.--Records good. Some regulation by reservoirs, navigation dams, and powerplants at low and medium stages. Flood flow not materially affected by artificial storage.

AVERAGE DISCHARGE.--52 years, 26,400 ft^3/s (747.6 m^3/s), 6.06 in/yr (154 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 268,000 ft^3/s (7,590 m^3/s) Apr. 19, 1965, gage height, 20.77 ft (6.331 m) from floodmark; minimum 2,250 ft^3/s (63.7 m^3/s) Dec. 29, 1933, gage height, -1.18 ft (-0.360 m); minimum gage height, -3.38 ft (-1.030 m) Aug. 31, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 18, 1880, reached an elevation of 657.14 ft (200.296 m), discharge, 172,000 ft^3/s (4,870 m^3/s), from information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 69,000 ft^3/s (1,950 m^3/s) Apr. 13, 14, gage height 8.96 ft (2.731 m); minimum, 6,350 ft^3/s (180 m^3/s) June 30; minimum gage height, 4.79 ft (1.460 m) June 29.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19900	26800	28700	24200	15500	16500	42000	30100	17400	22500	10200	26100
2	20100	28700	27600	24100	15700	16400	40000	28600	20300	22300	10400	24000
3	19000	31100	24700	23000	15900	16200	42500	27200	25300	21700	10800	20800
4	18600	31900	22300	21000	16600	15800	46500	25000	26200	20200	10200	21300
5	18900	28900	19800	19500	17100	15900	49400	24800	26800	18300	9700	25300
6	18400	33800	20600	18300	16800	15800	50800	23500	34100	16000	10400	29300
7	18400	37700	21900	16200	16600	15700	52700	22000	42100	12900	10500	36400
8	17000	36800	25200	13000	15700	16200	57000	19900	47600	12700	16300	38800
9	14600	36600	26600	11900	15400	16500	58500	18600	53300	14200	24600	36500
10	14700	37500	25400	11400	15500	17100	59800	17500	59200	14700	30400	33700
11	15100	38700	25300	12900	15700	17100	63600	17700	62700	14700	34300	31900
12	14600	39700	24700	13700	15600	16900	67600	19000	60700	14400	32800	33100
13	14700	39100	18900	14000	15600	16600	68800	20700	55000	14800	31500	35200
14	15100	36900	14500	16000	15700	16900	68500	21400	49500	12200	28500	37000
15	14400	34200	14600	17900	15700	16800	67700	22100	45700	10700	22400	37300
16	14500	32100	16300	20700	15800	17900	65500	22300	42700	10700	17500	38500
17	13900	31800	20100	23300	15900	23700	63100	21300	38900	11600	16000	41000
18	14100	32900	21300	25400	15800	32600	60400	18200	36800	13100	15600	40300
19	14500	33100	20100	26000	15800	41500	57400	16600	36500	14700	15500	37200
20	16500	32100	21600	25800	15800	58500	54700	16500	34900	14600	16600	35800
21	17200	31200	22000	24600	15900	66500	52200	17200	31900	12200	18800	40600
22	20700	30700	22500	23000	16800	60500	48600	19500	27800	12100	18800	41400
23	28200	30900	24900	20500	17800	52800	47700	21000	24900	11400	16900	43500
24	29400	30900	27200	18300	18600	53000	44900	21100	25700	11500	14400	44700
25	29600	31400	28600	17900	19100	50400	40700	20000	26500	11800	14100	46400
26	31700	32200	27500	18100	18500	47300	37300	15900	24900	13000	19500	49400
27	33300	32700	26600	18000	17000	43900	37400	12500	23100	13600	21700	49300
28	33600	33000	25100	17800	16600	43200	35600	12600	21700	13500	20400	44000
29	32400	32300	24000	17600	16600	44800	34100	13400	13300	12700	20000	35500
30	29800	30100	24000	16300	---	45400	32000	20400	16100	10800	22300	33600
31	26700	---	24100	15300	---	44700	---	22100	---	10200	25700	---
TOTAL	639600	995800	716700	585700	475100	973100	1547000	628700	1051600	439800	586800	1087900
MEAN	20630	33190	23120	18890	16380	31390	51570	20280	35050	14190	18930	36260
MAX	33600	39700	28700	26000	19100	66500	68800	30100	62700	22500	34300	49400
MIN	13900	26800	14500	11400	15400	15700	32000	12500	13300	10200	9700	20800
CFSM	.35	.56	.39	.32	.28	.53	.87	.34	.59	.24	.32	.61
IN.	.40	.63	.45	.37	.30	.61	.97	.40	.66	.28	.37	.68

CAL YR 1979 TOTAL 14607800 MEAN 40020 MAX 130000 MIN 12700 CFSM .68 IN 9.18
WTR YR 1980 TOTAL 9727800 MEAN 26580 MAX 68800 MIN 9700 CFSM .45 IN 6.11

05378500 MISSISSIPPI RIVER AT WINONA, MN--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: May-September 1980.
WATER TEMPERATURES: October 1975 to current year.
SUSPENDED-SEDIMENT DISCHARGE: September 1975 to current year.

REMARKS.--For the winter period, daily sediment loads were estimated on the basis of water records and weekly sediment samples. Water temperature was obtained once daily for most of the open water period and weekly for winter period. Specific conductance was begun in May and was done by the observer in conjunction with the sediment sampling. Letter K indicates a non-ideal colony count.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily for period May 29 to Sept. 30, 440 micromhos, June 23-15, June 28 to July 1, July 7-9, 1980; minimum daily, 180 micromhos Sept. 24, 1980.
WATER TEMPERATURES: Maximum daily, 29.0°C July 10, 1976; minimum daily, 0.0°C many days each year.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 393 mg/L July 2, 1978; minimum daily mean, 1 mg/L many days during 1978-80.
SEDIMENT LOADS: Maximum daily 65,300 tons (59,200 tonnes) July 2, 1978; minimum daily, 34 tons (31 tonnes) Jan. 5, 1979.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily for period May 29 to Sept. 30, 440 micromhos; minimum daily, 180 micromhos Sept. 24.
WATER TEMPERATURES: Maximum daily, 28.0°C July 11-14; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 98 mg/L June 8; minimum daily mean, 1 mg/L Mar. 10.
SEDIMENT LOADS: Maximum daily, 13,300 tons (12,100 tonnes) June 10; minimum daily, 46 tons (42 tonnes) Mar. 10.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE, WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS (MG/L AS CACO3) (00900)
OCT												
30...	1345	29600	415	8.2	13.5	10.0	5.0	10.1	93	190	57	180
DEC												
03...	1530	22600	500	8.4	2.5	.5	3.0	14.6	105	K17	K9	240
JAN												
14...	1500	16500	580	7.9	1.0	.0	.80	13.8	98	K12	K9	270
FEB												
20...	1630	22600	530	7.8	4.0	.5	1.0	12.2	87	100	29	210
APR												
09...	1715	58200	318	7.8	.0	3.0	.60	11.2	87	K26	280	130
MAY												
28...	1615	12100	385	8.8	32.0	22.0	4.5	11.6	135	K22	K17	160
JUL												
28...	1710	13500	405	8.3	27.0	26.0	3.6	8.1	104	70	K6	190
SEP												
08...	1700	38100	210	7.9	31.5	23.0	1.6	7.7	92	K600	280	100

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY (MG/L AS CACO3) (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
OCT												
30...	32	45	17	13	.4	2.9	150	32	14	.2	9.5	258
DEC												
03...	78	59	22	11	.3	2.5	160	60	15	.2	13	305
JAN												
14...	75	65	25	15	.4	2.7	190	54	18	.2	14	346
FEB												
20...	31	53	19	14	.4	2.4	180	43	18	.2	14	303
APR												
09...	18	33	11	7.0	.3	4.8	110	22	11	.1	9.7	188
MAY												
28...	26	37	16	10	.3	2.5	120	33	13	.2	.1	234
JUL												
28...	42	47	18	9.9	.3	2.7	150	41	15	.2	13	288
SEP												
08...	26	25	9.9	5.3	.2	1.9	77	13	7.6	.1	10	139

05378500 MISSISSIPPI RIVER AT WINONA, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	SILVER, TOTAL RECOVERABLE (UG/L AS AG) (01077)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
OCT 30...	230	20600	1.4	1.4	.060	.050	1.1	.80	.130	.070	0	8.1
DEC 03...	295	18600	3.7	3.6	.000	.000	.92	.89	.100	.070	--	--
JAN 14...	321	15400	3.1	3.0	.240	.240	.71	.71	.090	.070	0	12
FEB 20...	280	18500	1.9	1.9	.770	.400	1.4	1.0	.100	.080	--	--
APR 09...	170	29500	1.2	1.2	.690	.620	2.0	1.3	.230	.150	0	--
MAY 28...	198	7650	.03	.03	.220	.070	.94	.48	.140	.050	0	--
JUL 28...	238	10500	.16	.16	.120	.020	.99	.46	.180	.170	0	9.0
SEP 08...	121	14300	.34	.34	.010	.000	1.0	.71	.170	.120	0	--

DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, TOTAL RECOVERABLE (UG/L AS BA) (01007)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD) (01027)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, TOTAL RECOVERABLE (UG/L AS CO) (01037)
DEC 03...	1530	2	1	--	50	--	--	--	<10	--
APR 09...	1715	1	1	<50	50	4	4	20	10	0
MAY 28...	1615	4	4	<50	<50	0	0	10	10	0
SEP 08...	1700	1	1	100	100	0	0	10	10	3

DATE	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)
DEC 03...	2	--	4	--	40	--	--	--	30	<.1
APR 09...	0	10	4	1200	110	3	1	60	60	.1
MAY 28...	0	6	6	350	0	4	0	180	2	<.1
SEP 08...	0	9	4	1100	10	6	0	170	0	<.1

DATE	MERCURY DISSOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	SELENIUM, TOTAL (UG/L AS SE) (01147)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SILVER, DISSOLVED (UG/L AS AG) (01075)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED (MG/L AS C) (00689)
DEC 03...	<.1	3	3	0	0	0	--	10	7.6	.1
APR 09...	.1	5	1	0	0	0	20	5	11	.7
MAY 28...	<.1	3	1	0	0	0	20	10	6.3	.7
SEP 08...	<.1	3	0	0	0	0	10	0	9.0	.7

05378500 MISSISSIPPI RIVER AT WINONA, MN--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1979 TO SEPTEMBER 1980

DATE	OCT 30,79		APR 9,80		MAY 28,80		JUL 28,80		SEP 8,80	
TIME	1345		1715		1615		1710		1700	
TOTAL CELLS/ML	5800		2200		60000		110000		25000	
DIVERSITY: DIVISION	1.1		1.0		1.6		1.0		1.1	
.CLASS	1.1		1.0		1.6		1.0		1.1	
..ORDER	1.4		1.9		1.9		1.5		1.7	
...FAMILY	1.4		2.6		2.4		2.3		2.2	
....GENUS	2.1		3.1		3.0		2.6		2.4	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)										
.CHLOROPHYCEAE										
..CHLOROCOCCALES										
...CHARACIACEAE										
....SCHROEDERIA	--	-	--	-	*	0	--	-	--	-
...COELASTRACEAE										
....COELASTRUM	--	-	--	-	--	-	3200	3	--	-
...MICRACTINIACEAE										
....GOLENKINIA	--	-	--	-	720	1	--	-	*	0
....MICRACTINIUM	--	-	--	-	8600	14	--	-	--	-
...OOCYSTACEAE										
....ANKISTRODESMUS	44	1	350#	16	720	1	*	0	170	1
....CHLORELLA	--	-	--	-	*	0	--	-	--	-
....DICTYOSPHAERIUM	--	-	--	-	--	-	2000	2	300	1
....GLOEOACTINIUM	350	6	--	-	--	-	--	-	--	-
....KIRCHNERIELLA	--	-	--	-	--	-	--	-	*	0
....OOCYSTIS	44	1	--	-	--	-	580	1	--	-
....POLYEDRIOPSIS	--	-	--	-	--	-	*	0	--	-
....SELENASTRUM	180	3	13	1	--	-	*	0	340	1
....TETRAEDRON	--	-	--	-	--	-	--	-	*	0
....TREUBARIA	--	-	--	-	*	0	--	-	--	-
...SCENEDESMACEAE										
....ACTINASTRUM	--	-	--	-	1900	3	1200	1	--	-
....SCENEDESMUS	--	-	--	-	5800	10	3800	3	1100	4
....TETRASTRUM	--	-	--	-	960	2	--	-	170	1
..VOLVOCALES										
...CHLAMYDOMONADACEAE										
....CHLAMYDOMONAS	220	4	100	5	*	0	*	0	170	1
....CHLOROGONIUM	--	-	13	1	--	-	--	-	--	-
CHRYSOPHYTA										
.BACILLARIOPHYCEAE										
..CENTRALES										
...COSCINODISCACEAE										
....CYCLOTELLA	3400#	59	77	4	19000#	31	4400	4	1300	5
....MELOSIRA	920#	16	52	2	6200	10	9900	9	2500	10
....STEPHANODISCUS	--	-	540#	25	--	-	--	-	--	-
..PENNALES										
...CYMBELLACEAE										
....CYMBELLA	--	-	13	1	--	-	--	-	--	-
...FRAGILARIACEAE										
....ASTERIONELLA	--	-	--	-	1200	2	--	-	--	-
....FRAGILARIA	--	-	550#	25	--	-	--	-	--	-
....SYNEDRA	44	1	100	5	--	-	--	-	--	-
...GOMPHONEMATACEAE										
....GOMPHONEMA	--	-	13	1	--	-	--	-	--	-
...NAVICULACEAE										
....NAVICULA	--	-	64	3	--	-	--	-	--	-
...NITZSCHIACEAE										
....NITZSCHIA	88	2	180	8	1700	3	*	0	*	0
...SURIRELLACEAE										
....SURIRELLA	--	-	26	1	--	-	--	-	--	-
CRYPTOPHYTA (CRYPTOMONADS)										
.CRYPTOPHYCEAE										
..CRYPTOMONADALES										
...CRYPTOCHRYSIDACEAE										
....CHROOMONAS	--	-	--	-	--	-	*	0	--	-
...CRYPTOMONADACEAE										
....CRYPTOMONAS	88	2	--	-	*	0	--	-	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)										
.CYANOPHYCEAE										
..CHROOCOCCALES										
...CHROOCOCCACEAE										
....AGMENELLUM	--	-	--	-	--	-	2300	2	--	-
....ANACYSTIS	350	6	13	1	960	2	11000	10	4000#	16
..HORMOGONALES										
...NOSTOCACEAE										
....APHANIZOMENON	--	-	--	-	--	-	44000#	39	12000#	48
...OSCILLATORIACEAE										
....OSCILLATORIA	--	-	--	-	11000#	18	29000#	26	2600	10

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

05378500 MISSISSIPPI RIVER AT WINONA, MN--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1979 TO SEPTEMBER 1980--Continued

DATE	OCT 30,79		APR 9,80		MAY 28,80		JUL 28,80		SEP 8,80	
TIME	1345		1715		1615		1710		1700	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
EUGLENOPHYTA (EUGLENOIDS)										
.EUGLENOPHYCEAE										
..EUGLENALES										
...EUGLENACEAE										
....EUGLENA	--	-	26	1	--	-	--	-	--	-
....TRACHELOMONAS	--	-	26	1	*	0	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)										
.DINOPHYCEAE										
..PERIDINIALES										
...GLENODINIACEAE										
....GLENODINIUM	44	1	26	1	--	-	--	-	--	-

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

05378500 MISSISSIPPI RIVER AT WINONA, MN--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								---	335	440	410	300
2								---	340	420	410	300
3								---	360	400	410	310
4								---	360	400	410	320
5								---	365	410	412	310
6								---	345	420	400	300
7								---	360	440	400	300
8								---	305	440	400	220
9								---	270	440	400	240
10								---	260	420	400	280
11								---	280	410	260	290
12								---	335	400	265	290
13								---	380	423	280	290
14								---	400	410	300	300
15								---	400	410	300	280
16								---	400	410	360	260
17								---	420	410	360	260
18								---	420	410	360	300
19								---	420	415	340	300
20								---	420	415	340	310
21								---	420	400	350	280
22								---	420	400	350	260
23								---	440	410	360	200
24								---	440	410	360	180
25								---	440	420	360	200
26								---	430	415	360	240
27								---	400	410	360	270
28								---	440	410	340	270
29								340	440	410	340	280
30								336	440	410	330	300
31								325	---	410	320	---
MEAN									383	414	356	275

DATE	TIME	LENGTH OF EXPOSURE (DAYS) (00022)	PERIPHYTON BIOMASS TOTAL DRY WEIGHT G/SQ M (00573)	PERIPHYTON BIOMASS ASH WEIGHT G/SQ M (00572)	CHLOR-A PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2) (70957)	CHLOR-B PERIPHYTON CHROMOGRAPHIC FLUOROM (MG/M2) (70958)
OCT						
30...	1345	35	7.32	6.61	13.7	.530
APR						
09...	1715	128	2.52	1.81	2.16	.650
JUL						
28...	1710	61	82.4	62.4	110	22.5

05378500 MISSISSIPPI RIVER AT WINONA, MN--Continued

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.0		---	---	---	---	2.0	---	20.0	22.0	26.0	21.0
2	16.0		---	---	---	---	3.0	---	21.0	22.0	26.0	20.0
3	16.0		.5	---	---	1.0	3.0	---	21.0	23.0	27.0	21.0
4	14.0		---	---	.0	---	3.0	---	21.0	24.0	27.0	21.0
5	14.0		---	---	---	---	3.0	---	20.0	24.0	24.0	21.0
6	14.0		---	---	---	---	4.0	---	21.5	24.0	25.0	20.0
7	13.0		---	---	---	---	5.0	---	21.5	25.0	25.0	21.0
8	13.0		---	---	---	---	5.0	---	20.0	25.0	25.0	22.5
9	12.0		---	---	---	---	3.0	---	20.0	26.0	25.0	21.0
10	12.0		---	---	---	.0	2.0	---	20.0	26.0	25.0	19.0
11	11.0		---	---	.0	---	2.0	---	20.0	28.0	24.0	19.0
12	---		---	---	---	---	3.0	---	20.0	28.0	24.0	20.0
13	---		---	---	---	---	3.0	---	21.0	28.0	23.0	19.0
14	---		---	.0	---	---	4.0	---	22.0	28.0	24.0	19.0
15	---		---	---	---	---	4.0	---	21.0	27.5	24.0	17.0
16	---		---	---	---	---	5.0	---	20.0	2.0	23.0	17.0
17	---		---	---	---	.0	7.0	---	21.0	27.0	23.0	16.0
18	---		---	---	.0	3.0	9.0	---	21.0	27.0	24.0	16.0
19	---		---	---	---	2.0	9.0	---	20.0	27.0	22.0	16.0
20	---		---	---	.5	---	10.0	---	21.0	27.0	24.0	17.0
21	---		---	---	---	2.0	12.0	---	21.0	25.0	23.0	17.0
22	---		---	---	---	---	15.0	---	22.0	25.0	24.0	17.0
23	---		---	---	---	2.0	12.0	---	23.0	25.0	23.0	15.0
24	---		---	---	---	2.0	10.0	---	24.0	25.0	22.0	15.0
25	---		---	---	.0	2.0	10.0	---	25.0	26.0	23.0	15.0
26	---		---	---	---	2.0	10.0	---	25.0	24.0	23.0	14.0
27	---		---	---	---	2.0	10.0	---	24.0	---	22.0	14.0
28	---		---	1.0	---	2.0	11.0	22.0	23.0	25.5	21.0	14.0
29	---		---	---	---	2.0	12.0	21.0	24.0	25.0	22.0	15.0
30	10.0		---	---	---	2.0	---	21.0	22.0	25.0	22.0	15.0
31	---		---	---	---	2.0	---	20.5	---	26.0	22.0	---
									21.5		24.0	18.0

DATE	TIME	NUMBER OF SAMPLING POINTS (00063)	STREAMFLOW, INSTANTANEOUS (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)
SEP 08...	1700	3	38100	0	1	4	32	92	97	98	100

05378500 MISSISSIPPI RIVER AT WINONA, MN--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	15	806	16	1160	10	775	8	523	8	335	2	89
2	17	923	16	1240	8	596	8	521	9	382	2	89
3	20	1030	16	1340	9	600	8	497	13	558	2	87
4	20	1000	16	1380	8	482	7	397	18	807	2	85
5	19	970	17	1330	8	428	7	369	12	554	2	86
6	14	696	17	1550	8	445	6	296	7	318	2	85
7	15	745	17	1730	8	473	5	219	6	269	2	85
8	16	734	17	1690	8	544	5	175	5	212	2	87
9	15	591	17	1680	8	575	5	161	4	166	2	89
10	14	556	16	1620	8	549	5	154	4	167	1	46
11	11	448	16	1670	8	546	5	174	3	127	3	139
12	11	434	15	1610	8	534	5	185	3	126	4	183
13	12	476	13	1370	8	408	5	189	3	126	6	269
14	15	612	11	1100	8	313	5	216	3	127	7	319
15	16	622	9	831	8	315	6	290	3	127	9	408
16	12	470	9	780	10	440	9	503	3	128	16	773
17	13	488	11	944	14	760	14	881	3	129	22	1410
18	12	457	8	711	16	920	25	1710	3	128	28	2460
19	13	509	12	1070	14	760	24	1680	3	128	41	4590
20	14	624	12	1040	11	642	21	1460	3	128	49	7740
21	15	697	8	674	10	594	19	1260	2	86	24	4310
22	23	1290	10	829	9	547	18	1120	2	91	13	2120
23	24	1830	9	751	9	605	16	886	2	96	9	1280
24	18	1430	8	667	8	588	15	741	2	100	15	2150
25	15	1200	8	678	8	618	14	677	2	103	15	2040
26	15	1280	7	609	8	594	11	538	2	100	17	2170
27	18	1620	7	618	8	575	10	486	2	92	17	2020
28	18	1630	8	713	8	542	9	433	2	90	19	2220
29	13	1140	9	785	8	518	8	380	2	90	20	2420
30	14	1130	9	731	8	518	7	308	---	---	20	2450
31	15	1080	---	---	8	521	6	248	---	---	17	2050
TOTAL	---	27518	---	32901	---	17325	---	17677	---	5890	---	44349

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	15	1700	15	1220	38	1790	21	1280	11	303	14	987
2	13	1400	13	1000	20	1100	23	1380	12	337	12	778
3	15	1720	16	1180	23	1570	20	1170	11	321	12	674
4	17	2130	20	1350	20	1410	22	1200	9	248	12	690
5	18	2400	19	1270	34	2460	20	988	10	262	14	956
6	20	2740	21	1330	88	8100	19	821	11	309	16	1270
7	34	4840	21	1250	93	10600	16	557	9	255	16	1570
8	41	6310	22	1180	98	12600	17	583	14	616	27	2830
9	45	7110	21	1050	84	12100	17	652	27	1790	30	2960
10	41	6620	18	850	83	13300	16	635	23	1890	21	1910
11	35	6010	21	1000	70	11900	17	675	22	2040	18	1550
12	43	7850	17	872	56	9180	13	505	20	1770	15	1340
13	42	7800	18	1010	45	6680	16	639	15	1280	20	1900
14	26	4810	15	867	42	5610	13	428	17	1310	19	1900
15	26	4750	17	1010	39	4810	12	347	12	726	24	2420
16	22	3890	19	1140	37	4270	15	433	10	472	25	2600
17	20	3410	18	1040	32	3360	15	470	11	475	22	2440
18	20	3260	17	835	29	2880	12	424	10	421	24	2610
19	19	2940	12	538	34	3350	13	516	9	377	20	2010
20	20	2950	13	579	35	3300	14	552	9	403	19	1840
21	23	3240	13	604	32	2760	14	461	12	609	40	4380
22	15	1970	14	737	28	2100	13	425	11	558	50	5590
23	15	1930	12	680	24	1610	12	369	11	502	38	4460
24	14	1700	13	741	25	1730	11	342	10	389	33	3980
25	12	1320	13	702	27	1930	12	382	11	419	33	4130
26	10	1010	14	601	28	1880	12	421	12	632	38	5070
27	12	1210	13	439	36	2250	12	441	13	762	30	3990
28	12	1150	16	544	40	2340	11	401	11	606	21	2490
29	14	1290	13	470	39	1400	11	377	13	702	18	1730
30	13	1120	27	1490	20	869	12	350	13	783	16	1450
31	---	---	56	3340	---	---	13	358	15	1040	---	---
TOTAL	---	100580	---	30919	---	139239	---	18582	---	22607	---	72505

TOTAL LOAD FOR YEAR: 530092 TONS.

05384000 ROOT RIVER NEAR LANESBORO, MN

LOCATION.--Lat 43°44'58", long 91°58'43", in sec.1, T.103 N., R.10 W., Fillmore County, Hydrologic Unit 07040008, on left bank 0.5 mi (0.8 km) upstream from highway bridge, 1.2 mi (1.9 km) upstream from South Branch, and 2.5 mi (4.0 km) northeast of Lanesboro.

DRAINAGE AREA.--615 mi^2 (1,593 km^2).

PERIOD OF RECORD.--February to November 1910, February 1911 to September 1914, July 1915 to September 1917. August 1940 to current year. Published as North Branch Root River near Lanesboro, 1910-17.

REVISED RECORDS.--WSP 355: 1912. WSP 1308: 1911(M).

GAGE.--Water-stage recorder. Datum of gage is 791.32 ft (241.194 m) National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1917, nonrecording gage at site 0.5 mi (0.8 km) downstream at datum about 1.5 ft (0.5 m) higher.

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

AVERAGE DISCHARGE.--45 years (water years 1912-14, 1916-17, 1941-80), 339 ft^3/s (9.60 m^3/s), 7.49 in/yr (190 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,100 ft^3/s (626 m^3/s) Mar. 29, 1962, gage height, 16.11 ft (4.910 m); maximum gage height, 17.83 ft (5.435 m) Mar. 1, 1965, from floodmark (backwater from ice); minimum discharge, 29 ft^3/s (0.821 m^3/s) Aug. 27, 1949, gage height, 1.08 ft (0.329 m); minimum gage height, 0.54 ft (0.165 m) Jan. 7, 1980.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 3,500 ft^3/s (99.1 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Jan. 16	2200	5220	148	a8.48	2.585	May 30	0845	4780	135	8.03	2.448
Mar. 16	----	*6930	196	a*10.10	3.078	Sept.21	0200	5240	148	a8.50	2.591
Mar. 19	----	4650	132	---	---						

a From highwater mark in well.

Minimum discharge, 60 ft^3/s (1.70 m^3/s) Jan. 7, gage height, 0.54 ft (0.165 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	261	549	440	220	230	220	343	293	1520	270	166	534
2	289	696	400	220	220	220	322	285	905	265	172	466
3	286	578	360	220	220	210	313	277	685	258	179	389
4	275	507	410	220	220	205	322	269	569	250	180	365
5	259	485	450	220	220	200	358	263	545	242	184	347
6	254	716	445	160	220	200	942	253	1300	237	179	335
7	248	1380	416	90	220	200	1290	244	1490	231	191	338
8	246	923	370	200	220	200	806	241	1210	227	286	299
9	244	735	310	210	220	195	646	236	869	222	286	279
10	240	653	280	220	220	190	589	233	666	218	241	258
11	240	594	260	220	220	190	481	240	553	214	364	247
12	238	562	250	220	220	185	429	241	498	210	391	355
13	231	537	240	220	220	180	526	233	453	205	372	389
14	228	513	250	220	220	190	680	229	422	202	452	388
15	227	499	260	220	220	210	505	225	428	200	487	347
16	225	493	230	1490	220	3560	443	220	417	198	400	319
17	223	495	170	2100	220	4400	429	215	370	194	400	298
18	219	511	200	1020	220	2650	418	210	353	190	450	282
19	252	510	220	650	220	4110	413	210	509	189	491	268
20	245	492	220	445	230	3030	411	207	367	217	572	927
21	237	480	220	300	230	1510	411	207	334	269	709	2630
22	380	575	230	250	260	816	403	203	325	221	599	1200
23	1180	1150	250	205	300	584	388	198	315	201	475	941
24	1300	1040	250	200	290	458	366	193	307	190	377	687
25	1190	807	240	210	260	386	352	190	300	187	327	582
26	975	691	240	220	250	376	338	189	295	185	314	511
27	775	642	230	230	240	383	327	187	290	185	463	463
28	671	596	230	230	230	376	314	187	300	184	493	432
29	601	552	220	230	225	356	303	197	290	183	583	415
30	548	480	220	230	---	361	297	2610	280	174	527	392
31	515	---	220	230	---	356	---	3740	---	170	466	---
TOTAL	13302	19441	8731	11320	6705	26707	14165	12925	17165	6588	11776	15683
MEAN	429	648	282	365	231	862	472	417	572	213	380	523
MAX	1300	1380	450	2100	300	4400	1290	3740	1520	270	709	2630
MIN	219	480	170	90	220	180	297	187	280	170	166	247
CFSM	.70	1.05	.46	.59	.38	1.40	.77	.68	.93	.35	.62	.85
IN.	.80	1.18	.53	.68	.41	1.62	.86	.78	1.04	.40	.71	.95

CAL YR 1979 TOTAL 198456 MEAN 544 MAX 6700 MIN 128 CFSM .89 IN 12.00
WTR YR 1980 TOTAL 164508 MEAN 449 MAX 4400 MIN 90 CFSM .73 IN 9.95

05385000 ROOT RIVER NEAR HOUSTON, MN

LOCATION (REVISED).--Lat 43°46'07", long 91°34'11", in SW¼NW¼ sec.33, T.104 N., R.6 W., Houston County, Hydrologic Unit 07040008, on right bank 0.2 mi (0.3 km) north of Houston and 1.6 mi (2.6 km) upstream from South Fork and 18.2 mi (29.3 km) upstream from mouth.

DRAINAGE AREA.--1,270 mi^2 (3,290 km^2), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1909 to September 1917, May to November 1929, March 1930 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 895: Drainage area. WSP 1508: 1911-12. WSP 1628: 1948(P).

GAGE.--Water-stage recorder. Datum of gage is 667.00 ft (203.302 m) National Geodetic Vertical Datum of 1929. May 28, 1909, to Sept. 30, 1917, nonrecording gage at site 1.3 mi (2.1 km) downstream at different datum. May 4, 1929, to Sept. 27, 1933, nonrecording gage and Sept. 28, 1933 to June 26, 1980, recording gage at site 0.9 mi (1.4 km) upstream at datum 671.86 ft (204.783 m).

REMARKS.--Records good except those for winter periods, which are fair. Slight diurnal fluctuation at low flows caused by powerplants above station.

AVERAGE DISCHARGE.--58 years (water years 1910-17, 1931-80), 675 ft^3/s (19.12 m^3/s), 7.22 in/yr (183 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,000 ft^3/s (1,050 m^3/s) Apr. 1, 1952, gage height, 13.90 ft (4.237 m); maximum gage height, 18.32 ft (5.584 m) Mar. 2, 1965 (backwater from ice); minimum discharge, 65 ft^3/s (1.84 m^3/s) Dec. 26, 1933, Feb. 25, 1935.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 5,000 ft^3/s (142 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Jan. 17	0615	7360	208	8.93	2.722	May 31	1530	11000	312	10.21	3.112
Mar. 17	0730	12900	365	10.97	3.344	June 6	0630	8840	250	9.17	2.795
Mar. 19	0930	9180	260	9.33	2.844	Sept.21	0530	*16400	464	*15.29	4.661

Minimum daily discharge, 295 ft^3/s (8.35 m^3/s) Mar. 9-12.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	569	888	896	630	520	360	850	631	5030	715	466	1190
2	598	969	825	615	500	345	820	615	2650	665	471	1170
3	582	1000	790	600	480	330	800	600	2010	644	486	1030
4	564	899	820	580	460	315	805	582	1680	630	483	993
5	548	865	870	560	450	305	860	573	1580	617	487	930
6	533	919	845	540	440	302	990	546	7060	602	478	879
7	526	1610	815	498	430	300	1670	527	4150	598	496	1260
8	523	1570	785	495	420	300	1500	514	3130	587	610	903
9	517	1250	725	490	405	295	1260	504	2260	579	675	838
10	517	1130	745	500	400	295	1120	499	1840	571	630	783
11	517	1040	770	500	390	295	1020	507	1560	575	674	750
12	513	979	735	500	380	295	923	504	1390	570	778	992
13	508	943	635	500	380	300	889	503	1280	581	753	1050
14	504	900	655	500	370	300	1050	496	1190	573	850	950
15	498	875	710	500	365	560	1020	490	1110	564	885	920
16	500	875	680	1840	360	4750	890	486	1110	564	916	866
17	499	870	600	5020	360	11100	846	484	1020	523	920	821
18	494	891	620	1820	360	5430	827	477	963	511	918	789
19	498	924	650	1460	355	8240	810	476	998	506	1020	762
20	525	913	680	1100	360	6320	805	472	1010	544	1140	1190
21	517	918	700	935	385	3290	797	472	883	631	1730	13100
22	644	1000	720	860	440	2020	788	470	846	579	1180	5260
23	1120	1330	810	800	560	1510	771	465	816	533	1050	3020
24	1580	1710	840	750	610	1260	745	463	782	510	928	2260
25	1660	1460	765	710	560	1120	721	449	754	500	818	1900
26	1460	1280	700	680	500	1030	703	443	729	493	770	1630
27	1270	1170	670	640	440	1020	682	437	694	487	990	1480
28	1120	1120	650	610	410	990	665	436	696	483	1140	1340
29	1020	1040	630	580	380	946	647	465	746	477	1210	1260
30	947	957	610	560	---	908	640	3880	715	478	1400	1180
31	902	---	610	540	---	880	---	10300	---	473	1260	---
TOTAL	22773	32295	22556	26913	12470	55711	26914	28766	50682	17363	26612	51496
MEAN	735	1077	728	868	430	1797	897	928	1689	560	858	1717
MAX	1660	1710	896	5020	610	11100	1670	10300	7060	715	1730	13100
MIN	494	865	600	490	355	295	640	436	694	473	466	750
CFSM	.58	.85	.57	.68	.34	1.42	.71	.73	1.33	.44	.68	1.35
IN.	.67	.95	.66	.79	.37	1.63	.79	.84	1.48	.51	.78	1.51

CAL YR 1979 TOTAL 378276 MEAN 1036 MAX 8720 MIN 315 CFSM .82 IN 11.08
WTR YR 1980 TOTAL 374551 MEAN 1023 MAX 13100 MIN 295 CFSM .81 IN 10.97

05385000 ROOT RIVER NEAR HOUSTON, MN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1961-63, 1968 to current year.

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

REMARKS.--During the winter period suspended-sediment samples were collected weekly and daily sediment concentrations were estimated on the basis of water records and weekly sediment samples. Water temperature was obtained once daily for most of the open water period and weekly for winter period.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum daily, 31.0°C July 4, 5, 7, 14, 19, 1977; minimum daily, 0.0°C on many days each year.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 10,800 mg/L June 6, 1980; minimum daily mean, 5 mg/L Jan. 28-Feb. 7, 1977, Mar. 3, 1978.
SEDIMENT LOADS: Maximum daily, 215,000 tons (195,000 tonnes) June 6, 1980; minimum daily, 3.7 tons (3.4 tonnes) Mar. 3, 1978.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum daily, 28.0°C July 12; minimum daily, 0.0°C on many days.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 10,800 mg/L June 6; minimum daily mean, 34 mg/L May 9.
SEDIMENT LOADS: Maximum daily, 215,000 tons (195,000 tonnes) June 6; minimum daily, 40 tons (36 tonnes) Mar. 7.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.0	7.0	---	---	.0	---	8.0	18.0	17.5	18.0	26.0	20.0
2	14.0	7.0	---	1.0	---	---	10.0	---	18.0	24.0	24.0	20.0
3	13.0	6.0	.0	---	---	---	5.0	20.0	18.0	23.0	---	22.0
4	10.0	7.0	.0	---	---	---	8.0	21.0	18.0	24.0	21.0	21.0
5	12.0	6.0	2.0	---	---	---	10.0	18.0	19.0	25.0	23.0	20.5
6	10.0	5.0	2.0	---	---	---	10.0	17.0	18.5	---	25.0	19.0
7	12.0	4.0	2.0	---	.0	.0	10.0	12.0	19.0	27.0	22.0	19.0
8	10.0	3.0	1.0	---	---	---	8.0	14.0	18.0	26.0	24.0	23.0
9	10.0	2.0	---	---	---	---	5.0	15.0	18.0	25.0	23.0	19.0
10	9.0	2.0	3.0	.0	---	---	5.0	14.0	18.0	27.0	23.0	19.0
11	9.0	2.0	2.0	---	---	---	6.0	---	19.0	27.0	23.0	15.0
12	8.0	2.0	.0	---	---	---	8.0	15.0	19.0	28.0	24.0	17.0
13	8.0	2.0	.0	---	---	.0	6.0	13.0	20.0	---	22.0	18.0
14	9.0	2.0	.0	---	.0	---	5.0	13.0	22.0	27.0	22.0	---
15	10.0	4.0	---	---	---	---	8.0	16.0	---	27.0	21.0	16.0
16	12.0	5.0	---	---	---	1.0	10.0	14.0	20.0	26.0	---	14.0
17	12.0	5.0	---	.0	---	.0	13.0	17.0	18.0	27.0	16.5	15.0
18	11.0	---	---	.0	---	1.5	15.0	---	18.0	25.0	21.0	---
19	13.0	8.0	.0	1.0	---	3.0	16.0	18.0	19.0	26.0	20.0	16.0
20	15.0	6.0	---	---	.0	3.0	12.0	19.0	20.0	24.0	19.0	18.0
21	13.0	5.0	---	.0	---	3.0	18.0	20.0	21.0	24.0	23.0	16.5
22	10.0	5.0	---	.0	---	2.0	19.0	23.0	22.0	24.0	24.0	16.0
23	7.0	5.0	---	---	.0	2.0	17.0	22.0	23.0	24.0	21.0	15.0
24	7.5	4.0	---	.0	---	3.0	14.0	23.0	23.0	25.0	---	14.0
25	6.0	4.0	---	---	---	4.0	14.0	23.0	25.0	23.0	23.0	13.0
26	6.0	4.0	1.0	---	---	6.0	13.0	---	26.0	22.0	23.0	13.0
27	7.0	3.0	---	---	---	6.0	---	24.0	23.0	---	19.0	14.0
28	---	2.0	---	---	---	5.0	15.0	25.0	24.0	23.0	24.0	13.0
29	9.0	1.5	---	---	.0	4.0	13.0	23.0	19.0	25.0	22.0	15.0
30	10.0	1.0	---	---	---	---	15.0	17.0	23.0	24.0	20.0	15.0
31	10.0	---	---	---	---	9.0	---	17.5	---	25.0	25.0	---

05385000 ROOT RIVER NEAR HOUSTON, MN--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	41	63	141	338	103	249	81	138	156	219	83	81
2	59	95	162	424	99	221	78	130	152	205	78	73
3	47	74	142	383	94	201	78	126	148	192	72	64
4	46	70	86	209	96	213	77	121	143	178	66	56
5	49	73	66	154	99	233	76	115	138	168	61	50
6	68	98	96	238	97	221	74	108	133	158	56	46
7	61	87	345	1590	75	165	64	86	127	147	49	40
8	48	68	228	966	98	208	60	80	126	143	51	41
9	56	78	90	304	87	170	60	79	125	137	54	43
10	69	96	87	265	82	165	60	81	123	133	57	45
11	69	96	86	241	65	135	60	81	122	128	58	46
12	60	83	87	230	89	177	60	81	119	122	60	48
13	50	69	73	186	102	175	60	81	118	121	62	50
14	38	52	61	148	108	191	60	81	115	115	63	51
15	47	63	62	146	112	215	60	81	113	111	70	106
16	57	77	97	229	100	184	869	8250	112	109	2270	36500
17	54	73	102	240	77	125	2300	33800	110	107	1450	41900
18	45	60	118	284	63	105	920	4520	109	106	2040	19100
19	45	61	133	332	57	100	440	1730	108	104	2670	59400
20	68	96	127	313	56	103	235	698	108	105	1920	32800
21	67	94	115	285	56	106	125	316	109	113	1010	8970
22	138	240	101	273	65	126	105	244	123	146	540	2950
23	782	2510	232	929	98	214	83	179	155	234	268	1090
24	585	2500	338	1560	134	304	54	109	163	268	150	510
25	322	1440	229	903	127	262	53	102	142	215	123	372
26	193	761	159	550	108	204	112	206	126	170	113	314
27	141	483	112	354	97	175	182	314	113	134	119	328
28	117	354	109	330	89	156	177	292	102	113	107	286
29	113	311	119	334	87	148	172	269	89	91	99	253
30	116	297	109	282	85	140	167	253	---	---	99	243
31	126	307	---	---	83	137	162	236	---	---	96	228
TOTAL	---	10829	---	13020	---	5528	---	52987	---	4292	---	206084
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	94	216	66	112	2620	38100	238	459	89	112	305	980
2	94	208	57	95	1260	9020	202	363	104	132	243	768
3	93	201	45	73	665	3610	198	344	107	140	191	531
4	94	204	53	83	515	2340	202	344	94	123	218	584
5	181	420	52	80	504	2450	197	328	97	128	161	404
6	216	577	58	86	10800	215000	189	307	108	139	174	413
7	1030	4800	42	60	5500	61600	182	294	150	201	1030	3920
8	770	3120	40	56	4420	39100	168	266	305	502	216	527
9	360	1220	34	46	1330	8120	217	339	266	485	160	362
10	201	608	46	62	765	3800	201	310	188	320	147	311
11	185	509	42	57	534	2250	172	267	310	564	105	213
12	217	541	42	57	395	1480	172	265	442	928	390	1110
13	167	401	54	73	397	1370	177	278	336	683	287	814
14	182	516	48	64	352	1130	156	241	332	762	158	405
15	158	435	47	62	278	833	156	238	306	731	135	335
16	125	300	48	63	276	827	200	305	240	594	138	323
17	110	251	51	67	231	636	160	226	219	544	107	237
18	92	205	50	64	209	543	198	273	218	540	113	241
19	98	214	49	63	293	813	160	219	261	719	130	267
20	127	276	57	73	788	2150	248	364	585	2550	471	5550
21	135	291	71	90	512	1220	324	552	1370	7310	5030	184000
22	110	234	82	104	331	756	250	391	500	1590	2080	31600
23	88	183	76	95	255	562	202	291	326	924	1060	8880
24	85	171	93	116	227	479	180	248	254	636	516	3150
25	81	158	98	119	177	360	167	225	214	473	412	2110
26	83	158	88	105	174	342	138	184	190	395	286	1260
27	82	151	77	91	200	375	125	164	425	1140	241	963
28	75	135	87	102	207	389	122	159	485	1490	237	857
29	78	136	92	116	234	471	131	169	380	1240	243	827
30	61	105	6310	128000	240	463	113	146	558	2190	208	663
31	---	---	5790	158000	---	---	85	109	423	1440	---	---
TOTAL	---	16944	---	288334	---	400589	---	8668	---	29725	---	252605

TOTAL LOAD FOR YEAR: 1289605 TONS.

05385000 ROOT RIVER NEAR HOUSTON, MN--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE, WATER (DEG C) (00010)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)
MAY							
31...	1520	11000	18.0	3260	96800	44	56
JUN							
06...	0615	8720	17.0	17200	405000	28	35
SEP							
21...	0800	15500	16.0	4620	193000	46	53

DATE	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)
MAY						
31...	66	81	96	--	--	--
JUN						
06...	46	64	99	--	--	--
SEP						
21...	56	66	93	95	99	100

05385500 SOUTH FORK ROOT RIVER NEAR HOUSTON, MN

LOCATION.--Lat 43°44'19", long 91°33'50", in NE¼SW¼ sec.9, T.103 N., R.6 W., Houston County, Hydrologic Unit 07040008, on left bank 50 ft (15 m) downstream from bridge on State Highway 76, 0.5 mi (0.8 km) upstream from Badger Creek and 1.5 mi (2.4 km) south of Houston.

DRAINAGE AREA.--275 mi^2 (712 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1953 to current year.

REVISED RECORDS.--WSP 1388: 1953. WSP 1914: 1956(M), 1959(P), 1960.

GAGE.--Water-stage recorder. Datum of gage is 680.41 ft (207.389 m) National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--27 years, 135 ft^3/s (3.823 m^3/s), 6.67 in/yr (169 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,000 ft^3/s (312 m^3/s) June 21, 1974, gage height, 13.81 ft (4.209 m); minimum, 11 ft^3/s (0.31 m^3/s) Nov. 28, 1961, gage height, 1.47 ft (0.448 m); minimum gage height, 0.85 ft (0.259 m) Aug. 17, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 26, 1950, reached a stage of 12.81 ft (3.904 m), from floodmark, discharge, 7,040 ft^3/s (199 m^3/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 900 ft^3/s (25.5 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Jan. 17	0830	5100	144	12.25	3.734	June 6	1230	1440	40.8	9.83	2.996
Mar. 17	0130	*8020	227	*13.08	3.987	Sept.20	1500	969	27.4	7.58	2.310
Mar. 19	0515	1260	35.7	9.13	2.783	Sept.21	1200	1370	38.8	9.64	2.938

Minimum daily discharge, 107 ft^3/s (3.03 m^3/s) May 27; minimum gage height, 1.55 ft (0.472 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	135	135	142	129	138	123	136	126	189	129	108	169
2	134	134	137	129	137	122	135	124	168	128	112	160
3	132	131	143	129	137	120	138	123	157	127	113	154
4	131	134	140	128	136	117	152	123	148	127	111	160
5	129	142	142	128	135	115	184	122	152	126	114	160
6	130	152	142	128	133	114	168	120	855	122	109	150
7	129	152	135	128	132	113	152	119	361	122	121	257
8	130	147	141	128	132	112	153	119	246	120	161	167
9	128	146	141	128	131	111	167	119	201	120	150	158
10	129	145	141	129	130	110	166	119	191	119	131	152
11	130	141	136	130	130	109	153	119	182	117	200	153
12	129	144	124	132	129	112	147	119	174	118	168	191
13	128	142	132	136	129	115	148	119	171	116	155	205
14	126	141	134	140	128	115	150	119	167	116	161	174
15	128	141	134	150	128	128	147	118	160	116	141	160
16	126	134	132	785	127	2450	143	117	155	149	139	159
17	128	140	132	1840	127	3700	144	118	150	125	174	154
18	126	138	135	363	125	702	149	117	152	119	158	151
19	126	137	150	246	124	909	141	117	150	117	153	149
20	128	135	143	200	124	428	140	114	149	182	176	620
21	126	134	136	170	124	232	141	112	142	169	306	1010
22	154	153	134	155	201	184	136	113	140	126	176	386
23	198	157	142	145	403	166	132	112	140	119	155	323
24	150	151	149	144	252	155	131	112	138	117	148	274
25	130	147	142	142	160	148	131	109	136	117	145	253
26	129	148	131	140	138	146	131	108	134	117	140	232
27	129	147	130	140	124	146	129	107	134	115	168	219
28	128	147	130	140	119	143	128	109	152	114	177	211
29	126	145	132	139	124	137	128	108	136	113	157	205
30	128	143	126	139	---	136	126	463	132	111	166	198
31	132	---	130	138	---	136	---	337	---	110	181	---
TOTAL	4112	4283	4238	6998	4257	11654	4326	4181	5662	3843	4774	7114
MEAN	133	143	137	226	147	376	144	135	189	124	154	237
MAX	198	157	150	1840	403	3700	184	463	855	182	306	1010
MIN	126	131	124	128	119	109	126	107	132	110	108	149
CFSM	.48	.52	.50	.82	.54	1.37	.52	.49	.69	.45	.56	.86
IN.	.56	.58	.57	.95	.58	1.58	.59	.57	.77	.52	.65	.96

CAL YR 1979 TOTAL 56809 MEAN 156 MAX 1000 MIN 74 CFSM .57 IN 7.68
WTR YR 1980 TOTAL 65442 MEAN 179 MAX 3700 MIN 107 CFSM .65 IN 8.85

05385500 SOUTH FORK ROOT RIVER NEAR HOUSTON, MN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968-69, July 1975 to current year.

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

REMARKS.--During the winter period, suspended-sediment samples were collected weekly and daily sediment concentrations were estimated on the basis of water records and weekly sediment samples. Water temperature was obtained once daily for most of the open water period and weekly for winter period.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum daily, 28.0°C July 5, 14, 1977; minimum daily, 0.0°C on many days each year.
SEDIMENT CONCENTRATIONS: Maximum daily mean 8,460 mg/L June 5, 1979; minimum daily mean, 20 mg/L Jan. 26, 1977, and Feb. 22, 1978.
SEDIMENT LOADS: Maximum daily, 48,600 tons (44,100 tonnes) July 6, 1978; minimum daily, 3.4 tons (3.1 tonnes) Feb. 22, 1978.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum daily, 26.0°C July 7, 10-12; minimum daily, 0.0°C on many days.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 7,030 mg/L June 6; minimum daily mean, 43 mg/L Jan. 1, 2.
SEDIMENT LOADS: Maximum daily, 19,200 tons (17,400 tonnes) June 6; minimum daily, 15 tons (14 tonnes) Jan. 1, 2.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.0	7.0	---	---	.0	---	9.0	18.0	18.0	17.0	25.0	19.0
2	13.0	7.0	---	2.0	---	---	11.0	---	17.0	23.0	22.0	19.0
3	13.0	7.0	1.0	---	---	---	5.0	14.0	19.0	21.0	---	20.0
4	10.0	7.0	2.0	---	---	---	9.0	21.0	18.0	23.0	19.0	19.5
5	12.0	---	3.0	---	---	---	10.0	18.0	18.0	24.0	22.0	20.0
6	10.0	5.0	3.0	---	---	---	10.0	15.0	18.0	---	23.0	18.0
7	11.0	4.0	3.0	---	.0	1.0	11.0	10.0	19.0	26.0	20.0	17.5
8	10.0	4.0	1.0	---	---	---	8.0	13.0	18.0	25.0	23.0	22.0
9	10.0	3.0	---	---	---	---	5.0	15.0	18.0	23.0	20.0	18.0
10	9.0	3.0	4.0	.0	---	---	5.0	13.0	18.0	26.0	21.0	18.0
11	10.0	2.0	2.0	---	---	---	7.0	---	19.0	26.0	20.0	14.0
12	7.0	3.0	.0	---	---	---	8.0	15.0	19.0	26.0	22.0	17.0
13	8.0	3.0	.0	---	---	3.0	6.0	11.0	20.0	---	20.0	17.0
14	9.0	3.0	1.0	---	.0	---	5.0	12.0	22.0	25.0	20.0	---
15	10.0	5.0	---	---	---	---	10.0	15.0	---	25.0	19.0	15.0
16	13.0	5.0	---	2.0	---	1.0	10.0	13.0	20.0	24.0	---	13.0
17	12.0	7.0	---	.0	---	.5	13.0	12.0	18.0	21.0	15.5	13.0
18	11.0	---	---	.0	---	3.0	15.0	---	17.0	24.0	20.0	---
19	13.0	9.0	.0	1.0	---	3.0	16.0	17.0	19.0	24.0	18.0	15.0
20	15.0	7.0	---	---	---	3.0	12.0	18.0	19.0	22.0	17.0	18.0
21	13.0	6.0	---	1.0	3.0	4.0	19.0	19.5	20.0	23.0	21.0	17.0
22	10.0	6.0	---	.0	---	3.0	19.0	20.0	21.0	22.0	22.0	15.0
23	7.0	5.0	---	---	1.0	3.0	15.0	21.0	23.0	23.0	19.0	14.0
24	8.0	5.0	---	.0	---	4.0	13.0	21.0	23.0	23.0	---	14.0
25	8.0	3.0	---	---	---	5.0	13.0	23.0	24.0	20.0	---	12.0
26	7.0	5.0	2.0	---	---	7.0	12.0	---	25.0	21.0	22.0	12.0
27	8.0	4.0	---	---	---	6.0	---	23.0	22.0	---	17.0	14.0
28	---	3.0	---	---	---	5.0	15.0	23.0	23.0	22.0	23.0	12.0
29	10.0	2.0	---	---	.0	5.0	13.0	21.0	18.0	23.0	20.0	14.0
30	10.0	1.0	---	---	---	---	15.0	17.0	21.0	22.0	18.0	15.0
31	11.0	---	---	---	---	10.0	---	17.5	---	24.0	18.0	---

05385500 SOUTH FORK ROOT RIVER NEAR HOUSTON, MN--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	98	36	99	36	79	30	43	15	157	58	167	55
2	87	31	88	32	77	28	43	15	136	50	155	51
3	77	27	97	34	98	38	45	16	133	49	100	32
4	86	30	82	30	126	48	47	16	123	45	79	25
5	78	27	87	33	97	37	48	17	118	43	75	23
6	86	30	89	37	83	32	50	17	99	36	76	23
7	73	25	92	38	80	29	50	17	101	36	112	34
8	86	30	73	29	90	34	50	17	96	34	87	26
9	84	29	78	31	91	35	50	17	105	37	73	22
10	68	24	79	31	81	31	51	18	102	36	63	19
11	71	25	64	24	73	27	50	18	98	34	58	17
12	72	25	49	19	66	22	50	18	111	39	56	17
13	52	18	68	26	93	33	50	18	108	38	55	17
14	63	21	53	20	108	39	50	19	116	40	63	20
15	67	23	56	21	95	34	50	20	117	40	71	25
16	64	22	62	22	79	28	1470	5260	138	47	1570	9640
17	63	22	66	25	88	31	1370	7050	148	51	1350	9690
18	57	19	66	25	149	54	620	608	157	53	2190	4900
19	64	22	62	23	167	68	267	177	117	39	2920	7490
20	55	19	57	21	104	40	197	106	86	29	1440	1660
21	60	20	50	18	73	27	158	73	72	24	700	438
22	131	54	114	47	67	24	135	56	112	61	340	169
23	262	140	118	50	68	26	132	52	884	1050	182	82
24	120	49	128	52	86	35	191	74	272	185	163	68
25	107	38	100	40	81	31	169	65	160	69	172	69
26	94	33	98	39	72	25	150	57	132	49	150	59
27	89	31	114	45	66	23	142	54	114	38	152	60
28	92	32	102	40	61	21	140	53	100	32	132	51
29	98	33	113	44	56	20	140	53	121	41	119	44
30	92	32	85	33	51	17	140	53	---	---	111	41
31	88	31	---	---	47	16	140	52	---	---	97	36
TOTAL	---	998	---	965	---	983	---	14101	---	2383	---	34903
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	98	36	97	33	1780	908	191	67	97	28	179	82
2	94	34	93	31	665	302	183	63	113	34	145	63
3	99	37	82	27	495	210	163	56	112	34	118	49
4	139	57	93	31	410	164	151	52	96	29	128	55
5	320	159	107	35	408	167	164	56	94	29	134	58
6	255	116	97	31	7030	19200	174	57	108	32	128	52
7	231	95	79	25	3680	3590	164	54	763	286	1190	1020
8	200	83	80	26	1560	1040	142	46	348	151	246	111
9	185	83	98	31	680	369	128	41	222	90	181	77
10	149	67	106	34	489	252	124	40	153	54	170	70
11	155	64	101	32	422	207	145	46	735	451	147	61
12	155	62	93	30	369	173	137	44	428	194	385	199
13	157	63	85	27	294	136	129	40	254	106	533	295
14	120	49	68	22	283	128	129	40	242	105	220	103
15	120	48	79	25	267	115	124	39	197	75	138	60
16	122	47	90	28	217	91	250	101	197	74	133	57
17	109	42	95	30	182	74	248	84	268	126	127	53
18	128	51	103	33	187	77	228	73	205	87	118	48
19	135	51	108	34	172	70	211	67	165	68	108	43
20	135	51	118	36	138	56	618	304	302	184	1930	4270
21	131	50	124	37	133	51	554	253	961	894	3170	9240
22	139	51	144	44	173	65	300	102	370	176	1310	1370
23	117	42	160	48	168	64	222	71	204	85	945	824
24	142	50	166	50	149	56	203	64	176	70	570	422
25	127	45	163	48	173	64	197	62	168	66	404	276
26	104	37	167	49	168	61	167	53	167	63	342	214
27	97	34	198	57	198	72	151	47	335	152	312	184
28	100	35	229	67	301	124	148	46	335	160	286	163
29	97	34	198	58	227	83	136	41	198	84	241	133
30	86	29	4880	9190	178	63	115	34	233	104	213	114
31	---	---	4800	4370	---	---	88	26	212	104	---	---
TOTAL	---	1702	---	14619	---	28032	---	2169	---	4195	---	19766

TOTAL LOAD FOR YEAR: 124816 TONS.

05385500 SOUTH FORK ROOT RIVER NEAR HOUSTON, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE, WATER (DEG C) (00010)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)
MAY							
30...	1535	889	17.0	8420	20200	40	45
JUN							
06...	1240	1440	20.0	8390	32600	42	51
SEP							
21...	0740	1260	16.5	4800	16300	39	47

DATE	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)
MAY						
30...	52	59	95	--	--	--
JUN						
06...	57	74	89	90	95	100
SEP						
21...	51	62	95	96	99	100

DATE	TIME	NUMBER OF SAM-PLING POINTS (00063)	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	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)
SEP								
04...	1400	4	162	0	12	97	99	100

05457000 CEDAR RIVER NEAR AUSTIN, MN

LOCATION.--Lat 43°38'10", long 92°58'20", in NE¼SE¼ sec.15, T.102 N., R.18 W., Mower County, Hydrologic Unit 07080201, on left bank 200 ft (61 m) upstream from abandoned powerhouse, 500 ft (152 m) downstream from highway bridge, 1.1 mi (1.8 km) downstream from Turtle Creek, and 1.1 mi (1.8 km) south of Austin.

DRAINAGE AREA.--425 mi^2 (1,100 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1909 to September 1914, October 1944 to current year.

REVISED RECORDS.--WSP 1145: 1945, 1948.

GAGE.--Water-stage recorder. Datum of gage is 1,162.10 ft (354.208 m) National Geodetic Vertical Datum of 1929. May 1909 to April 1912, nonrecording gage in tailwater of powerplant 200 ft (61 m) downstream at datum 3.1 ft (0.94 m) lower. May 1912 to September 1914, nonrecording gage on highway bridge 500 ft (152 m) downstream at datum 1.1 ft (0.34 m) lower.

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

AVERAGE DISCHARGE.--41 years (water years 1910-14, 1945-80), 190 ft^3/s (5.381 m^3/s), 6.07 in/yr (154 mm/yr); median of yearly mean discharges, 172 ft^3/s (4.871 m^3/s), 5.50 in/yr (140 mm/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,400 ft^3/s (351 m^3/s) July 17, 1978, gage height, 20.35 ft (6.203 m) from floodmark in well; no flow for several days in 1911.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,400 ft^3/s (39.6 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Mar. 16	2000	2790	79.0	8.60	2.621	May 30	0945	2180	61.7	7.45	2.271
Mar. 19	1900	*3250	92.0	*9.37	2.856	Sept.21	1730	1580	44.7	6.29	1.917
Apr. 7	1715	1480	41.9	6.03	1.838						

Minimum discharge, 51 ft^3/s (1.44 m^3/s) Aug. 2, gage height, 2.26 ft (0.689 m).

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	95	226	224	107	72	73	213	162	633	218	55	741
2	86	237	190	104	69	69	192	155	398	171	94	510
3	86	222	185	91	67	64	192	147	287	145	90	363
4	82	204	188	100	67	64	195	140	249	126	85	356
5	79	260	189	97	66	64	270	138	501	116	69	328
6	77	642	190	92	66	64	1110	131	494	101	63	275
7	73	931	188	88	66	65	1380	124	478	97	97	241
8	74	692	141	81	66	65	935	120	560	91	132	219
9	77	465	157	75	66	65	574	115	395	88	98	195
10	73	358	163	70	66	66	418	112	269	83	140	172
11	74	295	163	74	66	68	349	115	219	80	247	161
12	76	269	112	72	66	70	374	109	191	75	275	287
13	70	249	145	70	66	73	410	116	178	68	545	293
14	68	237	136	74	66	77	401	109	203	67	814	247
15	71	232	132	84	66	151	313	107	206	67	436	217
16	71	227	111	263	66	2120	274	103	154	64	347	201
17	72	229	116	381	65	1830	255	100	137	61	720	186
18	70	230	109	260	66	1630	242	98	138	61	670	166
19	87	227	112	211	65	3010	242	98	134	62	479	161
20	77	215	114	166	68	2290	246	100	149	100	443	232
21	77	229	114	148	74	1140	246	98	129	84	363	1320
22	178	333	114	127	90	520	245	93	115	74	296	1210
23	315	528	144	109	104	308	237	89	108	66	220	841
24	559	527	141	107	112	229	223	86	104	62	182	531
25	531	402	123	104	103	194	210	82	99	64	163	394
26	394	328	116	90	95	197	202	78	95	63	254	320
27	304	297	115	86	84	198	192	76	162	57	777	276
28	253	263	110	87	80	197	184	84	690	57	1050	249
29	225	209	108	80	75	208	174	206	687	58	695	236
30	205	199	106	76	---	230	167	1830	335	57	664	227
31	209	---	108	73	---	231	---	1140	---	57	1030	---
TOTAL	4788	9962	4364	3647	2148	15630	10665	6261	8497	2640	11593	11155
MEAN	154	332	141	118	74.1	504	356	202	283	85.2	374	372
MAX	559	931	224	381	112	3010	1380	1830	690	218	1050	1320
MIN	68	199	106	70	65	64	167	76	95	57	55	161
CFSM	.36	.78	.33	.28	.17	1.19	.84	.48	.67	.20	.88	.88
IN.	.42	.87	.38	.32	.19	1.37	.93	.55	.74	.23	1.01	.98

CAL YR 1979 TOTAL 111058 MEAN 304 MAX 4300 MIN 57 CFSM .72 IN 9.72
WTR YR 1980 TOTAL 91350 MEAN 250 MAX 3010 MIN 55 CFSM .59 IN 8.00

05457000 CEDAR RIVER NEAR AUSTIN, MN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1961-62, 1968-69, 1971 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: March 1973 to September 1975.
WATER TEMPERATURES: March 1973 TO September 1975, October 1978 to current year.
SUSPENDED-SEDIMENT DISCHARGE: March 1971 to September 1971, March 1973 to September 1975, October 1978 to current year.

REMARKS.--Sediment observer collects suspended-sediment samples daily when the stage is equal to or greater than 3.5 feet and several times daily during periods of rapidly changing stage. Water temperatures are obtained when sediment samples are collected.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---		---	---		---	---	---	19.0		---	20.0
2	---		---	---		---	---	---	19.0		---	21.0
3	---		---	---		---	---	---	---		---	---
4	---		---	---		---	---	---	---		---	---
5	---		---	---		.5	---	---	20.0		---	---
6	---		---	---		---	---	---	20.0		23.5	---
7	---		---	---		---	7.0	---	20.0		---	---
8	---		---	---		---	6.0	---	---		---	---
9	---		---	---		---	---	---	20.0		---	---
10	---		---	---		---	4.0	---	---		---	---
11	---		.0	---		---	---	---	---		---	---
12	---		---	---		---	---	---	---		---	---
13	---		---	---		---	---	---	---		22.0	---
14	---		---	---		---	---	---	---		---	---
15	---		---	---		---	---	---	---		---	---
16	---		---	---		2.0	---	---	---		---	---
17	---		---	---		1.0	---	---	---		---	~~2.0~~ 14.0
18	---		---	---		2.0	---	---	---		---	---
19	---		---	---		2.0	---	---	---		---	---
20	---		---	---		---	---	---	---		---	---
21	---		---	---		2.0	---	---	---		---	---
22	8.0		---	---		---	---	---	---		---	---
23	---		---	---		---	---	---	---		---	---
24	---		---	---		---	---	---	---		---	---
25	---		---	---		---	---	---	23.0		---	---
26	---		---	---		---	---	---	---		---	---
27	---		---	---		---	---	---	---		20.0	---
28	---		---	.0		---	---	---	24.0		---	---
29	---		---	---		---	14.0	---	24.0		---	---
30	---		---	---		---	---	17.0	---		20.0	---
31	---		---	---		---	---	17.0	---		20.0	---

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	TEMPER-ATURE, WATER (DEG C) (00010)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)
AUG 22.	0850	2150	17.0	1470	8530	56	78	98	100

05457000 CEDAR RIVER NEAR AUSTIN, MN--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	OCTOBER MEAN CONCEN-TRATION (MG/L)	OCTOBER LOADS (T/DAY)	NOVEMBER MEAN CONCEN-TRATION (MG/L)	NOVEMBER LOADS (T/DAY)	DECEMBER MEAN CONCEN-TRATION (MG/L)	DECEMBER LOADS (T/DAY)	JANUARY MEAN CONCEN-TRATION (MG/L)	JANUARY LOADS (T/DAY)	FEBRUARY MEAN CONCEN-TRATION (MG/L)	FEBRUARY LOADS (T/DAY)	MARCH MEAN CONCEN-TRATION (MG/L)	MARCH LOADS (T/DAY)
1					---	---					---	---
2					---	---					---	---
3					---	---					---	---
4					---	---					---	---
5					---	---					---	---
6					---	---					---	---
7					---	---					---	---
8					---	---					---	---
9					---	---					---	---
10					---	---					---	---
11					10	4.4					---	---
12					---	---					---	---
13					---	---					---	---
14					---	---					---	---
15					---	---					---	---
16					---	---					175	1000
17					---	---					119	588
18					---	---					100	482
19					---	---					140	1140
20					---	---					71	439
21					---	---					---	---
22					---	---					---	---
23					---	---					---	---
24					---	---					---	---
25					---	---					---	---
26					---	---					---	---
27					---	---					---	---
28					---	---					---	---
29					---	---					---	---
30					---	---					---	---
31					---	---					---	---

DAY	APRIL MEAN CONCEN-TRATION (MG/L)	APRIL LOADS (T/DAY)	MAY MEAN CONCEN-TRATION (MG/L)	MAY LOADS (T/DAY)	JUNE MEAN CONCEN-TRATION (MG/L)	JUNE LOADS (T/DAY)	JULY MEAN CONCEN-TRATION (MG/L)	JULY LOADS (T/DAY)	AUGUST MEAN CONCEN-TRATION (MG/L)	AUGUST LOADS (T/DAY)	SEPTEMBER MEAN CONCEN-TRATION (MG/L)	SEPTEMBER LOADS (T/DAY)
1	---	---	---	---	219	374			---	---	163	326
2	---	---	---	---	201	216			---	---	100	138
3	---	---	---	---	158	122			---	---	---	---
4	---	---	---	---	141	95			---	---	---	---
5	---	---	---	---	290	392			---	---	---	---
6	---	---	---	---	284	379			52	8.8	---	---
7	140	522	---	---	187	241			---	---	---	---
8	139	351	---	---	223	337			---	---	---	---
9	140	217	---	---	197	210			---	---	---	---
10	151	170	---	---	---	---			---	---	---	---
11	---	---	---	---	---	---			---	---	---	---
12	---	---	---	---	---	---			---	---	---	---
13	---	---	---	---	---	---			197	290	---	---
14	---	---	---	---	---	---			---	---	---	---
15	---	---	---	---	---	---			---	---	---	---
16	---	---	---	---	---	---			---	---	---	---
17	---	---	---	---	---	---			---	---	44	22
18	---	---	---	---	---	---			---	---	---	---
19	---	---	---	---	---	---			---	---	---	---
20	---	---	---	---	---	---			---	---	---	---
21	---	---	---	---	---	---			---	---	---	---
22	---	---	---	---	---	---			---	---	---	---
23	---	---	---	---	---	---			---	---	---	---
24	---	---	---	---	---	---			---	---	---	---
25	---	---	---	---	57	15			---	---	---	---
26	---	---	---	---	---	---			---	---	---	---
27	---	---	---	---	---	---			268	562	---	---
28	---	---	---	---	478	891			---	---	---	---
29	19	8.9	261	597	477	885			---	---	---	---
30	---	---	1520	7510	---	---			193	346	---	---
31	---	---	1040	3400	---	---			257	715	---	---

05476000 DES MOINES RIVER AT JACKSON, MN

LOCATION.--Lat 43°37'10", long 94°59'10", in SE¼SW¼ sec.24, T.102 N., R.35 W., Jackson County, Hydrologic Unit 07100001, on right bank in storage room of city powerplant in Jackson.
DRAINAGE AREA.--1,220 mi^2 (3,160 km^2), approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1909 to December 1913, August 1930 to current year (winter record incomplete prior to 1936). Published as Des Moines River near Jackson, 1930-35, as West Fork Des Moines River near Jackson, 1936-44, and as West Fork Des Moines River at Jackson, 1945-69.
REVISED RECORDS.--WSP 1115: 1942. WSP 1175: Drainage area. WSP 1238: 1950. WSP 1308: 1938(M).
GAGE.--Water-stage recorder. Datum of gage is 1,287.75 ft (392.506 m) National Geodetic Vertical Datum of 1929. May 31, 1909, to Dec. 20, 1913, nonrecording gage at site 0.6 mi (1.0 km) downstream at datum 0.99 ft (0.302 m) lower. Aug. 22, 1930, to Sept. 30, 1944, nonrecording gage at site 7 mi (11 km) upstream at datum 17.10 ft (5.212 m) higher. Oct. 1, 1944, to Oct. 26, 1949, nonrecording gage at site 600 ft (183 m) upstream at datum 10.64 ft (3.243 m) higher. Oct. 27, 1949, to Dec. 15, 1965, water-stage recorder 200 ft (61 m) downstream at present datum.
REMARKS.--Records good except those for winter period, which are fair. Regulation at times by Yankton, Long, Shetek, and Heron Lakes.
AVERAGE DISCHARGE.--45 years (water years 1936-80), 283 ft^3/s (8.015 m^3/s), 3.15 in/yr (80 mm/yr); median of yearly mean discharges, 218 ft^3/s (6.174 m^3/s), 2.43 in/yr (62 mm/yr).
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,700 ft^3/s (445 m^3/s) Apr. 11, 1969, gage height, 19.45 ft (5.928 m); no flow at times.
EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 500 ft^3/s (14.2 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 18	2330	813	23.0	6.37	1.942	Apr. 5	2130	1350	38.2	8.08	2.463
Nov. 8	1000	*2830	80.1	*11.68	3.560	May 31	0900	2030	57.5	10.02	3.054
Dec. 5	1180	1530	43.3	a7.62	2.323	June 13	1945	1870	53.0	9.13	2.783
Mar. 23	0545	967	27.4	a8.01	2.441						

a Backwater from ice.

Minimum, 13.0 ft^3/s (0.368 m^3/s) Sept. 29, 30; minimum gage height, 3.04 ft (0.927 m) Sept. 20.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	666	1450	750	600	150	121	581	471	1640	450	46	72
2	630	1590	770	583	140	121	590	456	1380	413	47	59
3	597	1650	870	530	135	121	644	437	1290	381	46	69
4	558	1790	960	400	130	121	709	413	1300	369	57	76
5	528	2060	1140	415	130	121	1040	393	1550	375	56	62
6	495	2400	1140	425	125	121	1210	359	1640	343	43	56
7	471	2700	1100	340	123	121	1120	329	1570	248	38	49
8	450	2820	1050	275	122	121	1110	306	1530	184	42	46
9	427	2780	950	300	122	130	1090	292	1570	180	51	43
10	410	2660	930	400	121	140	1050	283	1620	184	61	41
11	395	2450	970	405	121	145	1000	264	1690	180	52	40
12	369	2360	850	355	121	135	976	239	1780	169	47	40
13	346	2220	780	325	121	130	949	242	1840	159	121	34
14	334	2100	760	305	121	170	908	234	1800	143	121	30
15	323	1990	750	285	121	270	862	229	1670	133	81	27
16	311	1890	720	270	121	570	817	222	1490	119	98	24
17	295	1800	660	260	121	665	774	227	1310	109	117	24
18	358	1720	660	250	121	495	743	245	1180	103	117	21
19	730	1650	700	240	121	555	715	261	1050	98	203	21
20	687	1580	710	230	121	725	693	253	924	94	201	26
21	651	1550	705	220	121	820	673	234	840	89	171	39
22	654	1520	700	210	121	910	659	220	775	86	143	36
23	678	1490	695	205	121	920	632	210	729	82	125	30
24	654	1480	685	200	121	740	604	201	660	77	109	26
25	630	1420	680	190	121	690	595	192	607	76	103	25
26	600	1390	670	185	121	640	584	180	609	73	123	23
27	582	1340	660	180	121	569	561	178	624	69	107	21
28	558	1290	650	175	121	554	534	184	582	67	98	19
29	537	1100	640	170	121	555	514	197	543	64	91	18
30	588	760	630	165	---	617	490	1350	489	59	82	18
31	1080	---	620	160	---	606	---	1970	---	61	76	---
TOTAL	16592	55000	24555	9253	3597	12719	23427	11271	36282	5237	2873	1115
MEAN	535	1833	792	298	124	410	781	364	1209	169	92.7	37.2
MAX	1080	2820	1140	600	150	920	1210	1970	1840	450	203	76
MIN	295	760	620	160	121	121	490	178	489	59	38	18
CFSM	.44	1.50	.65	.24	.10	.34	.64	.30	.99	.14	.08	.03
IN.	.51	1.68	.75	.28	.11	.39	.71	.34	1.11	.16	.09	.03

CAL YR 1979 TOTAL 365634.20 MEAN 1002 MAX 3450 MIN .90 CFSM .82 IN 11.15
WTR YR 1980 TOTAL 201921.00 MEAN 552 MAX 2820 MIN 18 CFSM .45 IN 6.16

05476000 DES MOINES RIVER AT JACKSON, MN--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to current year.

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	116	209	195	763	333	674	218	353	---	---	---	---
2	118	201	110	472	280	582	163	257	---	---	---	---
3	100	161	111	495	338	794	213	305	---	---	---	---
4	83	125	110	532	278	721	184	199	---	---	---	---
5	64	91	116	645	321	988	205	230	---	---	---	---
6	60	80	124	804	286	880	224	257	---	---	---	---
7	99	126	123	897	249	740	230	211	---	---	---	---
8	111	135	117	891	242	686	196	146	---	---	---	---
9	107	123	105	788	325	834	152	123	---	---	---	---
10	93	103	72	517	336	844	154	166	---	---	---	---
11	63	67	65	430	318	833	174	190	---	---	---	---
12	42	42	109	695	300	688	184	176	---	---	---	---
13	54	50	58	348	300	632	206	181	---	---	---	---
14	68	61	67	380	295	605	190	156	90	29	59	27
15	48	42	69	371	237	480	158	122	---	---	67	49
16	68	57	108	551	213	414	139	101	---	---	99	152
17	66	53	129	627	111	198	144	101	---	---	110	198
18	57	55	59	274	82	146	133	90	---	---	75	100
19	178	351	60	267	98	185	143	93	---	---	60	90
20	84	156	136	580	77	148	175	109	---	---	62	121
21	66	116	284	1190	85	162	146	87	---	---	69	153
22	59	104	301	1240	87	164	120	68	---	---	75	184
23	48	88	291	1170	114	214	129	71	---	---	80	199
24	50	88	238	951	116	215	132	71	---	---	67	134
25	59	100	277	1060	169	310	141	72	---	---	53	99
26	66	107	292	1100	127	230	151	75	---	---	39	67
27	46	72	269	973	139	248	134	65	---	---	32	49
28	62	93	259	902	141	247	114	54	---	---	34	51
29	82	119	267	793	80	138	---	---	---	---	39	58
30	85	135	287	589	136	231	---	---	---	---	57	95
31	147	429	---	---	242	405	---	---	---	---	77	126
TOTAL	---	3739	---	21295	---	14636						
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	66	104	85	108	305	1350	72	87	---	---		
2	43	68	74	91	271	1010	72	80	---	---		
3	44	77	86	101	278	968	61	63	---	---		
4	51	98	78	87	292	1020	---	---	---	---		
5	108	303	102	108	420	1760	---	---	---	---		
6	82	268	105	102	337	1490	---	---	---	---		
7	82	248	98	87	289	1230	---	---	---	---		
8	73	219	108	89	231	954	---	---	---	---		
9	64	188	106	84	178	755	---	---	---	---		
10	49	139	106	81	164	717	---	---	---	---		
11	48	130	---	---	123	561	---	---	---	---		
12	42	111	---	---	144	692	---	---	---	---		
13	46	118	---	---	116	576	---	---	---	---		
14	41	101	---	---	123	598	---	---	---	---		
15	40	93	---	---	143	645	---	---	---	---		
16	39	86	---	---	167	672	---	---	---	---		
17	39	82	---	---	163	577	---	---	---	---		
18	48	96	---	---	156	497	---	---	---	---		
19	75	145	---	---	160	454	---	---	---	---		
20	87	163	---	---	164	409	---	---	---	---		
21	58	105	---	---	160	363	---	---	---	---		
22	66	117	---	---	151	316	---	---	---	---		
23	73	125	---	---	141	278	---	---	---	---		
24	85	139	---	---	167	298	---	---	---	---		
25	66	106	---	---	137	225	---	---	---	---		
26	64	101	---	---	146	240	---	---	---	---		
27	70	106	---	---	189	318	---	---	---	---		
28	69	99	---	---	135	212	87	16	53	14		
29	94	130	110	59	95	139	---	---	---	---		
30	78	103	956	3480	71	94	---	---	---	---		
31	---	---	471	2510	---	---	---	---	---	---		
TOTAL	---	3968			---	19418						

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 flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record pogram. 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 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 when continuous records are available, will give a picture of the low-flow potentiality of a stream. The column headed "Period of record" shows the water years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at low-flow partial-record stations during water year 1980

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements	
					Date	Discharge (ft^3/s)
		Mississippi River main stem				
05200010	Mississippi River at Lake Itasca, MN	Lat 47°14'35", long 95°12'38", in NW¼ SW¼ sec.35, T.144 N., R.36 W., Clearwater County, Hydrologic Unit 07010101, at first culvert downstream from Lake Itasca, at County Highway 38 in Itasca State Park, 1 mile south of town of Lake Itasca, and about 22 miles southwest of Bemidji.	38.6	1964-65, 1967, 1970-71, 1973-74, 1976, 1980	5-20-80	6.4
*05200445	Mississippi River at Bemidji, MN	Lat 47°27'04", long 94°54'23", in NW¼NW¼ sec.20, T.146 N., R.33 W., Beltrami County, Hydrologic Unit 07010101, at bridge on County Highway 11, 1.5 miles southwest of intersection of U.S. Highway 2 with County Highway 7, in Bemidji.	a400	1964-65, 1970-71, 1973-76, 1980	10- 9-79 5-18-80	82 100
		Schoolcraft River basin				
05200450	Schoolcraft River near Bemidji, MN	Lat 47°24'48", long 94°54'46", in SW¼SE¼ sec.31, T.146 N., R.33 W., Beltrami County, Hydrologic Unit 07010101, at bridge on County Highway 2, 0.1 mile downstream from Lake Plantagenet outlet, and 4.6 miles south of Bemidji.	a165	1947, 1964-65, 1970-71, 1973-76, 1980	5-15-80	64
		Turtle River basin				
05200850	Turtle River near Pennington, MN	Lat 47°32'34", long 94°35'52", in SE¼SW¼ sec.15, T.147 N., R.31 W., Beltrami County, Hydrologic Unit 07010101, at bridge on County Highway 20, 7 miles northwest of Pennington.	a165	1964-65, 1970-71, 1973-76, 1980	5-15-80	72
05200920	North Turtle River near Pennington, MN	Lat 47°32'29", long 94°34'02", in NE¼NE¼ sec.23, T.147 N., R.31 W. Beltrami County, Hydrologic Unit 07010101, at bridge on County Highway 20, 0.5 mile upstream from mouth, and 5.8 miles northwest of Pennington.	76.5	1964-65, 1970-71, 1973-76, 1980	5-15-80	60
		Leech Lake River basin				
05204400	Boy River at Longville, MN	Lat 46°59'00", long 94°12'33", in NW¼SE¼ sec.34, T.141 N., R.28 W., Cass County, Hydrologic Unit 07010102, at bridge on State Highway 84, at Girl Lake outlet at Longville.	a160	1953-54, 1964-65, 1970-71, 1973, 1975-76, 1980	5-14-80	32

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		Leech Lake River basin--Continued				
05205200	Boy River near Remer, MN	Lat 47°04'51", long 94°05'54", in SE¼SE¼ sec.28, T.142 N., R.27 W., Cass County, Hydrologic Unit 07010102, at bridge on County Highway 53, 1.5 miles upstream from Boy Lake, and about 9 miles northwest of Remer.	a310	1964-65, 1970-71, 1973, 1975-76, 1980	5-14-80	97
		Prairie River basin				
05212200	Prairie River near Nashwauk, MN	Lat 47°29'37", long 93°19'14", in NW¼SW¼ sec.19, T.58 N., R.23 W., Itasca County, Hydrologic Unit 07010103, at bridge on County Highway 336, about 10 miles northwest of Nashwauk.	c220	1964-65, 1970-71, 1973, 1975-76, 1980	5- 9-80	90
05213050	Prairie River near Grand Rapids, MN	Lat 47°13'59", long 93°29'15", in NW¼SW¼ sec.14, T.55 N., R.25 W., Itasca County, Hydrologic Unit 07010103, at bridge on U.S. Highway 169, 0.5 mile northeast of Grand Rapids.	-	1970-71, 1976, 1980	5- 9-80	255
		Willow River basin				
05220670	Willow River near Hill City, MN	Lat 46°54'00", long 93°36'50", on line between secs.14 and 15, T.51 N., R.26 W., Aitkin County, Hydrologic Unit 07010103, at bridge on U.S. Highway 169, 6 miles south of intersection of State Highway 200 with U.S. Highway 169 at south edge of Hill City.	a160	1964-65, 1970-71, 1973-76, 1980	5- 9-80	99
#05221020	Willow River below Palisade, MN	Lat 46°42'36", long 93°33'21", in NW¼NE¼ sec.30, T.49 N., R.25 W., Aitkin County, Hydrologic Unit 07010103, at bridge on County Highway 3, 3.2 miles west of Palisade.	a445	1964-65, 1970-76, 1980	10-15-79 5- 9-80	66 231
		Rice River basin				
05222200	Rice River at Hassman, MN	Lat 46°35'57", long 93°36'47", on line between secs.34 and 35, T.48 N., R.26 W., Aitkin County, Hydrologic Unit 07010104, at bridge on U.S. Highway 169, 0.5 mile south of intersection of U.S. Highways 169 and 210 at Hassman.	a284	1945, 1949, 1964-65, 1970-71, 1973-76, 1980	10-15-79 5- 9-80	4.7 62
		Ripple River basin				
05227480	Ripple River at Aitkin, MN	Lat 46°31'47", long 93° 42'26", in NE¼NE¼ sec.26, T.47 N., R.27 W., Aitkin County, Hydrologic Unit 07010104, at bridge on U.S Highway 169, 0.2 mile south of intersection of U.S. Highway 169 with State Highway 210 in Aitkin, and 0.8 mile upstream from mouth.	a125	1964-65, 1970-71, 1973, 1975-76, 1980	10-15-79 5-13-80	20 36
		Pine River basin				
05229500	Pine River near Jenkins, MN	Lat 46°41'37", long 94°18'14", in NE¼SE¼ sec.11, T.137 N., R.29 W., Crow Wing County, Hydrologic Unit 07010105, at bridge on County Highway 15, 0.8 mile upstream from Upper Whitefish Lake, and 3.5 miles northeast of Jenkins.	a285	1964-65, 1970-71, 1973, 1975-76, 1980	5-14-80	69
05235500	Little Pine River near Cross Lake, MN	Lat 46°37'48", long 93°59'04", in SW¼SW¼ sec.33, T.137 N., R.26 W., Crow Wing County, Hydrologic Unit 07010105, at bridge on county road, 5 miles upstream from mouth, 6 miles southeast of town of Cross Lake, and about 10 miles north of Crosby.	a195	1964-65, 1970-71, 1973, 1975-76, 1980	5-14-80	54

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		Crow Wing River basin				
05242960	Crow Wing River near Hubbard, MN	Lat 46°50'48", long 94°52'29", in NE¼NE¼ sec.20, T.139 N., R.33 W., Hubbard County, Hydrologic Unit 07010106, at bridge on State Highway 87, at Third Crow Wing Lake outlet, and 6.6 miles east of Hubbard.	a218	1930-31, 1964-66, 1970-71, 1973, 1975-76, 1980	5-15-80	76
05243725	Straight River near Park Rapids, MN	Lat 46°52'30", long 95°03'56", in NW¼NE¼ sec.11, T.139 N., R.35 W., Hubbard County, Hydrologic Unit 07010106, at bridge on U.S. Highway 71, 3.2 miles south of Park Rapids, and 3.7 miles northwest of Hubbard.	53.2	1970-71, 1973, 1975-76, 1980	5-15-80	52
05243730	Fishhook River near Hubbard, MN	Lat 46°51'48", long 95°01'30", in NW¼NE¼ sec.18, T.139 N., R.34 W., Hubbard County, Hydrologic Unit 07010106, at bridge on State Highway 87, 0.5 mile downstream from Straight River, 2 miles northwest of Hubbard, and 4.4 miles southeast of Park Rapids.	a374	1964-66, 1970-71, 1973, 1975-76, 1980	5-15-80	130
05243750	Shell River near Hubbard, MN	Lat 46°49'47", long 95°01'53", in SW¼NW¼ sec.30, T.139 N., R.34 W., Hubbard County, Hydrologic Unit 07010106, at bridge on county road, just downstream from Fishhook River, and 1.2 miles southwest of Hubbard.	a600	1964-66, 1970-71, 1973, 1975-76, 1980	5-19-80	166
05244340	Leaf River near Bluffton, MN	Lat 46°26'57", long 95°16'13", in SE¼NW¼ sec.6, T.134 N., R.36 W., Otter Tail County, Hydrologic Unit 07010107, at bridge on County Highway 143, 2.2 miles southwest of Bluffton, and 4.6 miles northeast of Deer Creek.	167	1970-71, 1973, 1976, 1980	5-19-80	43
05244360	Leaf River near Verndale, MN	Lat 46°29'28", long 95°00'34", on line between secs.19 and 20, T.135 N., R.34 W., Wadena County, Hydrologic Unit 07010107, at bridge on County Highway 22, 6.4 miles north of Verndale.	424	1964-66, 1968-71, 1973-74, 1976, 1980	5-19-80	90
05244400	Wing River below Verndale, MN	Lat 46°26'28", long 95°00'02", on line between secs.5 and 8, T.134 N., R.34 W., Wadena County, Hydrologic Unit 07010107, at bridge on County Highway 4, 3.1 miles north of Verndale.	152	1964-71, 1973-74, 1976, 1980	5-19-80	30
05244410	Redeye River at Sebeka, MN	Lat 46°37'44", long 95°05'42", in NE¼NE¼ sec.4, T.136 N., R.35 W., Wadena County, Hydrologic Unit 07010107, at bridge on U.S. Highway 71, at Sebeka.	138	1968-71, 1973, 1975-76, 1980	5-19-80	19
05244420	Redeye River near Aldrich, MN	Lat 46°29'58", long 94°54'30", on line between secs.13 and 24, T.135 N., R.34 W., Wadena County, Hydrologic Unit 07010107, at bridge on County Highway 7, 1.5 miles upstream from mouth, 3.5 miles north of Central, and 8.5 miles north of Aldrich.	221	1964-66, 1968-71, 1973-76, 1980	5-20-80	38
*05244440	Leaf River near Aldrich, MN	Lat 46°27'25", long 94°50'29", in SW¼SW¼ sec.34, T.135 N., R.33 W., Wadena County, Hydrologic Unit 07010107, at bridge on County Highway 29, 2.3 miles upstream from mouth, and 7 miles northeast Aldrich.	860	1968, 1970-76, 1980	10-10-79 5-20-80	102 176
05244470	Partridge River near Aldrich, MN	Lat 46°25'02", long 94°50'28", in NW¼SW¼ sec.15, T.134 N., R.33 W., Wadena County, Hydrologic Unit 07010106, at bridge on County Highway 29, 0.7 mile upstream from mouth, and 5.5 miles northeast of Aldrich.	93.5	1964-71, 1973-76, 1980	5-20-80	7.1

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		Crow Wing River basin--Continued				
05244540	Mosquito Creek at Motley, MN	Lat 46°20'39", long 94°38'18", in SE¼SW¼ sec.7, T.133 N., R.31 W., Cass County, Hydrologic Unit 07010106, at bridge on State Highway 210, 0.2 mile upstream from mouth, and 0.6 mile northeast of Motley.	53.4	1964-66, 1970-71, 1973, 1976, 1980	5-20-80	7.1
05245200	Eagle Creek at Browerville, MN	Lat 46°05'35", long 94°51'53", in SE¼SW¼ sec.5, T.130 N., R.33 W., Todd County, Hydrologic Unit 07010108, at bridge on County Highway 21, 0.5 mile upstream from mouth, and 0.5 mile north of Browerville.	77.0	1970-71, 1973, 1976, 1980	5-20-80	7.9
		Nokasippi River basin				
05261351	Nokasippi River near Brainerd, MN	Lat 46°15'45", long 94°06'44", in NW¼SE¼ sec.27, T.44 N., R.30 W., Crow Wing County, Hydrologic Unit 07010104, at bridge on State Highway 25, 7.8 miles southeast of Brainerd.	69.9	1969-70, 1974, 1977, 1980	5-29-80	12
05261440	Daggett Brook near Crow Wing, MN	Lat 46°13'42", long 94°07'15", on line between secs.3 and 10, T.43 N., R.30 W., Crow Wing County, Hydrologic Unit 07010104, at bridge on county road, 9.1 miles southeast of Crow Wing.	47.7	1969-70, 1974, 1977, 1980	5-29-80	3.57
		Platte River basin				
05267700	Platte River near Harding, MN	Lat 46°05'27", long 94°06'10", on line between secs.26 and 27, T.42 N., R.30 W., Morrison County, Hydrologic Unit 07010201, at triple box culvert on State Highway 25, 3.5 miles southwest of Harding.	101	1969-70, 1975-76, 1979-80	5-30-80	10.9
05267810	Big Mink Creek near Pierz, MN	Lat 46°00'22", long 94°10'00", on line between secs.29 and 30, T.41 N., R.30 W., Morrison County, Hydrologic Unit 07010201, at bridge on county road, 3.6 miles northwest of Pierz.	18.6	1969-70, 1975-77, 1979-80	5-30-80	5.37
05267830	Little Mink Creek near Pierz, MN	Lat 45°59'12", long 94°11'15", on line between sec.31, T.41 N., R.30 W., and sec.36, T.41 N., R.31 W., Morrison County, Hydrologic Unit 07010201, at concrete culvert on County Highway 255, 4.1 miles west of Pierz.	18.8	1969, 1975-77, 1979-80	5-30-80	0.53
05267890	Skunk River near Pierz, MN	Lat 45°59'00", long 94°04'52", on line between sec.9, T.40 N., R.30 W., and sec.36, T.41 N., R.30 W., Morrison County, Hydrologic Unit 07010201, at double box culvert on County Highway 39, 1.1 miles east of Pierz.	55.6	1968-70, 1972-76, 1980	7-11-80	7.47
05267930	Skunk River near Buckman, MN	Lat 45°55'56", long 94°10'41", in SE¼SE¼ sec.27, T.40 N., R.31 W., Morrison County, Hydrologic Unit 07010201, at bridge on county road, 4.6 miles northwest of Buckman.	133	1968-70, 1972-76, 1980	7-11-80	8.64
		Little Rock Creek basin				
05268700	Little Rock Creek at Rice, MN	Lat 45°45'48", long 94°12'15", in NW¼NE¼ sec.28, T.38 N., R.31 W., Benton County, Hydrologic Unit 07010201, at bridge on County Highway 12, at northeast corner of Rice, and 2 miles upstream from Little Rock Lake.	73.4	1969-70, 1975-80	7-17-80	12.3

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		Watab River basin				
05269800	Watab River near Sartell, MN	Lat 45°37'09", long 94°13'38", in NE¼SE¼ sec.20, T.125 N., R.28 W., Stearns County, Hydrologic Unit 07010201, at bridge on county road, 1.1 miles west of Sartell.	90.1	1969-70, 1974, 1976, 1979-80	5-16-80 7-17-80	24.1 11.5
		Sauk River basin				
05270180	Sauk River at Sauk Centre, MN	Lat 45°43'22", long 94°56'17", in SW¼NE¼ sec.15, T.126 N., R.34 W., Stearns County, Hydrologic Unit 07010202, at bridge on County Highway 186 in Sauk Centre, 2.1 miles downstream from Sauk Lake.	367	1941, 1969-70, 1974, 1976, 1980	7-17-80	86.1
05270210	Adley Creek near Melrose, MN	Lat 45°41'00", long 94°46'13", in NE¼NE¼ sec.36, T.126 N., R.33 W., Stearns County, Hydrologic Unit 07010202, at culvert on County Highway 168, 0.1 mile upstream from mouth, and 2.2 miles east of Melrose.	87.8	1969-70, 1974, 1976, 1980	7-18-80	20
05270250	Stearns County ditch no. 44 near New Munich, MN	Lat 45°35'58", long 94°46'03", in NE¼NE¼ sec.36, T.125 N., R.33 W., Stearns County, Hydrologic Unit 07010202, at bridge on county road, 0.4 mile upstram from mouth, and 2.3 miles southwest of New Munich.	29.9	1969-70, 1974, 1976, 1977, 1979-80	7-18-80	0.22
05270280	Getchell Creek near New Munich, MN	Lat 45°34'36", long 94°45'50", in NE¼SE¼ sec.1, T.124 N., R.33 W., Stearns County, Hydrologic Unit 07010202, at bridge on County Highway 12, 0.5 mile upstream from mouth, and 4 miles south of New Munich.	65.7	1969-70, 1974, 1976, 1977, 1979-80	7-18-80	5.41
05270455	Mill Creek at Rockville, MN	Lat 45°28'20", long 94°20'21", on line between secs.9 and 16, T.123 N., R.29 W., Stearns County, Hydrologic Unit 07010202, at bridge on State Highway 23, at Rockville, and 0.2 mile upstream from mouth.	51.6	1969-70, 1974, 1976-77, 1979-80	5-16-80 7-18-80	11.7 8.52
		Plum Creek basin				
05272600	Plum Creek near Clearwater, MN	Lat 45°25'35", long 94°04'47", in NE¼NE¼ sec.33, T.123 N., R.27 W., Stearns County, Hydrologic Unit 07010203, at culvert on State Highway 152, 1.7 miles northwest of Clearwater.	23.3	1969-70, 1974, 1976, 1978-80	5-16-80	6.93
		Clearwater River basin				
05273100	Three Mile Creek near Fairhaven, MN	Lat 45°21'10", long 94°09'57", in NW¼NE¼ sec.26, T.122 N., R.28 W., Stearns County, Hydrologic Unit 07010203, 2.5 miles northeast of Fairhaven on State Highway 45.	-	1978, 1980	5-16-80 7-18-80	3.34 1.31
05273498	Clearwater River above Clearwater, MN	Lat 45°24'40", long 94°03'41", in NW¼NE¼ sec.3, T.122 N., R.27 W., at Wright-Stearns County line, Hydrologic Unit 07010203, at culvert on county road at southwest corner of Clearwater.	174	1969-70, 1974, 1976-80	5- 2-80	71.6
05273600	Silver Creek near Hasty, MN	Lat 45°22'37", long 93°56'31", in SW¼NE¼ sec.15, T.122 N., R.26 W., Wright County, Hydrologic Unit 07010203, at bridge on county road, 0.7 mile upstream from mouth, and 1.6 miles northeast of Hasty.	30.9	1969-70, 1974, 1977, 1980	5- 2-80	19.2

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		Elk River basin				
05274300	Rice Creek near Clear Lake, MN	Lat 45°29'57", long 93°58'28", in NE¼NW¼ sec.29, T.35 N., R.29 W., Sherburne County, Hydrologic Unit 07010203, at bridge on County Highway 61, 1.0 mile upstream from mouth, and 3.8 miles northeast of Clear Lake.	39.6	1969-70, 1974, 1976-78, 1980	5- 1-80	16.5
05274350	Briggs Creek near Clear Lake, MN	Lat 45°30'57", long 93°55'29", on line between secs.15 and 22, T.35 N., R.29 W., Sherburne County, Hydrologic Unit 07010203, at County Highway 48, 0.7 mile northeast of Lake Briggs, and 5.9 miles northeast of Clear Lake.	-	1970, 1976, 1978, 1980	5- 1-80	8.33
05274380	Elk River near Becker, MN	Lat 45°26'11", long 93°54'07", on line between secs.13 and 14, T.34 N., R.29 W., Sherburne County, Hydrologic Unit 07010203, at bridge on State Highway 25, 2.2 miles northwest of Becker.	250	1969-70, 1974, 1976, 1978, 1980	5- 1-80	97.8
05274480	Snake River near Big Lake, MN	Lat 45°23'18", long 93°46'28", in SW¼SW¼ sec.36, T.34 N., R.28 W., Sherburne County, Hydrologic Unit 07010203, at culvert on County Highway 73, 0.9 mile upstream from mouth, and 4.1 miles northwest of Big Lake.	31.9	1969-70, 1974, 1976, 1978, 1980	5- 1-80	20.7
05274700	St. Francis River at Santiago, MN	Lat 45°32'30", long 93°48'50", in NE¼ sec.10, T.35 N., R.28 W., Sherburne County, Hydrologic Unit 07010203, 0.2 mile east of Santiago and 0.4 mile upstream from bridge on county road.	87.4	1962, 1965-70#, 1976, 1978, 1980#	5- 2-80 5-21-80 6-26-80 7- 9-80 7-17-80 7-29-80 8-15-80	14.0 6.83 6.60 3.43 2.52 6.10 2.01
		Crow River basin				
05279500	South Fork Crow River near Rockford, MN	Lat 45°03'34", long 93°46'34", in NW¼ sec.1, T.118 N., R.25 W., Wright County, Hydrologic Unit 07010205, at bridge on county road, 2 miles upstream from North Fork Crow River and 3.5 miles southwest of Rockford.	a1250	1909-12#, 1970, 1980	5- 2-80	202
		Rum River basin				
05284660	Rum River near Milaca, MN	Lat 45°46'44", long 93°39'29", on line between secs.13 and 24, T.38 N., R.27 W., Mille Lacs County, Hydrologic Unit 07010207, at bridge on County Highway 9, 1.8 miles north of Milaca.	671	1968-70, 1975, 1976, 1980	5- 6-80	214
05284750	Rum River at Spencer Brook, MN	Lat 45°31'45", long 93°26'21", in NW¼NE¼ sec.15, T.35 N., R.25 W., Isanti County, Hydrologic Unit 07010207, at bridge on County Highway 7, 200 ft downstream from Spencer Brook, 0.5 mile north of village of Spencer Brook, and 7.5 miles southeast of Princeton.	a1000	1957-59, 1960-64#, 1965, 1970, 1972, 1978-80	5- 6-80 7-17-80	323 139
05284810	Green Lake Brook at West Point, MN	Lat 45°33'49", long 93°23'20", on line between sec.31, T.36 N., R.24 W., and sec.36, T.36 N., R.25 W., Isanti County, Hydrologic Unit 07010207, at bridge on State Highway 47, 0.2 mile upstream from mouth, and 0.5 mile north of West Point.	29.7	1965, 1969-70, 1975, 1976, 1979-80	7-17-80	8.92
05285800	Seelye Brook near St. Francis, MN	Lat 45°21'58", long 93°22'20", in SW¼NE¼ sec.7, T.33 N., R.24 W., Anoka County, Hydrologic Unit 07010203, at bridge on County Highway 55, 0.9 mile upstream from mouth, and 1.6 miles south of St. Francis.	37.5	1965, 1969-70, 1974, 1976, 1980	10- 3-79	10.0

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		Rum River basin--Continued				
05286800	Trott Brook near Nowthen, MN	Lat 45°17'16", long 93°25'08", in SW¼SE¼ sec.2, T.32 N., R.25 W., Anoka County, Hydrologic Unit 07010207, at bridge on State Highway 47, 0.8 mile upstream from mouth, and 3.9 miles southeast of Nowthen.	72.0	1965, 1969-70, 1974-76, 1980	5- 1-80	25.6
		Minnesota River basin				
c05293370	Pomme de Terre River near Elbow Lake, MN	Lat 45°59'06", long 95°53'37", in NE¼SE¼ sec.13, T.129 N., R.42 W., Grant County, Hydrologic Unit 07020002, at bridge on county road, 1 mile downstream from Pomme de Terre Lake, and 4 miles east of Elbow Lake.	a334	1963-65, 1970, 1973-75, 1978, 1980	5-21-80	33.4
c05293600	Mud Creek near Morris, MN	Lat 45°32'26", long 95°54'44", on line between secs.22 and 23, T.124 N., R.42 W., Stevens County, Hydrologic Unit 07020002, at culvert on U.S. Highway 59, 1 mile upstream from mouth, and 3 miles south of Morris.	a137	1963-65, 1970, 1973-75, 1978, 1980	5-22-80	0.08
c05294000	Pomme de Terre River near Appleton, MN	Lat 45°14'22", long 95°59'06", in NW¼NE¼ sec.1, T.120 N., R.43 W., Swift County, Hydrologic Unit 07020002, at bridge on County Highway 54, 3 miles northeast of Appleton, and 12 miles upstream from mouth.	885	1931-53#, 1964, 1973, 1980	5-23-80	68.6
05300500	Ten Mile Creek near Boyd, MN	Lat 44°56'10", long 95°53'20", on line between secs. 14 and 23, T.117 N., R.42 W., Lac qui Parle County, Hydro- Unit 07020003, at bridge on U.S. Highway 212, 5.8 miles north of Boyd and about 8 miles west of Montevideo.	82.8	1949-52#, 1980	5- 9-80	6.18
c05302700	Little Chippewa River near Cyrus, MN	Lat 45°35'46", long 95°40'32", on line between secs.34 and 35, T.125 N., R.40 W., Pope County, Hydrologic Unit 07020005, at bridge on County Road 73, 4.3 miles southeast of Cyrus.	a12.6	1969-70, 1973-74, 1980	5-21-80	6.76
c05302980	Lake Emily outlet near Hancock, MN	Lat 45°30'56", long 95°41'45", in SE¼SW¼ sec.28, T.124 N., R.40 W., Pope County, Hydrologic Unit 07020005, at culvert on county road, 4.9 miles east of Hancock.	260	1969-70, 1973-74, 1980	5-21-80	34.6
05303350	East Branch Chippewa River near Swift Falls, MN	Lat 45°22'35", long 95°24'51", in W½ sec.14, T.122 N., R.38 W., Swift County, Hydrologic Unit 07020005, at bridge on County Highway 28, 1.7 miles southeast of Swift Falls.	200	1969-70, 1973-74, 1980	5- 5-80	73.2
05303400	Mud Creek near Swift Falls, MN	Lat 45°21'54", long 95°22'34", in W½NW¼ sec.19, T.122 N., R.37 W., Swift County, Hydrologic Unit 07020005, at bridge on County Highway 87, 3.4 miles southeast of Swift Falls.	114	1969-70, 1973-74, 1980	5- 5-80	20.1
05303430	Mud Creek near Benson, MN	Lat 45°18'46", long 95°32'29", on line between secs.2 and 3, T.121 N., R.39 W., Swift County, Hydrologic Unit 07020005, at bridge on county road, 2.9 miles east of Benson.	85.0	1969-70, 1973-74, 1980	5-12-80	6.99
c05303470	East Branch Chippewa River near Benson, MN	Lat 45°20'53", long 95°35'37", in SE¼NW¼ sec.29, T.122 N., R.39 W., Swift County, Hydrologic Unit 07020005, at bridge on county road, 2.2 miles north of Benson.	a520	1964-66, 1969-70, 1973-74, 1980	5-22-80	63.3
c05304800	Dry Weather Creek near Montevideo, MN	Lat 45°03'00", long 95°46'00", in NE¼NW¼ sec.11, T.118 N., R.41 W., Chippewa County, Hydrologic Unit 07020005, at bridge on county road, 7.4 miles northwest of Montevideo.	105	1969-70, 1973-75, 1980	5-21-80	0.45

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		Minnesota River basin--Continued				
05311100	Palmer Creek near Granite Falls, MN	Lat 44°50'54", long 95°33'47", in SW¼SW¼ sec.16, T.116 N., R.39 W., Chippewa County, Hydrologic Unit 07020004, at bridge on county road, 2.5 miles north of Granite Falls.	34.2	1969-70, 1974-75, 1977-78, 1980	5- 8-80	1.47
05311500	Yellow Medicine River near Cottonwood, MN	Lat 44°38'45", long 95°48'35", in SE¼SE¼ sec.29, T.114 N., R.41 W., Yellow Medicine County, Hydrologic Unit 07020004, at bridge on U.S. Highway 59 at Normania, 5.4 miles southeast of Spring Creek, and 7 miles northwest of Cottonwood.	465	1945-46#, 1949, 1969, 1979-80	5- 9-80	23.1
05312000	Spring Creek near Clarkfield, MN	Lat 44°42'25", long 95°47'15", on line between secs.3 and 4, T.114 N., R.41 W., Yellow Medicine County, Hydrologic Unit 07020004, at bridge on county road, 1000 ft downstream from unnamed right bank tributary, and 5.6 5.6 miles southeast of Clarkfield.	a89	1945-46#, 1951, 1980	5- 9-80	3.90
05313670	Hawk Creek near Clara City, MN	Lat 44°58'41", long 95°21'40", on line between sec.31, T.118 N., R.37 W., and sec.6, T.117 N., R.37 W., Chippewa County, Hydrologic Unit 07020004, at bridge on county road, 1.5 miles north of Clara City.	197	1969, 1974-78, 1980	5- 5-80	3.97
05314520	Spring Creek near Maynard, MN	Lat 44°51'16", long 95°26'30", in SW¼NW¼ sec. 16, T.116 N., R.38 W., Renville County, Hydrologic Unit 07020004, at culvert on farm road 75 ft upstream from mouth, and 3.5 miles southeast of Maynard.	162	1969-70, 1974-75, 1979-80	5- 5-80	5.05
05314530	Hawk Creek near Granite Falls, MN	Lat 44°49'58", long 95°26'01", in SE¼SW¼ sec.21, T.116 N., R.38 W., Renville County, Hydrologic Unit 07020004, at bridge on county road, 1.5 miles downstram from Spring Creek, and 5 miles northeast of Granite Falls.	a486	1968-70, 1977, 1980	5- 5-80	12.0
05314600	Boiling Spring Creek near Belview, MN	Lat 44°40'02", long 95°19'10", on line between secs.20 and 21, T.114 N. R.37 W., Redwood County, Hydrologic Unit 07020004, at bridge on county road, 1 mile upstream from mouth and 3.6 miles north of Belview.	29.1	1969, 1973-75, 1977-80	5- 5-80	4.23
05314700	Sacred Heart Creek near Delhi, MN	Lat 44°40'41", long 95°14'43", in NW¼NE¼ sec.24, T.114 N., R.37 W., Renville County, Hydrologic Unit 07020004, at bridge on County Highway 15, 4.8 miles northwest of Delhi.	42.7	1969, 1974-75, 1977-80	5- 9-80	3.11
05314750	Middle Creek near Delhi, MN	Lat 44°37'25", long 95°09'37", in SE¼NE¼ sec.3, T.113 N., R.36 W., Renville County, Hydrologic Unit 07020004, at bridge on County Highway 15, 0.3 mile upstream from mouth, and 2.8 miles northeast of Delhi.	13.1	1969, 1974-75, 1977-80	5- 9-80	1.24
05314800	Smith Creek near North Redwood, MN	Lat 44°36'21", long 95°07'10", in NE¼SE¼ sec.12, T.113 N., R.36 W., Renville County, Hydrologic Unit 07020004, at bridge on County Highway 15, 0.7 mile upstream from mouth, and 3 miles northwest of North Redwood.	14.6	1969, 1974-80	5- 9-80	0.95
05315300	Three Mile Creek near Ghent, MN	Lat 44°31'30", long 95°50'12", on line between sec.7, T.112 N., R.41 W., and sec.12, T.112 N., R.42 W., Lyon County, Hydrologic Unit 07020006, at bridge on County Highway 65, 2.9 miles northeast of Ghent.	73.4	1969, 1973-77, 1980	5- 6-80	6.69

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		Minnesota River basin--Continued				
05316590	Birch Coulee Creek near Morton, MN	Lat 44°32'30", long 94°57'12", at common corner of secs.32 and 33, T.113 N., R.34 W., and sec.5, T.112 N., R.34 W., Renville County, Hydrologic Unit 07020007, at bridge on State Highway 19, 1.6 miles southeast of Morton.	68.4	1969, 1974-78, 1980	5- 9-80	7.46
05316630	Wabasha Creek near Morton, MN	Lat 44°29'45", long 94°54'23", in NE¼NE¼ sec.22, T.112 N., R.34 W., Redwood County, Hydrologic Unit 07020007, at bridge on county road, 5.4 miles southeast of Morton.	73.0	1969, 1973-78, 1980	5- 9-80	7.06
05316840	Cottonwood River near Tracy, MN	Lat 44°20'41", long 95°36'50", on line between secs.11 and 12, T.110 N., R.40 W., Lyon County, Hydrologic Unit 07020008, at bridge on County Highway 11, 7.2 miles north of Tracy.	76.7	1968-69, 1973-75, 1980	5- 6-80	12.4
05316870	Plum Creek near Walnut Grove, MN	Lat 44°16'09", long 95°25'39", on line between secs.4 and 9, T.109 N., R.38 W., Redwood County, Hydrologic Unit 07020008, at bridge on county road, 3.8 miles northeast of Walnut Grove.	82.6	1969, 1973-74, 1978, 1980	5- 8-80	13.5
05316879	Pell Creek near Lamberton, MN	Lat 44°14'47", long 95°19'56", in SE¼NE¼ sec.18, T.109 N., R.37 W., Redwood County, Hydrologic Unit 07020008, at bridge on county road, 3 miles west of Lamberton.	51.5	1969, 1973-74 1978, 1980	5- 8-80	4.98
05316890	Dutch Charley Creek near Lamberton, MN	Lat 44°12'58", long 95°16'12", on line between secs.26 and 27, T.109 N., R.37 W., Redwood County, Hydrologic Unit 07020008, at bridge on County Highway 6, 1.2 miles south of Lamberton.	88.2	1969, 1973-74, 1978, 1980	5- 8-80	12.9
05316895	Highwater Creek near Lamberton, MN	Lat 44°12'36", long 95°14'45", on line between secs.25 and 36, T.109 N., R.37 W., Redwood County, Hydrologic Unit 07020008, at bridge on County Highway 15, 1.9 miles southeast of Lamberton.	108	1969, 1973-75, 1979-80	5- 8-80	17.9
05316940	Mound Creek near Springfield, MN	Lat 44°11'40", long 95°03'34", in NW¼NW¼ sec.4, T.108 N., R.35 W., Brown County, Hydrologic Unit 07020008, at bridge on County Highway 2, 0.9 mile upstream from mouth, and 5 miles southwest of Springfield.	53.0	1968-69, 1973-76, 1978, 1980	5- 8-80	6.00
05317300	Morgan Creek at Cambria, MN	Lat 44°14'32", long 94°19'36", in SW¼SW¼ sec.16, T.109 N., R.29 W., Blue Earth County, Hydrologic Unit 07020007, at culvert on State Highway 68, 0.5 mile upstream from mouth, and 0.6 mile northwest of Cambria.	59.6	1969-70, 1973, 1980	5- 9-80	12.0
05317830	Coon Creek near Blue Earth, MN	Lat 43°36'57", long 94°05'51", on line between secs.20 and 29, T.102 N., R.27 W., Faribault County, Hydrologic Unit 07020009, on county road, 0.5 mile upstream from mouth, and 1.8 miles south of Blue Earth.	96.6	1969-71, 1976, 1980	5- 8-80	25.1
05317840	Badger Creek near Blue Earth, MN	Lat 43°38'26", long 94°08'16", in SW¼NE¼ sec.13, T.102 N., R.28 W., Faribault County, Hydrologic Unit 07020009, at bridge on county road, 1.2 miles upstream from mouth, and 1.2 miles west of Blue Earth.	80.6	1969-71, 1976, 1980	5- 8-80	15.4

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		Minnesota River basin--Continued				
05318120	East Branch Blue Earth River at Blue Earth, MN	Lat 43°38'58", long 94°06'10", in NW¼SW¼ sec.8, T.102 N., R.27 W., Faribault County, Hydrologic Unit 07020009, at bridge on U.S. Highway 169 in Blue Earth.	a285	1969-71, 1976, 1980	5- 8-80	91.4
05318140	South Creek near Winnebago, MN	Lat 43°42'33", long 94°10'38", in NW¼SE¼ sec.22, T.103 N., R.28 W., Faribault County, Hydrologic Unit 07020009, at bridge on County Highway 5, 3.5 miles south of Winnebago.	106	1969-70, 1976, 1980	5- 8-80	31.2
05318160	Lily Creek near Fairmont, MN	Lat 43°40'47", long 94°29'30", in NW¼SW¼ sec.31, T.103 N., R.30 W., Martin County, Hydrologic Unit 07020009, at culvert on Interstate 90, 1.5 miles upstream from mouth, and 2.3 miles northwest of Fairmont.	41.7	1969-71, 1975, 1976, 1980	5- 9 80	7.89
05318180	Center Creek near Huntley, MN	Lat 43°43'50", long 94°12'26", on line between secs.16 and 17, T.103 N., R.28 W., Faribault County, Hydrologic Unit 07020009, at bridge on county road, 1.5 miles east of Huntley, and 2 miles upstream from mouth.	a130	1968-70, 1976, 1980	5- 8-80	26.3
05318900	South Fork Watonwan River near Ormsby, MN	Lat 43°53'03", long 94°41'09", in NW¼SE¼ sec.21, T.105 N., R.32 W., Watonwan County, Hydrologic Unit 07020010, at bridge on State Highway 4, 2.5 miles north of Ormsby.	110	1969-70, 1974-76, 1980	5- 9-80	24.9
05320020	Le Sueur River near New Richland, MN	Lat 45°56'43", long 93°27'21", in SW¼NE¼ sec.34, T.106 N., R.22 W., Waseca County, Hydrologic Unit 07020011, at bridge on County Highway 56, 3.8 miles northeast of New Richland.	75.6	1969, 1971, 1976, 1980	5- 7-80	22.2
05320040	Boot Creek near New Richland, MN	Lat 43°56'07", long 93°30'52", on line between sec.6, T.105 N., R.22 W., and sec.31, T.106 N., R.22 W., Waseca County, Hydrologic Unit 07020011, at bridge on county road, 0.5 mile upstream from mouth, and 3 miles northwest of New Richland.	48.6	1969, 1971, 1976, 1980	5- 7-80	17.0
05320060	Little Le Sueur River near Wilton, MN	Lat 44°00'06", long 93°30'32", in SE¼NE¼ sec.7, T.106 N., R.22 W., Waseca County, Hydrologic Unit 07020011, at bridge on County Highway 51, 0.3 mile upstream from mouth, and 1.5 miles southeast of Wilton.	23.9	1969, 1971, 1976, 1980	5- 7-80	6.49
05320070	Le Sueur River at Wilton, MN	Lat 44°00'52", long 93°31'38", in NE¼SE¼ sec.1, T.106 N., R.23 W., Waseca County, Hydrologic Unit 07020011, at bridge on County Highway 4, 0.2 mile east of Wilton.	a155	1968-69, 1970, 1976, 1980	5- 7-80	56.0
05326400	Rush River near Henderson, MN	Lat 44°29'57", long 93°54'18", in NW¼NW¼ sec.24, T.112 N., R.26 W., Sibley County, Hydrologic Unit 07020012, at bridge on State Highway 93, 0.4 mile upstream from mouth, and 2 miles south of Henderson.	c397	1970-71, 1976, 1979-80	5- 5-80	72.9
05329900	Bevens Creek at East Union, MN	Lat 44°42'44", long 93°40'59", in SW¼NW¼ sec.2, T.114 N., R.24 W., Carver County, Hydrologic Unit 07020012, at bridge on County Highway 40, 0.4 mile south of East Union, and 2.3 miles upstream from mouth.	126	1969-70, 1976, 1979-80	5- 5-80	21.2
b05330700	Chaska Creek at Chaska, MN	Lat 44°47'19", long 93°36'19", in NE¼NE¼ sec.8, T.115 N., R.23 W., Carver County, Hydrologic Unit 07020012, at bridge on U.S. Highway 212 in Chaska, 1 mile upstream from mouth.	14.8	1967-70, 1975, 1979-80	1-14-80 5-30-80 6-24-80 7-23-80	1.57 1.74 0.99 0.51

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		St. Croix River basin				
05335110	Lower Tamarack River near Duxbury, MN	Lat 46°05'56", long 92°30'00", on line between secs.21 and 28, T.42 N., R.17 W., Pine County, Hydrologic Unit 07030001, at bridge on County Highway 25, 2 miles south of Duxbury.	75.3	1967, 1970, 1974, 1976, 1980	5-29-80 7-17-80	6.72 6.88
05335130	McDermott Creek near Duxbury, MN	Lat 46°05'56", long 92°28'30", on line between secs.22 and 27, T.42 N., R.17 W., Pine County, Hydrologic Unit 07030001, at bridge on County Highway 25, 0.6 mile upstream from mouth, and 2.5 miles southeast of Duxbury.	43.9	1967, 1970, 1974, 1976, 1980	10- 4-79 7-17-80	3.35 3.51
05335150	Hay Creek near Markville, MN	Lat 46°05'18", long 92°24'33", in NE¼SE¼ sec.30, T.42 N., R.16 W., Pine County, Hydrologic Unit 07030001, at bridge on County Highway 25, 4 miles west of Markville.	56.6	1967, 1970, 1974, 1976, 1980	10- 4-79 7-17-80	4.88 2.53
05335151	Lower Tamarack River near Markville, MN	Lat 46°04'49", long 92°23'37", in SE¼NW¼ sec.32, T.42 N., R.16 W., Pine County, Hydrologic Unit 07030001, at bridge on county road, 3 miles southwest of Markville.	188	1967, 1970, 1974, 1976, 1980	10- 4-79 7-17-80	18.8 4.97
05335170	Crooked Creek near Hinckley, MN	Lat 46°00'42", long 92°31'45", in NE¼NE¼ sec.30, T.41 N., R.17 W., Pine County, Hydrologic Unit 07030001, at bridge on State Highway 48, 2.7 miles upstream from mouth, 8 miles south of Duxbury, and 19 miles east of Hinckley.	93.0	1966-70, 1974, 1976, 1980	10- 4-79 5-29-80	16.9 14.6
05335800	Sand Creek near Sandstone, MN	Lat 46°07'43", long 92°42'50", on line between secs.11 and 14, T.42 N., R.19 W., Pine County, Hydrologic Unit 07030001, at bridge on County Highway 30, 7 miles east of Sandstone.	-	1967, 1980	5-30-80 7-18-80	8.69 8.27
05335890	Little Sand Creek near Hinckley, MN	Lat 45°58'59", long 92°39'55", in SW¼SE¼ sec.31, T.41 N., R.18 W., Pine County, Hydrologic Unit 07030001, at bridge on county road, 14 miles southeast of Hinckley.	27.7	1967, 1970, 1974, 1976, 1980	10- 4-79 5- 7-80 5-29-80	3.46 11.9 4.49
05336005	Bear Creek near Hinckley, MN	Lat 45°56'45", long 92°42'44", in NE¼NE¼ sec.21, T.40 N., R.19 W., Pine County, Hydrologic Unit 07030001, at bridge on St. Croix State Park Road, 12 miles southeast of Hinckley.	-	1967, 1970, 1974, 1976, 1980	5-29-80	4.86
05336150	West Branch Kettle River near Kettle River, MN	Lat 46°32'38", long 92°54'32", on line between secs.19 and 20, T.47 N., R.20 W., Carlton County, Hydrologic Unit 07030003, at bridge on State Highway 73, 4 miles northwest of Kettle River.	-	1967, 1979, 1980	5-28-80 7-16-80	5.20 1.31
05336220	Split Rock River near Kettle River, MN	Lat 46°26'09", long 92°54'29", on line between secs.29 and 30, T.46 N., R.20 W., Carlton County, Hydrologic Unit 07030003, at bridge on county highway, 4 miles southwest of Kettle River.	-	1967, 1969-80	5-28-80 7-16-80	2.23 1.73
05336280	Moose River at Barnum, MN	Lat 46°30'15", long 92°41'32", in NE¼NW¼ sec.1, T.46 N., R.19 W., Carlton County, Hydrologic Unit 07030003, at bridge on County Highway 61, at Barnum.	76.1	1967, 1971, 1974, 1976, 1979-80	5-28-80 7-16-80	7.37 12.9
05336360	Willow River near Kerrick, MN	Lat 46°21'38", long 92°38'41", in NW¼NE¼ sec.29, T.45 N., R.18 W., Pine County, Hydrologic Unit 07030003, at bridge on County Highway 46, 3 miles northwest of Kerrick.	-	1967, 1980	10- 2-79 5- 7-80 7-17-80	4.37 11.2 6.03

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		St. Croix River basin--Continued				
05336365	Hay Creek near Kerrick, MN	Lat 46°21'38", long 92°40'29", in NW¼NW¼ sec.30, T.45 N., R.18 W., Pine County, Hydrologic Unit 07030003, at bridge on County Highway 46, 4.5 miles northwest of Kerrick.	-	1967, 1980	10- 2-79 5- 7-80 7-17-80	0.25 2.29 0.36
05336370	Little Willow River near Bruno, MN	Lat 46°19'02", long 92°41'29", on line between secs.1 and 12, T.44 N., R.19 W., Pine County, Hydrologic Unit 07030003, at bridge on county road, 3 miles northwest of Bruno.	-	1967, 1980	10- 2-79 5- 7-80 7-17-80	3.46 7.40 7.88
05336380	Willow River at Willow River, MN	Lat 46°19'24", long 92°50'26", in NW¼SW¼ sec.2, T.44 N., R. 20 W., Pine County, Hydrologic Unit 07030003, at bridge on County Highway 41, at Willow River, and 0.6 mile upstream from mouth.	126	1943, 1947, 1950, 1967, 1976, 1980	5- 7-80 7-16-80	41.0 42.8
05336440	Pine River near Rutledge, MN	Lat 46°16'26", long 92°58'15", on line between secs. 22 and 27, T.44 N., R.21 W., Pine County, Hydrologic Unit 07030003, at bridge on County Highway 150, 6 miles northwest of Rutledge.	-	1967, 1980	10- 1-79 5- 7-80 7-18-80	8.30 19.3 13.5
05336460	Bremen Creek near Rutledge, MN	Lat 46°16'52", long 92°58'47", near center of sec.22, T. 44 N., R.21 W., Pine County, Hydrologic Unit 07030003, at bridge on county highway, 7 miles northwest of Rutledge.	-	1967, 1980	10- 1-79 5- 7-80 7-18-80	4.80 5.37 5.12
05336480	Pine River at Rutledge, MN	Lat 46°15'18", long 92°51'56", on line between secs.33 and 34, T.44 N., R.20 W., Pine County, Hydrologic Unit 07030003, at bridge on County Highway 61, 0.4 mile south of Rutledge, and 0.7 mile upstream from mouth.	139	1967, 1976, 1980	10- 2-79 7-18-80	25.6 19.5
05336900	North Branch Grindstone River near Hinckley, MN	Lat 46°02'03", long 92°58'16", on line between secs.14 and 15, T.41 N., R.21 W., Pine County, Hydrologic Unit 07030003, at bridge on county road, 1.8 miles northwest of Hinckley.	43.8	1967, 1970, 1974, 1976, 1980	5-19-80	9.68
05336990	South Branch Grindstone River near Hinckley, MN	Lat 46°01'28", long 92°58'16", on line between secs.22 and 23, T.41 N., R.21 W., Pine County, Hydrologic Unit 07030003, at culvert on county road, 1.5 miles northwest of Hinckley.	34.0	1967, 1970, 1974, 1976, 1980	5-19-80	4.03
05337010	Grindstone River near Hinckley, MN	Lat 46°00'40", long 92°52'37", on line between secs.21 and 28, T.41 N., R.20 W., Pine County, Hydrologic Unit 07030003, at bridge on State Highway 48, 1.6 miles upstream from mouth, and 2.8 miles east of Hinckley.	89.4	1967, 1970, 1974, 1976, 1980	5-29-80	14.2
05337100	Snake River at Pliny, MN	Lat 46°20'21", long 93°15'42", on line between secs.32 and 33, T.45 N., R.23 W., Aitkin County, Hydrologic Unit 07030004, at bridge on State Highways 65 and 27, 0.5 mile north of Pliny.	-	1967, 1980	10- 1-79 5-21-80	2.32 2.71
05337150	Snake River near McGrath, MN	Lat 46°13'05", long 93°14'25", in NW¼NW¼ sec.15, T.43 N., R.23 W., Aitkin County, Hydrologic Unit 07030004, at bridge on State Highway 18, 2 miles southeast of McGrath.	-	1967, 1980	10- 1-79 5-21-80	6.09 17.9
05337200	Snake River near Warman, MN	Lat 46°01'29", long 93°13'51", on line between secs.15 and 22, T.41 N., R.23 W., Kanabec County, Hydrologic Unit 07030004, at bridge on County Highway 3, 0.4 mile east bridge over Snowshoe Brook, and 3.2 miles southeast of Warman.	273	1967, 1969-70, 1974, 1976, 1980	5-28-80	22.9

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		St. Croix River basin--Continued				
05337220	Snowshoe Brook near Warman, MN	Lat 46°01'29", long 93°14'20", on line between secs.15 and 22, T.41 N., R.23 W., Kanabec County, Hydrologic Unit 07030004, at bridge on County Highway 3, 0.3 mile upstream from mouth, and 3 miles southeast of Warman.	22.4	1967, 1970, 1974, 1976, 1980	5- 6-80	1.47
05337530	Little Ann River near Mora, MN	Lat 45°56'01", long 93°25'11", on line between secs.23 and 26, T.40 N., R.25 W., Kanabec County, Hydrologic Unit 07030004, at bridge on County Highway 26, 7 miles northwest of Mora.	29.3	1967, 1970, 1974, 1976, 1980	10- 3-79	0.47
05337650	South Fork Groundhouse River near Ogilvie, MN	Lat 45°47'20", long 93°23'48", on line between secs.12 and 13, T.38 N., R.25 W., Kanabec County, Hydrologic Unit 07030004, at bridge on county road, 3 miles southeast of Ogilvie.	48.2	1967, 1969-70, 1974, 1976, 1980	5- 6-80	10.2
05337900	Snake River at Grasston, MN	Lat 45°47'19", long 93°08'48", in SW¼SE¼ sec.12, T.38 N., R.23 W., Kanabec County, Hydrologic Unit 07030004, at bridge on State Highway 70, near south boundary of Grasston.	789	1967, 1969-70, 1974, 1976, 1980	5-28-80	106
05339750	Goose Creek near Harris, MN	Lat 45°36'45", long 92°55'29", in NW¼NE¼ sec.14, T.36 N., R.21 W., Chisago County, Hydrologic Unit 07030005, at bridge on County Highway 57, 3 miles northeast of Harris.	63.9	1967, 1969, 1974-76, 1980	10- 2-79 5- 1-80	5.90 14.2
05339800	Sunrise River near Wyoming, MN	Lat 45°19'59", long 92°57'05", in SW¼NW¼ sec.22, T.33 N., R.21 W., Chisago County, Hydrologic Unit 07030005, at bridge on State Highway 98, 2 miles east of Wyoming.	45.3	1967, 1969-70, 1974-75, 1977, 1980	5- 2-80	18.3
05339950	West Branch Sunrise River at Stacy, MN	Lat 45°23'29", long 92°59'52", in SE¼NE¼ sec.31, T.34 N., R.21 W., Chisago County, Hydrologic Unit 07030005, at bridge on county road, at southwest edge of Stacy, and 2.0 miles upstream from mouth.	53.5	1967, 1969-70, 1974-76, 1980	5- 2-80	30.8
05340060	Sunrise River tributary near Lindstrom, MN	Lat 45°27'19", long 92°53'51", in SE¼SE¼ sec.1, T.34 N., R.21 W., Chisago County, Hydrologic Unit 07030005, at culvert on County Highway 15, 0.7 mile upstream from mouth, and 5.5 miles northwest of Lindstrom.	4.25	1969, 1974, 1976, 1980	5- 2-80	0.21
05340100	North Branch Sunrise River tributary near Weber, MN	Lat 45°30'00", long 93°04'44", in SW¼SW¼ sec.22, T.35 N., R.22 W., Isanti County, Hydrologic Unit 07030005, at culvert on County Highway 5, 0.6 mile upstream from mouth, and 2.8 miles northeast of Weber.	12.4	1969-70, 1974, 1976, 1980	5- 2-80	1.94
05340110	North Branch Sunrise River near Weber, MN	Lat 45°29'59", long 93°03'22", in SE¼SW¼ sec.23, T.35 N., R.22 W., Isanti County, Hydrologic Unit 07030005, at bridge on County Highway 5, 3.8 miles northeast of Weber.	30.7	1969-70, 1974, 1976, 1980	5- 2-80	12.4
05340130	North Branch Sunrise River at North Branch, MN	Lat 45°30'57", long 92°58'47", in SW¼SW¼ sec.16, T.35 N., R.21 W., Chisago County, Hydrologic Unit 07030005, at culvert on County Highway 30, at North Branch.	53.5	1969, 1974, 1976, 1980	5- 2-80	25.7
05340550	Lawrence Creek at Franconia, MN	Lat 45°22'16", long 92°41'37", in SE¼SE¼ sec.3, T.33 N., R.19 W., Chisago County, Hydrologic Unit 07030005, at bridge on county road, 1.0 mile upstream from mouth at Franconia.	16.2	1969-70, 1974-76, 1980	5- 1-80	2.29

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		St. Croix River basin--Continued				
05341540	Browns Creek at Stillwater, MN	Lat 45°04'35", long 92°48'21", in NE¼NE¼ sec.21, T.30 N., R.20 W., Washington County, Hydrologic Unit 07030005, at culvert on State Highway 95, 0.1 mile upstream from mouth at Stillwater.	30.8	1969, 1974-76, 1980	10- 3-79 5- 1-80	7.89 6.86
05341790	St. Croix River tributary at Afton, MN	Lat 44°53'49", long 92°46'59", in NE¼SE¼ sec.22, T.28 N., R.20 W., Washington County, Hydrologic Unit 07030005, at bridge on County Highway 21, 0.2 mile upstream from mouth at Afton.	2.49	1969, 1974-76, 1980	5- 1-80	0.61
05341810	Trout Brook near Afton, MN	Lat 44°51'49", long 92°48'04", in SW¼SW¼ sec.34, T.28 N., R.20 W., Washington County, Hydrologic Unit 07030005, at bridge on County Highway 21, 1.9 miles upstream from mouth, and 2.9 miles southwest of Afton.	5.90	1969, 1974-76, 1980	5-1-80	0.57
		Cannon River basin				
05352810	Turtle Creek near Owatonna, MN	Lat 44°02'00", long 93°14'46", on line between secs.32 and 33, T.107 N., R.20 W., Steele County, Hydrologic Unit 07040002, at bridge on county road, 0.7 mile upstream from mouth, and 3.7 miles south of Owatonna.	41.1	1969-71, 1974, 1977, 1979-80	5- 7-80	7.95
05352900	Maple Creek at Owatonna, MN	Lat 44°05'42", long 93°13'24", in NW¼NW¼ sec.10, T.107 N., R.20 W., Steele County, Hydrologic Unit 07040002, 0.3 mile upstream from mouth, and at Elm Street bridge in Owatonna.	39.0	1969-71, 1974, 1977, 1979-80	5- 7-80	8.79
05354600	Wolf Creek near Dundas, MN	Lat 44°24'38", long 93°14'15", on line between secs.21 and 22, T.111 N., R.20 W., Rice County, Hydrologic Unit 07040002, at bridge on County Highway 8, 0.7 mile upstream from mouth, and 1.5 miles southwest of Dundas.	42.1	1969-72, 1974, 1976-77, 1979-80	5- 5-80	12.9
05355020	Heath Creek near Northfield, MN	Lat 44°26'48", long 93°11'15", in NW¼SE¼ sec.2, T.111 N., R.20 W., Rice County, Hydrologic Unit 07040002, at bridge on County Highway 78, 0.2 mile upstream from mouth, and 1.5 miles southwest of Northfield.	40.7	1965, 1969-72, 1974, 1976-77, 1979-80	5- 5-80	15.4
05355040	Chub Creek at Randolph, MN	Lat 44°31'23", long 93°01'46", in NE¼NW¼ sec.7, T.112, N., R.18 W., Dakota County, Hydrologic Unit 07040002, at bridge on County Highway 94, at west edge of Randolph.	85.1	1969-72, 1974, 1976, 1980	5- 5-80	23.0
05355060	Spring Creek near Cannon Falls, MN	Lat 44°30'21", long 92°59'40", in NE¼SW¼ sec.16, T.112 N., R.18 W., Goodhue County, Hydrologic Unit 07040002, at bridge on county road, 0.5 mile upstream from mouth, and 4.4 miles west of Cannon Falls.	11.3	1969-72, 1974, 1976, 1979-80	5- 1-80	1.29
05355080	Prairie Creek near Cannon Falls, MN	Lat 44°29'10", long 92°59'14", on line between secs.21 and 28, T.112 N., R.18 W., Goodhue County, Hydrologic Unit 07040002, at bridge on State Highway 19, 4.5 miles southwest of Cannon Falls.	79.0	1966-70, 1974, 1976, 1980	5- 1-80	23.9
		Spring Creek basin				
05355260	Spring Creek near Red Wing, MN	Lat 44°33'42", long 92°36'42", on line between secs.27 and 28, T.113 N., R.15 W., Goodhue County, Hydrologic Unit 07040002, at bridge on County Highway 53, 4 miles west of Red Wing.	23.1	1969-71, 1974, 1976, 1977, 1980	5 - 1-80	4.61

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		Hay Creek basin				
05355280	Hay Creek at Red Wing, MN	Lat 44°33'09", long 92°33'46", in SE¼NW¼ sec.36, T.113 N., R.15 W., Goodhue County, Hydrologic Unit 07040001, at bridge on county road in Red Wing, 1.9 miles upstream from mouth.	45.6	1939-41, 1969-71, 1974, 1976-77, 1980	5- 1-80	27.9
		Wells Creek basin				
05355350	Wells Creek near Frontenac, MN	Lat 44°30'32", long 92°19'26", in NE¼NW¼ sec.13, T.112 N., R.13 W., Goodhue County, Hydrologic Unit 07040001, at bridge on county road leading to Old Frontenac, 1.2 miles south of Old Frontenac, and 1.6 miles east of Frontenac.	68.9	1969-71, 1974, 1976-77, 1980	5- 7-80	26.7
		Miller Creek basin				
05355360	Miller Creek near Lake City, MN	Lat 44°25'51", long 92°16'35", in NW¼SE¼ sec.8, T.111 N., R.12 W., Wabasha County, Hydrologic Unit 07040001, at bridge on County Highway 9, 1.3 miles south of Lake City.	14.6	1969-71, 1974, 1976-77, 1980	5- 7-80	3.43
		Zumbro River basin				
*05372800	South Fork Zumbro River on beltline at Rochester, MN	Lat 44°00'26", long 92°28'19", in SE¼SW¼ sec.2, T.106 N., R.14 W., Olmsted County, Hydrologic Unit 07040004, at left bank on downstream side of west bound lane bridge of U.S. Highway 14 at Rochester, and 1.5 miles upstream from Bear Creek.	155	1965, 1968-80	5- 7-80	46.9
05373100	Milliken Creek near Concord, MN	Lat 44°08'04", long 92°46'07", in SW¼NE¼ sec.29, T.108 N., R.16 W., Dodge County, Hydrologic Unit 07040004, at bridge on County Highway 22, 3.5 miles southeast of Concord.	28.6	1970-71, 1974 1976-77, 1979-80	5- 7-80	4.98
05373130	North Branch Middle Fork Zumbro River at Pine Island, MN	Lat 44°12'10", long 92°38'45", in SW¼NW¼ sec.32, T.109 N., R.15 W., Goodhue County, Hydrologic Unit 07040004, at bridge on Main Street in Pine Island, 0.3 mile upstream from Middle Fork Zumbro River.	58.6	1967, 1970-71, 1974-75, 1977, 1980	5- 6-80	9.15
05373200	Dodge Center Creek near Dodge Center, MN	Lat 44°01'48", long 92°53'14", in SW¼NE¼ sec.32, T.107 N., R.17W., Dodge County, Hydrologic Unit 07040004, at bridge on County Road H., 1.5 miles west of Dodge Center.	77.5	1970-71, 1974, 1976-77, 1979-80	5- 7-80	15.1
05373850	North Fork Zumbro River at Mazeppa, MN	Lat 44°16'00", long 92°32'58, in NW¼NW¼ sec.7, T.109 N., R.14 W., Wabasha County, Hydrologic Unit 07040004, at bridge on County Highway 1, at the southwest edge of Mazeppa.	174	1969-71, 1974, 1977, 1980	5- 6-80	82.0
05373950	Trout Brook near Mazeppa, MN	Lat 44°16'34", long 92°31'16", in SW¼NE¼ seo.5, T.109 N., R.14 W., Wabasha County, Hydrologic Unit 07040004, at bridge on State Highway 60, 1.3 miles east of Mazeppa.	53.8	1969-71, 1974, 1977, 1980	5- 6-80	5.52
05373995	Cold Creek at Zumbro Falls, MN	Lat 44°17'18", long 92°26'02", in SE¼NE¼ sec.36, T.110 N., R.14 W., Wabasha County, Hydrologic Unit 07040004, at triple box culvert on State Highway 60, 0.2 mile upstream from mouth, and 0.6 mile northwest of Zumbro Falls.	45.9	1916, 1969-71, 1974, 1977, 1979-80	5- 6-80	11.2

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		Zumbro River basin--Continued				
05374420	Long Creek near Millville, MN	Lat 44°15'50", long 92°14'27", in NE¼NW¼ sec.10, T.109 N., R.12 W., Wabasha County, Hydrologic Unit 07040004, at bridge on new road along right bank of the Zumbro River, 0.2 mile upstream from mouth, and 3.2 miles northeast of Milleville.	33.0	1970-71, 1974, 1977, 1979-80	5- 7-80	13.0
05374480	Spring Creek near West Albany, MN	Lat 44°18'06", long 92°14'36", in NE¼SW¼ sec.27, T.110 N., R.12 W., Wabasha County, Hydrologic Unit 07040004, at bridge on County Highway 11, 0.8 mile upstream from mouth, and 2.2 miles east of West Albany.	63.6	1969-71, 1974, 1977, 1980	5- 6-80	6.54
05374520	West Indian Creek at Theilman, MN	Lat 44°17'21", long 92°10'58", in SE¼NW¼ sec.31, T.110 N., R.11 W., Wabasha County, Hydrologic Unit 07040004, at bridge on County Highway 4, 0.3 mile upstream from mouth, and 0.5 mile east of Theilman.	26.4	1970-71, 1974, 1977, 1980	5- 7-80	10.2
		Gorman Creek basin				
05375000	Gorman Creek near Kellogg, MN	Lat 44°17'34", long 91°59'21", on line between secs.34 and 35, T.110 N., R.10 W., Wabasha County, Hydrologic Unit 07040003, on U.S. Highway 61, 1.1 miles southeast of Kellogg.	16.6	1969-71, 1974, 1977, 1979-80	5- 7-80	1.47
		Whitewater River basin				
05376200	Middle Fork Whitewater River at Elba, MN	Lat 44°04'51", long 92°01'39", in SW¼SE¼ sec.9, T.107 N., R.10 W., Winona County, Hydrologic Unit 07040003, at bridge on State Highway 74, at Elba, and 0.7 mile upstream from North Fork Whitewater River.	53.4	1969-71, 1977, 1980	5- 8-80	25.8
05377000	Beaver Creek at Beaver, MN	Lat 44°09'21", long 92°00'29", in NW¼SE¼ sec.15, T.108 N., R.10 W., Winona County, Hydrologic Unit 07040003, at bridge on State Highway 74 at Beaver.	15.4	1940-41, 1950, 1956, 1979-80	5- 8-80	12.4
		Garvin Brook basin				
05378240	Garvin Brook at Minnesota City, MN	Lat 44°05'07", long 91°45'36", on line between secs.10 and 11, T.107 N., R.8 W., Winona County, Hydrologic Unit 07040003, one lane road, 0.5 mile upstream from mouth, and 0.6 mile southwest of Minnesota City.	47.7	1935-37, 1939, 1969-71, 1977, 1979-80	5- 8-80	25.6
05378400	Rollingstone Creek near Minnesota City, MN	Lat 44°05'52", long 91°46'44", in NW¼SW¼ sec.3, T.107 N., R.8 W., Winona County, Hydrologic Unit 07040003, at bridge on county road, 1.4 miles west of Minnesota City.	49.7	1969-71, 1977, 1979-80	5- 8-80	22.8
		Pleasant Valley Creek basin				
05379090	Pleasant Valley Creek at Winona, MN	Lat 44°01'12", long 91°36'08", on line between sec.36, T.107 N., R.7 W., and Sec.1, T.106 N., R.7 W., Winona County, Hydrologic Unit 07040003, at bridge on County Highway 15, at southeast edge of Winona.	12.0	1967-71, 1974-75, 1976, 1979-80	5- 8-80	6.53
		Pine Creek basin				
05383520	Pine Creek at LaCrescent, MN	Lat 43°49'04", long 91°19'30", in NE¼NW¼ sec.16, T.104 N., R.4 W., Houston County, Hydrologic Unit 07040006, at bridge on County Highway 25, 1 mile southwest of LaCrescent.	55.2	1971, 1977, 1980	5- 7-80	24.0

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		Root River basin				
05383940	Trout Run near Pilot Mound, MN	Lat 43°49'04", long 92°02'59", in NE¼NE¼ sec.17, T.104 N., R.10 W., Fillmore County, Hydrologic Unit 07040008, at bridge on State Highway 30, 1.3 miles west of Pilot Mound.	30.3	1971, 1977, 1980	5- 8-80	30.1
05384450	Pine Creek near Rushford, MN	Lat 43°51'12", long 91°48'16", in NW¼SE¼ sec.32, T.105 N., R.8 W., Winona County, Hydrologic Unit 07040008, at bridge on County Highway 2, 4.5 miles northwest of Rushford.	49.4	1971, 1976-77, 1980	5- 7-80	14.9
05385400	Beaver Creek near Sheldon, MN	Lat 43°42'24", long 91°36'01", in NW¼SE¼ sec.19, T.103 N., R.6 W., Houston County, Hydrologic Unit 07040008, at bridge on County Highway 10, 1.3 miles upstream from mouth, and 2 miles north of Sheldon.	52.6	1971, 1974, 1976-77, 1980	5- 7-80	25.8
05386050	Silver Creek near Houston, MN	Lat 43°47'10", long 91°29'52", in NW¼NE¼ sec.25, T.104 N., R.6 W., Houston County, Hydrologic Unit 07040008, at bridge on County Highway 21, 4 miles northeast of Houston.	17.3	1971, 1974, 1976-77, 1980	5- 7-80	7.14
		Crooked Creek basin				
05387040	Crooked Creek at Reno, MN	Lat 43°35'22", long 91°16'47", in SW¼SE¼ sec.35, T.102 N., R.4 W., Houston County, Hydrologic Unit 07060001, at bridge on State Highway 26, 0.8 mile southwest of Reno.	69.7	1971, 1976-77, 1980	5- 7-80	27.1
		Winnebago Creek basin				
05387200	Winnebago Creek near New Albin, Iowa	Lat 43°31'04", long 91°18'28", in SW¼SW¼ sec.27, T.101 N., R.4 W., Houston County, Hydrologic Unit 07060001, at bridge on County Highway 5, 1.3 miles northwest of New Albin, Iowa.	59.-0	1969-71, 1976-77, 1980	5- 7-80	28.4
		Iowa River basin				
05455930	Roberts Creek near Lansing, MN	Lat 43°45'32", long 92°56'59", on line between secs.1 and 2, T.103 N., R.18 W., Mower County, Hydrologic Unit 07080201, at bridge on county road, 0.4 mile upstream from mouth, and 1.4 miles northeast of Lansing.	39.9	1969, 1971, 1974, 1976, 1980	5- 6-80	5.53
05455960	Wolf Creek at Austin, MN	Lat 43°41'28", long 92°57'36", in SW¼SE¼ sec.26, T.103 N., R.18 W., Mower County, Hydrologic Unit 07080201, at bridge on County Highway 25, in Todd Park at Austin, and 0.3 mile upstream from mouth.	10.6	1969, 1971, 1974, 1976, 1980	5- 6-80	2.85
05457160	Rose Creek near Austin, MN	Lat 43°36'48", long 92°58'10", on line between secs.26 and 27, T.102 N., R.18 W., Mower County, Hydrologic Unit 07080201, at bridge on County Highway 29, 0.3 mile upstream from mouth, and 3.8 miles south of Austin.	65.8	1969, 1971, 1974, 1976, 1980	5- 6-80	14.6
05458970	Shell Rock River at Gordonsville, MN	Lat 43°30'51", long 93°16'06", on line between secs.29 and 32, T.101 N., R.20 W., Freeborn County, Hydrologic Unit 07080202, at bridge on County Highway 1, 0.8 mile west of Gordonsville.	191	1971, 1974, 1976, 1980	5- 7-80	67.0

"See footnotes at end of table."

Discharge measurements made at low-flow partial-record stations during water year 1980--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		Iowa River basin--Continued				
05458975	Goose Creek near Gordonsville, MN	Lat 43°30'13", long 93°16'24", in NE¼SE¼ sec.31, T.101 N., R.20 W., Freeborn County, Hydrologic Unit 07080202, at bridge on County Highway 1, 0.2 mile upstream from mouth, and 1.1 miles southwest of Gordonsville.	53.8	1971, 1974, 1976, 1980	5- 7-80	17.4
05459040	Lime Creek near Emmons, MN	Lat 43°30'00", long 93°33'29", in SW¼SE¼ sec.35, T.101 N., R.23 W., Freeborn County, Hydrologic Unit 07080203, at bridge on County Highway 60, 3.5 miles west of Emmons.	58.4	1971, 1974, 1976, 1980	5- 8-80	14.9

* Also a crest-stage partial-record station.
\# Operated as continuous-record gaging station.
a Approximately.
b Also published under measurements made at miscellaneous sites.
c Also published under low-flow investigations in the Pomme de Terre and Chippewa River basins.

High-flow partial-record stations

The following table contains annual maximum discharge for high-flow stations. A high-flow partial-record station is equipped with a crest-stage gage, 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, and discharge measurements may have been made for purposes of establishing the stage-discharge relation, but these are not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at high-flow partial-record stations during water year 1980

Station No.	Station name	Location	Drainage area (mi^2)	Period of Record	Annual maximum Date	Gage height (feet)	Discharge (ft^3/s)
		Mississippi River main stem					
05200200	Hennepin Creek near Becida, MN	Lat 47°23'52", long 95°05'12", in NW¼NE¼ sec.11, T.145 N., R.35 W., Hubbard County, Hydrologic Unit 07010101, gages up stream and downstream from culvert on Stumphges Rapids Trail approximately 1/2 mile west of Hubbard County Road 3, 3 miles north of Becida, and 1.5 miles upstream from mouth.	41.4	1979-80	11- 1-79	11.83	(†)
*05200445	Mississippi River at Bemidji, MN	Lat 47°27'04", long 94°54'23", in NW¼NW¼ sec.20, T.146 N., R.33 W., Beltrami County, Hydrologic Unit 07010101, at bridge on County Highway 11, 1.5 miles southwest of intersection of U.S. Highway 2 and County Highway 7 in Bemidji.	a400	1973-80	4-20-80	11.82	620
		Smith Creek basin					
05210200	Smith Creek near Hill City, MN	Lat 47°04'58", long 93°34'59", in SE¼NW¼ sec.13, T.53 N., R.26 W., Itasca County, Hydrologic Unit 07010101, at culvert on U.S. Highway 169, 6.2 miles north of Hill City.	8.00	1961-80	8-20-80	3.98	20
		Swan River basin					
05216980	Swan River tributary at Warba, MN	Lat 47°07'11", long 93°15'00", in SE¼NW¼ sec.34, T.54 N., R.23 W., Itasca County, Hydrologic Unit 07010103, at culvert on U.S. Highway 2, 0.9 mile upstream from mouth, and 1.1 miles southeast of Warba.	3.95	1961-80	4-12-80	e5.64	28
		Bluff Creek basin					
05217700	Bluff Creek near Jacobson, MN	Lat 47°00'19", long 93°17'30", in SW¼NW¼ sec.8, T.52 N., R.23 W., Aitkin County, Hydrologic Unit 07010103, at culvert on State Highway 200, 1.2 miles west of Jacobson.	1.50	1961-80	4- 7-80	6.38	12
		Willow River basin					
*05221020	Willow River below Palisade, MN	Lat 46°42'36", long 93°33'21", in NW¼NE¼ sec.30, T.49 N., R.25 W., Aitkin County, Hydrologic Unit 07010103, at bridge on County Highway 3, 3.2 miles west of Palisade.	a445	1972-80	4-12-80	e13.08	1,060
		Crow Wing River basin					
05244200	Cat River near Nimrod, MN	Lat 46°37'49", long 94°55'51", in SW¼ SW¼ sec.36, T.137 N., R.34 W., Wadena County, Hydrologic Unit 07010106, at bridge on State Highway 227, 2.5 miles west of Nimrod, and 3.0 miles upstream from mouth.	49.2	1961-80	4- 9-80	5.59	d125
*5244440	Leaf River near Aldrich, MN	Lat 46°27'25", long 94°50'29", in SW¼SW¼ sec.34, T.135 N., R.33 W., Wadena County, Hydrologic Unit 07010107, at bridge on County Highway 29, 3.3 miles upstream from mouth, and 7.0 miles northeast of Aldrich.	860	1972-80	4-09-80	13.85	2,060

"See footnotes at end of the table."

Annual maximum discharge at high-flow partial-record stations during water year 1980

Station No.	Station name	Location	Drainage area (mi^2)	Period of Record	Annual maximum Date	Gage height (feet)	Discharge (ft^3/s)
		Crow Wing River basin--Continued					
05245800	Sevenmile Creek near Pillager, MN	Lat 46°20'32", long 94°32'56", in SW¼SE¼ sec.11, T.133 N., R.31 W., Cass County, Hydrologic Unit 07010106, at downstream wingwall of bridge on township road, 3.5 miles northwest of Pillager, 3.2 miles upstream from mouth.	18.3	1979-80	3-29-80	e12.02	(†)
		Mississippi River main stem					
05261000	Mississippi River near Fort Ripley, MN	Lat 46°10'50", long 94°21'56", in SE¼NW¼ sec.27, T.43 N., R.32 W., Crow Wing County, Hydrologic Unit 07010104, on left bank 600 ft upstream from Nokasippi River, and 1.0 mile north of Fort Ripley.	11,010	1929#, 1972-80	4- 7-80	1143.33	14,700
		Platte River basin					
05267800	Big Mink Creek tributary near Lastrup, MN	Lat 46°01'58", long 94°06'13", in NW¼SE¼ sec.14, T.41 N., R.30 W., Morrison County, Hydrologic Unit 07010201, at culvert on State Highway 25, 1.4 miles upstream from mouth, and 2.1 miles west of Lastrup.	1.53	1961-80	4- 4-80	9.20	(†)
05267900	Hillman Creek near Pierz, MN	Lat 45°58'27", long 94°04'21", in NE¼SE¼ sec.9, T.40 N., R.30 W., Morrison County, Hydrologic Unit 07010201, at bridge on county highway, 1.1 miles upstream from mouth, and 1.5 miles east of Pierz.	46.7	1964-80	3-20-80	13.36	(†)
05268000	Platte River above Royalton, MN	Lat 45°50'43", long 94°17'40", in SE¼NW¼ sec.26, T.39 N., R.32 W., Morrison County, Hydrologic Unit 07010201, at bridge on County Highway 27, 0.6 mile north of Royalton, and 6.6 miles upstream from mouth.	335	1929-36#, 1972-80	3-29-80	e3.03	800
		Sauk River basin					
05270300	Sauk River tributary at Spring Hill, MN	Lat 45°31'22", long 94°48'31", in SW¼NE¼ sec.27, T.124 N., R.33 W., Stearns County, Hydrologic Unit 07010202, at culvert on State Highway 4, 1.0 mile east of Spring Hill, and 2.7 miles upstream from mouth.	7.06	1960-80	6- 5-80	9.95	93
05270310	Sauk River tributary No. 2 near St. Martin, MN	Lat 45°31'44", long 94°44'50", in SE¼SE¼ sec.19, T.124 N., R.32 W., Stearns County, Hydrologic Unit 07010202, at culvert on county highway, 4.2 miles northwest of St. Martin.	.26	1960, 1962-80	6- 5-80	8.09	24
		Johnson Creek basin					
05271800	Johnson Creek tributary at Luxemburg, MN	Lat 45°26'30", long 94°14'46", in NW¼NE¼ sec.30, T.123 N., R.28 W., Stearns County, Hydrologic Unit 07010203, at culverts on State Highway 15, 0.8 mile south of Luxemburg.	3.82	1964-80	6- 6-80	7.55	40
05272000	Johnson Creek tributary No. 2 near St. Augusta, MN	Lat 45°26'52", long 94°12'00", in NE¼SE¼ sec.21, T.123 N., R.28 W., Stearns County, Hydrologic Unit 07010203, at culverts on county highway, 0.7 mile upstream from mouth, and 3.1 miles southwest of St. Augusta.	13.4	1964-80	9-12-80	8.61	(†)
05272300	Johnson Creek near St. Augusta, MN	Lat 45°27'49", long 94°09'19", in NW¼SW¼ sec.13, T.123 N., R.28 W., Stearns County, Hydrologic Unit 07010203, at bridge on County Highway 7, 1.0 mile south of St. Augusta, and 3.3 miles upstream from mouth.	46.7	1964-80	9-12-80	13.48	470

"See footnotes at end of the table."

Annual maximum discharge at high-flow partial-record stations during water year 1980

Station No.	Station name	Location	Drainage area (mi^2)	Period of Record	Annual maximum Date	Gage height (feet)	Discharge (ft^3/s)
		Mississippi River main stem					
05273510	Mississippi River at Clearwater, MN	Lat 45°25'15", long 94°02'37", in NW¼SW¼ sec.23, T.34 N., R.30 W., Sherburne County, Hydrologic Unit 07010203, on left bank 700 ft upstream from bridge, on State Highway 24 at Clearwater.	-	1972-80	4-10-80	f	h15,800
		Otsego Creek basin					
05273700	Otsego Creek near Otsego, MN	Lat 45°17'19", long 93°38'59", in SW¼NE¼ sec.13, T.131 N., R.24 W., Wright County, Hydrologic Unit 07010203, at culvert on County Highway 39, 1.3 miles upstream from mouth, and 1.9 miles west of Otsego.	3.11	1964-80	3-20-80	e7.40	145
		Elk River basin					
05274200	Stony Brook tributary near Foley, MN	Lat 45°38'42", long 93°54'54", in NE¼NW¼ sec.2, T.36 N., R.29 W., Benton County, Hydrologic Unit 07010203, at culvert on State Highway 25, 0.3 mile upstream from mouth, and 1.5 miles south of Foley.	2.26	1960-80	4- 4-80	e8.01	22
		Crow River basin					
05276100	North Fork Crow River tributary near Paynesville, MN	Lat 45°23'29", long 94°46'56", in SW¼NW¼ sec.12, T.122 N., R.33 W., Kandiyohi County, Hydrologic Unit logic Unit 07010204, at culvert on county highway, 1.2 miles upstream from mouth, and 3.0 miles west of Paynesville.	.55	1960-80	6- 5-80	16.94	14
05276200	North Fork Crow River at Paynesville, MN	Lat 45°23'09", long 94°42'41", in SW¼SE¼ sec.9, T.122 N., R.32 W., Stearns County, Hydrologic Unit 07010204, at bridge on county road at northeast edge of Paynesville city limits.	236	1973-80	3-31-80	3.02	345
05278350	Fountain Creek near Montrose, MN	Lat 45°01'20", long 93°56'29", in NE¼NW¼ sec.22, T.118 N., R.26 W., Wright County, Hydrologic Unit 07010204, at culvert on County Highway 30, 3.3 miles southwest of Montrose.	6.73	1962-80	6- 5-80	5.38	32
05278700	Otter Creek near Lester Prairie, MN	Lat 44°54'23", long 94°04'24", in SE¼SE¼ sec.28, T.117 N., R.27 W., McLeod County, Hydrologic Unit 07010205, at culvert on State Highway 7, 2.1 miles northwest of Lester Prairie, and 4.4 miles upstream from mouth.	30.2	1961-80	3-19-80	e6.89	51
05278750	Otter Creek tributary near Lester Prairie, MN	Lat 44°53'34", long 94°04'24", in SE¼SE¼ sec.33, T.117 N., R.27 W., McLeod County, Hydrologic Unit 07010205, at culvert on County Highway 63, 1.7 miles northwest of Lester Prairie, and 3.3 miles upstream from mouth.	1.54	1962-80	6-05-80	8.97	42
05278850	Buffalo Creek tributary near Brownton, MN	Lat 44°45'55", long 94°22'33", in NE¼SE¼ sec.13, T.115 N., R.30 W., McLeod County, Hydrologic Unit 07010205, at culvert on State Highway 15, 0.6 mile upstream from mouth, and 2.6 miles northwest of Brownton.	9.45	1961-80	3-19-80	e13.70	17
05279000	South Fork Crow River near Mayer, MN	Lat 44°54'20", long 93°53'05", in SW¼SW¼ sec.30, T.117 N., R. 25 W., Carver County, Hydrologic Unit 07010205, near center of span on downstream side of bridge on State Highway 7, 1.3 miles north of Mayer, 4.3 miles southwest of Watertown, and 16 miles upstream from confluenoe with North Fork.	1170	1934-79#, 1980	3-29-80	7.05	1220

"See footnotes at end of the table."

Annual maximum discharge at high-flow partial-record stations during water year 1980

Station No.	Station name	Location	Drainage area (mi^2)	Period of Record	Annual maximum Date	Gage height (feet)	Discharge (ft^3/s)
		Crow River basin--Continued					
05280300	School Lake Creek tributary near St. Michael, MN	Lat 45°12'09", long 93°41'31", in NW¼SE¼ sec.15, T.120 N., R.24 W., Wright County, Hydrologic Unit 07010204, at culvert on county highway, 0.2 mile upstream from mouth, and 1.5 miles southwest of St. Michael.	2.04	1964-80	3-20-80	7.76	20
		Rum River basin					
05284600	Robinson Brook near Onamia, MN	Lat 45°58'22", long 93°39'42", in NE¼SE¼ sec.11, T.40 N., R.27 W., Mille Lacs County, Hydrologic Unit 07010207, at culvert on U.S. Highway 169, 0.2 mile upstream from mouth, and 6.8 miles south of Onamia.	4.79	1960-80	---	f	h22
05284620	Rum River tributary near Onamia, MN	Lat 45°57'29", long 93°39'43", in NE¼SE¼ sec.14, T.40 N., R.27 W., Mille Lacs County, Hydrologic Unit 07010207, at culvert on U.S. Highway 169, 0.3 mile upstream from mouth, and 7.8 miles south of Onamia.	2.37	1960-80	9- 4-80	7.12	23
05284920	Stanchfield Creek tributary near Day, MN	Lat 45°41'29", long 93°23'45", in NW¼SE¼ sec.13, T.37 N., R.25 W., Isanti County, Hydrologic Unit 07010207, at culvert on County Highway 60, 0.5 mile upstream from mouth, and 1.5 miles southwest of Day.	1.26	1961-80	4- 1-80	4.93	5.0
		Minnesota River basin					
05299100	Lazarus Creek tributary near Canby, MN	Lat 44°43'04", long 96°19'42", in NE¼NW¼ sec.6, T.114 N., R.45 W., Yellow Medicine County, Hydrologic Unit 07020003, at culvert on State Highway 68, 2.7 miles west of Canby, and 4.2 miles upstream from mouth.	2.97	1960-80	6- 5-80	11.94	220
05302500	Little Chippewa River near Starbuck, MN	Lat 45°36'52", long 95°37'12", in NW¼NE¼ sec.30, T.125 N., R.39 W., Pope County,Hydrologic Unit 07020005, at downstream wingwall on triple box culvert on State Highway 28, 4.4 miles west of Starbuck.	69.6	1979-80	4- 1-80	12.09	(†)
05302970	Outlet Creek tributary near Starbuck, MN	Lat 45°31'35", long 95°33'43", in NW¼NW¼ sec.27, T.124 N., R.39 W., Pope County, Hydrologic Unit 07020005, at culvert on State Highway 29, 0.2 mile upstream from mouth, and 6.6 miles south of Starbuck.	.47	1962-80	6-23-80	7.74	13
05303450	Hassel Creek near Clontarf, MN	Lat 45°24'03", long 95°34'13", in SW¼SE¼ sec.4, T.122 N., R.39 W., Swift County, Hydrologic Unit 07020005, at culvert on State Highway 29, 0.2 mile upstream from Lake Hassel, and 5.6 miles east of Clontarf.	7.53	1962-80	6- 7-80	d9.69	44
05305200	Spring Creek near Montevideo, MN	Lat 44°58'41", long 95°42'57", in NW¼NW¼ sec.5, T.117 N., R.40 W., Chippewa County, Hydrologic Unit 07020005, at culvert on State Highway 29, 1.2 miles upstream from mouth, and 2.0 miles north of Montevideo.	16.0	1959-80	3-18-80	13.11	36
05311200	North Branch Yellow Medicine River near Ivanhoe, MN	Lat 44°27'32", long 96°21'27", in NE¼NW¼ sec.2, T.111 N., R.46 W., Lincoln County, Hydrologic Unit 07020004, at culvert on State Highway 19, 5.3 miles west of Ivanhoe.	14.8	1960-80	6- 5-80	d15.13	150
05311250	North Branch Yellow Medicine River tributary near Wilno, MN	Lat 44°33'12", long 96°16'33", in SE¼NE¼ sec.33, T.113 N., R.45 W., Lincoln County, Hydrologic Unit 07020004, at culvert on U.S. Highway 75, 2.1 miles upstream from mouth, and 4.3 miles northwest of Wilno.	.33	1960-80	6- 5-80	8.83	21

"See footnotes at end of the table."

Annual maximum discharge at high-flow partial-record stations during water year 1980

Station No.	Station name	Location	Drainage area (mi^2)	Period of Record	Annual maximum Date	Gage height (feet)	Discharge (ft^3/s)
		Minnesota River basin--Continued					
05314900	Redwood River at Ruthton, MN	Lat 44°10'53", long 96°06'07", in NW¼NW¼ sec.11, T.108 N., R.44 W., Pipestone County, Hydrologic Unit 07020006, at culvert on State Highway 23, 0.3 mile north of Ruthton.	6.18	1959-80	6- 5-80	d14.60	56
05315200	Prairie Ravine near Marshall, MN	Lat 44°29'44", long 95°47'48", in SE¼NE¼ sec.20, T.112 N., R.41 W., Lyon County, Hydrologic Unit 07020006, at culvert on U.S. Highway 59, 2.7 miles north of Marshall.	5.63	1959-64#, 1965-80	11- 1-79	6.33	40
05316550	West Fork Beaver Creek near Olivia, MN	Lat 44°50'56", long 95°01'53", in SE¼SW¼ sec.14, T.116 N., R.35 W., Renville County, Hydrologic Unit 07020004, at culvert on field road, 0.25 mile upstream from U.S. Highway 71, and 5.5 miles northwest of Olivia.	12.2	1959-80	5-30-80	d5.59	56
05316570	Beaver Creek at Beaver Falls, MN	Lat 44°35'03", long 95°02'49", in NE¼NW¼ sec.22, T.113 N., R.35 W., Renville County, Hydrologic Unit 07020004, at bridge on County Highway 2 in Beaver Falls, 2.2 miles upstream from mouth, and 3.8 miles northwest of Morton.	194	1972-80	5-29-80	10.45	940
05316690	Spring Creek tributary near Sleepy Eye, MN	Lat 44°23'54", long 94°45'35", in NW¼ sec.25, T.111 N., R.33 W., Brown County, Hydrologic Unit 07020007, at culvert on county highway, 0.1 mile upstream from mouth, and 7.5 miles north of Sleepy Eye.	3.69	1966-80	5-29-80	5.38	59
05316700	Spring Creek near Sleepy Eye, MN	Lat°44 24'12", long 94°44'41", in NE¼SE¼ sec.24, T.111 N., R.33 W., Brown County, Hydrologic Unit 07020007, at culvert on county highway, 4.3 miles upstream from mouth, and 7.5 miles north of Sleepy Eye.	31.3	1959-80	5-29-80	12.97	345
05316800	Cottonwood River tributary near Balaton, MN	Lat 44°14'24", long 95°57'22", in NW¼NW¼ sec.19, T.109 N., R.42 W., Lyon County, Hydrologic Unit 07020008, at culvert on U.S. Highway 14, 4.0 miles west of Balaton.	.91	1959-80	5-27-80	7.92	133
05316900	Dry Creek near Jeffers, MN	Lat 44°07'21", long 95°12'13", in NE¼NE¼ sec.31, T.108 N., R.36 W., Cottonwood County, Hydrologic Unit 07020008, at culvert on County Highway 10, 4.5 miles north of Jeffers.	3.13	1961-80	3-15-80	e6.58	88
05316920	Cottonwood River tributary No. 2 near Sanborn, MN	Lat 44°10'34", long 95°07'15", in SW¼NW¼ sec.12, T.108 N., R.36 W., Cottonwood County, Hydrologic Unit 07020008, at culvert on U.S. Highway 71, 2.4 miles south of Sanborn.	.42	1966-80	5-30-80	4.10	14
05316950	Cottonwood River near Springfield, MN	Lat 44°12'12", long 95°02'53", on line between secs.33 and 34, T.109 N., R.35 W., Brown County, Hydrologic Unit 07020008, at bridge on County Highway 2, 1.3 miles downstream from Mound Creek, 1.0 mile upstream from Coal Mine Creek, and 3.5 miles southwest of Springfield.	-	1973-80	11- 1-79	20.76	3160
05317845	East Branch Blue Earth River near Walters, MN	Lat 43°37'58", long 93°42'28", in SE¼SE¼ sec.16, T.102 N., R.24 W., Faribault County, Hydrologic Unit 07020009, at left downstream wingwall of box culvert on State Highway 22, 2.5 miles northwest of Walters.	29.6	1979-80	5-30-80	17.82	(†)
05317850	Foster Creek near Alden, MN	Lat 43°39'31", long 93°35'30", in NE¼NE¼ sec.9, T.102 N., R.23 W., Freeborn County, Hydrologic Unit 07020009, at culvert on U.S. Highway 16, 1.2 miles southwest of Alden.	2.26	1959-80	5-30-80	d7.66	75

"See footnotes at end of the table."

Annual maximum discharge at high-flow partial-record stations during water year 1980

Station No.	Station name	Location	Drainage area (mi^2)	Period of Record	Annual maximum Date	Gage height (feet)	Discharge (ft^3/s)
		Minnesota River basin--Continued					
05318000	East Branch Blue Earth River near Bricelyn, MN	Lat 43°37'50", long 93°47'25", in NE¼NE¼ sec.23, T.102 N., R.25 W., Faribault County, Hydrologic Unit 07020009, at bridge on county highway, 2.0 miles upstream from Brush Creek, 3.0 miles downstream from South Walnut Lake, and 5.0 miles northeast of Bricelyn.	132	1973-80	5-30-80	d9.21	500
05318100	East Branch Blue Earth River tributary near Blue Earth, MN	Lat 43°37'09", long 94°01'03", in SW¼SE¼ sec.24, T.102 N., R.27 W., Faribault County, Hydrologic Unit 07020009, at culvert on County Highway 13, 0.5 mile upstream from mouth, and 4.3 miles east of Blue Earth.	9.20	1960-80	5-30-80	7.32	205
05318300	Watonwan River near Delft, MN	Lat 43°59'55", long 95°07'11", in NE¼SE¼ sec.11, T.106 N., R.36 W., Cottonwood County, Hydrologic Unit 07020010, at culvert on U.S. Highway 71, 1.7 miles northwest of Delft.	13.0	1960-80	5-30-80	d17.82	900
05318897	South Fork Watonwan River near Ormsby, MN	Lat 43°53'08", long 94°41'27", in SE¼NW¼ sec.21, T.105 N., R.32 W., Watonwan County, Hydrologic Unit 07020010, at right downstream wingwall of bridge on township road, 2.6 miles north of Ormsby, 5.0 miles upstream from mouth at Willow Creek.	109	1979-80	3-31-79 5-31-80	e16.58 18.40	b836 1410
05320200	Le Sueur River tributary near Mankato, MN	Lat 44°07'29", long 93°57'33", in SE¼SW¼ sec.28, T.108 N., R.26 W., Blue Earth County, Hydrologic Unit 07020011, at culvert on State Highway 22, 0.2 mile up stream from mouth, and 1.5 miles southeast of Mankato Airport.	.073	1959-80	9-21-80	19.56	9.6
05320300	Cobb River tributary near Mapleton, MN	Lat 44°01'05", long 93°57'30", in SW¼NE¼ sec.4, T.106 N., R.26 W., Blue Earth County, Hydrologic Unit 07020011, at culvert on State Highway 22, 1.0 mile upstream from mouth, and 6.3 miles north of Mapleton.	7.25	1959-80	4- 5-80	14.86	86
05320400	Maple River tributary near Mapleton, MN	Lat 43°55'18", long 94°01'17", in SE¼SW¼ sec.1, T.105 N., R.27 W., Blue Earth County, Hydrologic Unit 07020011, at culvert on State Highway 30, 0.9 mile upstream from mouth, and 3.3 miles west of Mapleton.	6.22	1959-80	5-29-80	d16.96	73
05320480	Maple River near Rapidan, MN	Lat 44°03'54", long 94°01'32", in SW¼ sec.13, T.107 N., R.27 W., Blue Earth County, Hydrologic Unit 07020011, at bridge on County Highway 35, 3.0 miles southeast of Rapidan, and 3.3 miles upstream from mouth.	c343	1972-80	5-30-80	g10.76	(†)
05326100	Middle Branch Rush River near Gaylord, MN	Lat 44°30'27", long 94°15'00", in SW¼NW¼ sec.18, T.112 N., on line between R.28 W. and R.29 W., Sibley County, Hydrologic Unit 07020012, at downstream side of bridge on township road, 3.0 miles southwest of Gaylord, 10.5 miles upstream from the main branch of Rush River.	68.5	1979-80	6- 7-80	12.28	128
05330150	Sand Creek tributary near Montgomery, MN	Lat 44°25'41", long 93°30'31", in NE¼NE¼ sec.18, T.111 N., R.22 W., Rice County, Hydrologic Unit 07020012, at culvert on State Highway 21, 3.5 miles east of Montgomery.	.36	1961-80	10-31-79	8.06	13
05330200	Rice Lake tributary near Montgomery, MN	Lat 44°25'42", long 93°32'10", in NE¼NW¼ sec.13, T.111 N., R.23 W., Le Sueur County, Hydrologic Unit 07020012, at culvert on State Highway 21, 1.8 miles upstream from Rice Lake, and 2.5 miles east of Montgomery.	3.16	1960-80	3-18-80	e7.43	35

"See footnotes at end of the table."

Annual maximum discharge at high-flow partial-record stations during water year 1980

Station No.	Station name	Location	Drainage area (mi^2)	Period of Record	Annual maximum Date	Gage height (feet)	Discharge (ft^3/s)
		Minnesota River basin--Continued					
05330300	Sand Creek near New Prague, MN	Lat 44°32'37", long 93°32'16", in NE¼NW¼ sec.1, T.112 N., R.23 W., Le Sueur County, Hydrologic Unit 07020012, at culvert on State Highway 13 and 19, 1.9 miles east of New Prague.	62.4	1960-80	3-18-80	e10.60	143
05330550	Raven Stream tributary near New Prague, MN	Lat 44°34'21", long 93°35'58", in NW¼ sec.28, T.113 N., R.23 W., Scott County, Hydrologic Unit 07020012, at culvert on county road, 1.6 miles upstream from mouth, and 2.3 miles northwest of New Prague.	22.1	1960-80	3-16-80	11.42	140
05330600	Sand Creek tributary No. 2 near Jordan, MN	Lat 44°37'45", long 93°36'33", in NW¼NE¼ sec.5, T.113 N., R.23 W., Scott County, Hydrologic Unit 07020012, at culvert on State Highway 21, 0.8 mile upstream from mouth, and 2.8 miles south of Jordan.	2.62	1960-80	3-16-80	e12.92	33
		St. Croix River basin					
05336200	Glaisby Brook near Kettle River, MN	Lat 46°27'19", long 92°51'34", in SE¼NW¼ sec.22, T.46 N., R.20 W., Carlton County, Hydrologic Unit 07030003, at bridge on State Highways 27 and 73, 1.0 mile upstream from mouth, and 2.4 miles south of Kettle River.	24.2	1960-70#, 1971-80	9- 5-80	5.35	350
05336300	Moose River tributary at Moose Lake, MN	Lat 46°27'17", long 92°47'14", in SE¼NE¼ sec.19, T.46 N., R.19 W., Carlton County, Hydrologic Unit 07030003, at culvert on State Highway 27, 0.9 mile upstream from mouth, and 1.2 miles west of Moose Lake.	1.23	1960-80	3-30-80	e8.88	15
05336550	Wolf Creek tributary near Sandstone, MN	Lat 46°09'45", long 92°51'58", in NE¼SE¼ sec.33, T.43 N., R.20 W., Pine County, Hydrologic Unit 07030003, at culvert on U.S. Highway 61, 0.2 mile upstream from mouth, and 2.2 miles north of Sandstone.	5.46	1960-80	4- 1-80	d15.77	15
05336600	Kettle River tributary at Sandstone, MN	Lat 46°08'46", long 92°51'57", in SE¼SE¼ sec.4, T.42 N., R.20 W., Pine County, Hydrologic Unit 07030003, at culvert on U.S. Highway 61 at Sandstone, and 0.2 mile upstream from mouth.	.65	1960-80	9- 5-80	(f)	h6
05338200	Mission Creek near Hinckley, MN	Lat 45°59'52", long 92°56'44", in SW¼SW¼ sec.25, T.41 N., R.21 W., Pine County, Hydrologic Unit 07030004, at culvert on U.S. Highway 23, 1.2 miles south of Hinckley.	3.84	1960-80	9- 5-80	13.47	42
		Cannon River basin					
05352700	Turtle Creek tributary No. 2 near Pratt, MN	Lat 44°00'02", long 93°08'30", in NW¼SW¼ sec.8, T.106 N., R.19 W., Steele County, Hydrologic Unit 07040002, at culvert on U.S. Highway 218, 1.0 mile upstream from mouth, and 1.7 miles southeast of Pratt.	1.26	1960-80	11- 5-79	15.25	(†)
05352800	Turtle Creek tributary near Steele Center, MN	Lat 44°00'26", long 93°12'20", in NW¼NW¼ sec.11, T.106 N., R.20 W., Steele County, Hydrologic Unit 07040002, at culvert on township road, 1.3 miles upstream from mouth, and 1.6 miles northeast of Steele Center.	5.01	1960-80	9-21-80	4.63	17
05355024	Cannon River at Northfield, MN	Lat 44°27'19", long 93°09'46", in NE¼NE¼ sec.1, T.111 N., R.20 W., Rice County, Hydrologic Unit 07040002, on left bank at downstream side of Fifth Street bridge in Northfield.	934	1980	3-19-80	904.28	(†)

"See footnotes at end of the table."

Annual maximum discharge at high-flow partial-record stations during water year 1980

Station No.	Station name	Location	Drainage area (mi^2)	Period of Record	Annual maximum Date	Gage height (feet)	Discharge (ft^3/s)
		Cannon River basin--Continued					
05355100	Little Cannon River tributary near Kenyon, MN	Lat 44°20'45", long 92°58'47", in NE¼SE¼ sec.9, T.110 N., R.18 W., Goodhue County, Hydrologic Unit 07040002, at culvert on State Highway 56, 0.3 mile upstream from mouth, and 5.3 miles north of Kenyon.	2.20	1960-80	3-19-80	e13.25	89
05355150	Pine Creek near Cannon Falls, MN	Lat 44°32'27", long 92°53'40", in NE¼NE¼ sec.6, T.112 N., R.17 W., Goodhue County, Hydrologic Unit 07040002, at culvert on State Highway 20, 2.0 miles upstream from mouth, and 2.1 miles north of Cannon Falls.	20.2	1960-80	3-18-80	3.95	275
05355200	Cannon River at Welch, MN	Lat 44°33'50", long 92°43'55", in NW¼SW¼ sec.27, T.113 N., R.16 W., Goodhue County, Hydrologic Unit 07040002, on right bank 0.3 mile downstream from highway bridge at Welch, and 1.8 miles upstream from Belle Creek.	1,320	1909-14#, 1930-71#, 1973-80	3-20-80	10.37	9350
05355230	Cannon River tributary near Welch, MN	Lat 44°36'04", long 92°42'34", in SW¼SW¼ sec.11, T.113 N., R.16 W., Goodhue County, Hydrologic Unit 07040002, at culvert on U.S. Highway 61, 1.2 miles upstream from mouth, and 2.7 miles northeast of Welch.	.05	1960-80	5-30-80	10.24	51
		Zumbro River basin					
*05372800	South Fork Zumbro River on Belt Line at Rochester, MN	Lat 44°00'26", long 92°28'19", in SE¼SW¼ sec.2, T.106 N., R.14 W., Olmsted County, Hydrologic Unit 07040004, at bridge on west-bound lane of U.S. Highway 14 at Rochester, and 1.5 miles upstream from Bear Creek.	155	1969-80	3-15-80	e998.74	1100
05372930	Bear Creek on Belt Line at Rochester, MN	Lat 44°00'29", long 92°26'44", in SW¼SE¼ sec.1, T.106 N., R.14 W., Olmsted County, Hydrologic Unit 07040004, at bridge on west-bound lane of U.S. Highway 14 at Rochester, and 1.2 miles up stream from mouth.	80.0	1969-80	3-15-80	d999.11	1075
05372950	Silver Creek at Rochester, MN	Lat 44°01'44", long 92°25'44", near center of sec.31, T.107 N., R.13 W., Olmsted County, Hydrologic Unit 07040004, at bridge on county highway at east edge of Rochester, and 1.7 miles upstream from mouth.	17.3	1969-80	5-30-80	10.51	400
05372990	Cascade Creek at Rochester, MN	Lat 44°01'51", long 92°28'18", in SE¼NW¼ sec.35, T.107 N., R.14 W., Olmsted County, Hydrologic Unit 07040004, at bridge on 7th Street NW at Rochester, and 0.6 mile upstream from mouth.	37.0	1969-80	3-15-80	979.03	(†)
05373080	Milliken Creek near Concord, MN	Lat 44°07'13", long 92°49'08", in NW¼NW¼ sec.36, T.108 N., R.17 W., Dodge County, Hydrologic Unit 07040004, at bridge on County Road 9, 8.0 miles upstream from mouth, 2.1 miles southeast of Concord.	22.2	1979-80	3-19-80	e13.90	(†)
05373350	Zumbro River tributary near South Troy, MN	Lat 44°11'16", long 92°25'22", in SE¼NE¼ sec.6, T.108 N., R.13 W., Olmsted County, Hydrologic Unit 07040004, at culvert on county road, 0.8 mile upstream from mouth, and 1.3 miles south of South Troy.	.16	1962-80	5-30-80	11.47	102
05373700	Spring Creek near Wanamingo, MN	Lat 44°17'13", long 92°52'17", in SE¼SE¼ sec.32, T.110 N., R.17 W., Goodhue County, Hydrologic Unit 07040004, at culvert on County Highway 1, 3.5 miles upstream from mouth, and 4.2 miles southwest of Wanamingo.	9.93	1960-80	3-19-80	e11.17	106

"See footnotes at end of the table."

Annual maximum discharge at high-flow partial-record stations during water year 1980

Station No.	Station name	Location	Drainage area (mi^2)	Period of Record	Annual maximum Date	Gage height (feet)	Discharge (ft^3/s)
		Zumbro River basin--Continued					
05373900	Trout Brook tributary near Goodhue, MN	Lat 44°21'30", long 92°36'58", in NE¼SE¼ sec.4, T.110 N., R.15 W., Goodhue County, Hydrologic Unit 07040004, at culvert on State Highway 58, 0.8 mile upstream from mouth, and 3.0 miles south of Goodhue.	.40	1960-80	3-20-80	e8.60	115
05374400	Long Creek near Potsdam, MN	Lat 44°10'48", long 92°17'23", at quarter corner on north line of sec.8, T.108 N., R.12 W., Wabasha County, Hydrologic Unit 07040004, at culvert on county highway, 2.6 miles northeast of Potsdam.	4.46	1966-80	5-30-80	13.57	720
		Whitewater River basin					
05376500	South Fork Whitewater River near Altura, MN	Lat 44°04'10", long 91°58'49", in SE¼ sec.14, T.107 N., R.10 W., Winona County, Hydrologic Unit 07040003, on left bank 500 ft upstream from highway bridge, 2.0 miles west of Altura, and 2.4 miles upstream from Keefer Creek.	76.8	1939-71#, 1973-80	6- 5-80	5.57	1180
		Root River basin					
05383600	North Branch Root River tributary near Stewartville, MN	Lat 43°51'20", long 92°26'50", near center sec.36, T.105 N., R.14 W., Olmsted County, Hydrologic Unit 07040008, at culvert on State Highway 30, 2.0 miles east of Stewartville, and 2.3 miles upstream from mouth.	.73	1958, 1959-64#, 1965-80	5-30-80	5.86	23
05383720	Mill Creek near Chatfield, MN	Lat 43°53'01", long 92°13'46", in SE¼NW¼ sec.23, T.105 N., R.12 W., Olmsted County, Hydrologic Unit 07040008, at bridge on county highway 3.4 miles northwest of Chatfield, and 4.8 miles upstream from mouth.	22.4	1962-80	6-27-75 3-12-76 5-16-77 7- 6-78 8-28-79 5-30-80	14.21 14.08 11.46 c17.79 15.71 16.68	b1700 b1600 b680 8580 b3100 4850
05383850	South Fork Bear Creek near Grand Meadow, MN	Lat 43°43'24", long 92°35'24", in NE¼SE¼ sec.14, T.103 N., R.15 W., Mower County, Hydrologic Unit 07040008, at bridge on county highway, 1.5 miles northwest of Grand Meadow, and 4.0 miles upstream from North Fork Bear Creek.	14.0	1962-80	5-30-80	18.05	840
05384100	Duschee Creek near Lanesboro, MN	Lat 43°39'40", long 91°58'10", in SW¼SW¼ sec.6, T.102 N., R.9 W., Fillmore County, Hydrologic Unit 07040008, at culvert on county highway, 4 miles south of Lanesboro, and 7.4 miles upstream from mouth.	3.85	1959-80	5-30-80	19.12	790
05384120	South Branch Root River at Lanesboro, MN	Lat 43°43'19", long 91°58'43", in NW¼SE¼ sec.13, T.103 N., R.10 W., Fillmore County, Hydrologic Unit 07040008, at bridge to ball park in Lanesboro, and 2.5 miles upstream from mouth.	a297	1973-80	5-30-80	11.95	(†)
05384150	Root River tributary near Whalan, MN	Lat 43°43'03", long 91°56'39", in SE¼SW¼ sec.17, T.103 N., R.9 W., Fillmore County, Hydrologic Unit 07040008, at culvert on private road, 1.3 miles southwest of Whalan.	.08	1959-80	5-30-80	10.07	172
05384200	Gribben Creek near Whalan, MN	Lat 43°42'26", long 91°54'50", in NE¼SE¼ sec.21, T.103 N., R.9 W., Fillmore County, Hydrologic Unit 07040008, at bridge on county highway, 1.9 miles southeast of Whalan, and 2.4 miles upstream from mouth.	7.80	1959-80	5-30-80	20.84	2350
05384300	Big Springs Creek near Arendahl, MN	Lat 43°49'26", long 91°57'00", in NE¼SE¼ sec.7, T.104 N., R.9 W., Fillmore County, Hydrologic Unit 07040008, at culvert on State Highway 250, 2.0 miles west of Arendahl.	.14	1959-80	4-30-80	10.48	36

"See footnotes at end of the table."

Annual maximum discharge at high-flow partial-record stations during water year 1980

Station No.	Station name	Location	Drainage area (mi^2)	Period of Record	Annual maximum Date	Gage height (feet)	Discharge (ft^3/s)
		Root River basin--Continued					
05384400	Pine Creek near Arendahl, MN	Lat 43°50'27", long 91°53'39", in SE¼NE¼ sec.3, T.104 N., R.9 W., Fillmore County, Hydrologic Unit 07040008, at bridge on County Highway 25, 1.3 miles northeast of Arendahl, and 4.9 miles upstream from Hemingway Creek.	28.1	1959-80	9-21-80	14.82	2800
05384500	Rush Creek near Rushford, MN	Lat 43°50'00", long 91°46'40", on line between secs.3 and 10, T.104 N., R.8 W., Fillmore County, Hydrologic Unit 07040008, on downstream side near center of span of highway bridge, 1.5 miles northwest of Rushford, 3.0 miles upstream from mouth.	129	1942-79#, 1980	9-21-80	8.26	3930
		Crooked Creek basin					
05387030	Crooked Creek at Freeburg, MN	Lat 43°36'37", long 91°21'39", in SW¼NE¼ sec.30, T.102 N., R.4 W., Houston County, Hydrologic Unit 07060001, on right downstream wingwall of bridge on State Highway 249 at Freeburg, 6.5 miles upstream from mouth.	44.2	1979-80	8-21-80	12.63	(†)
		Iowa River basin					
05457080	Rose Creek tributary near Dexter, MN	Lat 43°42'11", long 92°44'35", in SE¼SW¼ sec.22, T.103 N., R.16 W., Mower County, Hydrologic Unit 07080201, at culvert on county highway, 0.2 mile upstream from mouth, and 2.2 miles southwest of Dexter.	1.17	1962-80	5-30-80	d8.86	96
		Des Moines River basin					
05474750	Beaver Creek tributary No. 2 near Slayton, MN	Lat 43°59'35", long 95°48'01", in NW¼NW¼ sec.17, T.106 N., R.41 W., Murray County, Hydrologic Unit 07100001, at culvert on State Highway 30, 2.4 miles west of Slayton, and 3.2 miles upstream from mouth.	3.53	1961-80	5-27-80	18.69	140
05474760	Beaver Creek tributary above Slayton, MN	Lat 43°59'35", long 95°47'12", in NE¼NE¼ sec.17, T.106 N., R.41 W., Murray County, Hydrologic Unit 07100001, at culvert on State Highway 30, 0.9 mile upstream from mouth, and 1.7 miles west of Slayton.	2.20	1961-80	5-27-80	19.47	112
05475400	Warren Lake tributary near Windom, MN	Lat 43°54'02", long 95°07'13", in SE¼NE¼ sec.14, T.105 N., R.36 W., Cottonwood County, Hydrologic Unit 07100001, at oulvert on U.S. Highway 71, 0.2 mile up stream from Warren Lake, and 2.4 miles north of Windom.	1.39	1960-80	5-29-80	12.84	370
05475800	Des Moines River tributary near Jackson, MN	Lat 43°41'36", long 95°01'26", in NW¼SE¼ sec.27, T.103 N., R.35 W., Jackson County, Hydrologic Unit 07100001, at culvert on county highway, 0.8 mile upstream from mouth, and 5.3 miles north of Jackson.	1.52	1960-80	10-31-79	14.38	39
05475900	Des Moines River tributary No. 2 near Lakefield, MN	Lat 43°40'28", long 95°03'15", in SE¼SE¼ sec.32, T.103 N., R.35 W., Jackson County, Hydrologic Unit 07100001, at culvert on County Highway 19, 1.9 miles upstream from mouth, and 5.8 miles east of Lakefield.	5.18	1960-80	10-31-79	d6.66	75
05476900	Fourmile Creek near Dunnell, MN	Lat 43°34'57", long 94°46'26", in SW¼NW¼ sec.2, T.101 N., R.33 W., Martin County, Hydrologic Unit 07100003, at bridge on State Highway 4, 0.6 mile upstream from mouth, and 1.6 miles north of Dunnell.	14.0	1960-80	5-30-80	d11.66	132

"See footnotes at end of the table."

Annual maximum discharge at high-flow partial-record stations during water year 1980

Station No.	Station name	Location	Drainage area (mi^2)	Period of Record	Annual maximum Date	Gage height (feet)	Discharge (ft^3/s)
		Big Sioux River basin					
06482933	Chanarambie Creek near Edgerton, MN	Lat 43°53'59", long 96°03'39", in NW¼SW¼ sec.18, T.105 N., R.43 W., near Murray and Pipestone County line, Hydrologic Unit 10170204, at right downstream wingwall of bridge on township road, 3.8 miles northeast of Edgerton, 7.4 miles upstream from mouth.	56.1	1979-80	6- 5-80	16.92	(†)
06482950	Mound Creek near Hardwick, MN	Lat 43°48'18", long 96°12'47", in SE¼ SE¼ sec.15, T.104 N., R.45 W., Rock County, Hydrologic Unit 10170204, at culvert on county highway, 2.2 miles northwest of Hardwick.	2.47	1959-80	6- 5-80	9.64	79
06482960	Mound Creek tributary at Hardwick, MN	Lat 43°46'05", long 96°12'44", in NE¼ SE¼ sec.34, T.104 N., R.45 W., Rock County, Hydrologic Unit 10170204, at culvert on U.S. Highway 75, 0.7 mile upstream from mouth, and 0.9 mile southwest of Hardwick.	.19	1959-80	6- 5-80	7.44	71
06483000	Rock River at Luverne, MN	Lat 43°39'15", long 96°12'03", in SW¼ NE¼ sec.11, T.102 N., R.45 W., Rock County, Hydrologic Unit 10170204, at bridge on Main Street (County Highway 4) in Luverne.	425	1911-14#, 1972-80	11- 3-79	8.00	4220
06483200	Kanaranzi Creek tributary near Lismore, MN	Lat 43°45'41", long 95°55'56", in SW¼SW¼ sec.31, T.104 N., R.42 W., Nobles County, Hydrologic Unit 10170204, at culvert on county highway adjacent to State Highway 91, 60 ft upstream from mouth, and 1.2 miles northeast of Lismore.	.14	1959-80	5-30-80	21.76	273
06483210	Kanaranzi Creek tributary No. 2 near Wilmont, MN	Lat 43°43'32", long 95°52'20", in SW¼NW¼ sec.15, T.103 N., R.42 W., Nobles County, Hydrologic Unit 10170204, at culvert on County Highway 15, 3.5 miles southwest of Wilmont, and 3.7 miles upstream from mouth.	2.14	1966-80	5-30-80	9.16	430
		Little Sioux River basin					
06603530	Little Sioux River near Spafford, MN	Lat 43°36'08", long 95°15'27", in NE¼NE¼ sec.34, T.102 N., R.37 W., Jackson County, Hydrologic Unit 10230003, at bridge on county highway, 1.6 miles downstream from Jackson County ditch No. 11, and 5.8 miles east of Spafford.	41.1	1962-80	10-31-79	8.80	445

* Also a low-flow partial-record station.
† Discharge not determined.
# Operated as a continuous-record gaging station.
a approximately.
b Not previously published.
c Revised.
d Affected by shifting control.
e Backwater from ice.
f Peak stage did not reach bottom of gage.
g Datum change as of October 1, 1979.
h Estimated.

Discharge measurements at miscellaneous sites

Measurements of streamflow at points other than gaging stations are given in the following table. The measurements of base flow are designated by an asterisk (*); measurements of peak flow by a dagger (†).

Discharge measurements made at miscellaneous sites during water year 1980

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		Crow Wing River basin				
Long Prairie River	Crow Wing River	Lat 46°16'11", long 94°45'06", on line between secs.5 and 6, T.132 N., R.32 W., Todd County, Hydrologic Unit 07010108, on County Highway 7, 6.3 miles southeast of Staples, 2 miles southwest of Philbrook, MN.	-	1979	10-29-79 12-10-79 1-25-80 3-11-80 4-15-80	131 167 97.6 93.9 837
Long Prairie River	Crow Wing River	Lat 46°19'10", long 94°38'50", in SW¼NW¼ sec.19, T.133 N., R.31 W., Morrison County, Hydrologic Unit 07010108, at bridge on U.S. Highway 10, 1.5 miles south of Motley, MN, 3.3 miles upstream from mouth. (05245500)	a973	1909-17#, 1930-31#, 1965, 1979	10-30-79 12-10-79 1-25-80 3-11-80 4-15-80	159 176 120 86.4 1,020
		Mississippi River main stem				
Mississippi River	Gulf of Mexico	Lat 45°27'54", long 94°06'05", in SE¼NE¼ sec.17, T.123 N., R.27 W., Stearns County, Hydrologic Unit 07010203, reference mark on right bank, 4.2 miles northwest of Clearwater, MN.	-	1979	10-24-79 7-22-80	3,210 2,050
Mississippi River	Gulf of Mexico	Lat 45°26'12", long 94°04'06", in SE¼NW¼ sec.27, T.123 N., R.27 W., Stearns County, Hydrologic Unit 07010203, reference mark on right bank, 1.7 miles northwest of Clearwater, MN, 3,500 ft below the mouth of Plum Creek.	-	-	10-25-79	3,030
Mississippi River	Gulf of Mexico	Lat 45°24'35", long 94°01'54", in NW¼NW¼ sec.1, T.122 N., R.27 W., Wright County, Hydrologic Unit 07010203, reference mark on right bank, 0.8 mile downstream from Clearwater, MN.	-	1979	10-26-79 12- 3-79	3,300 4,320
Mississippi River	Gulf of Mexico	Lat 45°23'01", long 93°55'13", in NW¼NE¼ sec.14, T.122 N., R.26 W., Wright County, Hydrologic Unit 07010203, reference mark on right bank, 2.0 miles north of Enfield, MN, 1.0 mile downstream from the mouth of Silver Creek.	-	1979	12- 4-79	3,790
Mississippi River	Gulf of Mexico	Lat 45°19'00", long 93°48'46", in NW¼SE¼ sec.3, T.121 N., R.25 W., Wright County, Hydrologic Unit 07010203, reference mark on right bank, 1.2 miles northwest of Monticello, MN.	-	1979	10- 4-79	2,440
Mississippi River	Gulf of Mexico	Lat 45°17'39", long 93°45'07", in NW¼NE¼ sec.18, T.121 N., R.24 W., Wright County, Hydrologic Unit 07010203, reference mark on right bank, 2.2 miles southeast of Monticello, MN.	-	1979	10- 3-79	3,290
Mississippi River	Gulf of Mexico	Lat 45°17'32", long 93°36'47", in NE¼NW¼ sec.17, T.121 N., R.23 W., Wright County, Hydrologic Unit 07010203, reference mark on right bank, 2.4 miles west of Elk River, 0.2 mile north of Otsego, MN.	-	1979	10- 2-79	3,420
Mississippi River	Gulf of Mexico	Lat 45°18'09", long 93°33'53", in SE¼SW¼ sec.34, T.33 N., R.26 W., Sherburne County, Hydrologic Unit 07010203, on left bank in town of Elk River, MN, and at River Mile 884.6 upstream from Ohio River. (05275500)	a14,500	1915-57#, 1966-69	10- 1-79	3,530

"See footnotes at end of table."

Discharge measurements made at miscellaneous sites during water year 1980--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		Coon Creek basin				
Coon Creek	Mississippi River	Lat 45°13'55", long 93°09'45", in NW¼SW¼ sec.25, T.32 N., R.23 W., Anoka County, Hydrologic Unit 07010206, on right bank at upstream side of County Road 17 (Lexington Avenue) near Ham Lake, MN.	18.4	1979	4- 3-80 8- 8-80 8- 8-80 9-16-80	8.63 67.7 66.4 70.4
County Ditch 11	Coon Creek	Lat 45°14'23", long 93°11'33", in NW¼NE¼ sec.27, T.32 N., R.23 W., Anoka County, Hydrologic Unit 07010206, on Westlund Drive near Ham Lake, MN.	3.73	1979	4- 3-80 7- 9-80 8- 8-80	6.07 1.60 40.8
County Ditch 59-4	Coon Creek	Lat 45°13'19", long 93°12'03", in SW¼NW¼ sec.34, T.32 N., R.23 W., Anoka County, Hydrologic Unit 07010206, on County Road 116 (Bunker Lake Boulevard), 0.7 mile east of County Road 52 near Ham Lake, MN.	5.37	1979	4- 3-80	2.18
Coon Creek	Mississippi River	Lat 45°14'03", long 93°12'50", in SW¼NE¼ sec.28, T.32 N., R.23 W., Anoka County, Hydrologic Unit 07010206, on left bank at upstream side of Raddison Road (County Road 52), 1.5 miles south of Ham Lake, MN (05288450).	31.9	1979	11- 1-79 2-22-80 3-20-80 4-16-80 4-17-80 4-22-80 5-21-80 5-28-80 6- 6-80 7- 1-80 7-10-80 7-16-80 8- 5-80 8- 8-80 8- 9-80	18.8 3.25 61.6 25.8 24.0 17.6 10.2 5.85 33.6 10.6 4.72 11.7 2.22 138 107
County Ditch 58	Coon Creek	Lat 45°14'02", long 93°15'19", in SE¼NW¼ sec.30, T.32 N., R.23 W., Anoka County, Hydrologic Unit 07010206, on right bank at upstream side of County Road 16 (Andover Road), near Coon Rapids, MN (05288470).	10.6	1979	11- 1-79 2-21-80 3-21-80 4-16-80 4-17-80 5-21-80 5-28-80 6- 5-80 7-10-80 7-16-80 8- 8-80 9-26-80	3.43 0.63 9.97 5.41 5.12 2.45 1.40 3.49 0.68 0.92 10.7 6.79
Coon Creek	Mississippi River	Lat 45°11'11", long 93°18'41", in SE¼SE¼ sec.10, T.31 N., R.24 W., Anoka County, Hydrologic Unit 07010206, on right wingwall at downstream side of bridge on Hanson Boulevard (County Road 78), near Coon Rapids, MN (05288480).	73.5	1979	3-21-80 4-16-80 5-21-80 7- 9-80 7-16-80 8- 6-80 8-21-80	136 55.1 28.9 16.1 19.2 8.84 32.7
Sand Creek	Coon Creek	Lat 45°10'49", long 93°14'03", in NW¼NE¼ sec.17, T.31 N., R.23 W., Anoka County, Hydrologic Unit 07010206, on east side of State Highway 65 in Blaine, MN.	8.33	1979	10-29-79 4- 2-80 4-22-80 7-16-80 8- 8-80 8- 8-80	3.36 4.96 5.14 0.76 7.16 9.38
County Ditch 39	Coon Creek	Lat 45°10'06", long 93°14'48", in SE¼SE¼ sec.18, T.31 N., R.23 W., Anoka County, Hydrologic Unit 07010206, 0.6 mile west of State Highway 65 on County Road 12 (109th Avenue NE) in Blaine, MN.	1.45	1979	4- 2-80	0.20
Sand Creek	Coon Creek	Lat 45°11'03", long 93°16'31", in SW¼SW¼ sec.12, T.31 N., R.24 W., Anoka County, Hydrologic Unit 07010206, 0.5 mile north of junction of County Roads 11 and 12 in Coon Rapids, MN, on Foley Boulevard.	14.8	-	3-20-80 4- 2-80 7- 2-80 8- 8-80	54.4 8.72 2.40 26.9

"See footnotes at end of table."

Discharge measurements made at miscellaneous sites during water year 1980--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		Coon Creek basin--Continued				
Sand Creek	Coon Creek	Lat 45°10'58", long 93°18'14", in SW¼SW¼ sec.11, T.31 N., R. 24 W., Anoka County, Hydrologic Unit 07010206, one mile north of Coon Rapids, MN, on left bank 100 ft upstream of Xeon Boulevard (05288487).	15.7	1979	11- 2-79	11.0
					2-21-80	2.09
					3-20-80	41.4
					4-16-80	9.75
					4-17-80	9.76
					4-22-80	8.48
					5-21-80	4.82
					5-28-80	3.24
					6- 5-80	28.9
					7-10-80	3.33
					7-16-80	7.55
					8- 6-80	2.04
					8- 8-80	51.2
					9-11-80	13.5
County Ditch 52	Coon Creek	Lat 45°09'40", long 93°17'53", in SE¼NW¼ sec.23, T.31 N., R.24 W., Anoka County, Hydrologic Unit 07010206, 0.6 mile northeast of County Road 1 (Coon Rapids Boulevard) on Egret Boulevard in Coon Rapids, MN.	1.37	1979	4-22-80	0.86
					6- 2-80	0.73
					7- 9-80	0.36
					7-16-80	0.57
Coon Creek	Mississippi River	Lat 45°09'05", long 93°17'48", in NW¼NE¼ sec.26, T.31 N., R.24 W., Anoka County, Hydrologic Unit 07010206, on upstream side of abandoned County Road 1 bridge in Coon Rapids, MN, 1.2 miles above mouth (05288490).	96.4	1979	11- 2-79	51.8
					2-22-80	23.6
					3-20-80	141
					4-16-80	67.6
					4-18-80	70.4
					5-21-80	33.6
					5-28-80	23.9
					6- 6-80	76.9
					7-10-80	19.7
					7-16-80	32.6
					8- 6-80	13.3
					8- 8-80	131
					8- 9-80	138
					8-21-80	39.8
					8-21-80	37.6
					9-11-80	69.4
		Bassett Creek basin				
Bassett Creek	Mississippi River	Lat 44°59'58", long 93°21'17", in W½ sec.28, T.118 N., R.21 W., Hennepin County, Hydrologic Unit 07010206, at bridge on County Highway 66, 0.2 mile west of underpass on State Highway 100 in Golden Valley, MN (05288800).	-	1963-79	11-20-79	4.52
					5- 1-80	0.78
					6-23-80	12.4
					7-22-80	9.30
					9-11-80	14.6
North Fork Bassett	Bassett Creek	Lat 45°01'06", long 93°21'32", in NW¼ sec.21, T.118 N., R.21 W., Hennepin County, Hydrologic Unit 07010206, at culvert on 34th Avenue North at Crystal, MN, and 0.8 mile upstream from mouth (05288810).	-	1963-79	11-20-79	0.60
					5- 1-80	0.14
					6-23-80	0.47
					7-22-80	0.55
					9-11-80	1.46
South Fork Bassett Creek	Bassett Creek	Lat 44°59'04", long 93°20'40", near center of W½ sec.19, T.29 N., R.24 W., Hennepin County, Hydrologic Unit 07010206, at culvert on Olson Memorial Highway (State Highway 55), 0.2 mile east of State Highway 100 in Golden Valley, MN (05288850).	-	1963-69, 1971-79	11-20-79	3.03
					5- 1-80	0.96
					6-23-80	3.66
					7-20-80	0.40
					9-11-80	3.86
Bassett Creek	Mississippi River	Lat 44°58'45", long 93°18'48", in SE¼ sec.20, T.29 N., R.24 W., Hennepin County, Hydrologic Unit 07010206, at Fruen Mill, 700 ft downstream from Glenwood Avenue, at Minneapolis, MN (05288900).	41.6	1952-56, 1963-79	11-20-79	9.99
					5- 1-80	5.10
					6-23-80	13.5
					7-22-80	9.40
					9-11-80	17.8

"See footnotes at end of table."

Discharge measurements made at miscellaneous sites during water year 1980--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		Mississippi River main stem				
Mississippi River	Gulf of Mexico	Lat 44°58'46", long 93°14'50", in SE¼SE¼ sec.23, T.29 N., R.24 W., Hennepin County, Hydrologic Unit 07010206, at lower St. Anthony Falls lock and dam in Minneapolis, MN, at River Mile 853.3 upstream from Ohio River. (Discharge measurements made between Hennepin Avenue and Franklin Avenue bridges over the Mississippi River are included). (05288920)	a19,700	1912, 1938-39, 1941, 1943, 1953-54, 1957, 1963-79	4-17-80 7- 8-80 9- 8-80	14,700 3,040 3,670
Mississippi River	Gulf of Mexico	Lat 44°54'57", long 93°11'59", in NE¼NW¼ sec.17, T.28 N., R.23 W., Ramsey County, Hydrologic Unit 07010206, at Ford Motor Company hydroelectric plant, 800 ft downstream from Ford Parkway bridge in St. Paul, MN, 3.5 miles upstream from Minnesota River, and at River mile 847.6 upstream from Ohio River. (05288950)	a19,700	1924, 1935, 1938-39, 1941, 1943, 1945-50, 1954, 1957, 1959, 1961-62, 1964-70, 1972-79	7-15-80 9- 9-80	2,920 4,940
		Minnesota River basin				
Chippewa River diversion	Mississippi River	Lat 45°01'30", long 95°48'00", in SE¼ sec.16, T.118 N., R.41 W., Chippewa County, Hydrologic Unit 07020001, 1 mile north of Watson, MN.	-	1945-79	10-12-79 11-20-79 1- 1-80 3-31-80 4-15-80 6-23-80 9- 3-80	26.1 91.6 45.2 750 382 268 84.3
Chippewa River below diversion	Mississippi River	Lat 45°01'10", long 95°47'30", in NW¼ sec.22, T.118 N., R.41 W., Chippewa County, Hydrologic Unit 07020005, 1.4 miles northeast of Watson, MN.	-	1945-79	10-12-79 11-29-79 1- 3-80 2-19-80 3-31-80 4-15-80 6-23-80 9- 3-80	79.9 1.72 80.2 40.4 160 158 315 33.0
bChaska Creek	Minnesota River	Lat 44°47'19", long 93°36'19", in NE¼NE¼ sec.8, T.115 N., R.23 W., Carver County, Hydrologic Unit 07020012, at bridge on U.S. Highway 212 in Chaska, MN, and 1 mile upstream from mouth (05330700).	14.8	1967-70, 1975, 1979	10-30-79 1-14-80 3-25-80 4-30-80 5-30-80 6-12-80 6-24-80 7-17-80 7-23-80 8-22-80	3.30 1.57 23.6 3.23 1.74 11.7 2.36 0.99 0.51 1.18
East Creek	Minnesota River	Lat 44°47'28", long 93°35'52", in SW¼SW¼ sec.4, T.115 N., R.23 W., Carver County, Hydrologic Unit 07020012, at bridge on U.S. Highway 212, 0.2 mile east of intersection with State Highway 41 in Chaska, MN.	-	1979	10-30-79 1-14-80 3-25-80 4-30-80 5-30-80 6-12-80 6-24-80 7-17-80 7-23-80 8-22-80	2.11 1.38 6.33 2.90 1.87 4.41 2.26 0.25 0.35 0.52
Eagle Creek above Boiling Springs	Minnesota River	Lat 44°46'13", long 93°23'53", in SW¼NW¼ sec.18, T.115 N. R.20 W., Scott County, Hydrologic Unit 07020012, 30 ft upstream from Boiling Springs and 1.1 miles southwest of intersection of State Highways 13 and 101, 3 miles southwest of Savage, MN.	-	1971, 1972	11-14-79 3-14-80	0.39 0.50

"See footnotes at end of table."

Discharge measurements made at miscellaneous sites during water year 1980--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		Minnesota River basin--Continued				
Eagle Creek below Boiling Springs	Minnesota River	Lat 44°46'15", long 93°23'51", in SW¼NW¼ sec.18, T.115 N., R.21 W., Scott County, Hydrologic Unit 07020012, 40 ft below Boiling Springs and 1.1 miles southwest of intersection of State Highways 13 and 101, 3 miles southwest of Savage, MN.	-	1971, 1972	11-14-79 3-14-80	2.80 2.87
		Mississippi River main stem				
Mississippi River	Gulf of Mexico	Lat 44°44'48", long 92°51'08", on line between secs.21 and 22, T. 115 N., R.17 W., Dakota-Washington County line, Hydrologic Unit 07010206, at bridge on U.S. Highway 61, at Hastings, MN, 2.5 miles upstream from St. Croix River (05331580).	a37,100	1928, 1931-39, 1941-52, 1959-79	4-16-80	34,700
		St. Croix River basin				
St. Croix River	Mississippi River	Lat 44°44'57", long 92°48'16", in SE¼SE¼ sec.9, T.26 N., R.20 W., Pierce County, Hydrologic Unit 07030005, at bridge in Prescott, WI, 0.1 mile upstream from mouth (05344490).	a7,650	1928-30, 1932-39, 1947-48, 1950, 1953-57, 1959-79	4-16-80	9,380
		Zumbro River basin				
South Fork Zumbro River below hydro dam	Zumbro River	Lat 44°12'46", long 92°28'44", in SE¼SW¼ sec.27, T.109 N., R.14 W., Wabasha County, Hydrologic Unit 07040004, at powerplant at outlet of Zumbro Lake, 1 mile southeast of Mazeppa, 0.9 mile northeast of Oronoco, MN.	-	-	12-12-79	39.3
		Cedar Creek basin				
Cedar Creek	Mississippi River	Lat 44°00'25", long 91°29'45", in SW¼, sec.5, T.106 N., R.6 W., Winona County, Hydrologic Unit 07040003, at U.S. Highway 61 bridge and Chicago, Milwaukee, St Paul, and Pacific Railroad bridge, 4.2 miles east of Homer, MN, and 0.2 miles above mouth.	-	-	9-20-80	11,100
		Big Trout Creek basin				
Big Trout Creek	Mississippi River	Lat 43°57'46", long 91°30'07", on line between NE¼ sec.26 and SE¼ sec.23, T.106 N., R.6 W., Winona County, Hydrologic Unit 07040003, on east-west gravel road about 4.1 miles above mouth, and 1.4 miles southwest of Pickwick, MN.	-	-	9-20-80	18,000
		Root River basin				
South Fork Root River	Root River	Lat 43°41'20", long 91°41'30", in SW¼SW¼ sec.28, T.103 N., R.7 W., Houston County, Hydrologic Unit 07040008, at bridge on County Highway 4, 0.8 mile north of Yucatan, MN.		1976,	5- 7-80	44.4

\# Operated as a continuous-record gaging station.
a Approximately.
b Also published under measurements made at low-flow partial-record stations.

Low-flow investigations in the Chippewa-Pomme de Terre watersheds

Discharge measurements were made in the Chippewa-Pomme de Terre watersheds to determine base-flow variations that will facilitate modeling of ground water-surface water relationships. Conditions were excellent, and all measurements are considered base flow. Total precipitation in the area for the 30 days preceding the measurements was generally less than 0.6 inch, 0.52 inch at Montevideo, 0.5 inch at Milan, 0.39 inch at Morris, and 0.57 inch at Benson.

Stream	Location	Drainage area (mi^2)	Measured previously (water years)	Date	Discharge (ft^3/s)	Specific conductance (micromhos)	Water Temperature °C
	Pomme de Terre River basin						
Pomme de Terre River at inlet to Pomme de Terre Lake	Lat 46°02'53", long 95°53'57", in NW¼NE¼ sec.25, T.130 N., R.42 W., Grant County, Hydrologic Unit 07020002, at bridge on County Road 52, 5.2 miles northeast of Elbow Lake, MN.	-	-	5-21-80	46.5	660	21.0
cPomme de Terre River at outlet from Pomme de Terre Lake	Lat 45°59'06", long 95°53'37", in NE¼SE¼ sec.13, T.129 N., R.42 W., Grant County, Hyrologic Unit 07020002, at culverts on county road, 4 miles east of Elbow Lake, MN. (05293370)	a334	1963-65, 1970, 1973-75, 1978	5-21-80	33.4	650	22.0
Pomme de Terre River at inlet to Barrett Lake	Lat 45°56'02", long 95°52'31", in NE¼NW¼ sec.6, T.128 N., R.41 W., Grant County, Hydrologic Unit 07020002, at culverts on County Road 36, 1.8 miles northeast of Barrett, MN.	-	-	5-21-80	37.8	650	19.0
Pomme de Terre River at Barrett Lake outlet	Lat 45°54'43", long 95°52'57", in NE¼SE¼ sec.12, T.128 N., R.42 W., Grant County, Hydrologic Unit 07020002, at control structures on County Highway 2, in Barrett, MN.	-	1943-45, 1964	5-21-80	37.3	600	18.0
Pomme de Terre River	Lat 45°49'56", long 95°51'38", in NW¼NW¼ sec.8, T.127 N., R.41 W., Grant County, Hydrologic Unit 07020002, at bridge on State Highway 27, 3 miles west of Hoffman, MN.	-	-	5-21-80	42.2	680	23.0
Pomme de Terre River at inlet to North Pomme de Terre Lake	Lat 45°44'43", long 95°51'24", in NW¼NW¼ sec.8, T.126 N., R.41 W., Stevens County, Hydrologic Unit 07020002, at culverts on County Road 76, 6.7 miles southwest of Hoffman, MN.	-	-	5-22-80	48.5	740	20.5
Pomme de Terre River at Perkins Lake outlet	Lat 45°41'14", long 95°51'35", in NW¼NW¼ sec.32, T.126 N., R.41 W., Stevens County, Hydrologic Unit 07020002, at culverts on County Road 74, 7.2 miles northeast of Morris, MN.	-	-	5-22-80	50.0	620	19.0
Pomme de Terre River	Lat 45°36'26", long 95°52'50", in NW¼SW¼ sec.30, T.125 N., R.41 W., Stevens County, Hydrologic Unit 07020002, at bridge on State Highway 28, 2 miles northeast of Morris, MN.	-	-	5-22-80	55.6	700	18.5
Pomme de Terre River	Lat 45°33'08", long 95°52'33", in SW¼NE¼ sec.13, T.124 N., R.42 W., Stevens County, Hydrologic Unit 07020002, at bridge on State Highway 9, 3 miles southeast of Morris, MN.	-	-	5-22-80	52.5	700	23.0
cMud Creek	Lat 45°32'26", long 95°54'44", in NE¼NE¼ sec.22, T.124 N., R.42 W., Stevens County, Hydrologic Unit 07020002, at culvert on U.S. Highway 59, 1 mile upstream from mouth, and 3 miles south of Morris, MN. (05293600)	a137	1963-65, 1970, 1973-75, 1978	5-22-80	0.08	1,900	22.0
Pomme de Terre River	Lat 45°27'20", long 95°57'20", in NE¼NE¼ sec.20, T.123 N., R.42 W., Stevens County, Hydrologic Unit 07020002, at bridge on County Road 58, 9.5 miles southwest of Morris, MN.	-	-	-5-22-80	61.8	780	23.0
Pomme de Terre River	Lat 45°23'02", long 95°56'43", in NE¼NW¼ sec.16, T.122 N., R.42 W., Swift County, Hydrologic Unit 07020002, at bridge on County Highway 22, 3 miles north of Fairfield, MN.	-	1964, 1973	5-23-80	60.1	-	-

"See footnotes at end of table."

Low-flow investigations in the Chippewa-Pomme de Terre watersheds--Continued

Stream	Location	Drainage area (mi^2)	Measured previously (water years)	Date	Discharge (ft^3/s)	Specific conductance (micromhos)	Water Temperature °C
	Pomme de Terre River basin--Continued						
Pomme de Terre River	Lat 45°18'42", long 95°56'57", in SW¼SW¼ sec.4, T.121 N., R.42 W., Swift County, Hydrologic Unit 07020002, at bridge on County Road 56, 2 miles south of Fairfield, MN.	-	1964, 1973	5-23-80	65.5	-	-
Pomme de Terre River	Lat 45°17'02", long 95°58'45", in SW¼SE¼ sec.18, T.121 N., R.42 W., Swift County, Hydrologic Unit 07020002, at spillway north of U.S. Highway 12, 4. miles northwest of Holloway, MN.	-	1964, 1973	5-23-80	63.2	-	-
cPomme de Terre River	Lat 45°14'22", long 95°59'06", in NW¼NE¼ sec.1, T.120 N., R.43 W., Swift County, Hydrologic Unit 07020002, on County Road 54, 3.5 miles west of Holloway, MN. (05294000)	885	1931-53#d, 1964	5-23-80	68.6	-	-
Pomme de Terre River	Lat 45°12'46", long 95°59'34", in SE¼SW¼ sec.12, T.120 N., R.43 W., Swift County, Hydrologic Unit 07020002, at bridge on county road, 1.5 miles east of Appleton, MN.	-	1973	5-23-80	68.0	-	-
Pomme de Terre River	Lat 45°12'10", long 96°01'20", in SW¼NW¼ sec.14, T.120 N., R.43 W., Swift County, Hydrologic Unit 07020002, on left bank 60 ft upstream from bridge on U.S. Highway 59 and State Highway 119 at Appleton, and 8 miles upstream from mouth. (05294000)	905	1953-79#	5-23-80	66.0	-	-
Pomme de Terre River	Lat 45°11'18", long 96°04'18", in SW¼NE¼ sec.20, T.120 N., R.43 W., Swift County, Hydrologic Unit 07020002, at bridge on County Road 51, 2.5 miles southwest of Appleton, MN.	-	-	5-23-80	78.5	-	-
	Chippewa River basin						
Chippewa River	Lat 45°51'40", long 95°46'05", in NE¼NW¼ sec.36, T.128 N., R.41 W., Grant County, Hydrologic Unit 07020005, at culverts on county road, 2.5 miles northeast of Hoffman, MN.	-	-	5-21-80	46.6	580	23.0
Chippewa River at Reed Lake outlet	Lat 45°47'16", long 95°45'53", in NW¼NE¼ sec.25, T.127 N., R.41 W., Grant County, Hydrologic Unit 07020005, at culverts on County Road 37, 3 miles southeast of Hoffman, MN.	-	-	5-21-80	50.6	660	22.0
Chippewa River	Lat 45°42'59", long 95°46'33", in NW¼NW¼ sec.24, T.126 N., R.41 W., Stevens County, Hydrologic Unit 07020005, at culverts on County Highway 20, 7.2 miles northwest of Cyrus, MN.	-	-	5-21-80	54.6	590	19.0
Chippewa River	Lat 45°36'53", long 95°43'45", in NE¼NW¼ sec.29, T.125 N., R.40 W., Pope County, Hydrologic Unit 07020005, at bridge on State Highway 28, 0.5 mile east of Cyrus, MN.	-	-	5-21-80	65.5	610	20.0
cLittle Chippewa River	Lat 45°35'46", long 95°40'32", in SE¼NE¼ sec.34, T.125 N., R.40 W., Pope County, Hydrologic Unit 07020005, at culvert on County Road 73, 4.3 miles southeast of Cyrus, MN. (05302700)	a12.6	1969-70, 1973-74	5-21-80	6.76	720	20.0
Chippewa River	Lat 45°32'08", long 95°41'54", in NE¼SW¼ sec.21, T.124 N., R.40 W., Pope County, Hydrologic Unit 07020005, at bridge on County Highway 1, 5.2 miles northeast of Hancock, MN.	-	-	5-21-80	82.1	650	21.0
cLake Emily outlet	Lat 45°30'56", long 95°41'45", in SE¼SW¼ sec.28, T.124 N., R.40 W., Pope County, Hydrologic Unit 07020005, at culverts on county road, 4.9 miles northeast of Hancock, MN. (05302980)	260	1969-70, 1973-74	5-21-80	34.6	640	20.0

"See footnotes at end of table."

Low-flow investigations in the Chippewa-Pomme de Terre watersheds--Continued

Stream	Location	Drainage area (mi^2)	Measured previously (water years)	Date	Discharge (ft^3/s)	Specific conductance (micromhos)	Water Temperature °C
	Chippewa River basin--Continued						
Chippewa River tributary	Lat 45°28'22", long 95°41'08", in SE¼SE¼ sec.9, T.123 N., R.40 W., Pope County, Hydrologic Unit 07020005, at culvert on County Road 71, 5.6 miles southeast of Hancock, MN.	-	-	5-22-80	b0.3	-	-
Chippewa River	Lat 45°28'13", long 95°42'13", in NW¼NW¼ sec.16, T.123 N., R.40 W., Pope County, Hydrologic Unit 07020005, at bridge on county road, 4.8 miles southeast of Hancock, MN.	-	-	5-22-80	120	650	19.0
Chippewa River	Lat 45°23'08", long 95°39'30", in SE¼SW¼ sec.11, T.122 N., R.40 W., Swift County, Hydrologic Unit 07020005, at bridge on County Highway 22, 1 mile northeast of Clontarf, MN.	-	-	5-22-80	127	660	19.0
cEast Branch of Chippewa River	Lat 45°20'53", long 95°35'37", in SE¼NW¼ sec.29, T.122 N., R.39 W., Swift County, Hydrologic Unit 07020005, at bridge on county road, 2.2 miles north of Benson, MN. (05303470)	-	1963-65, 1969-70, 1973-74	5-22-80	63.3	590	21.0
Chippewa River	Lat 45°18'42", long 95°37'28", in SE¼SE¼ sec.1, T.121 N., R.40 W., Swift County, Hydrologic Unit 07020005, at bridge on U.S. Highway 12, 1.2 miles southwest of Benson, MN.	-	-	5-22-80	205	650	21.0
Chippewa River	Lat 45°16'01", long 95°40'28", in NW¼NE¼ sec.27, T.121 N., R.40 W., Swift County, Hydrologic Unit 07020005, at bridge on County Highway 14, 5.0 miles southwest of Benson, MN.	-	-	5-22-80	197	670	23.0
Chippewa River	Lat 45°12'30", long 95°40'00", in NE¼NW¼ sec.15, T.120 N., R.40 W., Swift County, Hydrologic Unit 07020005, at bridge on county road, 6.4 miles southeast of Danvers, MN.	-	-	5-22-80	197	650	22.0
Shakopee Creek	Lat 45°12'37", long 95°39'15", in SE¼SE¼ sec.10, T.120 N., R.40 W., Swift County, Hydrologic Unit 07020005, at bridge on county road, 7.7 miles southwest of Benson, MN.	-	-	5-22-80	13.5	900	25.0
Chippewa River	Lat 45°09'23", long 95°44'07", in NE¼SE¼ sec.36, T.120 N., R.41 W., Swift County, Hydrologic Unit 07020005, at bridge on county road, 2.0 miles northeast of Hagen, MN.	-	-	5-22-80	233	700	21.5
Cottonwood Creek	Lat 45°08'34", long 95°48'07", in NW¼SE¼ sec.4, T.119 N., R.41 W., Chippewa County, Hydrologic Unit 07020005, at bridge on county road, 1.2 miles west of Big Bend City, MN.	-	-	5-22-80	12.5	1,125	22.0
Chippewa River	Lat 45°06'39", long 95°47'57", in SE¼SE¼ sec.16, T.119 N., R.41 W., Chippewa County, Hydrologic Unit 07020005, on right bank 800 ft upstream from bridge on State Highway 40, 2 miles upstream from small tributary, and 5.5 miles east of Milan, MN. (05304500)	a1,870	1939-79#	5-21-80	257	725	22.0
cDry Weather Creek	Lat 45°03'00", long 95°46'00", in NE¼NW¼ sec.11, T.118 N., R.41 W., Chippewa County, Hydrologic Unit 07020005, at bridge on county road, 7.4 miles northeast of Montevideo, MN. (05304800)	105	1969-70, 1973-75	5-21-80	.45	1,700	28.5
Chippewa River tributary	Lat 45°02'12", long 95°47'14", in SE¼SW¼ sec.10, T.118 N., R.41 W., Chippewa County, Hydrologic Unit 07020005, at bridge on county road, 2 miles north of Watson, MN.	-	-	5-21-80	.72	1,100	16.0

"See footnotes at end of table."

Low-flow investigations in the Chippewa-Pomme de Terre watersheds--Continued

Stream	Location	Drainage area (mi^2)	Measured previously (water years)	Date	Discharge (ft^3/s)	Specific conductance (micromhos)	Water Temperature °C
	Chippewa River basin--Continued						
Chippewa River	Lat 45°01'20", long 95°47'28", on line between secs.15 and 22, T.118 N., R.41 W., Chippewa County, Hydrologic Unit 07020005, at culvert on County Highway 13, 1.5 miles north of Watson, MN, 2.4 miles downstream from Dry Weather Creek, and 10 miles upstream from mouth. (05305000)	a2,050	1910-17#, 1931-36#, 1937, 1943-58, 1960-67, 1969-71	5-22-80	241	600	20.0

Operated as a continuous-record gaging station.
a Approximately.
b Estimate.
c Also published under low-flow measurements.
d Site of gage prior to 1953.

05288470 COUNTY DITCH #58 NEAR COON RAPIDS, MN

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH FIELD (UNITS)	TEMPER-ATURE, AIR (DEG C)	TEMPER-ATURE, WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIOCHEM UNINHIB 5 DAY (MG/L)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
NOV											
01...	1500	3.4	332	7.8	3.8	6.0	10.2	84	2.1	12	232
FEB											
21...	1230	.63	320	7.7	2.0	2.8	10.8	81	.7	5.6	248
APR											
17...	0945	5.1	272	7.6	18.0	9.0	10.6	93	1.3	7.5	195
MAY											
28...	1150	1.4	376	7.9	24.0	26.0	9.9	124	1.8	7.8	263
JUN											
05...	1145	3.4	335	7.9	24.0	19.0	9.1	87	3.8	8.0	231
JUL											
10...	1015	.68	376	7.6	27.0	23.2	11.8	140	2.2	5.3	282
16...	1115	.92	360	8.0	29.0	25.0	9.6	120	1.4	6.0	277
AUG											
08...	1130	10	338	6.8	24.0	19.5	3.6	40	5.3	9.2	300
SEP											
12...	0915	--	226	6.2	15.0	14.7	4.8	49	5.5	7.9	233

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, DIS-SOLVED (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, ORTHOPH OSPHATE DISSOL. (MG/L AS P)	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)
NOV											
01...	1.2	.260	1.2	1.8	1.5	2.7	.120	.040	2	0	20
FEB											
21...	.74	.190	.63	.82	.82	1.6	.060	.020	1	0	20
APR											
17...	.90	.140	1.1	1.2	1.2	2.1	.110	.000	0	0	20
MAY											
28...	.35	.160	.60	1.3	.76	1.1	.110	.000	1	0	20
JUN											
05...	.44	.140	1.5	1.7	1.6	2.0	.250	.000	2	0	10
JUL											
10...	.36	.040	1.2	1.2	1.2	1.6	.100	.020	2	0	20
16...	.58	.260	.57	.83	.83	1.4	.080	.030	2	0	10
AUG											
08...	4.7	.320	1.7	2.8	2.0	6.7	.260	.050	3	2	20
SEP											
12...	1.9	.340	2.9	3.7	3.2	5.1	.270	.130	3	2	10

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED (MG/L AS C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)
NOV											
01...	2	--	6	240	<.1	0	20	17	3.8	24	.22
FEB											
21...	2	2100	1	310	.1	4	50	--	--	6	.01
APR											
17...	3	2300	2	170	.1	1	10	13	1.3	16	.22
MAY											
28...	0	2100	0	450	<.1	0	20	13	.8	15	.06
JUN											
05...	4	5100	5	460	<.1	1	20	19	2.0	39	.37
JUL											
10...	1	2000	3	300	<.1	0	10	17	.3	6	.01
16...	0	1700	0	430	<.1	0	10	14	.8	7	.02
AUG											
08...	1	5100	10	610	<.1	2	50	--	--	53	1.5
SEP											
12...	2	7900	9	480	<.1	3	20	19	2.9	31	--

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.

05330700 CHASKA CREEK AT CHASKA, MN

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH FIELD (UNITS)	TEMPER-ATURE, WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIOCHEM UNINHIB 5 DAY (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
OCT												
30...	1330	3.3	720	8.3	10.0	4.0	10.6	94	1.7	38	20	458
JAN												
14...	1250	1.6	783	7.9	1.5	1.1	13.6	99	--	45	21	456
MAR												
25...	1500	24	327	7.5	2.4	50	14.1	106	--	17	14	229
APR												
30...	1400	3.2	638	8.3	17.1	.65	12.0	126	2.1	37	21	473
MAY												
30...	1300	1.7	724	7.7	15.2	9.0	9.1	92	3.8	34	23	487
JUN												
12...	1145	11	684	7.7	16.8	28	9.4	99	--	27	18	368
24...	0915	2.4	589	8.2	20.0	1.0	--	--	1.9	19	21	435
JUL												
17...	1015	.99	686	8.2	29.0	4.5	8.2	108	--	53	28	432
23...	1600	.51	--	--	--	--	--	--	.8	--	--	--
AUG												
22...	1130	1.2	729	7.7	16.5	2.6	11.3	116	1.0	39	18	439

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, DIS-SOLVED (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED (MG/L AS C)
OCT											
30...	11	1.2	.010	.91	.92	.92	2.1	.080	.060	12	.4
JAN											
14...	21	2.0	.170	.74	.91	.91	2.9	.070	.050	5.4	.2
MAR											
25...	60	.94	1.500	1.7	4.8	3.2	4.1	.480	.460	18	4.2
APR											
30...	15	.19	.010	.82	1.0	.83	1.0	.130	.060	11	.6
MAY											
30...	860	.50	.110	.51	.62	.62	1.1	.170	.110	9.3	.5
JUN											
12...	76	1.1	.100	1.4	1.8	1.5	2.6	.450	.270	18	3.2
24...	15	.70	.070	.44	--	.51	1.2	.240	.190	15	.5
JUL											
17...	16	.31	.130	.21	.42	.34	.65	.080	.050	3.8	.4
23...	--	--	--	--	--	--	--	--	--	--	--
AUG											
22...	8	.31	.030	.29	.45	.32	.63	.050	.050	4.1	.4

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	OIL AND GREASE, TOTAL RECOV. GRAVI-METRIC (MG/L)
MAR											
25...	1500	7	0	1	6	3100	4	670	<.1	30	2
JUL											
17...	1015	4	0	22	1	670	0	340	<.1	10	0

05330700 CHASKA CREEK AT CHASKA, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PCB TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	ATRAZINE, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)
JUN 12...	1145	.00	.00	.00	3.3	.0	.00	.00	.00	.00	.00

DATE	ENDOSULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTACHLOR, TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
JUN 12...	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	PARATHION, TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	PROMETONE TOTAL (UG/L)	PROMETRYNE TOTAL (UG/L)	SIMAZINE TOTAL (UG/L)	SIMETRYNE TOTAL (UG/L)	TOTAL TRITHION (UG/L)	TOXAPHENE, TOTAL (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN 12...	.00	.00	.0	.1	.0	.0	.00	0	.09	.00	.00

444728093355201 EAST CREEK AT CHASKA, MN

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH FIELD (UNITS)	TEMPER-ATURE, WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIOCHEM UNINHIB 5 DAY (MG/L)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)
OCT												
30...	1115	2.1	625	8.2	9.5	2.0	11.2	99	3.9	40	23	396
JAN												
14...	1120	1.4	1020	8.0	1.0	5.0	13.0	94	--	54	180	664
MAR												
25...	1300	6.3	428	7.5	3.7	2.5	13.5	105	--	30	25	300
APR												
30...	1245	2.9	522	8.3	16.4	.56	12.1	126	2.1	37	24	418
MAY												
30...	1120	1.9	624	7.8	17.4	6.0	9.5	101	3.4	39	28	449
JUN												
12...	1010	4.4	558	7.8	17.5	17	9.0	97	--	37	22	361
24...	0940	2.3	491	8.3	20.0	.50	--	--	2.5	35	20	325
JUL												
17...	1115	.22	630	8.2	29.5	4.0	7.9	105	--	53	28	439
23...	1445	.61	--	--	--	--	--	--	1.4	--	--	--
AUG												
22...	1300	.52	650	7.7	23.1	2.0	8.4	99	.9	68	31	450

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N)	NITRO-GEN, DIS-SOLVED (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C)	CARBON, ORGANIC SUS-PENDED (MG/L AS C)
OCT											
30...	12	.37	.010	.92	1.0	.93	1.3	.070	.030	12	1.2
JAN											
14...	23	1.6	.170	1.1	1.3	1.3	2.9	.050	.040	10	.5
MAR											
25...	17	.82	.430	1.1	2.4	1.5	2.3	.730	.260	12	2.8
APR											
30...	15	.03	.000	.69	1.0	.69	.72	.030	.020	12	.4
MAY											
30...	11	.31	.100	.76	.99	.86	1.2	.090	.060	11	.6
JUN											
12...	25	.23	.050	1.1	1.2	1.1	1.3	.130	.060	13	1.4
24...	16	.30	.030	.48	--	.51	.81	.080	.060	11	.8
JUL											
17...	14	.32	.120	.22	.36	.34	.66	.050	.050	4.2	.6
23...	--	--	--	--	--	--	--	--	--	--	--
AUG											
22...	6	.19	.000	.32	.45	.32	.51	.010	.010	3.6	.4

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	OIL AND GREASE, TOTAL RECOV. GRAVI-METRIC (MG/L)
MAR											
25...	1300	6	0	1	4	1400	130	400	<.1	80	2
JUL											
17...	1115	3	0	23	0	440	1	100	<.1	10	0

444728093355201 EAST CREEK AT CHASKA, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PCB TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	ATRAZINE, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)
JUN 12...	1010	.00	.00	.00	.40	.0	.00	.00	.00	.00	.00

DATE	ENDOSULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTACHLOR, TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)
JUN 12...	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	PARATHION, TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	PROMETONE TOTAL (UG/L)	PROMETRYNE TOTAL (UG/L)	SIMAZINE TOTAL (UG/L)	SIMETRYNE TOTAL (UG/L)	TOTAL TRITHION (UG/L)	TOXAPHENE, TOTAL (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN 12...	.00	.00	.0	.1	.0	.0	.00	0	.07	.00	.00

444720093352401 COURTHOUSE LAKE AT CHASKA, MN

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	SAMPLING DEPTH (FT)	RESERVOIR DEPTH (FEET)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH FIELD (UNITS)	TEMPERATURE, WATER (DEG C)	TRANSPARENCY (SECCHI DISK) (M)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)
MAR												
25...	1100	9.0	54	398	7.7	4.1	--	11.3	88	--	--	--
APR												
30...	1022	12.0	53	364	8.2	10.2	5.1	12.2	111	--	--	--
JUN												
24...	1020	3.0	47	370	8.0	25.0	--	8.5	104	--	--	--
AUG												
22...	0930	15.0	55	380	8.4	23.7	4.1	8.4	100	170	48	36
22...	1001	48.0	55	423	7.0	6.4	--	3.1	25	200	37	46

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	SOLIDS, DISSOLVED (TONS PER AC-FT)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
MAR												
25...	--	--	--	--	--	12	--	--	247	--	.34	.05
APR												
30...	--	--	--	--	--	10	--	--	236	--	.32	.03
JUN												
24...	--	--	--	120	46	10	.2	--	247	--	.34	.01
AUG												
22...	19	5.4	5.0	120	50	11	.3	.8	232	200	.32	.00
22...	20	10	5.1	160	48	12	.3	3.0	278	241	.38	.00

DATE	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITROGEN, DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)	CARBON, ORGANIC SUSPENDED (MG/L AS C)	PHYTOPLANKTON, TOTAL (CELLS PER ML)	CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L)
MAR												
25...	.070	.15	.23	.22	.27	.050	.030	5.8	.4	7100	--	--
APR												
30...	.000	.43	.60	.43	.46	.030	.010	4.9	.3	0	.000	.000
JUN												
24...	.030	.05	.44	.08	.09	.010	.010	5.9	.3	1400	--	--
AUG												
22...	.000	.32	.35	.32	.32	.003	.000	4.8	.7	5200	1.69	.000
22...	.110	.35	.54	.46	.46	.184	.177	9.6	.4	--	--	--

DATE	TIME	SAMPLING DEPTH (FT)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH FIELD (UNITS)	TEMPERATURE, WATER (DEG C)	OXYGEN, DISSOLVED (MG/L)
MAR						
25...	1054	1.5	390	7.6	4.0	11.5
25...	1056	3.0	396	7.6	4.0	11.5
25...	1058	6.0	398	7.6	4.1	11.4
25...	1100	9.0	398	7.7	4.1	11.3
25...	1102	12.0	398	7.7	4.1	11.2
25...	1104	18.0	398	7.7	4.1	10.9
25...	1106	24.0	398	7.7	4.0	10.7
25...	1108	30.0	398	7.7	4.0	10.3
25...	1110	36.0	398	7.6	4.0	9.7
25...	1112	42.0	409	7.4	4.1	3.8
25...	1114	48.0	410	7.3	4.1	2.9
25...	1116	52.0	411	7.3	4.1	2.8
APR						
30...	1014	1.0	372	8.1	15.3	10.0
30...	1016	3.0	371	8.1	15.0	10.0
30...	1018	6.0	371	8.1	14.9	10.1
30...	1020	9.0	370	8.1	14.1	10.7
30...	1022	12.0	364	8.2	10.2	12.2
30...	1024	15.0	360	8.2	7.9	12.6
30...	1026	18.0	362	8.2	6.8	12.7
30...	1028	21.0	383	8.0	5.8	11.6
30...	1030	27.0	394	7.6	4.8	9.0
30...	1032	33.0	399	7.3	4.5	4.0
30...	1034	39.0	399	7.2	4.5	3.7
30...	1036	45.0	399	7.2	4.5	3.7
30...	1038	51.0	398	7.2	4.5	3.7

444720093352401 COURTHOUSE LAKE AT CHASKA, MN--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	SAMP-LING DEPTH (FT)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH FIELD (UNITS)	TEMPER-ATURE, WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)
JUN						
24...	1019	1.0	370	7.9	25.0	8.4
24...	1020	3.0	370	8.0	25.0	8.5
24...	1021	6.0	370	8.0	24.6	8.7
24...	1022	10.0	370	8.1	23.6	9.0
24...	1023	12.0	372	8.2	22.5	9.6
24...	1024	15.0	380	8.1	19.9	11.8
24...	1025	18.0	387	8.2	15.4	13.3
24...	1026	20.0	394	8.2	12.6	13.2
24...	1027	23.0	400	8.0	10.6	12.5
24...	1028	25.0	407	7.8	9.1	11.0
24...	1029	28.0	411	7.6	8.0	8.1
24...	1030	30.0	412	7.4	7.4	6.5
24...	1031	35.0	414	7.2	6.6	3.8
24...	1032	40.0	414	7.1	6.1	3.2
24...	1033	44.0	412	7.1	6.0	3.1
AUG						
22...	0920	1.0	370	8.0	23.7	8.4
22...	0922	3.0	370	8.1	23.8	8.4
22...	0924	6.0	370	8.1	23.8	8.4
22...	0926	9.0	370	8.1	23.7	8.3
22...	0928	12.0	370	8.1	23.7	8.4
22...	0930	15.0	380	8.4	23.7	8.4
22...	0933	18.0	375	8.2	22.3	10.8
22...	0936	21.0	399	7.8	18.3	11.3
22...	0939	24.0	416	7.3	14.4	6.5
22...	0942	27.0	422	7.1	10.7	3.6
22...	0945	30.0	423	7.1	9.4	3.0
22...	0948	33.0	423	7.1	8.1	2.9
22...	0952	36.0	422	7.1	7.4	3.0
22...	0956	42.0	422	7.0	6.7	3.1
22...	1001	48.0	423	7.0	6.4	3.1
22...	1004	54.0	423	7.0	6.2	3.1

444720093352401 COURTHOUSE LAKE AT CHASKA, MN--Continued

PHYTOPLANKTON ANALYSES, OCTOBER 1979 TO AUGUST 1980

DATE	MAR 25,80		APR 30,80		JUN 24,80		AUG 22,80	
TIME	1100		1022		1020		0930	
TOTAL CELLS/ML	7100		0		1400		5200	
DIVERSITY: DIVISION	1.5		0.0		1.4		1.2	
.CLASS	1.5		0.0		1.4		1.2	
..ORDER	1.5		0.0		1.4		1.6	
...FAMILY	1.5		0.0		1.6		2.0	
....GENUS	1.5		0.0		1.6		2.6	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
CHLOROPHYTA (GREEN ALGAE)								
.CHLOROPHYCEAE								
..CHLOROCOCCALES								
...CHARACIACEAE								
....SCHROEDERIA	1600#	23	--	-	43	3	*	0
...OOCYSTACEAE								
....ANKISTRODESMUS	--	-	--	-	--	-	41	1
....OOCYSTIS	--	-	--	-	800#	57	320	6
...SCENEDESMACEAE								
....CRUCIGENIA	--	-	--	-	--	-	550	11
....SCENEDESMUS	--	-	--	-	--	-	1100#	21
..TETRASPORALES								
...COCCOMYXACEAE								
....ELAKATOTHRIX	--	-	--	-	--	-	160	3
..VOLVOCALES								
...CHLAMYDOMONADACEAE								
....CHLAMYDOMONAS	--	-	--	-	14	1	--	-
CHRYSOPHYTA								
.BACILLARIOPHYCEAE								
..CENTRALES								
...COSCINODISCACEAE								
...CYCLOTELLA	3300#	47	--	-	--	-	41	1
.CHRYSOPHYCEAE								
..CHRYSOMONADALES								
...OCHROMONADACEAE								
....OCHROMONAS	--	-	--	-	--	-	96	2
CRYPTOPHYTA (CRYPTOMONADS)								
.CRYPTOPHYCEAE								
..CRYPTOMONADALES								
...CRYPTOCHRYSIDACEAE								
....CHROOMONAS	2100#	30	--	-	260#	18	--	-
...CRYPTOMONADACEAE								
....CRYPTOMONAS	--	-	--	-	--	-	*	0
CYANOPHYTA (BLUE-GREEN ALGAE)								
.CYANOPHYCEAE								
..CHROOCOCCALES								
...CHROOCOCCACEAE								
....ANACYSTIS	--	-	--	-	290#	20	2200#	43
....COCCOCHLORIS	--	-	--	-	--	-	300	6
..HORMOGONALES								
...OSCILLATORIACEAE								
....OSCILLATORIA	--	-	--	-	--	-	150	3
....PHORMIDIUM	--	-	--	-	--	-	110	2
...RIVULARIACEAE								
....RAPHIDIOPSIS	--	-	--	-	--	-	82	2

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

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	SAMPLING DEPTH (FT) (00003)	RESERVOIR DEPTH (FEET) (72025)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	TRANSPARENCY (SECCHI DISK) (M) (00078)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L) (00530)
443636096095400 DILLON-SYLTIE IMPOUNDMENT NEAR PORTER, MN (LAT 44°36'36" LONG 096°09'54")											
MAY 1980											
13...	1730	--	12	--	--	--	--	1.07	--	--	9
JUN											
06...	1200	.5	--	--	820	8.0	21.0	--	--	--	--
JUL											
17...	1515	--	12	--	--	--	--	1.68	--	--	5
SEP											
04...	1645	2.0	11	--	--	--	--	.70	--	--	8
04...	1650	10.0	--	--	--	--	--	--	--	--	2
29...	1512	--	--	--	--	--	--	.79	--	--	--
29...	1525	10.0	--	--	--	--	--	--	--	--	1
443636096095402 DILLON-SYLTIE IMPOUNDMENT INLET NEAR PORTER, MN (LAT 44°36'36" LONG 096°09'54")											
MAR 1980											
20...	1500	--	--	E3.5	617	7.8	.5	--	14.1	103	--
JUN											
06...	1030	--	--	5.5	1025	8.0	20.0	--	--	--	--
443636096095404 DILLON-SYLTIE IMPOUNDMENT OUTLET NEAR PORTER, MN (LAT 44°36'36" LONG 096°09'54")											
MAR 1980											
20...	1420	--	--	E9.8	549	7.8	1.7	--	13.8	100	--
JUN											
06...	1130	--	--	8.4	830	8.1	21.5	--	--	--	--
JUL											
17...	1515	--	--	E.05	--	--	--	--	--	--	--

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)
443636096095400 DILLON-SYLTIE IMPOUNDMENT NEAR PORTER, MN (LAT 44°36'36" LONG 096°09'54")										
MAY 1980										
13...	.00	.120	.98	1.1	1.1	.040	4.36	.000	--	--
JUN										
06...	.74	.100	1.2	1.3	2.0	.110	--	--	--	--
JUL										
17...	.00	.000	1.2	1.2	1.2	.050	12.0	.000	--	--
SEP										
04...	.01	.040	.76	.80	.81	.080	23.8	.000	--	--
04...	.01	.040	.73	.77	.78	.080	--	--	--	--
29...	--	--	--	--	--	--	15.9	.180	--	--
29...	.01	.040	.67	.71	.72	.050	--	--	--	--
443636096095402 DILLON-SYLTIE IMPOUNDMENT INLET NEAR PORTER, MN (LAT 44°36'36" LONG 096°09'54")										
MAR 1980										
20...	--	--	--	--	--	.470	--	--	--	--
JUN										
06...	--	--	--	--	--	.140	--	--	168	2.5
443636096095404 DILLON-SYLTIE IMPOUNDMENT OUTLET NEAR PORTER, MN (LAT 44°36'36" LONG 096°09'54")										
MAR 1980										
20...	--	--	--	--	--	.290	--	--	16	.42
JUN										
06...	--	--	--	--	--	.120	--	--	32	.70
JUL										
17...	--	--	--	--	--	.030	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

443636096095400 DILLON-SYLTIE IMPOUNDMENT NEAR PORTER, MN

DATE	TIME	SAMPLING DEPTH (FT) (00003)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)
MAY							
13...	1720	.5	1059	7.9	13.7	9.9	99
13...	1723	3.0	1059	7.9	13.7	9.9	99
13...	1726	6.0	1058	7.9	13.6	9.8	97
13...	1729	9.0	1060	7.9	13.6	9.8	97
13...	1732	11.5	1061	7.8	13.0	8.8	86
JUL							
17...	1455	.5	835	7.7	26.8	7.6	98
17...	1500	3.0	836	7.8	26.9	7.4	95
17...	1503	6.0	837	7.6	26.3	6.2	78
17...	1506	7.0	838	7.3	26.1	4.6	59
17...	1509	8.0	--	7.2	25.9	3.1	39
17...	1512	9.0	848	7.0	25.2	1.2	15
17...	1514	11.5	880	6.9	21.8	1.3	15
SEP							
04...	1630	.5	815	8.1	21.6	8.7	102
04...	1633	3.0	818	8.1	21.6	8.7	102
04...	1636	6.0	819	8.1	21.6	8.7	102
04...	1639	9.0	819	8.1	21.6	8.7	102
04...	1642	11.0	819	8.1	21.6	8.7	102
29...	1515	.5	872	8.1	16.0	9.6	101
29...	1517	3.0	870	8.1	15.9	9.7	102
29...	1518	6.0	869	8.2	15.3	9.5	97
29...	1519	9.0	872	8.2	15.2	9.5	97
29...	1520	11.0	872	8.3	15.2	9.4	96

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	SAMPLING DEPTH (FT) (00003)	RESERVOIR DEPTH (FEET) (72025)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	TRANSPARENCY (SECCHI DISK) (M) (00078)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L) (00530)
444900096240000 WEBBER IMPOUNDMENT NEAR GARY, SD (LAT 44°49'00" LONG 096°24'00")											
MAR 1980											
20...	1200	.5	12	--	313	7.0	4.0	--	8.8	70	--
MAY											
14...	1600	--	15	--	--	--	--	2.59	--	--	6
JUN											
05...	1500	--	--	--	540	8.1	23.0	--	--	--	--
JUL											
18...	1145	--	17	--	--	--	--	.30	--	--	13
SEP											
04...	1320	2.5	12	--	--	--	--	.99	--	--	6
04...	1325	11.0	--	--	--	--	--	--	--	--	3
30...	1245	.5	12	--	581	8.3	15.8	3.00	9.3	97	--
30...	1250	11.5	--	--	580	8.4	15.8	--	9.1	95	19
444900096240002 WEBBER IMPOUNDMENT INLET NEAR GARY, SD (LAT 44°49'00" LONG 096°24'00")											
JUN 1980											
05...	1500	--	--	8.5	600	7.6	22.5	--	--	--	--

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)
444900096240000 WEBBER IMPOUNDMENT NEAR GARY, SD (LAT 44°49'00" LONG 096°24'00")										
MAR 1980										
20...	.50	.450	1.1	1.5	2.0	.170	--	--	--	--
MAY										
14...	.00	.100	.72	.82	.82	.030	3.32	.000	--	--
JUN										
05...	.14	.110	1.2	1.3	1.4	.120	--	--	--	--
JUL										
18...	.02	.110	1.2	1.3	1.3	.040	10.5	.000	--	--
SEP										
04...	.07	.070	.62	.69	.76	.040	3.11	.000	--	--
04...	.07	.110	.68	.79	.86	.060	--	--	--	--
30...	--	--	--	--	--	--	2.86	.000	--	--
30...	.00	.030	.68	.71	.71	.030	--	--	--	--
444900096240002 WEBBER IMPOUNDMENT INLET NEAR GARY, SD (LAT 44°49'00" LONG 096°24'00")										
JUN 1980										
05...	--	--	--	--	--	.180	--	--	97	2.2

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

444900096240000 WEBBER IMPOUNDMENT NEAR GARY, SD

DATE	TIME	SAMP-LING DEPTH (FT) (00003)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)
MAR							
20...	1200	.5	313	7.0	4.0	8.8	70
20...	1203	3.0	792	7.2	3.5	7.3	58
20...	1206	6.0	791	7.3	4.0	6.9	55
20...	1209	9.0	796	7.2	4.0	5.6	45
20...	1213	11.5	806	7.1	4.5	3.9	32
MAY							
14...	1603	.5	595	8.3	14.1	11.0	110
14...	1606	3.0	595	8.3	14.0	11.1	111
14...	1609	6.0	594	8.3	13.6	11.2	111
14...	1612	9.0	593	8.3	13.0	11.3	111
14...	1615	12.0	592	8.3	12.8	11.5	113
14...	1618	14.5	593	8.3	12.5	10.8	106
JUL							
18...	1148	.5	545	8.0	24.8	7.0	87
18...	1151	3.0	545	8.1	24.9	7.0	87
18...	1154	6.0	544	8.1	24.9	7.0	87
18...	1157	9.0	544	8.2	24.9	7.0	87
18...	1200	12.0	543	8.2	24.9	7.0	87
18...	1203	13.0	544	8.2	24.8	6.7	83
18...	1206	13.5	--	7.3	22.2	1.7	20
18...	1209	14.0	572	7.0	21.5	1.7	20
18...	1212	15.0	573	7.0	20.6	1.6	18
18...	1215	17.0	578	7.0	19.9	1.5	17
SEP							
04...	1323	.5	545	8.0	20.6	8.1	92
04...	1326	3.0	546	8.1	20.6	8.1	92
04...	1329	6.0	546	8.1	20.6	8.1	92
04...	1332	9.0	544	8.1	20.6	8.1	92
04...	1335	12.0	545	8.1	20.6	8.1	92
30...	1245	.5	581	8.3	15.8	9.3	97
30...	1246	3.0	581	8.3	15.8	9.3	97
30...	1248	6.0	581	8.4	15.8	9.1	95
30...	1249	9.0	581	8.4	15.8	9.2	96
30...	1250	11.5	580	8.4	15.8	9.1	95

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	SAMPLING DEPTH (FT) (00003)	RESERVOIR DEPTH (FEET) (72025)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	TRANSPARENCY (SECCHI DISK) (M) (00078)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (MG/L) (00530)
450317096412100 LA BOLT IMPOUNDMENT AT LA BOLT, SD (LAT 45°03'17" LONG 096°41'21")											
MAR 1980											
19...	1645	.5	11	--	265	8.0	.5	--	14.3	104	--
MAY											
14...	1300	.5	11	--	804	7.8	14.5	.82	10.1	103	9
JUN											
05...	1100	--	--	--	530	8.0	18.5	--	--	--	--
JUL											
18...	1000	--	11	--	--	--	--	.53	--	--	20
SEP											
04...	1100	1.5	12	--	--	--	--	.21	--	--	24
04...	1105	8.5	--	--	--	--	--	--	--	--	32
30...	1000	.5	9.3	--	640	8.0	14.9	.38	9.1	92	--
30...	1005	9.0	--	--	643	8.1	14.8	--	8.9	90	37
450317096412102 LA BOLT IMPOUNDMENT INLET AT LA BOLT, SD (LAT 45°03'17" LONG 096°41'21")											
MAR 1980											
19...	1500	--	--	33	283	8.1	.2	--	14.9	107	--
MAY											
14...	1130	--	--	1.6	835	7.9	10.7	--	11.3	106	--
JUN											
05...	1030	--	--	65	600	8.2	19.5	--	--	--	--
450317096412104 LA BOLT IMPOUNDMENT OUTLET NEAR LA BOLT, SD (LAT 45°03'17" LONG 096°41'21")											
MAR 1980											
19...	1700	--	--	38	280	7.7	.7	--	14.5	107	--
MAY											
14...	1330	--	--	1.2	851	7.6	14.8	--	9.6	99	--
JUN											
05...	1135	--	--	67	540	8.0	18.0	--	--	--	--

DATE	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70953)	CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L) (70954)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)
450317096412100 LA BOLT IMPOUNDMENT AT LA BOLT, SD (LAT 45°03'17" LONG 096°41'21")										
MAR 1980										
19...	.90	.640	2.0	2.6	3.5	.450	--	--	--	--
MAY										
14...	.55	.660	.44	1.1	1.7	.040	8.89	.000	--	--
JUN										
05...	.35	.160	1.5	1.7	2.1	.230	--	--	--	--
JUL										
18...	.00	.090	1.4	1.5	1.5	.190	52.6	7.10	--	--
SEP										
04...	.01	.320	2.2	2.5	2.5	.280	122	23.6	--	--
04...	.01	.290	1.6	1.9	1.9	.270	--	--	--	--
30...	--	--	--	--	--	--	157	.000	--	--
30...	.00	.070	2.3	2.4	2.4	.180	--	--	--	--
450317096412102 LA BOLT IMPOUNDMENT INLET AT LA BOLT, SD (LAT 45°03'17" LONG 096°41'21")										
MAR 1980										
19...	--	--	--	--	--	.210	--	--	86	7.6
MAY										
14...	--	--	--	--	--	.020	--	--	38	.16
JUN										
05...	--	--	--	--	--	.290	--	--	191	33
450317096412104 LA BOLT IMPOUNDMENT OUTLET NEAR LA BOLT, SD (LAT 45°03'17" LONG 096°41'21")										
MAR 1980										
19...	--	--	--	--	--	.480	--	--	20	2.0
MAY										
14...	--	--	--	--	--	.050	--	--	72	.23
JUN										
05...	--	--	--	--	--	.240	--	--	134	24

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

450317096412100 LA BOLT IMPOUNDMENT AT LA BOLT, SD

DATE	TIME	SAMPLING DEPTH (FT) (00003)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)
MAR							
19...	1645	.5	265	8.0	.5	14.3	104
19...	1648	3.0	266	7.8	1.0	14.4	107
19...	1651	4.5	1188	7.3	2.0	4.2	32
19...	1653	6.0	1252	7.2	3.0	3.1	24
19...	1656	9.0	1269	7.1	3.5	2.8	22
19...	1659	10.0	1280	7.2	3.5	2.7	21
MAY							
14...	1300	.5	804	7.8	14.5	10.1	103
14...	1303	3.0	802	7.9	13.1	10.4	103
14...	1306	6.0	804	7.7	12.4	8.6	85
14...	1309	9.0	806	7.7	11.8	7.8	76
14...	1312	10.5	809	7.5	11.4	5.5	51
JUL							
18...	1003	.5	699	7.7	24.5	6.4	79
18...	1006	3.0	699	7.7	24.5	6.5	80
18...	1009	6.0	700	7.7	24.4	6.1	76
18...	1012	7.0	711	7.6	24.7	4.2	52
18...	1015	8.0	779	6.7	21.3	1.6	19
18...	1018	9.0	799	6.7	19.0	1.6	18
18...	1021	10.5	812	6.6	19.0	1.5	17
SEP							
04...	1103	.5	597	7.9	19.0	6.7	76
04...	1106	3.0	597	7.9	19.0	6.7	76
04...	1109	6.0	597	8.0	19.0	6.7	76
04...	1112	9.0	597	8.0	19.0	6.8	77
04...	1115	10.0	597	7.9	19.0	6.7	76
30...	1000	.5	640	8.0	14.9	9.1	92
30...	1002	3.0	642	8.0	14.9	9.0	91
30...	1004	6.0	642	8.0	14.9	9.0	91
30...	1005	9.0	643	8.1	14.8	8.9	90

WATER QUALITY DATA AT STREAMFLOW STATIONS

Periodic field determinations of water temperature and specific conductance are made at many stream-gaging stations other than regular water-quality stations. These data are usually collected at monthly intervals during routine visits to the station. Additional data for each station are published in Volume 2 of this report.

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (^oC)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (^oC)	SPECIFIC CONDUCTANCE (MICROMHOS)
05211000 MISSISSIPPI RIVER AT GRAND RAPIDS, MN							
OCT. 09, 1979...	882	6.0	150	APR. 14.....	1100	3.5	260
OCT. 12.....	460	8.0	---	APR. 17.....	517	6.0	250
NOV. 16.....	2000	3.0	290	APR. 30.....	421	14.0	190
DEC. 21.....	1760	.5	325	MAY 19.....	313	17.5	280
FEB. 07, 1980...	1700	.0	350	JULY 25.....	223	24.0	300
MAR. 18.....	1670	.5	---	AUG. 26.....	185	22.5	310
MAR. 31.....	1170	3.0	340	SEPT. 22.....	341	14.0	310
05212700 PRAIRIE RIVER NEAR TACONITE, MN							
OCT. 05, 1979...	26	12.0	155	APR. 24.....	535	7.0	115
NOV. 15.....	237	2.0	140	MAY 19.....	126	19.5	200
DEC. 17.....	106	1.0	---	JULY 21.....	55	22.0	95
FEB. 08, 1980...	71	.0	165	AUG. 26.....	333	20.0	140
MAR. 17.....	72	.5	---	SEPT. 22.....	190	13.0	150
APR. 14.....	390	3.0	150				
05216860 SWAN RIVER NEAR CALUMET, MN							
OCT. 05, 1979...	3.7	9.5	255	APR. 24.....	93	8.0	265
NOV. 15.....	39	2.5	290	MAY 19.....	30	16.0	275
DEC. 17.....	26	1.0	325	JULY 21.....	11	23.0	270
FEB. 08, 1980...	18	.5	323	AUG. 26.....	113	20.0	270
MAR. 17.....	23	1.0	325	SEPT. 23.....	61	12.0	285
APR. 10.....	90	2.0	55				
05220500 MISSISSIPPI RIVER BELOW SANDY RIVER NEAR LIBBY, MN							
OCT. 16, 1979...	1020	8.0	240	APR. 14.....	2610	3.5	212
NOV. 27.....	2700	.5	145	MAY 12.....	950	12.0	235
JAN. 09, 1980...	2000	.0	315	JULY 17.....	474	26.0	270
FEB. 21.....	1910	.5	290	AUG. 20.....	445	22.0	260
APR. 01.....	2170	.5	295	SEPT. 16.....	1260	15.0	230
05227500 MISSISSIPPI RIVER AT AITKIN, MN							
OCT. 15, 1979...	1010	8.0	285	APR. 15.....	4190	3.0	200
NOV. 26.....	2870	.5	216	MAY 13.....	1250	12.5	240
JAN. 08, 1980...	2020	.0	324	JULY 15.....	562	27.0	300
FEB. 20.....	1990	.0	282	AUG. 20.....	582	23.0	310
MAR. 31.....	2010	.0	300	SEPT. 15.....	1970	16.0	120

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05244000 CROW WING RIVER AT NIMROD, MN							
OCT. 11, 1979...	315	7.0	320	APR. 09.....	978	1.5	230
NOV. 26.....	516	.5	310	MAY 07.....	458	10.0	310
JAN. 08, 1980...	305	.0	385	JULY 15.....	181	27.5	280
FEB. 11.....	346	.0	360	AUG. 11.....	213	20.5	305
MAR. 24.....	388	.0	500	SEPT. 10.....	252	16.5	278
05245100 LONG PRAIRIE RIVER AT LONG PRAIRIE, MN							
OCT. 29, 1979...	88	6.5	510	APR. 16.....	274	8.0	440
DEC. 11.....	96	.0	450	JUNE 25.....	230	22.0	530
JAN. 25, 1980...	72	.0	260	JULY 31.....	143	22.0	460
MAR. 11.....	57	.0	---	SEPT. 05.....	136	---	450
05247500 CROW WING RIVER NEAR PILLAGER, MN							
OCT. 18, 1979...	567	---	---	MAY 01.....	1590	18.0	337
NOV. 15.....	1860	---	---	JUNE 25.....	1300	24.0	360
DEC. 19.....	577	---	---	JULY 31.....	755	25.0	325
FEB. 05, 1980...	546	---	---	SEPT. 02.....	737	21.0	348
MAR. 13.....	616	---	---				
05267000 MISSISSIPPI RIVER NEAR ROYALTON, MN							
OCT. 31, 1979...	3960	8.5	305	JUNE 24.....	2770	20.5	343
DEC. 19.....	3910	.0	315	JULY 30.....	1450	---	300
MAR. 18, 1980...	3290	.0	305	SEPT. 16.....	4770	18.0	260
APR. 30.....	5510	16.0	242				
05270500 SAUK RIVER NEAR ST. CLOUD, MN							
OCT. 23, 1979...	154	5.0	440	APR. 07.....	912	11.0	400
NOV. 16.....	366	5.5	430	APR. 28.....	473	8.5	---
DEC. 21.....	329	1.0	450	JUNE 23.....	424	27.0	405
FEB. 06, 1980...	389	1.0	440	AUG. 01.....	127	23.0	410
MAR. 13.....	383	1.0	440	SEPT. 02.....	223	20.0	400
05275000 ELK RIVER NEAR BIG LAKE, MN							
OCT. 22, 1979...	218	16.0	320	APR. 28.....	288	---	---
NOV. 19.....	300	8.5	300	JUNE 23.....	210	24.5	310
DEC. 27.....	182	.5	365	AUG. 04.....	59	22.0	308
FEB. 07, 1980...	217	.5	350	AUG. 11.....	166	22.0	305
MAR. 17.....	269	.5	320	SEPT. 04.....	181	20.0	290

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (^oC)	SPECIFIC CONDUCTANCE (MICROMHOS)
05278000 MIDDLE FORK CROW RIVER NEAR SPICER, MN			
OCT. 25, 1979...	9.4	4.5	420
NOV. 08.....	23	---	---
DEC. 10.....	34	2.5	460
JAN. 25, 1980...	40	.5	460
MAR. 07.....	38	.5	500
APR. 01.....	48	4.5	420
JUNE 03.....	33	21.0	440
JULY 08.....	41	26.5	370
AUG. 11.....	19	22.0	360
SEPT. 11.....	20	17.0	360
05278930 BUFFALO CREEK NEAR GLENCOE, MN			
OCT. 01, 1979...	52	16.5	900
NOV. 08.....	299	3.0	1360
DEC. 27.....	50	.0	---
FEB. 11, 1980...	5.3	.0	1320
MAR. 24.....	91	.0	435
APR. 29.....	58	---	---
JUNE 17.....	178	22.0	550
JULY 29.....	1.5	17.0	950
JULY 29.....	1.4	---	---
AUG. 05.....	.93	---	---
05280000 CROW RIVER AT ROCKFORD, MN			
OCT. 24, 1979...	314	10.0	600
NOV. 21.....	650	4.5	---
DEC. 20.....	328	.0	845
JAN. 04, 1980...	303	.5	800
JAN. 17.....	213	.0	760
FEB. 20.....	147	---	---
MAR. 20.....	711	2.0	---
APR. 24.....	845	14.5	560
MAY 21.....	348	20.5	545
JUNE 24.....	840	---	---
JUNE 27.....	687	21.5	550
JULY 23.....	165	23.0	620
AUG. 20.....	151	25.0	510
SEPT. 23.....	288	14.0	600
05286000 RUM RIVER NEAR ST. FRANCIS, MN			
OCT. 17, 1979...	394	20.5	350
NOV. 14.....	779	5.0	220
DEC. 18.....	1070	1.5	210
FEB. 04, 1980...	440	.5	300
MAR. 11.....	254	1.0	310
APR. 07.....	1940	12.0	280
APR. 29.....	763	15.0	255
JUNE 27.....	414	23.5	275
AUG. 11.....	382	21.0	285
SEPT. 04.....	321	21.5	270
05287890 ELM CREEK NEAR CHAMPLIN, MN			
OCT. 01, 1979...	5.9	12.5	545
NOV. 08.....	16	1.0	560
DEC. 17.....	11	1.0	550
FEB. 04, 1980...	9.3	.5	520
MAR. 11.....	2.6	1.0	500
MAY 02.....	23	18.0	532
MAY 30.....	8.6	---	---
JUNE 27.....	22	21.0	460
JULY 28.....	4.9	19.0	520
AUG. 29.....	5.6	18.0	515
05288500 MISSISSIPPI RIVER NEAR ANOKA, MN			
OCT. 05, 1979...	4180	12.5	385
NOV. 16.....	11000	3.0	380
APR. 02, 1980...	13200	4.0	220
APR. 03.....	14500	3.5	215
MAY 05.....	7600	21.0	330
JULY 01.....	4280	22.0	370
JULY 25.....	2840	22.0	350
SEPT. 05.....	4530	21.0	430

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (^oC)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (^oC)	SPECIFIC CONDUCTANCE (MICROMHOS)
05290000 LITTLE MINNESOTA RIVER NEAR PEEVER, SOUTH DAKOTA							
OCT. 12, 1979...	.72	8.0	1520	APR. 02.....	253	4.5	630
NOV. 14.....	4.4	1.0	1100	MAY 09.....	11	14.0	1450
DEC. 26.....	2.5	.0	2020	JUNE 26.....	2.3	26.0	1300
FEB. 07, 1980...	.76	.0	---	AUG. 07.....	.31	26.5	1500
MAY 18.....	100	1.0	580	SEPT. 11.....	.21	18.0	1360
05291000 WHETSTONE RIVER NEAR BIG STONE CITY, SOUTH DAKOTA							
NOV. 01, 1979...	39	4.0	1200	MAR. 31.....	378	2.5	560
DEC. 10.....	16	1.5	1600	APR. 10.....	96	8.0	900
JAN. 23, 1980...	8.7	.0	1500	JUNE 09.....	102	19.0	1250
MAR. 07.....	8.4	.0	---	JULY 10.....	5.3	30.0	1125
MAR. 19.....	327	1.0	480	AUG. 15.....	4.2	22.0	1040
05292000 MINNESOTA RIVER AT ORTONVILLE, MN							
OCT. 19, 1979...	2.2	---	---	MAR. 31.....	323	.0	480
NOV. 14.....	1.4	5.0	2000	APR. 10.....	424	5.0	870
DEC. 10.....	1.5	4.0	2200	JUNE 09.....	71	18.0	1290
JAN. 23, 1980...	1.1	1.0	2200	JULY 15.....	17	30.0	1080
MAR. 07.....	1.3	---	---	AUG. 15.....	11	24.0	1220
05293000 YELLOW BANK RIVER NEAR ODESSA, MN							
NOV. 01, 1979...	50	3.5	900	MAR. 31.....	200	3.0	580
DEC. 10.....	17	1.5	1100	APR. 17.....	44	---	---
JAN. 23, 1980...	7.7	.0	1250	JUNE 06.....	392	20.0	920
MAR. 07.....	.0	---	---	JULY 10.....	11	23.0	780
MAR. 20.....	289	1.0	420	AUG. 15.....	2.6	19.5	1090
05294000 POMME DE TERRE RIVER AT APPLETON, MN							
OCT. 11, 1979...	44	8.0	830	MAY 19.....	83	17.0	880
NOV. 26.....	71	---	---	MAY 23.....	66	---	---
JAN. 10, 1980...	43	.0	940	JUNE 06.....	395	20.0	420
JAN. 28.....	49	1.0	1000	JULY 09.....	92	26.0	800
MAR. 07.....	45	.5	900	AUG. 11.....	43	22.0	780
MAR. 20.....	194	1.0	440				
05300000 LAC QUI PARLE RIVER NEAR LAC QUI PARLE, MN							
OCT. 11, 1979...	9.0	9.5	1300	MAR. 31.....	276	1.5	775
NOV. 23.....	91	1.0	1530	APR. 18.....	98	---	---
DEC. 18.....	40	.5	1600	JUNE 06.....	509	19.0	1160
JAN. 28, 1980...	14	.0	---	JULY 09.....	103	26.0	1100
MAR. 07.....	8.0	.0	1700	AUG. 15.....	7.9	21.0	1060
MAR. 20.....	454	1.0	550				

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05301000 MINNESOTA RIVER NEAR LAC QUI PARLE, MN							
OCT. 11, 1979...	133	9.5	850	JUNE 04.....	40	20.0	1150
NOV. 23.....	328	1.0	1020	JULY 09.....	659	24.0	790
DEC. 13.....	302	1.0	1030	AUG. 06.....	35	24.0	780
JAN. 28, 1980...	278	---	---	AUG. 13.....	10	---	---
MAR. 07.....	127	1.0	1275	SEPT. 12.....	78	18.5	820
MAR. 31.....	898	3.0	920				
05304500 CHIPPEWA RIVER NEAR MILAN, MN							
OCT. 12, 1979...	99	6.0	750	APR. 15.....	603	---	---
NOV. 20.....	260	6.0	640	MAY 21.....	257	22.0	725
JAN. 03, 1980...	130	.5	870	JUNE 23.....	558	26.0	560
FEB. 19.....	68	.0	---	AUG. 01.....	107	23.0	700
MAR. 31.....	840	3.0	480	SEPT. 03.....	118	23.5	660
05311000 MINNESOTA RIVER AT MONTEVIDEO, MN							
OCT. 11, 1979...	180	8.0	850	MAR. 31.....	1060	3.0	---
NOV. 20.....	482	4.0	900	JUNE 04.....	162	---	---
DEC. 13.....	401	.5	1050	JUNE 23.....	1240	26.0	800
JAN. 29, 1980...	335	.0	1150	AUG. 01.....	116	25.0	770
MAR. 14.....	164	.0	1200	SEPT. 03.....	109	---	---
MAR. 21.....	284	3.0	340				
05311400 SOUTH BRANCH YELLOW MEDICINE RIVER NEAR MINNEOTA, MN							
OCT. 11, 1979...	1.5	---	---	JUNE 03.....	2.7	19.0	1040
NOV. 19.....	21	6.0	1150	JUNE 05.....	160	---	1025
DEC. 14.....	19	.5	1500	JULY 03.....	37	20.5	1050
JAN. 28, 1980...	4.2	.0	1050	JULY 30.....	2.3	22.0	1150
MAR. 17.....	88	.0	350	SEPT. 04.....	.56	25.0	1120
APR. 01.....	37	.5	800	SEPT. 29.....	.04	15.0	1150
APR. 25.....	15	11.0	1125				
05313500 YELLOW MEDICINE RIVER NEAR GRANITE FALLS, MN							
OCT. 18, 1979...	14	---	---	APR. 02.....	181	4.5	825
NOV. 19.....	177	6.0	1500	JUNE 04.....	21	---	---
JAN. 04, 1980...	81	.5	1700	JULY 03.....	164	23.0	1100
FEB. 14.....	19	.0	1700	AUG. 06.....	23	---	---
MAR. 18.....	201	.0	---	SEPT. 04.....	8.0	---	1000

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05315000 REDWOOD RIVER AT MARSHALL, MN							
OCT. 11, 1979...	10	---	---	JUNE 03.....	57	19.0	1005
NOV. 19.....	92	6.5	1180	JUNE 05.....	300	20.0	900
DEC. 14.....	67	---	---	JULY 03.....	33	22.0	1000
JAN. 28, 1980...	10	.0	1300	JULY 30.....	22	25.0	1000
MAR. 13.....	11	.0	1475	SEPT. 04.....	6.6	26.0	1200
MAR. 17.....	342	---	---	SEPT. 11.....	3.3	---	---
APR. 01.....	121	---	---	SEPT. 22.....	4.0	---	---
APR. 22.....	50	---	---	SEPT. 29.....	3.4	14.0	600
05316500 REDWOOD RIVER NEAR REDWOOD FALLS, MN							
OCT. 18, 1979...	52	---	---	APR. 01.....	270	5.0	850
NOV. 20.....	255	5.5	1700	MAY 27.....	52	23.0	1500
JAN. 03, 1980...	104	1.0	1700	JULY 02.....	66	22.0	1260
FEB. 14.....	30	.0	1750	JULY 29.....	40	28.0	1200
MAR. 20.....	1440	.0	400	AUG. 29.....	32	25.0	1400
05317000 COTTONWOOD RIVER NEAR NEW ULM, MN							
OCT. 03, 1979...	190	14.5	1120	MAY 09.....	203	12.0	1220
NOV. 07.....	1870	4.0	1300	JUNE 30.....	244	21.0	1245
DEC. 27.....	467	.0	1400	AUG. 18.....	89	23.0	750
FEB. 05, 1980...	97	.0	1400	AUG. 18.....	88	23.0	750
MAR. 20.....	2380	1.0	370				
05317200 LITTLE COTTONWOOD RIVER NEAR COURTLAND, MN							
OCT. 04, 1979...	51	10.5	920	MAR. 17.....	64	.5	340
NOV. 07.....	191	3.0	1020	MAY 09.....	38	14.0	895
DEC. 18.....	76	.5	1300	JUNE 30.....	35	24.0	875
FEB. 05, 1980...	12	.0	1190	AUG. 18.....	8.6	25.0	760
05319500 WATONWAN RIVER NEAR GARDEN CITY, MN							
NOV. 08, 1979...	1070	3.5	980	MAY 10.....	191	13.0	920
DEC. 19.....	400	.0	1420	JULY 02.....	236	20.0	870
FEB. 06, 1980...	55	.0	1120	AUG. 19.....	64	22.0	760
MAR. 26.....	315	.5	---				
05320000 BLUE EARTH RIVER NEAR RAPIDAN, MN							
NOV. 01, 1979...	1900	8.5	920	MAY 10.....	646	15.0	800
DEC. 20.....	1130	.0	1170	JULY 02.....	682	22.0	775
FEB. 06, 1980...	274	.0	1110	AUG. 20.....	1600	---	---
MAR. 19.....	1760	1.0	275	AUG. 21.....	---	23.0	750

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05320500 LE SUEUR RIVER NEAR RAPIDAN, MN							
NOV. 08, 1979	694	4.0	840	MAY 10	292	15.0	750
DEC. 19	284	.0	1040	JULY 02	515	19.0	860
FEB. 07, 1980	83	.0	950	AUG. 20	282	24.5	700
MAR. 19	2280	1.0	230	AUG. 21	248	---	---
05325000 MINNESOTA RIVER AT MANKATO, MN							
NOV. 07, 1979	8690	4.5	980	MAY 11	2190	13.5	920
DEC. 28	2990	.0	1280	JULY 03	3090	29.0	795
FEB. 08, 1980	922	.0	1290	AUG. 21	2220	22.0	760
MAR. 19	7590	1.0	425				
05327000 HIGH ISLAND CREEK NEAR HENDERSON, MN							
OCT. 03, 1979	92	13.0	930	MAR. 14	5.6	3.0	1080
OCT. 03	86	13.0	930	MAY 05	34	15.0	890
NOV. 07	285	2.5	1060	JUNE 06	91	20.0	---
DEC. 18	72	.0	1420	JUNE 11	142	---	---
FEB. 04, 1980	7.4	.0	1300	AUG. 08	1.6	---	---
05330000 MINNESOTA RIVER NEAR JORDAN, MN							
OCT. 22, 1979	2520	11.0	900	MAY 14	2640	13.0	760
NOV. 14	7880	2.0	1080	JUNE 12	14500	20.5	740
DEC. 19	3530	.0	---	JULY 10	2590	26.0	795
JAN. 22, 1980	1750	.0	1130	JULY 24	1200	24.0	795
FEB. 27	1320	.0	---	AUG. 26	1800	23.0	770
MAR. 24	9780	1.0	---	SEPT. 24	1060	15.0	725
05330800 PURGATORY CREEK AT EDEN PRAIRIE, MN							
OCT. 01, 1979	6.3	15.0	490	MAY 02	9.6	15.0	550
NOV. 09	11	2.0	580	MAY 14	2.6	15.0	540
DEC. 26	4.0	2.5	555	JUNE 19	20	21.0	550
FEB. 07, 1980	2.3	1.5	735	JULY 25	3.1	19.0	520
MAR. 21	23	1.0	540	AUG. 05	.87	19.0	500
MAR. 26	33	6.0	560	SEPT. 12	12	15.5	480
05331000 MISSISSIPPI RIVER AT ST. PAUL, MN							
APR. 15, 1980	12100	---	---	SEPT. 09	6450	23.5	380
JULY 02	7730	---	---				
05336700 KETTLE RIVER BELOW SANDSTONE, MN							
OCT. 24, 1979	364	5.0	175	APR. 02	1220	3.0	150
NOV. 27	337	.5	140	MAY 20	197	17.0	170
JAN. 08, 1980	114	.0	250	JULY 08	94	23.0	200
FEB. 20	131	.0	220	AUG. 19	134	19.0	205

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05337400 KNIFE RIVER NEAR MORA, MN			
OCT. 26, 1979...	23	4.0	160
NOV. 28.....	29	.0	160
JAN. 09, 1980...	10	.0	220
FEB. 21.....	11	.0	385
APR. 04.....	209	2.5	170
MAY 06.....	18	18.0	180
MAY 22.....	7.0	17.5	200
JULY 10.....	3.4	24.0	245
AUG. 20.....	11	22.5	210
05338500 SNAKE RIVER NEAR PINE CITY, MN			
OCT. 23, 1979...	222	11.0	205
NOV. 26.....	363	2.5	195
JAN. 07, 1980...	153	.0	270
FEB. 19.....	109	.0	440
APR. 02.....	1120	2.5	205
MAY 19.....	228	20.5	235
JULY 07.....	110	29.0	235
AUG. 18.....	110	25.5	235
05340050 SUNRISE RIVER NEAR LINDSTROM, MN			
OCT. 23, 1979...	81	7.0	---
NOV. 26.....	99	2.5	285
JAN. 07, 1980...	40	.0	420
FEB. 19.....	40	.0	410
APR. 02.....	131	2.0	270
MAY 02.....	101	17.5	280
MAY 19.....	58	16.0	305
JULY 07.....	52	24.5	260
AUG. 18.....	73	19.5	245
05344500 MISSISSIPPI RIVER AT PRESCOTT, WISCONSIN			
APR. 16, 1980...	34700	8.0	525
JULY 03.....	10300	25.5	570
SEPT. 10.....	13800	21.5	262
05345000 VERMILLION RIVER NEAR EMPIRE, MN			
OCT. 10, 1979...	37	10.0	640
NOV. 01.....	62	8.0	595
DEC. 13.....	38	1.5	710
JAN. 23, 1980...	31	---	750
MAR. 06.....	23	.5	825
MAR. 19.....	568	2.0	220
MAR. 20.....	894	2.5	225
MAR. 21.....	508	2.0	235
APR. 22.....	76	15.5	640
APR. 22.....	76	---	---
MAY 02.....	49	14.0	685
MAY 22.....	34	18.5	670
JUNE 05.....	51	---	---
JUNE 20.....	46	19.5	700
JULY 24.....	23	17.0	650
JULY 31.....	20	---	---
AUG. 28.....	30	---	---
SEPT. 15.....	45	20.5	630
SEPT. 22.....	102	---	---
05353800 STRAIGHT RIVER NEAR FARIBAULT, MN			
OCT. 31, 1979...	276	11.5	815
NOV. 09.....	424	2.0	760
DEC. 11.....	190	1.0	880
JAN. 28, 1980...	58	.0	960
MAR. 04.....	45	1.0	920
APR. 28.....	210	19.0	975
JUNE 23.....	90	26.0	750
AUG. 05.....	39	26.0	750
SEPT. 15.....	63	7.0	710

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (MICROMHOS)
05373000 SOUTH FORK ZUMBRO RIVER NEAR ROCHESTER, MN							
OCT. 02, 1979...	114	16.0	660	APR. 30.....	153	19.5	710
NOV. 08.....	385	6.0	675	JUNE 26.....	92	25.0	925
DEC. 13.....	146	3.0	760	AUG. 08.....	94	25.0	690
JAN. 29, 1980...	89	3.0	850	SEPT. 18.....	81	18.0	610
MAR. 06.....	66	6.0	950				
05374000 ZUMBRO RIVER AT ZUMBRO FALLS, MN							
OCT. 02, 1979...	247	14.0	560	MAY 01.....	725	17.0	520
NOV. 07.....	887	6.0	650	JULY 01.....	172	23.0	570
DEC. 13.....	206	.5	675	AUG. 11.....	159	---	---
JAN. 30, 1980...	160	.0	640	SEPT. 19.....	173	15.0	430
MAR. 07.....	735	3.0	700				
05374900 ZUMBRO RIVER AT KELLOGG, MN							
OCT. 03, 1979...	479	13.0	490	MAR. 20.....	14700	5.0	---
NOV. 14.....	1010	2.0	650	MAY 02.....	656	19.0	600
DEC. 14.....	365	2.0	---	JULY 02.....	371	23.5	580
JAN. 31, 1980...	423	.0	690	AUG. 11.....	413	23.0	725
MAR. 10.....	382	.5	620	SEPT. 22.....	1240	15.5	300
MAR. 19.....	9650	5.0	270				
05376000 NORTH FORK WHITEWATER RIVER NEAR ELBA, MN							
OCT. 30, 1979...	42	9.5	570	APR. 09.....	58	5.5	542
DEC. 03.....	46	2.0	590	MAY 28.....	32	17.0	610
JAN. 14, 1980...	39	1.0	570	JULY 16.....	30	21.0	480
FEB. 20.....	33	2.5	550	SEPT. 08.....	32	18.5	470
05376800 WHITEWATER RIVER NEAR BEAVER, MN							
OCT. 25, 1979...	255	9.0	490	APR. 10.....	196	6.0	569
NOV. 30.....	164	1.0	560	MAY 19.....	118	17.5	550
JAN. 15, 1980...	143	2.0	545	JULY 15.....	121	21.0	500
FEB. 22.....	134	3.0	580	SEPT. 06.....	121	16.0	540
05378300 STRAIGHT VALLEY CREEK NEAR ROLLINGSTONE, MN							
OCT. 25, 1979...	2.6	9.0	530	APR. 10.....	2.9	7.0	632
NOV. 29.....	1.7	2.5	560	MAY 19.....	1.4	15.0	570
JAN. 15, 1980...	1.6	4.5	550	JULY 16.....	2.0	24.0	520
FEB. 22.....	2.3	2.5	530	SEPT. 06.....	1.5	16.0	540

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (^oC)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	MEASURED DISCHARGE (ft^3/s)	TEMPERATURE (^oC)	SPECIFIC CONDUCTANCE (MICROMHOS)
05378500 MISSISSIPPI RIVER AT WINONA, MN							
OCT. 31, 1979...	25300	---	---	SEPT. 09.....	39500	---	---
JULY 29, 1980...	15600	---	---				
05384000 ROOT RIVER NEAR LANESBORO, MN							
OCT. 23, 1979...	1300	4.0	535	APR. 12.....	426	5.0	558
NOV. 28.....	613	2.0	540	MAY 20.....	202	20.0	520
JAN. 18, 1980...	946	.5	320	JULY 18.....	190	25.0	485
FEB. 21.....	227	1.0	560	SEPT. 03.....	382	21.0	625
05385000 ROOT RIVER NEAR HOUSTON, MN							
OCT. 24, 1979...	1600	9.0	430	MAY 21.....	471	19.0	540
NOV. 29.....	1060	1.5	550	MAY 21.....	481	19.0	540
JAN. 17, 1980...	5470	.5	280	JULY 17.....	522	21.0	560
MAR. 06.....	302	.0	610	SEPT. 05.....	922	20.5	580
APR. 11.....	1030	6.0	532				
05385500 SOUTH FORK ROOT RIVER NEAR HOUSTON, MN							
OCT. 24, 1979...	146	9.0	460	FEB. 21.....	121	3.0	550
NOV. 28.....	150	3.0	500	APR. 11.....	151	9.5	538
JAN. 16, 1980...	332	2.0	420	MAY 21.....	112	19.5	520
JAN. 16.....	989	---	---	JULY 17.....	120	21.0	448
JAN. 17.....	3330	---	---	SEPT. 04.....	162	19.5	600
05457000 CEDAR RIVER NEAR AUSTIN, MN							
OCT. 22, 1979...	200	8.0	540	APR. 29.....	166	14.0	690
DEC. 11.....	170	.0	725	JUNE 25.....	96	23.0	650
JAN. 28, 1980...	87	.0	800	AUG. 06.....	63	23.5	650
MAR. 05.....	64	.5	800	SEPT. 17.....	185	14.0	480
05476000 DES MOINES RIVER AT JACKSON, MN							
OCT. 18, 1979...	270	11.5	1050	MAY 07.....	331	14.5	1000
NOV. 19.....	1640	7.0	1000	JUNE 06.....	1660	20.0	790
JAN. 02, 1980...	583	.0	1200	JUNE 23.....	738	24.5	940
FEB. 14.....	121	.0	1400	JULY 28.....	67	27.5	850
MAR. 21.....	834	2.0	600	AUG. 28.....	97	22.0	860
APR. 17.....	768	13.0	800				

AITKIN COUNTY

462447093154401. Local number, 045N23W05ADD01.
LOCATION.--Lat 46°24'47", long 93°15'44", in SE¼SE¼NE¼ sec.5, T.45 N., R.23 W., Hydrologic Unit 07010104, in Solana State Forest.
Owner: U.S. Geological Survey.
AQUIFER.--Shallow buried sand of Pleistocene Age.
WELL CHARACTERISTICS.--Hand augered and driven observation water-table well, diameter 1¼ in (0.03 m), depth 13 ft (4.0 m), screened 10 to 13 ft (3.0 to 4.0 m).
DATUM.--Altitude of land-surface datum is 1,265 ft (386 m). Measuring point: Top of platform, 0.80 ft (0.24 m) above land-surface datum.
REMARKS.--Water level subject to freezing during winter periods.
PERIOD OF RECORD.--October 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.50 ft (0.15 m) above land-surface datum, Mar. 22, 1976; lowest, 3.12 ft (0.95 m) below land-surface datum, Jan. 10, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	0.58	JAN 09	0.73	MAY 02	0.26	JUN 15	0.76	AUG 20	0.67	SEP 16	0.00
NOV 27	0.70										

462447093154402. Local number, 045N23W05ADD02.
LOCATION.--Lat 46°24'47", long 93°15'44", in SE¼SE¼NE¼ sec.5, T.45 N., R.23 W., Hydrologic Unit 07010104, in Solana State Forest.
Owner: U.S. Geological Survey.
AQUIFER.--Peat of Quaternary Age.
WELL CHARACTERISTICS.--Hand augered and driven observation water-table well, diameter 2 in (0.05 m), depth 3 ft (0.9 m), screened 0 to 3 ft (0.0 to 0.9 m).
DATUM.--Altitude of land-surface datum is 1,265 ft (386 m). Measuring point: Top of platform, 0.80 ft (0.24 m) above land-surface datum.
REMARKS.--Water-level subject to freezing during winter periods.
PERIOD OF RECORD.--November 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.22 ft (0.07 m) above land-surface datum, May 2, 1975; lowest, dry below land-surface datum, Sept. 10, 1976 to Feb. 14, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	0.67	NOV 27	0.60	MAY 12	0.30	JUL 15	1.01	AUG 20	0.54	SEP 16	0.26

462447093154403. Local number, 045N23W05ADD03.
LOCATION.--Lat 46°24'47", long 93°15'44", in SE¼SE¼NE¼ sec.5, T.45 N., R.23 W., Hydrologic Unit 07010104, in Solana State Forest.
Owner: U.S. Geological Survey.
AQUIFER.--Peat and sand of Quaternary Age.
WELL CHARACTERISTICS.--Hand augered observation water-table well, diameter 8 in (0.20 m), depth 4 ft (1.2 m), open end stovepipe.
DATUM.--Altitude of land-surface datum is 1,265 ft (386 m). Measuring point: Top of platform, 0.80 ft (0.24 m) above land-surface datum.
REMARKS.--Water-level subject to freezing during winter periods.
PERIOD OF RECORD.--August 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.13 ft (0.04 m) above land-surface datum, May 19, 1979; lowest, dry below land-surface datum, Nov. 29, 1976 to Feb. 14, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	0.63	0.29	.....	.....	.....	.....	.....	0.32	0.28	.....	0.83	0.19
10	0.68	0.32	.....	.....	.....	.....	.....	0.37	0.27	.....	0.74	0.26
15	0.72	0.32	.....	.....	.....	.....	.....	0.32	0.27	0.82	0.53	0.22
20	0.60	.....	.....	.....	.....	.....	0.27	0.28	0.30	0.51	0.54	0.26
25	0.52	.....	.....	.....	.....	.....	0.23	0.19	0.24	0.55	0.45	0.28
EOM	0.40	.....	.....	.....	.....	.....	0.26	0.17	.....	0.74	0.44	0.27

WTR YEAR 1980 HIGHEST 0.17 MAY 31, 1980 LOWEST 0.83 AUG 5, 1980

AITKIN COUNTY--Continued

463135093433901. Local number, 047N27W26BBC01.
LOCATION.--Lat 46°31'35", long 93°43'39", in SW¼NW¼NW¼ sec.26, T.47 N., R.27 W., Hydrologic Unit 07010104, in City of Aitkin.
Owner: Woodland Container Co.
AQUIFER.--Buried sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in (0.15 m), depth 52 ft (15.8 m), screened 47 to 52 ft (14.3 to 15.8 m).
DATUM.--Altitude of land-surface datum is 1,213 ft (370 m). Measuring point: Top of casing, 1.20 ft (0.37 m) above land-surface datum.
PERIOD OF RECORD.--January 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.96 ft (2.12 m) below land-surface datum, June 9, 1965; lowest, 13.38 ft (4.08 m) below land-surface datum, Nov. 29, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	12.07	JAN 08	11.82	MAR 31	12.74	JUL 15	12.14	AUG 20	12.26	SEP 15	11.27
NOV 26	11.27	FEB 20	12.00	MAY 12	11.75						

ANOKA COUNTY

451056093072201. Local number, 031N22W18AAA01.
LOCATION.--Lat 45°10'56", long 93°07'22", in NE¼NE¼NE¼ sec.18, T.31 N., R.22 W., Hydrologic Unit 07010206, at 4th Avenue and Lilac Street, Lino Lakes.
Owner: U.S. Geological Survey.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 6 in (0.15 m), depth 270 ft (82.3 m), screened 260 to 270 ft (79.2 to 82.3 m).
DATUM.--Land-surface datum is 895.8 ft (273.0 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of well cap, 0.80 ft (0.24 m) above land-surface datum.
REMARKS.--Water level affected by pumping.
PERIOD OF RECORD.--February 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.39 ft (1.95 m) below land-surface datum, July 7, 1975; lowest, 14.75 ft (4.50 m) below land-surface datum, Aug. 24, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	10.22	JAN 15	10.87	FEB 26	10.99	APR 10	11.04	JUN 09	12.14	AUG 14	13.84
DEC 03	10.72										

451056093072202. Local number, 031N22W18AAA02.
LOCATION.--Lat 45°10'56", long 93°07'22", in NE¼NE¼NE¼ sec.18, T.31 N., R.22 W., Hydrologic Unit 07010206, at 4th Avenue and Lilac Street, Lino Lakes.
Owner: U.S. Geological Survey.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 4 in (0.10 m), depth 214 ft (65.2 m), screened 209 to 214 ft (63.7 to 65.2 m).
DATUM.--Land-surface datum is 896.1 ft (273.1 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of well cap, 2.20 ft (0.67 m) above land-surface datum.
REMARKS.--Water level affected by pumping.
PERIOD OF RECORD.--February 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.78 ft (2.07 m) below land-surface datum, July 7, 1975; lowest, 15.10 ft (4.60 m) below land-surface datum, Aug. 24, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	11.55	JAN 15	11.25	FEB 26	11.28	APR 10	11.42	JUN 09	11.65	AUG 14	14.22
DEC 03	11.14										

ANOKA COUNTY--Continued

451056093072203. Local number, 031N22W18AAA03.
LOCATION.--Lat 45°10'56", long 93°07'22", in NE¼NE¼NE¼ sec.18, T.31 N., R.22 W., Hydrologic Unit 07010206, at 4th Avenue and Lilac Street, Lino Lakes.
Owner: U.S. Geological Survey.
AQUIFER.--Buried gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 4 in (0.10 m), depth 125 ft (38.1 m), screened 120 to 125 ft (36.6 to 38.1 m).
DATUM.--Land-surface datum is 896.0 ft (273.1 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of well cap, 1.60 ft (0.49 m) above land-surface datum.
PERIOD OF RECORD.--February 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 7.35 ft (2.24 m) below land-surface datum, Aug. 18, 1975; lowest, 10.70 ft (3.26 m) below land-surface datum, Mar. 20, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	10.29	DEC 03	10.29	JAN 15	10.30	FEB 26	10.31	JUN 09	10.37	AUG 14	10.58

451056093072205. Local number, 031N22W18AAA05.
LOCATION.--Lat 45°10'56", long 93°07'22", in NE¼NE¼NE¼ sec.18, T.31 N., R.18 W., Hydrologic Unit 07010206, at 4th Avenue and Lilac Street, Lino Lakes.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial outwash sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 13 ft (3.96 m), screened 11 to 13 ft (3.35 to 3.96 m).
DATUM.--Land-surface datum is 895.6 ft (273.0 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.90 ft (0.60 m) above land-surface datum.
PERIOD OF RECORD.--February 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.67 ft (0.81 m) below land-surface datum, July 7, 1975; lowest, 6.03 ft (1.84 m) below land-surface datum, Feb. 14, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	5.09	JAN 15	5.46	FEB 26	5.65	APR 10	5.15	JUN 09	4.88	AUG 14	5.07
DEC 03	5.18										

450927093033801. Local number, 031N22W23CBC01.
LOCATION.--Lat 45°09'27", long 93°03'38", in SW¼NW¼SW¼ sec.23, T.31 N., R.22 W., Hydrologic Unit 07010206, at City of Centerville.
Owner: U.S. Geological Survey.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 4 in (0.10 m), depth 95 ft (29.0 m), screened 91 to 95 ft (27.7 to 29.0 m).
DATUM.--Land-surface datum is 901.6 ft (274.8 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of well cap, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--February 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.95 ft (2.12 m) below land-surface datum, Aug. 20, 1975; lowest, 9.78 ft (2.98 m) below land-surface datum, Feb. 14, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	7.82	JAN 15	8.14	FEB 26	8.33	APR 10	8.45	JUN 09	8.30	AUG 14	8.24
DEC 03	7.95										

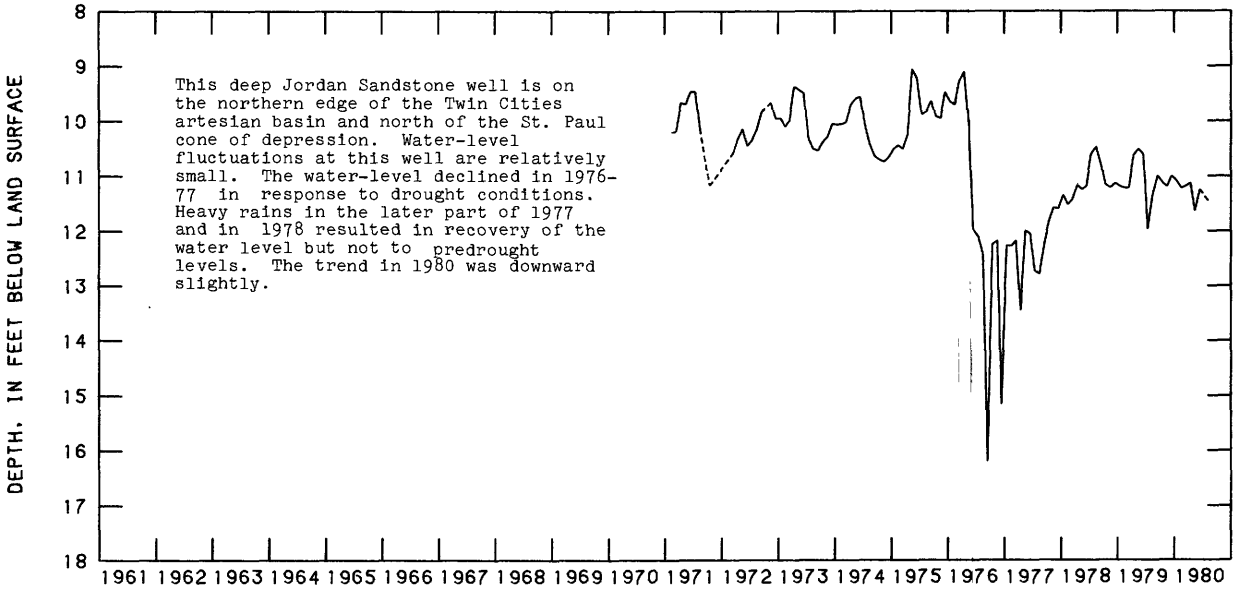
ANOKA COUNTY--Continued

450927093033802. Local number, 031N22W23CBC02.
LOCATION.--Lat 45°09'27", long 93°03'38", in SW¼NW¼SW¼ sec.23, T.31 N., R.22 W., Hydrologic Unit 07010206, at City of Centerville.
Owner: U.S. Geological Survey.
AQUIFER.--Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 4 in (0.10 m), depth 277 ft (84.4 m), screened 272 to 277 ft (82.9 to 84.4 m).
DATUM.--Land-surface datum is 901.6 ft (274.8 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of recorder platform, 2.20 ft (0.67 m) above land-surface datum.
REMARKS.--Water level affected by nearby flowing wells.
PERIOD OF RECORD.--February 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 8.10 ft (2.47 m) below land-surface datum, July 5, 1975; lowest, 16.20 ft (4.94 m) below land-surface datum, Sept. 15, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	DATE	WATER LEVEL	DATE	WATER LEVEL
5	10.92	11.11	10.84	10.92	11.00	11.08	11.00	11.20	JUN 09	11.24	AUG 14	11.49
10	11.04	11.05	10.83	10.93	10.93	11.18	11.02	11.64				
15	11.11	11.09	11.00	10.97	11.06	11.17	10.95	11.35				
20	11.00	11.19	10.96	11.05	11.04	11.13	10.92	11.26				
25	11.09	10.93	10.98	11.09	11.17	11.08	11.00	11.55				
EOM	10.93	10.92	10.90	11.06	11.22	11.08	11.12	.....				

WTR YEAR 1980 HIGHEST 10.61 JAN 6, 1980 LOWEST 11.97 MAY 8, 1980



031N22W23CBC02 WATER LEVEL

450927093033803. Local number, 031N22W23CBC03.
LOCATION.--Lat 45°09'27", long 93°03'38", in SW¼NW¼SW¼ sec.23, T.31 N., R.22 W., Hydrologic Unit 07010206, at City of Centerville.
Owner: U.S. Geological Survey.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 4 in (0.10 m), depth 221 ft (67.4 m), cased to 211 ft (64.3 m).
DATUM.--Land-surface datum is 901.8 ft (274.9 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of well cap, 3.30 ft (1.01 m) above land-surface datum.
REMARKS.--Water level affected by nearby flowing wells.
PERIOD OF RECORD.--February 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 8.57 ft (2.61 m) below land-surface datum, July 7, 1975; lowest, 12.69 ft (3.87 m) below land-surface datum, Aug. 1, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	11.36	JAN 15	11.18	FEB 26	11.23	APR 10	11.25	JUN 09	11.52	AUG 14	11.78
DEC 03	11.14										

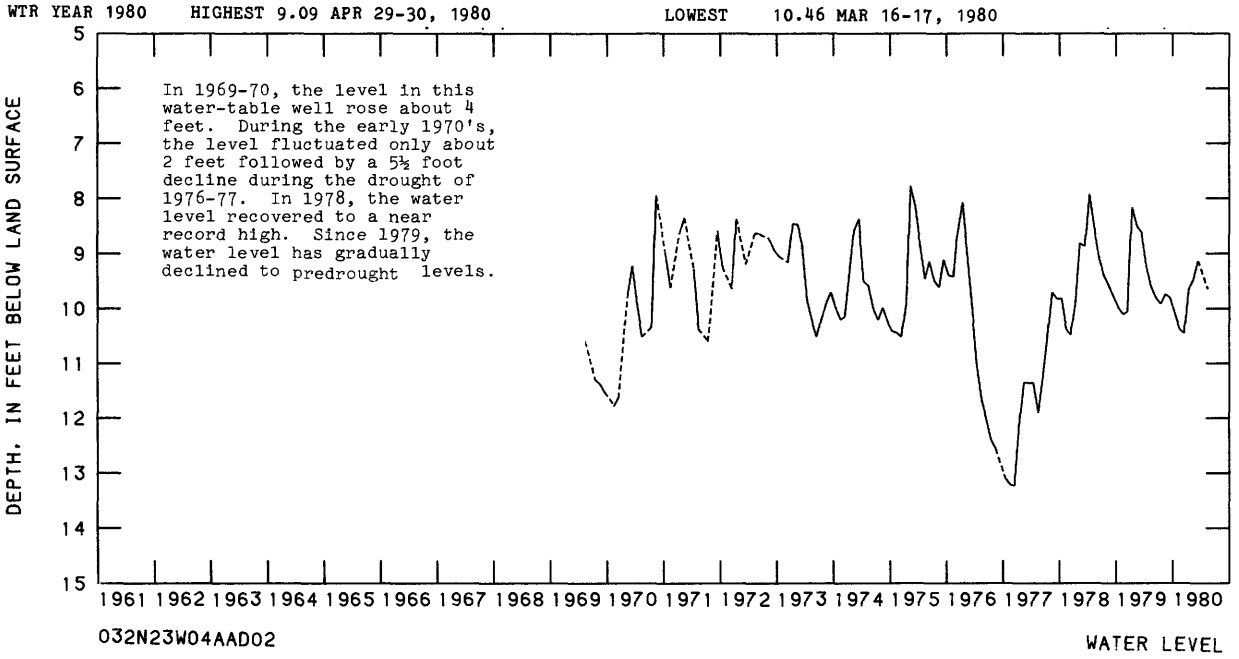
ANOKA COUNTY--Continued

451742093122102. Local number, 032N23W04AAD02.
LOCATION.--Lat 45°17'42", long 93°12'21", in SE¼NE¼NE¼ sec.4, T.32 N., R.23 W., Hydrologic Unit 07030005, 1.5 mi (2.4 km) east of Soderville.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial outwash sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 2 in (0.05 m), depth 21 ft (6.4 m), screened 19 to 21 ft (5.8 to 6.4 m).
DATUM.--Altitude of land-surface datum is 916 ft (279 m). Measuring point: Top of casing, 3.50 ft (1.07 m) above land-surface datum.
PERIOD OF RECORD.--August 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.20 ft (1.89 m) below land-surface datum, July 30, 1975; lowest, 13.22 ft (4.03 m) below land-surface datum, Mar. 5-9, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	DATE	WATER LEVEL	DATE	WATER LEVEL
5	9.82	9.72	9.56	9.88	10.12	10.35	9.65	9.16	JUN 09	9.13	AUG 14	9.64
10	9.88	9.67	9.56	9.89	10.07	10.42	9.55	9.19				
15	9.92	9.69	9.71	9.93	10.21	10.45	9.40	9.36				
20	9.81	9.74	9.72	10.00	10.25	10.32	9.26	9.32				
25	9.84	9.57	9.80	10.07	10.32	9.98	9.16	9.47				
EOM	9.66	9.59	9.78	10.10	10.37	9.72	9.12	.....				

WTR YEAR 1980 HIGHEST 9.09 APR 29-30, 1980 LOWEST 10.46 MAR 16-17, 1980



BECKER COUNTY

456601095110101. Local number, 140N36W26AAD01.
LOCATION.--Lat 46°55'01', long 95°11'01", in SE¼NE¼NE¼ sec.26 T.140 N., R.36 W., Hydrologic Unit 07010106, on Pritchard farm.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 28 ft (8.5 m), screened 26 to 28 ft (7.9 to 8.5 m).
DATUM.--Altitude of land-surface datum is 1,469 ft (448 m): Measuring point: Top of platform, 0.50 ft (0.15 m) above land-surface datum.
PERIOD OF RECORD.--October 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 17.80 ft (5.43 m) below land-surface datum, July 28, 1975; lowest, 22.40 ft (6.83 m) below land-surface datum, Aug. 7, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	.....	.....	20.31	20.44	20.62	20.72	.....	20.33	20.86	.....	22.18	21.64
10	20.55	.....	20.33	20.47	20.62	20.73	.....	.....	20.83	.....	22.25	21.54
15	.....	.....	20.35	20.49	20.62	20.77	.....	20.39	20.82	21.89	22.36	21.46
20	.....	.....	20.35	20.52	20.64	20.79	.....	20.41	20.90	22.12	22.11	21.43
25	.....	.....	20.38	20.55	20.69	.....	.....	20.45	.....	22.24	21.94	21.39
EOM	.....	20.32	20.42	20.58	20.71	.....	.....	20.69	.....	22.14	21.76	21.38

WTR YEAR 1980 HIGHEST 20.31 MAY 10, 1980 LOWEST 22.40 AUG 7, 1980

BELTRAMI COUNTY

473023094570901. Local number, 147N34W35ADC01.
LOCATION.--Lat 47°30'23", long 94°57'09", in SW¼SE¼NE¼ sec.35, T.147 N., R.34 W., Hydrologic Unit 07010101, on Clarence Hart farm.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial outwash sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 20 ft (6.1 m), screened 18 to 20 ft (5.5 to 6.1 m).
DATUM.--Altitude of land-surface datum is 1,383 ft (421 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--October 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.17 ft (1.88 m) below land-surface datum, Aug. 1, 1975; lowest, 10.55 ft (3.22 m) below land-surface datum, Aug. 25, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 09	8.17	JAN 10	8.32	FEB 28	8.33	JUL 16	9.20	AUG 13	9.52	SEP 08	9.45
NOV 28	7.98	FEB 13	8.75	MAY 05	8.38						

BENTON COUNTY

453454094002402. Local number, 036N29W30BCC02.
LOCATION.--Lat 45°34'54", long 93°00'24", in SW¼SW¼NW¼ seo. 30, T.36 N., R.29 W., Hydrologic Unit 07010203, 3.7 mi (6.0 km) west of Duelm.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 19 ft (5.8 m), screened 17 to 19 ft (5.2 to 5.8 m).
DATUM.--Altitude of land-surface datum is 1,049 ft (320 m). Measuring point: Top of oasing, 4.00 ft (1.22 m) above land-surface datum.
PERIOD OF RECORD.--October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.58 ft (1.70 m) below land-surface datum, June 30, 1979; lowest, 12.30 ft (3.75 m) below land-surface datum, Aug. 18, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	6.52	JAN 02	7.48	MAR 12	8.57	MAY 06	8.12	JUN 06	8.40	JUL 08	8.56
DEC 04	6.96	FEB 12	8.21	APR 08	8.11						

454312094114402. Local number, 037N31W09AAA02.
LOCATION.--Lat 45°43'12",long 94°11'44", in NE¼NE¼NE¼ seo.9, T.37 N., R.31 W., Hydrologic Unit 07010201, 2.6 mi (4.2 km) south of flashing light in Rice.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in(0.03 m), depth 34 ft (10.4 m), screened 32 to 34 ft (9.8 to 10.4 m).
DATUM.--Altitude of land-surface datum is 1,058 ft (322 m). Measuring point: Top of casing, 2.50 ft (0.76 m) above land-surfaoa datum.
PERIOD OF RECORD.--Ootober 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 28.68 ft (8.74 m) below land-surface datum, Sept. 29, 1978; lowest, 33.52 ft (10.22 m) below land-surface datum, Sept. 5, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	28.98	JAN 02	28.99	MAR 12	30.32	MAY 06	30.10	JUN 06	30.42	JUL 08	30.69
DEC 04	29.24	FEB 12	29.54	APR 08	29.88						

BENTON COUNTY--Continued

454657094143701. Local number, 038N31W18DCA01.
LOCATION.--Lat 45°46'57", long 94°14'37", in NE¼SW¼SE¼ sec.18, T.38 N., R.31 W., Hydrologic Unit 07010201, 0.25 mi (0.40 km) north of Highway 10.
Owner: Jerry Schlicting.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 12 in (0.30 m), depth 130 ft (39.6 m), screened 101 to 106 ft (30.8 to 32.3 m) and 120 to 130 ft (36.6 to 39.6 m).
DATUM.--Altitude of land-surface datum is 1,070 ft (326 m): Measuring point: Hole in pump base, 1.00 ft (0.30 m) above land-surface datum.
PERIOD OF RECORD.--December 1979 to June 1980.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 20.91 ft (6.37 m) below land-surface datum, Dec. 6, 1979; lowest, 23.30 ft (7.10 m) below land-surface datum, June 23, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 06	20.91	JAN 21	21.20	APR 14	22.08	JUN 23	23.30

454648094144102. Local number, 038N31W18DCD02.
LOCATION.--Lat 45°46'48", long 94°14'41", in SE¼SW¼SE¼ sec.18, T.38 N., R.31 W., Hydrologic Unit 07010201, 2.4 mi (3.9 km) north of flashing light in Rice.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 36 ft (11.0 m), screened 34 to 36 ft (10.4 to 11.0 m).
DATUM.--Altitude of land-surface datum is 1,065 ft (325 m). Measuring point: Top of casing, 4.60 ft (1.40 m) above land-surface datum.
PERIOD OF RECORD.--October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 23.65 ft (7.21 m) below land-surface datum, Dec. 6, 1979; lowest, 32.36 ft (9.86 m) below land-surface datum, Aug. 10, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	DATE	WATER LEVEL
5	23.95	23.95	23.72	23.82	24.11	24.41	24.65	24.95	JUN 23	25.75
10	.....	23.87	23.72	23.82	24.09	24.47	24.70	25.13		
15	.....	23.86	23.79	23.90	24.21	24.52	24.75	25.22		
20	.....	23.88	23.73	23.98	24.24	24.57	24.79	25.28		
25	23.94	23.77	23.76	24.01	24.33	24.60	24.85	25.37		
EOM	23.85	23.78	23.76	24.09	24.39	24.63	24.89	25.55		

WTR YEAR 1980 HIGHEST 23.65 DEC 6, 1979 LOWEST 25.75 JUN 23, 1980

454644094092902. Local number, 038N31W23AAB02.
LOCATION.--Lat 45°46'44", long 94°09'29", in NW¼NE¼NE¼ sec.23, T.38 N., R.31 W., Hydrologic Unit 07010201, 3.2 mi (5.2 km) northeast of flashing light in Rice.
Owner: U.S. Geolcgical Survey.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 13 ft (4.0 m), screened 11 to 13 ft (3.4 to 4.0 m).
DATUM.--Altitude of land-surface datum is 1,082 ft (330 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.43 ft (0.74 m) below land-surface datum, July 14, 1978; lowest, 8.00 ft (2.44 m) below land-surface datum, Feb. 8, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	4.08	JAN 02	5.08	MAR 12	6.11	MAY 06	4.87	JUN 06	5.50	JUL 08	5.74
DEC 04	4.51	FEB 12	5.80	APR 08	5.32						

BIG STONE COUNTY

451517096104501. Local number, 121N44W27CCC01.
LOCATION.--Lat 45°15'17", long 96°10'45", in SW¼SW¼SW¼ sec.27, T.121 N., R.44 W., Hydrologic Unit 07020001, north of Correll.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 16 ft (4.9 m), screened 14 to 16 ft (4.3 to 4.9 m).
DATUM.--Altitude of land-surface datum is 1,018 ft (310 m). Measuring point: Top of casing, 3.10 ft (0.94 m) above land-surface datum.
PERIOD OF RECORD.--September 1972 to February 1974, August 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.09 ft (1.55 m) below land-surface datum, May 28, 1973; lowest, 8.99 ft (2.74 m) below land-surface datum, Feb. 8, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 11	7.06	JAN 10	7.17	APR 30	7.23	JUN 23	6.79	AUG 11	7.33	SEP 12	7.57
NOV 26	6.98	MAR 04	7.43								

453330096420201. Local number, 124N48W17AAA01.
LOCATION.--Lat 45°33'30", long 96°42'02", in NE¼NE¼NE¼ sec.17, T.124 N., R.48 W., Hydrologic Unit 07020001, 0.5 mi (0.8 km) east of Beardsley.
Owner: U.S. Geological Survey.
AQUIFER.--Buried sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in (0.05 m), depth 282 ft (86.0 m), screened 242 to 282 ft (73.8 to 86.0 m).
DATUM.--Land-surface datum is 1,086.8 ft (331.3 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.70 ft (0.82 m) above land-surface datum.
PERIOD OF RECORD.--November 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 10.90 ft (3.32 m) below land-surface datum, Apr. 11, 1979; lowest, 16.26 ft (4.96 m) below land-surface datum, Aug. 11, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 09	13.00	JUL 09	14.60	AUG 11	16.26	SEP 11	14.05

453237096381601. Local number, 124N48W23AAA04.
LOCATION.--Lat 45°32'37", long 96°38'16", in NE¼NE¼NE¼ sec.23, T.124 N., R.48 W., Hydrologic Unit 07020001, 3.5 mi (5.6 km) southeast of Beardsley.
Owner: U.S. Geological Survey.
AQUIFER.--Buried sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in (0.05 m), depth 240 ft (73.2 m), screened 200 to 240 ft (61.0 to 73.2 m).
DATUM.--Land-surface datum is 1,087.2 ft (331.4 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 1.00 ft (0.30 m) above land-surface datum.
PERIOD OF RECORD.--November 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 39.25 ft (11.96 m) below land-surface datum, Jan. 28., 1979; lowest, 40.84 ft (12.45 m) below land-surface datum, Nov. 8, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 09	40.06	JUL 09	40.18	SEP 11	40.23

BIG STONE COUNTY--Continued

453100096442202. Local number, 124N48W31BBB01.
LOCATION.--Lat 45°31'00", long 96°44'22", in NW¼NW¼NW¼ sec.31, T.124 N., R.48 W., Hydrologic Unit 07020001, 3.5 mi (5.6 km) southwest of Beardsley.
Owner: U.S. Geological Survey.
AQUIFER.--Buried sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation artesian well, diameter 1½ in (0.04 m), depth 30 ft (9.1 m), screened 28 to 30 ft (8.5 to 9.1 m).
DATUM.--Altitude of land-surface datum is 1,083.0 ft (330.1 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 3.90 ft (1.19 m) above land-surface datum.
PERIOD OF RECORD.--September 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 7.65 ft (2.33 m) below land-surface datum, July 10, 1979; lowest, 16.88 ft (5.15 m) below land-surface datum, Sept. 30, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 09	10.12	JUL 09	9.02	AUG 07	10.68	SEP 11	12.23

453430096454201. Local number, 124N49W02DDD01.
LOCATION.--Lat 45°34'30", long 96°45'42", in SE¼SE¼SE¼ sec.2, T.124 N., R.49 W., Hydrologic Unit 07020001, 5 mi (8 km) southeast of Browns Valley.
Owner: U.S. Geological Survey.
AQUIFER.--Buried sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation artesian well, diameter 1½ in (0.04 m), depth 23.5 ft (7.16 m), screened 21.5 to 23.5 ft (6.55 to 7.16 m).
DATUM.--Altitude of land-surface datum is 1,088 ft (332 m). Measuring point: 3.20 ft (0.98 m) above land-surface datum.
PERIOD OF RECORD.--September 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 7.51 ft (2.29 m) below land-surface datum, Apr. 30, 1979; lowest, 12.30 ft (3.75 m) below land-surface datum, Sept. 27, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 09	9.68	JUL 09	10.09	AUG 07	10.43	SEP 11	10.68

BLUE EARTH COUNTY

435544093573901. Local number, 105N26W04BDC01.
LOCATION.--Lat 45°55'44", long 93°57'39", in SW¼SE¼NW¼ sec.4, T.105 N., R.26 W., Hydrologic Unit 07020011, at Mapleton.
Owner: Mapleton Creamery.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in (0.15 m), depth 186 ft (56.7 m).
DATUM.--Altitude of land-surface datum is 1,036 ft (316 m). Measuring point: Hole in well cap, 1.70 ft (0.52 m) above land-surface datum.
PERIOD OF RECORD.--October 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 29.94 ft (9.13 m) below land-surface datum, May 11, 1978; lowest, 35.78 ft (10.91 m) below land-surface datum, Nov. 30, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	31.76	FEB 08	32.16	MAR 18	32.62	MAY 10	33.38	JUL 01	33.09	AUG 19	33.91
DEC 20	32.79										

BLUE EARTH COUNTY--Continued

440050094102801. Local number, 106N28W03DBA01.
LOCATION.--Lat°44 00'50", long 94°10'28", in NE¼NW¼SE¼ sec.3, T.106 N., R.28 W., Hydrologic Unit 07020010, at Farmland Industries Ammonia Plant, 3.2 mi (5.2 km) north of Vernon Center.
Owner: Farmland Industries.
AQUIFER.--Ironton-Galesville Sandstones of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 16 in (0.41 m), depth 390 ft (119 m), cased to 150 ft (45.7 m).
DATUM.--Altitude of land-surface datum is 1,005 ft (306 m). Measuring point: Top of recorder floor, 2.00 ft (0.61 m) above land-surface datum.
PERIOD OF RECORD.--October 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 72.37 ft (22.06 m) below land-surface datum, June 21, 1974; lowest, 76.17 ft (23.22 m) below land-surface datum, Aug. 17, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	73.77	73.94	73.46	73.67	73.86	73.91	73.73	73.71	73.59	73.76	74.21	74.38
10	73.86	73.74	73.58	73.76	73.76	73.89	73.63	73.59	73.61	73.85	74.31	74.50
15	73.85	73.88	73.81	73.62	73.93	73.86	73.63	73.93	73.56	73.92	74.37	74.43
20	73.66	73.88	73.71	73.99	73.63	73.77	73.79	73.87	73.68	74.04	74.14	74.31
25	73.95	73.61	73.64	73.79	74.05	73.85	73.70	73.87	73.64	74.18	74.30	74.48
EOM	73.58	.....	73.71	74.03	74.26	73.77	73.69	73.88	73.62	74.26	74.26	74.31

WTR YEAR 1980 HIGHEST 73.38 OCT 31, 1979 LOWEST 74.51 SEP 9, 26, 1980

441134093505301. Local number, 108N25W04BBC01.
LOCATION.--Lat 44°11'34", long 93°50'53", in SW¼NW¼NW¼ sec.4, T.108 N., R.25 W., Hydrologic Unit 07020011, 1.3 mi (2.1 km) west of Madison Lake at waste treatment plant.
Owner: City of Madison Lake.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age.
WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in (0.15 m), depth 313 ft (95.4 m), cased to 296 ft (90.2 m).
DATUM.--Altitude of land-surface datum is 1,036 ft (316 m). Measuring point: Top of casing, 1.60 ft (0.49 m) above land-surface datum.
PERIOD OF RECORD.--May 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 94.80 ft (28.90 m) below land-surface datum, Nov. 6, 1979; lowest, 95.10 ft (28.99 m) below land-surface datum, July 26, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	94.80	DEC 11	94.85	JAN 23	94.83	MAR 03	94.83	JUN 18	94.89	AUG 21	94.90

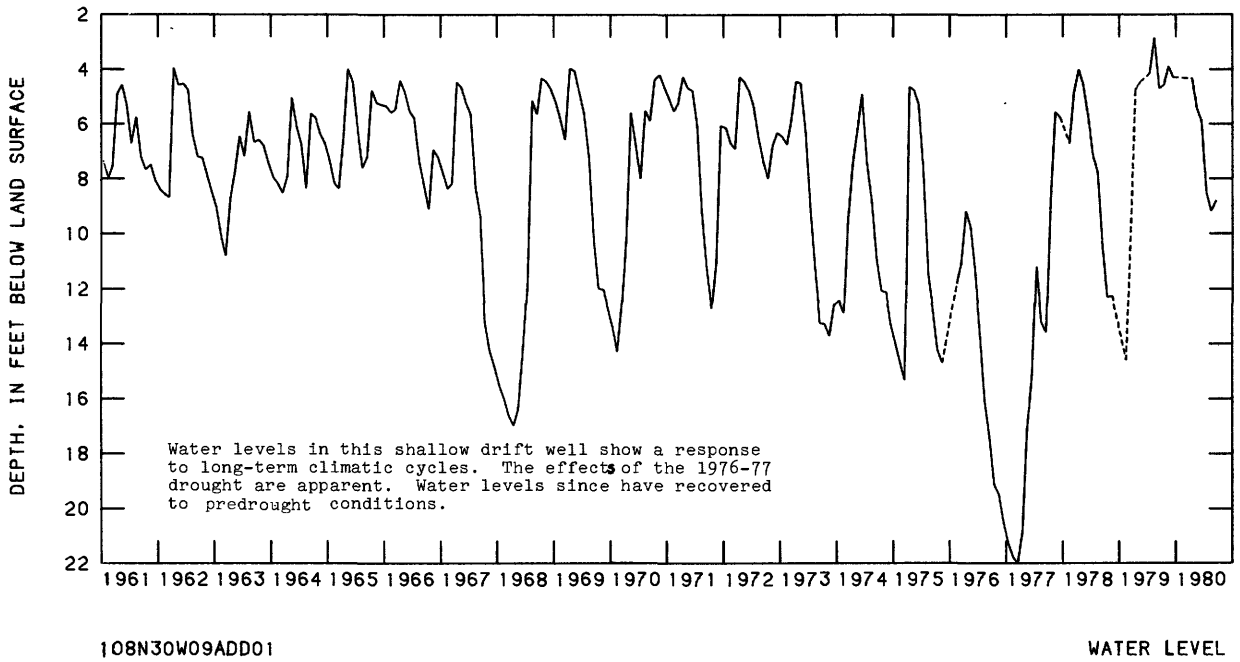
BROWN COUNTY

441030094254501. Local number, 108N30W09ADD01.
LOCATION.--Lat 44 10'30", long 94 25'45", in SE¼SE¼NE¼ sec.9, T.108 N., R.30 W., Hydrologic Unit 07020007, 3.7 mi (6.0 km) northeast of Hanska.
Owner: Erwin Kjelshus.
AQUIFER.--Deposits of Pleistocene Age.
WELL CHARACTERISTICS.--Bored unused water-table well, diameter 16 in (0.41 m), depth 32 ft (9.8 m), cased to 32 ft (9.8 m), open end.
DATUM.--Altitude of land-surface datum is 1,003 ft (306 m). Measuring point: Top of concrete cover, at land-surface datum.
REMARKS.--Measured by Erwin Kjelshus. Water level used in monthly Water Resources Review.
PERIOD OF RECORD.--July 1942 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.27 ft (0.79 m) below land-surface datum, Aug. 10, 1979; lowest, 22.00 ft (6.71 m) below land-surface datum, Mar. 2, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 10	4.55	APR 17	4.20	MAY 18	5.17	JUN 08	5.10	JUL 20	7.80	AUG 27	8.04
30	4.37	25	4.33	25	5.41	15	5.37	27	8.50	SEP 04	8.06
NOV 30	3.88	MAY 04	4.70	29	5.90	22	5.75	AUG 03	9.18	20	8.80
DEC 18	4.29	11	5.00	JUN 01	5.20	JUL 06	6.43	18	8.46	29	8.60

BROWN COUNTY--Continued



441800094434301. Local number, 110N32W30DDB01.
LOCATION.--Lat 44°18'00", long 94°43'43", in NW¼SE¼SE¼ sec. 30, T.110 N., R.32 W., Hydrologic Unit 07020008, in Sleepy Eye at hospital.
Owner: City of Sleepy Eye.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in (0.05 m), depth 176 ft (53.6 m).
DATUM.--Altitude of land-surface datum is 1,030 ft (314 m). Measuring point: Top of casing, 1.30 ft (0.40 m) above land-surface datum.
REMARKS.--Water level affected by pumping from nearby wells.
PERIOD OF RECORD.--August 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 52.40 ft (15.97 m) below land-surface datum, June 3, 1980; lowest, 118.1 ft (36.00 m) below land-surface datum, Sept. 15, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 20	55.50	FEB 04	53.30	APR 02	53.60	JUN 03	52.40	JUL 18	63.00	SEP 03	57.70
JAN 10	54.50	MAR 03	53.50	MAY 01	53.10	JUL 03	57.90	AUG 06	59.50		

CARLTON COUNTY

462712092453401. Local number, 046N19W21CBB01.
LOCATION.--Lat 46°27'12", long 92°45'34", in NW¼NW¼SW¼ sec.21, T.46 N., R.19 W., Hydrologic Unit 07030003, in Moose Lake at water tower.
Owner: City of Moose Lake.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Dug unused water-table well, diameter 120 in (3.0 m), depth 43 ft (13.1 m), screened 33 to 43 ft (10.1 to 13.1 m).
DATUM.--Altitude of land-surface datum is 1,061 ft (323 m). Measuring point: Top of concrete cover, 1.10 ft (0.34 m) above land-surface datum.
PERIOD OF RECORD.--August 1967 to May 1969, July 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 20.35 ft (6.20 m) below land-surface datum, Oct. 25, 1968; lowest, 22.89 ft (6.98 m) below land-surface datum, July 9, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	22.26	APR 30	22.20	JUL 09	22.89	AUG 01	22.68	AUG 28	22.62	SEP 19	21.82
MAR 12	22.86	JUN 19	22.58	22	22.88						

CARLTON COUNTY--Continued

463747092372701. Local number, 048N18W21ACD01.
LOCATION.--Lat 46°37'47", long 92°37'27", in SE¼SW¼NE¼ sec.21, T.48 N., R.18 W., Hydrologic Unit 07030003, on Clarence Gustafson farm.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 52 ft (15.8 m), screened 50 to 52 ft (15.2 to 15.8 m).
DATUM.--Altitude of land-surface datum is 1,280 ft (390 m). Measuring point: Top of casing, 3.80 ft (1.16 m) above land-surface datum.
PERIOD OF RECORD.--December 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 20.36 ft (6.21 m) below land-surface datum, July 25, 1979; lowest, 22.53 ft (6.87 m) below land-surface datum, Mar. 6, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	20.83	APR 29	20.80	JUL 09	21.35	JUL 22	21.44	AUG 28	21.61	SEP 19	21.40
MAR 12	21.25	JUN 11	20.60								

463715092380001. Local number, 048N18W21CDC01.
LOCATION.--Lat 46°37'15", long 92°38'00", in SW¼SE¼SW¼ sec.21, T.48 N., R.18 W., Hydrologic Unit 07030003, on Marvin Benson farm:
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-tble well, diameter 1½ in (0.04 m), depth 44 ft (13.4 m), screened 42 to 44 ft (12.8 to 13.4 m).
DATUM.--Altitude of land-surface datum is 1,275 ft (389 m). Measuring point: Top of casing, 4.00 ft (1.22 m) above land-surface datum.
PERIOD OF RECORD.--December 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 22.24 ft (6.78 m) below land-surface datum, Mar. 12, 1980; lowest, 23.66 ft (7.21 m) below land-surface datum, July 9, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	22.78	APR 29	22.78	JUL 09	23.66	JUL 22	23.32	AUG 28	23.38	SEP 19	23.12
MAR 12	22.24	MAY 11	23.18								

CARVER COUNTY

445155093320101. Local number, 116N23W12CDB01.
LOCATION.--Lat 44°51'55", long 93°32'01", in NW¼SE¼SW¼ sec.12, T.116 N., R.23 W., Hydrologic Unit 07020012, at Chanhassen water tower.
Owner: City of Chanhassen, well 1.
AQUIFER.--Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled public supply artesian well, diameter 10 in (0.25 m), depth 518 ft (158 m), cased to 424 ft (129.2 m).
DATUM.--Altitude of land-surface datum is 990 ft (302 m). Measuring point: Edge of vent pipe, 2.40 ft (0.73 m) above land-surface datum.
REMARKS.--Water level affected by pumping from nearby wells.
PERIOD OF RECORD.--June 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 139.4 ft (42.48 m) below land-surface datum, June 4, 1975; lowest, 147.9 ft (45.08 m) below land-surface datum, July 14, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	144.9	JAN 18	145.2	FEB 28	144.2	APR 08	144.2	JUN 12	147.3	AUG 12	147.5
DEC 05	143.8										

CHIPPEWA COUNTY

450813095512701. Local number, 119N41W07BBB01.
LOCATION.--Lat 45°08'13", long 95°51'27", in NW¼NW¼NW¼ sec.7, T.119 N., R.41 W., Hydrologic Unit 07020005, northwest of Milan.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.3 m), depth 20 ft (6.1 m), screened 18 to 20 ft (5.5 to 6.1 m).
DATUM.--Altitude of land-surface datum is 1,040 ft (317 m). Measuring point: Top of casing, 1.40 ft (0.43 m) above land-surface datum.
PERIOD OF RECORD.--September 1972 to October 1973, January 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 14.96 ft (4.56 m) below land-surface datum, Sept. 14, 1972; lowest, 19.77 ft (6.03 m) below land-surface datum, Apr. 1, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 11	16.03	JAN 10	16.70	APR 30	17.28	JUN 23	17.30	AUG 11	17.33	SEP 12	17.37
NOV 26	16.45	MAR 04	17.00								

450447095490101. Local number, 119N41W29DDD01.
LOCATION.--Lat 45°04'47", long 95°49'01", in SE¼SE¼SE¼ sec.29, T.119 N., R.41 W., Hydrologic Unit 07020005, 5 mi (8.1 km) north of Watson.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 19 ft (5.8 m), screened 17 to 19 ft (5.2 to 5.8 m).
DATUM.--Altitude of land-surface datum is 992 ft (302 m). Measuring point: Top of casing, 3.75 ft (1.14 m) above land-surface datum.
PERIOD OF RECORD.--September 1972 to February 1974, January 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.23 ft (1.29 m) below land-surface datum, May 7, 1973; lowest, 9.06 ft (2.76 m) below land-surface datum, Feb. 8, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 11	6.39	JAN 10	6.17	APR 30	5.18	JUN 23	5.12	AUG 11	6.94	SEP 12	6.94
NOV 26	5.30	MAR 04	6.77								

450631095562201. Local number, 119N42W17DDD01.
LOCATION.--Lat 45°06'31", long 95°56'22", in SE¼SE¼SE¼ sec.17, T.119 N., R.42 W., Hydrologic Unit 07020001, west of Milan.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial silt of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m) depth 19 ft (5.8 m), screened 17 to 19 ft (5.2 to 5.8 m).
DATUM.--Altitude of land-surface datum is 1,027 ft (313 m). Measuring point: Top of casing, 4.50 ft (1.37 m) above land-surface datum.
PERIOD OF RECORD.--September 1972 to October 1973, April 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 1.50 ft (0.46 m) below land-surface datum, May 7, 1973; lowest, 17.46 ft (5.32 m) below land-surface datum, Apr. 1, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 11	8.61	JAN 10	6.57	APR 30	6.94	JUN 23	6.69	AUG 11	9.26	SEP 12	9.30
NOV 26	5.36	MAR 04	9.20								

CHISAGO COUNTY

452014092595102. Local number, 033N21W20BBC02.
LOCATION.--Lat 45°20'14", long 92°59'51", in SW¼NW¼NW¼ sec.20, T.33 N., R.21 W., Hydrologic Unit 07030005, at City of Wyoming.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial outwash sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 2 in (0.05 m), depth 20 ft (6.1 m), screened 18 to 20 ft (5.5 to 6.1 m).
DATUM.--Altitude of land-surface datum is 905 ft (276 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--August 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.57 ft (2.00 m) below land-surface datum, July 11, 1975; lowest, 11.70 ft (3.57 m) below land-surface datum, Feb. 24, 1970.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 23	8.67	JAN 07	9.23	APR 02	9.89	MAY 19	9.50	JUL 07	9.16	AUG 18	9.15
NOV 26	8.81	FEB 19	9.70								

452936092561901. Local number, 035N21W26BCC01.
LOCATION.--Lat 45°29'36", long 92°56'19", in SW¼SW¼NW¼ sec.26, T.35 N., R.21 W., Hydrologic Unit 07030005, southeast of North Branch.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial outwash sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 26 ft (7.9 m), screened 24 to 26 ft (7.3 to 7.9 m).
DATUM.--Altitude of land-surface datum is 894 ft (272 m). Measuring point: Top of casing, 2.00 ft (0.61 m) above land-surface datum.
PERIOD OF RECORD.--September 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 10.42 ft (3.18 m) below land-surface datum, July 11, 1975; lowest, 15.54 ft (4.74 m) below land-surface datum, Apr. 4, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 23	13.78	JAN 07	14.36	APR 02	14.98	MAY 19	14.92	JUL 07	14.73	AUG 18	14.85
NOV 26	13.97	FEB 19	14.81								

COTTONWOOD COUNTY

435458095110801. Local number, 105N36W08ACA01.
LOCATION.--Lat 43°54'58", long 95°11'08", in NE¼SW¼NE¼, sec.8, T.105 N., R.36 W., Hydrologic Unit 0710001, 4 mi (6.4 km) northwest of Windom.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 25 ft (7.6 m), screened 23 to 25 ft (7.0 to 7.6 m).
DATUM.--Altitude of land-surface datum is 1,370 ft (418 m): Measuring point: Top of casing, 3.20 ft (0.98 m) above land-surface datum.
PERIOD OF RECORD.--November 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 15.62 ft (4.76 m) below land-surface datum, June 7, 1979; lowest, 23.50 ft (7.16 m) below land-surface datum, Nov. 3, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 09	17.31	DEC 21	16.85	FEB 09	19.29	APR 27	19.53	JUN 14	17.19	AUG 30	19.57
NOV 24	16.86	JAN 18	17.62	MAR 15	19.73	MAY 24	20.11	JUL 25	19.13	SEP 17	21.08

COTTONWOOD COUNTY--Continued

436237095180601. Local number, 105N37W29AAA01.
LOCATION.--Lat 43°52'37", long 95°18'06", in NE¼NE¼NE¼ sec.29, T.105 N., R.37 W., Hydrologic Unit 07100001, 9.6 mi (15.4 km) west of Windom.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.04 m), depth 8 ft (2.4 m), screened 6 to 8 ft (1.8 to 2.4 m).
DATUM.--Altitude of land-surface datum is 1,375 ft (419 m): Measuring point: Top of casing, 0.70 ft (0.21 m) above land-surface datum.
PERIOD OF RECORD.--November 1977 to current year
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.90 ft (0.27 m) below land-surface datum, Apr. 18, 1979; lowest, 6.89 ft (2.10 m) below land-surface datum, Nov. 18, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 09	5.35	DEC 21	2.96	MAR 15	4.50	MAY 24	5.68	JUL 25	6.45	SEP 17	6.81
NOV 24	2.96	JAN 18	4.49	APR 27	4.52	JUN 14	3.10	AUG 30	6.55		

435258095255301. Local number, 105N38W20BAA01.
LOCATION.--Lat 43°52'58", long 95°25'53", in NE¼NE¼NW¼ sec.20, T.105 N., R.38 W., Hydrologic Unit 07100001, 4.5 mi (7.2 km) northeast of Dundee.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.04 m), depth 12.5 ft (3.8 m), screened 10.5 to 12.5 ft (3.2 to 3.8 m).
DATUM.--Altitude of land-surface datum is 1,415 ft (431 m): Measuring point: Top of casing, 3.40 ft (1.04 m) above land-surface datum.
PERIOD OF RECORD.--November 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.21 ft (1.89 m) below land-surface datum, May 5, 1979; lowest, 10.23 ft (3.12 m) below land-surface datum, Nov. 3, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 24	7.30	JAN 18	7.99	MAR 15	8.73	MAY 24	8.54	JUL 25	8.86	SEP 17	9.14
DEC 21	7.60	FEB 09	8.68	APR 27	7.74	JUN 14	7.96	AUG 30	8.99		

CROW WING COUNTY

463006094131201. Local number, 135N28W16CCD01.
LOCATION.--Lat 46°30'06", long 94°13'12", in SE¼SW¼SW¼ sec.16, T.135 N., R.28 W., Hydrologic Unit 07010106, northwest of Merrifield.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 18 ft (5.5 m), screened 16 to 18 ft (4.9 to 5.5 m).
DATUM.--Altitude of land-surface datum is 1,212 ft (369 m). Measuring point: Top of casing, 2.00 ft (0.61 m) above land-surface datum.
PERIOD OF RECORD.--October 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 8.50 ft (2.59 m) below land-surface datum, May 12, 1975; lowest, 11.38 ft (3.47 m) below land-surface datum, Oct. 16, 1970, Feb. 11, Mar. 11, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 05	9.77	DEC 07	9.75	FEB 01	9.99	MAR 21	10.00	MAY 09	9.65	JUN 30	10.10
19	9.70	21	9.89	09	10.00	APR 04	10.90	17	9.26	JUL 08	10.20
NOV 03	9.71	JAN 05	9.95	22	10.04	12	9.75	25	9.87	SEP 05	10.31
16	9.75	12	9.85	29	9.77	19	9.80	JUN 06	10.00	12	10.25
30	9.35	26	9.86	MAR 15	10.00	26	9.76	19	9.98	27	9.95

DAKOTA COUNTY

445040093102201. Local number, 027N23W09ABD01.
LOCATION.--Lat 44°50'40", long 93°10'22", in SE¼NW¼NE¼ sec.9, T.27 N., R.23 W., Hydrologic Unit 07020012, at Eagan.
Owner: City of Eagan, Timberline Addition.
AQUIFER.--Jordan Sandstone of Early Cambrian Age.
WELL CHARACTERISTICS.--Drilled public-supply artesian well, diameter 10 in (0.25 m), depth 503 ft (153 m), cased to 401 ft (122 m).
DATUM.--Altitude of land-surface datum is 900 ft (274 m). Measuring point: Hole in well cap, 2.60 ft (0.79 m) above land-surface datum.
REMARKS.--Water-level affected by pumping.
PERIOD OF RECORD.--December 1965, April 1966, December 1966, March 1967, December 1970, August 1971, August 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 141.4 ft (43.10 m) below land-surface datum, Apr. 5, 1966; lowest, 155.5 ft (47.40 m) below land-surface datum, Sept. 7, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	145.8	DEC 05	146.6	JAN 18	145.5	FEB 29	146.7	APR 07	148.9	JUN 12	149.8
AUG 20	147.3										

444702093170101. Local number, 027N24W34BDC01.
LOCATION.--Lat 44°47'02", long 93°17'01", in SW¼SE¼NW¼ sec.34, T.27 N., R.24 W., Hydrologic Unit 07020012, at Burnsville recycling center.
Owner: City of Burnsville.
AQUIFER.--Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in (0.15 m), depth 220 ft (67.1 m), cased to 180 ft (54.9 m).
DATUM.--Altitude of land-surface datum is 725 ft (221 m). Measuring point: Top of well cap, 2.70 ft (0.82 m) above land-surface datum.
REMARKS.--Water level affected by pumping from nearby city wells.
PERIOD OF RECORD.--July 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 7.50 ft (2.29 m) above land-surface datum, Sept. 12, 1975; lowest, 42.00 ft (12.80 m) below land-surface datum, July 22, 1975.

WATER LEVEL, IN FEET BELOW OR ABOVE (+) LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	+3.35	DEC 05	+7.15	JAN 18	20.55	FEB 28	14.70	APR 15	7.10

445330093054101. Local number, 028N22W19DCC01.
LOCATION.--Lat 44°53'30", long 93°05'41", in SW¼SW¼SE¼ sec.19, T.28 N., R.22 W., Hydrologic Unit 07010206, in West St. Paul.
Owner: U.S. Geological Survey, 1-N.
AQUIFER.--Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 6 in (0.15 m), depth 652 ft (199 m), cased to 561 ft (171 m).
DATUM.--Land-surface datum is 1,039.0 ft (316.7 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 3.40 ft (1.04 m) above land-surface datum.
REMARKS.--Water level affected by regional pumping.
PERIOD OF RECORD.--October 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 315.2 ft (96.07 m) below land-surface datum, Apr. 15, 1980; lowest, 332.9 ft (101.5 m) below land-surface datum, July 31, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	316.4	JAN 18	316.0	MAR 03	315.5	APR 15	315.2	JUN 12	320.0	AUG 20	321.1
DEC 05	315.7										

DAKOTA COUNTY--Continued

445330093054301. Local number, 028N22W19DCC02.
LOCATION.--Lat 44°53'30", long 93°05'43", in SW¼SW¼SE¼ sec.19, T.28 N., R.22 W., Hydrologic Unit 07010206, in West St. Paul.
Owner: U.S. Geological Survey, 2-N.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 6 in (0.15 m), depth 539 ft (164 m), cased to 407 ft (124 m).
DATUM.--Land-surface datum is 1,036.8 ft (316.0 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.60 ft (0.79 m) above land-surface datum.
REMARKS.--Water level affected by regional pumping.
PERIOD OF RECORD.--January 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 310.4 ft (94.61 m) below land-surface datum, Nov. 9, 1971; lowest, 328.0 ft (99.97 m) below land-surface datum, July 31, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	313.7	312.7	312.1	312.2	312.0	312.0	311.9	318.2	315.6	321.2	317.8	316.7
10	313.0	312.5	312.3	311.7	311.7	312.1	311.7	316.6	314.4	322.8	317.8	317.3
15	313.1	312.6	312.7	312.1	312.1	312.0	311.9	314.2	216.5	322.0	318.8	314.2
20	311.9	312.9	312.7	312.7	312.0	312.4	313.2	314.7	316.5	318.6	316.8	313.7
25	312.8	312.3	312.3	312.2	312.2	312.2	314.4	319.7	318.9	319.2	316.2	314.0
EOM	312.5	312.6	312.2	312.6	312.8	312.1	315.0	316.4	319.0	320.5	315.8	313.3

WTR YEAR 1980 HIGHEST 310.8 MAR 10, 1980 LOWEST 323.5 JUL 11, 1980

443149092582701. Local number, 112N18W03CDC01.
LOCATION.--Lat 44°31'49", long 92°58'27", in SW¼SE¼SW¼ sec.3, T.112 N., R.18 W., Hydrologic Unit 07040002, 0.25 mi (0.40 km) east of Felton Avenue.
Owner: Arnold Felton.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled irrigation water-table well, diameter 16 in (0.41 m), depth 32 ft (9.8 m), screened 17 to 32 ft (5.2 to 9.8 m).
DATUM.--Altitude of land-surface datum is 865 ft (264 m). Measuring point: Top of casing, 1.30 ft (0.49 m) above land-surface datum.
REMARKS.--Water level affected by Lake Byllesby.
PERIOD OF RECORD.--October 1979 to June 1980.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.09 ft (1.25 m) below land-surface datum, June 16, 1980; lowest, 5.36 ft (1.63 m) below land-surface datum, Feb. 27, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	4.70	DEC 10	4.46	JAN 17	5.03	FEB 27	5.36	APR 11	4.16	JUN 16	4.09

443146093002201. Local number, 112N18W08ABA01.
LOCATION.--Lat 44°31'46", long 93°00'22", in NE¼NW¼NE¼ sec.8, T.112 N., R.18 W., Hydrologic Unit 07040002, northeast of Randolph.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial outwash sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 44 (13.4 m), screened 42 to 44 ft (12.8 to 13.4 m).
DATUM.--Altitude of land-surface datum is 880 ft (268 m). Measuring point: Top of casing, 3.40 ft (1.04 m) above land-surface datum.
PERIOD OF RECORD.--April 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 19.88 ft (6.06 m) below land-surface datum, Sept. 18, 1979; lowest, 23.80 ft (7.25 m) below land-surface datum, Feb. 21, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	20.10	JAN 17	21.42	FEB 27	21.67	APR 11	21.23	JUN 16	20.81	AUG 20	21.20
DEC 10	20.92										

DAKOTA COUNTY--Continued

443134093010601. Local number, 112N18W08BBC01.
LOCATION.--Lat 44°31'34", long 93°01'06", in SW¼NW¼NW¼ sec.8, T.112 N., R.18 W., Hydrologic Unit 07040002, at Randolph Fire Station.
Owner: City of Randolph.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age.
WELL CHARACTERISTICS.--Drilled fire protection artesian well, diameter 10 in (0.25 m), depth 150 ft (45.7 m), cased to 64 ft (19.5 m).
DATUM.--Altitude of land-surface datum is 883 ft (269 m). Measuring point: Top of 3/4-inch (0.02 m) breather pipe, 2.20 ft (0.67 m) above land-surface datum.
PERIOD OF RECORD.--July 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 11.97 ft (3.65 m) below land-surface datum, Apr. 3, 1979; lowest, 19.70 ft (6.00 m) below land-surface datum, Aug. 11, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	14.52	JAN 17	14.97	FEB 27	14.90	APR 11	14.26	JUN 16	14.63	AUG 20	15.80
DEC 10	14.51										

443136093042901. Local number, 112N19W11BBD01.
LOCATION.--Lat 44°31'36", long 93°04'29", in SE¼NW¼NW¼ sec.11, T.112 N., R.19 W., Hydrologic Unit 07040002, Northfield Boulevard, 0.3 mi (0.1 km) southwest of 290th Street.
Owner: Willmer Volkert.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age and Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 16 in (0.41 m), depth 364 ft (111 m), cased to 40 ft (12.2 m).
DATUM.--Altitude of land-surface datum is 894 ft (273 m). Measuring point: Hole in pump base, 2.00 ft (0.61 m) above land-surface datum.
PERIOD OF RECORD.--September 1977, February 1978, June 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 9.25 ft (2.82 m) below land-surface datum, June 11, 1979; lowest, 12.65 ft (3.86 m) below land-surface datum, Sept. 14, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	10.02	JAN 17	10.27	MAR 06	10.49	APR 11	9.63	JUN 16	10.40	AUG 20	11.88
DEC 10	9.84										

442830093085201. Local number, 112N19W30DBD01.
LOCATION.--Lat 44°28'30", long 93°08'52", in SE¼NW¼SE¼ sec.30, T.112 N., R.19 W., Hydrologic Unit 07040002, at Northfield waste treatment plant.
Owner: City of Northfield.
AQUIFER.--Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in (0.15 m), depth 275 ft (83.8 m), cased to 212 ft (64.6 m).
DATUM.--Altitude of land-surface datum is 890 ft (271 m). Measuring point: Center of pressure guage, 2.05 ft (0.62 m) above land-surface datum.
PERIOD OF RECORD.--May 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 13.83 ft (4.22 m) above land-surface datum, Nov. 5, 1979; lowest, 11.06 ft (3.37 m) above land-surface datum, Aug. 20, 1980.

WATER LEVEL, IN FEET ABOVE LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	13.83	JAN 17	12.33	MAR 06	11.75	APR 11	12.45	JUN 16	11.75	AUG 20	11.06
DEC 10	13.37										

DAKOTA COUNTY--Continued

443747092483501. Local number, 113N17W01BBA01.
LOCATION.--Lat 44°37'47", long 92°48'35", in NE¼NW¼NW¼ sec.1, T.113 N., R.17 W., Hydrologic Unit 07040001, north of Miesville.
Owner: Alvin Bauer.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age and Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled irrigation water-table well, diameter 16 in (0.41 m), depth 424 ft (129 m), cased to 50 ft (15.2 m).
DATUM.--Altitude of land-surface datum is 994 ft (288 m). Measuring point: Hole in pump base, 1.20 ft (0.37 m) above land-surface datum.
PERIOD OF RECORD.--August 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 144.5 ft (44.04 m) below land-surface datum, Mar. 3, 1980; lowest, 150.4 ft (45.84 m) below land-surface datum, Aug. 8, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	146.9	JAN 16	145.2	MAR 03	144.5	APR 11	145.0	JUN 11	145.5	AUG 15	150.3
DEC 04	145.9										

443459092531901. Local number, 113N17W20BCA01.
LOCATION.--Lat 44°34'59", long 92°53'19", in NE¼SW¼NW¼ sec.20, T.113 N., R.17 W., Hydrologic Unit 07040002, southeast of New Trier.
Owner: Leander Kimmes.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age and Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 16 in (0.41 m), depth 451 ft (137 m), cased to 64 ft (19.5 m).
DATUM.--Altitude of land-surface datum is 920 ft (280 m). Measuring point: Edge of vent pipe, 1.00 ft (0.30 m) above land-surface datum.
PERIOD OF RECORD.--September 1977, February 1978, June 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 55.25 ft (16.84 m) below land-surface datum, Dec. 10, 1979; lowest, 63.05 ft (19.22 m) below land-surface datum, Aug. 8, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	55.82	JAN 17	55.75	FEB 27	55.72	APR 11	55.59	JUN 11	56.64	AUG 18	57.88
DEC 10	55.25										

443645093014701. Local number, 113N18W07BAC01.
LOCATION.--Lat 44°36'45", long 93°01'47", in SW¼NE¼NW¼ sec.7, T.113 N., R.18 W., Hydrologic Unit 07040001, west of Hampton.
Owner: Eugene Dohmen.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age and Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 16 in (0.41 m), depth 325 ft (99.1 m), cased to 65 ft (19.8 m).
DATUM.--Altitude of land-surface datum is 915 ft (217 m). Measuring point: Hole in pump base, 1.60 ft (0.49 m) above land-surface datum.
PERIOD OF RECORD.--April 1977 to August 1977, January 1978, June 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 29.75 ft (9.07 m) below land-surface datum, Dec. 10, 1979; lowest, 33.19 ft (10.12 m) below land-surface datum, Aug. 12, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	30.04	JAN 17	30.16	FEB 27	30.48	APR 11	30.31	JUN 16	30.43	AUG 18	31.23
DEC 10	29.75										

DAKOTA COUNTY--Continued

444205925000O1. Local number, 114N17W10AAA01.
LOCATION.--Lat 44°42'05", long 92°50'00", in NE¼NE¼NE¼ sec.10, T.114 N., R.17 W., Hydrologic Unit 07040001, southeast of Hastings.
Owner: John Conzemius.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 4 in (0.10 m), depth 151 ft (46.0 m), depth of casing unknown.
DATUM.--Altitude of land-surface datum is 827 ft (252 m). Measuring point: Top of platform, 2.50 ft (0.76 m) above land-surface datum.
PERIOD OF RECORD.--April 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 98.82 ft (30.12 m) below land-surface datum, July 26, 1978; lowest, 107.4 ft (32.74 m) below land-surface datum, Mar. 12, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	101.6	101.9	101.6	102.0	102.1	102.2	100.2	100.6	101.2	101.1	101.7	.....
10	101.7	101.8	101.8	102.0	101.8	102.4	100.2	100.6	101.2	101.6	102.0	.....
15	101.6	101.9	102.0	102.0	102.2	102.4	100.4	101.0	101.0	101.4	101.9	.....
20	101.5	102.1	101.9	102.2	102.1	102.1	100.3	101.0	100.7	101.8	102.0	.....
25	101.9	101.8	102.0	102.3	102.4	101.4	100.5	101.0	100.8	101.9	101.9	.....
EOM	101.5	101.9	101.8	102.3	102.6	100.5	100.5	100.3	101.0	101.8	102.2	.....

WTR YEAR 1980 HIGHEST 99.87 APR 14, 1980 LOWEST 102.6 FEB 29, 1980

444101092500001. Local number, 114N17W15ADA01.
LOCATION.--Lat 44°41'01", long 92°50'00", in NE¼SE¼NE¼ sec.15, T.114 N., R.17 W., Hydrologic Unit 07040001, 1.5 mi (2.4 km) south of State Highway 316.
Owner: Schultz and Swanson.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 5 in (0.13 m), depth 119 ft (36.3 m), screen information not available.
DATUM.--Altitude of land-surface datum is 820 ft (250 m). Measuring point: Top of pump flange, 0.50 ft (0.15 m) above land-surface datum.
PERIOD OF RECORD.--April 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 93.85 ft (28.61 m) below land-surface datum, Apr. 7, 1980; lowest, 100.0 ft (30.48 m) below land-surface datum, June 27, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	95.07	JAN 16	94.72	FEB 26	94.65	APR 07	93.85	JUN 11	94.08	AUG 15	94.72
DEC 04	95.70										

444047092521901. Local number, 114N17W16CBB01.
LOCATION.--Lat 44°40'47", long 92°52'19", in NW¼NW¼SW¼ sec.16, T.114 N., R.17 W., Hydrologic Unit 07040001, Kirby Avenue, 0.5 mi (0.8 km) north of 190th Street.
Owner: Jim Huneke Construction Company.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 4 in (0.10 m), depth 170 ft (51.8 m), screened 164 to 170 ft (50.0 to 51.8 m).
DATUM.--Altitude of land-surface datum is 823 ft (251 m). Measuring point: Top of casing, 1.10 ft (0.34 m) above land-surface datum.
PERIOD OF RECORD.--March 1976, March 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 80.98 ft (24.68 m) below land-surface datum, Apr. 7, 1980; lowest, 87.75 ft (26.75 m) below land-surface datum, June 27, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	81.67	JAN 16	81.12	FEB 27	81.16	APR 07	80.98	JUN 11	81.27	AUG 15	82.58
DEC 04	81.27										

DAKOTA COUNTY--Continued

444116092541301. Local number, 114N17W18ABB01.
LOCATION.--Lat 44°41'16", long 92°54'13", in NW¼NW¼NE¼ sec.18, T.114 N., R.17 W., Hydrologic Unit 07040001, 0.3 mi (0.5 km) east of Northfield Boulevard.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 94 ft (28.6 m), screened 92 to 94 ft (28.0 to 28.6 m).
DATUM.--Altitude of land-surface datum is 830 ft (253 m). Measuring point: Top of casing, 3.90 ft (1.19 m) above land-surface datum.
PERIOD OF RECORD.--April 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 78.93 ft (24.06 m) below land-surface datum, Apr. 7, 1980; lowest, 86.32 ft (26.31 m) below land-surface datum, June 27, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	79.76	JAN 16	79.68	FEB 27	79.76	APR 07	78.93	JUN 11	79.63	AUG 15	80.57
DEC 04	79.66										

443850092495501. Local number, 114N17W26CCB01.
LOCATION.--Lat 44°38'50", long 92°49'55", in NW¼SW¼SW¼ sec.26, T.114 N., R.17 W., Hydrologic Unit 07040001, Michael Avenue, 1.8 mi (2.9 km) south of 190th Street).
Owner: State of Minnesota.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 5 in (0.13 m), depth 195 ft (59.4 m), cased to 25 ft (7.6 m).
DATUM.--Altitude of land-surface datum is 900 ft (274 m). Measuring point: Hole in well cap, 1.50 ft (0.46 m) above land-surface datum.
PERIOD OF RECORD.--June 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 118.9 ft (36.24 m) below land-surface datum, Mar. 3, 1980; lowest, 124.2 ft (37.86 m) below land-surface datum, June 7, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	119.6	JAN 16	118.9	MAR 03	118.9	APR 07	119.0	JUN 11	119.8	AUG 15	120.4
DEC 04	119.1										

443754092544701. Local number, 114N17W31CCC01.
LOCATION.--Lat 44°37'54", long 92°54'47", in SW¼SW¼SW¼ sec.31, T.114 N., R.17 W., Hydrologic Unit 07040001, Inga Avenue, 0.1 mi (0.2 km) north of 220th Street.
Owner: Jim Carnell.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age and Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 16 in (0.41 m), depth 406 ft (124 m), cased to 29 ft (8.8 m).
DATUM.--Altitude of land-surface datum is 890 ft (271 m). Measuring point: Hole in pump base, 1.30 ft (0.40 m) above land-surface datum.
PERIOD OF RECORD.--June 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 35.95 ft (10.96 m) below land-surface datum, Apr. 11, 1980; lowest, 40.52 ft (12.35 m) below land-surface datum, Aug. 8, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	36.84	JAN 16	36.09	FEB 27	36.03	APR 11	35.95	JUN 11	36.44	AUG 18	38.73
DEC 04	36.34										

DAKOTA COUNTY--Continued

443827092521801. Local number, 114N17W33BBC01.
LOCATION.--Lat 44°38'27", long 92°52'18", in SW¼NW¼NW¼ sec.33, T.114 N., R.17 W., Hydrologic Unit 07040001, 39 ft (11.9 m) south of irrigation well.
Owner: Rainer Kimmes.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 16 in (0.41 m), depth 290 ft (88.4 m), cased to 25 ft (7.6 m).
DATUM.--Altitude of land-surface datum is 862 ft (263 m). Measuring point: Hole in plate over well, 2.00 ft (0.61 m) above land-surface datum.
PERIOD OF RECORD.--August 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 64.08 ft (19.53 m) below land-surface datum, Jan. 16, 1980; lowest, 78.52 ft (23.02 m) below land-surface datum, Aug. 10, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	64.50	JAN 16	64.08	FEB 27	64.50	APR 11	64.77	JUN 11	65.58	AUG 15	70.00
DEC 04	64.10										

443248092550601. Local number, 114N18W01ADB01.
LOCATION.--Lat 44°42'48", long 92°55'06", in NW¼SE¼NE¼ sec.1, T.114 N., R.18 W., Hydrologic Unit 07040001, 1.75 mi (2.82 km) west of Hastings.
Owner: Greg Bauer.
AQUIFER.--Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled irrigation water-table well, diameter 16 in (0.41 m), depth 400 ft (122 m), cased to 300 ft (91.4 m).
DATUM.--Altitude of land-surface datum is 830 ft (253 m). Measuring point: Hole in pump base, 0.40 ft (0.12 m) above land-surface datum.
PERIOD OF RECORD.--June 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 97.92 ft (29.85 m) below land-surface datum, June 11, 1980; lowest, 98.75 ft (30.10 m) below land-surface datum, June 12, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	98.21	DEC 04	98.05	JAN 16	98.08	APR 11	97.93	JUN 11	97.92	AUG 18	98.39

444117092560201. Local number, 114N18W11DDD01.
LOCATION.--Lat 44°41'17", long 92°56'02", in SE¼SE¼SE¼ sec.11, T.114 N., R.18 W., Hydrologic Unit 07040001, Hogan Avenue and 180th Street.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial outwash sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 58 ft (17.7 m), screened 56 to 58 ft (17.1 to 17.7 m).
DATUM.--Altitude of land-surface datum is 838 ft (255 m). Measuring point: Top of casing 3.30 ft (1.01 m) above land-surface datum.
PERIOD OF RECORD.--April 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 40.27 ft (12.27 m) below land-surface datum, Apr. 3, 1979; lowest, 45.23 ft (13.79 m) below land-surface datum, Dec. 14, 1977, Jan. 18, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	41.14	JAN 16	41.92	FEB 27	42.37	APR 07	41.90	JUN 11	42.14	AUG 15	42.65
DEC 04	41.42										

DAKOTA COUNTY--Continued

444117092595701. Local number, 114N18W17AAB01.
LOCATION.--Lat 44°41'17", long 92°59'57", in NW¼NE¼NE¼ sec.17, T.114 N., R.18 W., Hydrologic Unit 07040001, 180th Street, 0.25 mi (0.40 km) west of Emery Avenue.
Owner: Joe Ries.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age and Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 16 in (0.41 m), depth 280 ft (85.3 m), cased to 39 ft (11.9 m).
DATUM.--Altitude of land-surface datum is 905 ft (276 m). Measuring point: Edge of vent pipe, 1.40 ft (0.43 m) above land-surface datum.
PERIOD OF RECORD.--June 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 65.81 ft (20.06 m) below land-surface datum, June 11, 1979; lowest, 71.35 ft (21.75 m) below land-surface datum, Aug. 18, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	68.76	JAN 16	67.24	FEB 27	67.70	APR 11	66.84	JUN 11	68.75	AUG 18	71.35
DEC 04	67.12										

443933092595401. Local number, 114N18W29AAB01.
LOCATION.--Lat 44°39'33", long 92°59'54", in NW¼NE¼NE¼ sec.29, T.114 N., R.18 W., Hydrologic Unit 07040001, east of Empire.
Owner: U.S. Geological Survey
AQUIFER.--Surficial outwash sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 30 ft (0.91 m), screened 28 to 30 ft (8.5 to 9.1 m).
DATUM.--Altitude of land-surface datum is 850 ft (259 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--April 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 13.53 ft (4.12 m) below land-surface datum, Apr. 3, 1979; lowest, 16.93 ft (5.16 m) below land-surface datum, Sept. 12, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	15.14	JAN 16	15.34	FEB 27	15.55	APR 07	14.86	JUN 11	14.43	AUG 18	15.47
DEC 04	15.19										

443801092571301. Local number, 114N18W35CCB01.
LOCATION.--Lat 44°38'01", long 92°57'13", in NW¼SW¼SW¼ sec.35, T.114 N., R.18 W., Hydrologic Unit 07040001, Goodwin Avenue, 1.1 mi (1.8 km) south of Northfield Boulevard.
Owner: Al Wagner, Jr.
AQUIFER.--Buried gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 12 in (0.30 m), depth 203 ft (61.9 m), screened 173 to 203 ft (52.7 to 61.9 m).
DATUM.--Altitude of land-surface datum is 898 ft (274 m). Measuring point: Hole in pump base, 1.25 ft (0.38 m) above land-surface datum.
PERIOD OF RECORD.--June 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 31.11 ft (9.48 m) below land-surface datum, June 12, 1979; lowest, 35.58 ft (10.84 m) below land-surface datum, Aug. 18, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	31.35	JAN 16	31.34	FEB 27	31.77	APR 11	31.61	JUN 11	32.63	AUG 18	35.58
DEC 04	31.19										

DAKOTA COUNTY--Continued

444220093055001. Local number, 114N19W04DAC01.
LOCATION.--Lat 44°42'20", long 93°05'50", in NE¼SE¼SE¼ sec.4, T.114 N., R.19 W., Hydrologic Unit 07040001, 2.1 mi (3.4 km) southeast of Rosemount.
Owner: University of Minnesota Agricultural Experiment Station (Plant Pathology).
AQUIFER.--Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 6 in (0.15 m), depth 415 ft (126 m), cased to 355 ft (108 m).
DATUM.--Altitude of land-surface datum is 947 ft (289 m). Measuring point: Top of 1-inch breather pipe, 2.10 ft (0.64 m) above land-surface datum.
PERIOD OF RECORD.--August 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 61.02 ft (18.60 m) below land-surface datum, Dec. 4, 1979; lowest, 65.23 ft (19.88 m) below land-surface datum, Nov. 27, 1970.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	61.35	DEC 04	61.02	JAN 16	61.24	APR 07	61.10	JUN 11	61.40	AUG 13	61.58

443934093043201. Local number, 114N19W22DDD01.
LOCATION.--Lat 44°39'34", long 93°04'32", in SE¼SE¼SE¼ sec.22, T.114 N., R.19 W., Hydrologic Unit 07040001, west of Empire.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial outwash sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-tabel well, diameter 1¼ in (0.03 m), depth 24 ft (7.3 m), screened 22 to 64 ft (6.7 to 7.3 m).
DATUM.--Altitude of land-surface datum is 875 ft (267 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--April 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.90 ft (1.80 m) below land-surface datum, Apr. 3, 1979; lowest, 9.08 ft (2.77 m) below land-surface datum, Sept. 12, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	7.66	JAN 16	7.95	FEB 27	8.35	APR 07	7.69	JUN 11	7.17	AUG 18	8.35
DEC 04	7.49										

443831093074201. Local number, 114N19W32BAD01.
LOCATION.--Lat 44°38'31", long 93°07'42", in SE¼NE¼NW¼ sec.32, T.114 N., R.19 W., Hydrologic Unit 07040001, at city of Farmington.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial outwash sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 23 ft (7.0 m), screened 21 to 64 ft (6.4 to 7.0 m).
DATUM.--Altitude of land-surface datum is 895 ft (273 m). Measuring point: Top of casing, 3.75 ft (1.14 m) above land-surface datum.
PERIOD OF RECORD.--August 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.51 ft (1.07 m) below land-surface datum, May 2, 1975; lowest, 8.60 ft (2.62 m) below land-surface datum, Oct. 26, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	5.32	JAN 16	5.34	FEB 27	5.61	APR 07	5.66	JUN 11	5.15	AUG 18	5.79
DEC 04	5.23										

DAKOTA COUNTY--Continued

444616093020101. Local number, 115N18W18BCB01.
LOCATION.--Lat 44°46'16", long 93°02'01", in NW¼SW¼NW¼ sec.18, T.115 N., R.18 W., Hydrologic Unit 07010206, southwest corner of Pine Bend Cemetery.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 189 ft (57.6 m), screened 187 to 189 ft (57.0 to 57.6 m).
DATUM.--Altitude of land-surface datum is 930 ft (283 m). Measuring point: Top of casing, 3.80 ft (1.16 m) above land-surface datum.
PERIOD OF RECORD.--May and June 1973, January 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 167.3 ft (50.99 m) below land-surface datum, Mar. 31, 1973; lowest, 175.7 ft (53.55 m) below land-surface datum, Sept. 13, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	174.4	JAN 16	174.0	FEB 28	173.8	APR 07	174.3	JUN 11	174.4	AUG 13	175.1
DEC 04	174.2										

444358093034001. Local number, 115N19W26DCD01.
LOCATION.--Lat 44°43'58", long 93°03'40", in SE¼SW¼SE¼ sec.26, T.115 N., R.19 W., Hydrologic Unit 07040001, at Rosemount Research Center.
Owner: University of Minnesota.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 5 in (0.13 m), depth 156 ft (47.5 m), cased to 140 ft (42.7 m).
DATUM.--Altitude of land-surfaoe datum is 930 ft (283 m). Measuring point: Top of well cap, 2.00 ft (0.61 m) above land-surface datum.
PERIOD OF RECORD.--August 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 85.38 ft (26.02 m) below land-surface datum, Dec. 4, 1979; lowest, 90.73 ft (27.65 m) below land-surface datum, Nov. 27, 1970.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	86.07	JAN 16	85.70	FEB 28	86.05	APR 07	85.48	JUN 11	85.95	AUG 13	85.88
DEC 04	85.38										

444631093150901. Local number, 115N20W08CDC01.
LOCATION.--Lat 44°46'31", long 93°15'09", in SW¼SE¼SW¼ sec.8, T.115 N., R.20 W., Hydrologic Unit 07020012, 0.05 mi (0.08 km) east of Burnsville Boulevard.
Owner: City of Burnsville.
AQUIFER.--Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 6 in (0.15 m), depth 504 ft (154 m), cased to 420 ft (128 m).
DATUM.--Altitude of land-surface datum is 980 ft (299 m). Measuring point: Top of coupling, 2.50 ft (0.76 m) above land-surface datum.
PERIOD OF RECORD.--September 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 184.4 ft (56.21 m) below land-surface datum, Dec. 5, 1979; lowest, 186.4 ft (56.81 m) below land-surface datum, Sept. 20, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	186.1	JAN 18	185.1	FEB 28	185.3	APR 15	185.4	JUN 12	185.9	AUG 13	184.7
DEC 05	184.4										

DODGE COUNTY

435336092553201. Local number, 105N18W13DDD01.
LOCATION.--Lat 43°53'36", long 92°55'32", in SE¼SE¼SE¼ sec.13, T.105 N., R.18 W., Hydrologic Unit 07080201, 3 mi (4.8 km) west of Hayfield.
Owner: James Barry.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 5 in (0.13 m), depth 82 ft (25.0 m), screen information not available.
DATUM.--Altitude of land-surface datum is 1,288 ft (393 m). Measuring point: Top of casing, 1.80 ft (0.55 m) above land-surface datum.
PERIOD OF RECORD.--June 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 40.70 ft (12.41 m) below land-surface datum, July 11, 1975; lowest, 46.25 ft (14.10 m) below land-surface datum, Mar. 30, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 22	42.48	JAN 29	42.21	APR 28	43.26	JUN 25	42.28	AUG 06	42.99	SEP 17	42.30
DEC 12	42.04	MAR 04	42.13								

440448092485501. Local number, 107N17W13BBA01.
LOCATION.--Lat 44°04'48", long 92°58'55", in NE¼NW¼NW¼ sec.13, T.107 N., R.17 W., Hydrologic Unit 07040004, in City of Wasioja.
Owner: Wasioja Township Garage.
AQUIFER.--Galena Formation of Middle Ordovician Age.
WELL CHARACTERISTICS.--Drilled maintenance artesian well, diameter 6 in (0.15 m), depth 100 ft (30.5 m), cased to 52 ft (15.8 m).
DATUM.--Altitude of land-surface datum is 1,185 ft (361 m). Measuring point: Top of casing, 1.60 ft (0.49 m) above land-surface datum.
PERIOD OF RECORD.--January 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 17.97 ft (5.48 m) below land-surface datum, July 11, 1975; lowest, 26.88 ft (8.19 m) below land-surface datum, Jan. 5, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 02	22.28	DEC 12	21.62	MAR 05	23.02	JUN 26	22.58	AUG 07	23.58	SEP 17	23.74
08	22.05	JAN 29	22.50	APR 30	21.89						

DOUGLAS COUNTY

454643095413201. Local number, 127N40W27CBB01.
LOCATION.--Lat 45°46'43", long 95°41'32", in NW¼NW¼SW¼ sec.27, T.127 N., R.40 W., Hydrologic Unit 07020005, at Kensington.
Owner: City of Kensington.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 10 in (0.25 m), depth 259 ft (78.9 m), screened 251 to 261 ft (76.5 to 79.6 m).
DATUM.--Altitude of land-surface datum is 1,332 ft (406 m). Measuring point: Top of casing, 2.10 ft (0.64 m) above land-surface datum.
PERIOD OF RECORD.--March 1964 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 79.95 ft (24.37 m) below land-surface datum, Oct. 2, 1972; lowest, 83.17 ft (25.35 m) below land-surface datum, Apr. 5, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	80.38	APR 11	80.42	JUL 31	80.55

GOODHUE COUNTY

441737092400501. Local number, 110N15W31BBD01.
LOCATION.--Lat 44°17'37", long 92°40'05", in SE¼NW¼NW¼ sec.31, T.110 N., R.15 W., Hydrologic Unit 07040004, at Zumbrota Fire Station.
Owner: City of Zumbrota, well 3.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 12 in (0.30 m), depth 210 ft (64.0 m), cased to 50 ft (15.2 m).
DATUM.--Altitude of land-surface datum is 1,000 ft (305 m). Measuring point: Hole in pump base, 2.20 ft (0.67 m) above land-surface datum.
PERIOD OF RECORD.--June 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 20.07 ft (6.12 m) below land-surface datum, July 11, 1975; lowest, 27.07 ft (8.23 m) below land-surface datum, Jan. 5, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	23.53	DEC 13	26.45	MAR 04	26.24	JUN 23	24.72	AUG 05	25.22	SEP 16	26.16
NOV 07	23.95	JAN 29	24.76	APR 28	24.10						

442401092372501. Local number, 111N15W21CDA01.
LOCATION.--Lat 44°24'01", long 92°37'25", in NE¼SE¼SW¼ sec.21, T.111 N., R.15 W., Hydrologic Unit 07040004, in Goodhue clerk's office.
Owner: City of Goodhue, creamery well.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age and Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled public-supply artesian well, diameter 12 in (0.30 m), depth 310 ft (94.5 m), cased to 175 ft (53.3 m).
DATUM.--Altitude of land-surface datum is 1,125 ft (343 m). Measuring point: Top of 1¼ in (0.03 m) elbow, 1.50 ft (0.46 m) above land-surface datum.
PERIOD OF RECORD.--June 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 124.4 ft (37.92 m) below land-surface datum, Aug. 23, 1974; lowest, 143.8 ft (43.83 m) below land-surface datum, Jan. 29, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	143.2	JAN 29	143.8	MAY 01	134.2	JUL 01	134.1	AUG 05	133.8	SEP 18	134.4
DEC 13	142.9	MAR 10	134.9								

442844093001601. Local number, 112N18W29DBA01.
LOCATION.--Lat 44°28'44", long 93°00'26", in NE¼NW¼SE¼ sec.28, T.112 N., R.18 W., Hydrologic Unit 07040001, northeast of Stanton.
Owner: David McKeag.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 12 in (0.30 m), depth 355 ft (108 m), cased to 43 ft (13.1 m).
DATUM.--Altitude of land-surface datum is 912 ft (278 m). Measuring point: Hole in cover, 1.20 ft (0.37 m) above land-surface datum.
PERIOD OF RECORD.--May 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 15.69 ft (4.78 m) below land-surface datum, Sept. 8, 1979; lowest, 17.13 ft (5.22 m) below land-surface datum, Aug. 20, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	16.29	JAN 17	16.70	FEB 27	16.86	APR 11	16.30	JUN 16	16.64	AUG 20	17.13
DEC 10	16.52										

GOODHUE COUNTY--Continued

443012092362201. Local number, 113N15W27BAB01.
LOCATION.--Lat 44°30'12", long 92°36'22", in NW¼NE¼NW¼ sec.27, T.113 N., R.15 W., Hydrologic Unit 07040002, at Red Wing.
Owner: City of Red Wing, Anderson Park.
AQUIFER.--Eau Claire-Mount Simon Sandstones of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 12 in (0.30 m), depth 684 ft (208 m), cased to 243 ft (74.1 m).
DATUM.--Altitude of land-surface datum is 800 ft (244 m). Measuring point: Edge of casing, 2.70 ft (0.82 m) above land-surface datum.
PERIOD OF RECORD.--April 1976, June 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 105.1 ft (32.03 m) below land-surface datum, Apr. 22, 1976; lowest, 108.2 ft (32.98 m) below land-surface datum, Sept. 14, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 03	105.9	DEC 14	105.7	MAR 10	105.5	JUL 01	106.3	AUG 05	105.4	SEP 19	105.1
NOV 02	106.0	JAN 29	106.4	MAY 01	106.2						

HENNEPIN COUNTY

444815093194901. Local number, 027N24W30AAA01.
LOCATION.--Lat 44°48'15", long 93°19'49", in NE¼NE¼NE¼ sec.30, T.27 N., R.24 W., Hydrologic Unit 07020012, at 4001 West 110th Street, Bloomington.
Owner: Transfiguration Church
AQUIFER.--Buried sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 4 in (0.10 m), depth 139 ft (42.4 m), screened 135 to 139 ft (41.2 to 42.4 m).
DATUM.--Altitude of land-surface datum is 832 ft (254 m). Measuring point: Top of casing, 0.50 ft (0.15 m) above land-surface datum.
PERIOD OF RECORD.--March 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 63.97 ft (19.50 m) below land-surface datum, Mar. 2, 1979; lowest, 66.69 ft (20.33 m) below land-surface datum, Aug. 13, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	65.00	JAN 18	65.16	FEB 28	65.12	APR 08	65.24	JUN 12	66.03	AUG 13	66.69
DEC 05	65.07										

444801093202801. Local number, 027N24W30BDA01.
LOCATION.--Lat 44°48'01", long 93°20'28", in NE¼SE¼NW¼ sec.30, T.27 N., R.24 W., Hydrologic Unit 07020012, in Bloomington.
Owner: City of Bloomington, at Southwood Terrace.
AQUIFER.--Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 12 in (0.30 m), depth 330 ft (101 m), cased to 269 ft (82.0 m).
DATUM.--Altitude of land-surface datum is 815 ft (248 m). Measuring point: Top of recorder platform, 2.20 ft (0.67 m) above land-surface datum.
PERIOD OF RECORD.--March 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 63.05 ft (19.22 m) below land-surface datum, Apr. 15, 1969; lowest, 81.91 ft (24.97 m) below land-surface datum, Aug. 11, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	74.44	73.93	73.71	73.83	73.79	73.93	73.67	79.27	75.65	77.82	78.41	76.18
10	74.76	73.80	73.69	73.83	73.65	73.95	73.61	78.93	77.00	81.55	76.25	79.44
15	76.98	73.88	73.94	73.96	73.92	73.90	73.53	77.89	77.24	79.66	77.71	76.12
20	74.21	74.03	73.89	74.01	73.86	73.75	75.48	77.46	78.81	78.15	76.48	77.41
25	74.06	73.79	73.86	74.01	74.04	73.65	75.81	78.33	80.17	80.13	77.95	76.40
EOM	73.89	73.89	73.77	73.95	74.17	73.67	79.02	75.71	80.22	79.48	76.02	76.76

WTR YEAR 1980 HIGHEST 73.25 APR 8, 14, 1980 LOWEST 81.75 JUL 11, 1980

HENNEPIN COUNTY--Continued

445356093145301. Local number, 028N24W23ADD01.
LOCATION.--Lat 44°53'56", long 93°14'53", in SE¼SE¼NE¼ sec.23, T.28 N., R.24 W., Hydrologic Unit 07010206, at 5728 Cedar Avenue, Minneapolis.
Owner: Hope Lutheran Church.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 6 in (0.15 m), depth 245 ft (74.7 m), cased to 172 ft (52.4 m).
DATUM.--Altitude of land-surface datum is 835 ft (254 m). Measuring point: Top of casing, 0.30 ft (0.09 m) above land-surface datum.
PERIOD OF RECORD.--April 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 37.42 ft (11.41 m) below land-surface datum, Jan. 23, 1980; lowest, 45.30 ft (13.81 m) below land-surface datum, Aug. 12, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	28.54	JAN 23	37.42	MAR 03	37.83	APR 16	37.65	JUN 17	44.02	AUG 12	45.30
DEC 11	38.00										

450116093205301. Local number, 029N24W06CCC01.
LOCATION.--Lat 45°01'16", long 93°20'53", in SW¼SW¼SW¼ sec.6, T.29 N., R.24 W., Hydrologic Unit 07010206, at 3610 Unity Avenue North, Robbinsdale.
Owner: Minnesota Department of Transportation.
AQUIFER.--St. Peter Sandstone of Middle Ordovician Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 5 in (0.13 m), depth 200 ft (61.0 m), cased to 152 ft (46.3 m).
DATUM.--Altitude of land-surface datum is 870 ft (265 m). Measuring point: Top of casing, 3.50 ft (1.07 m) above land-surface datum.
REMARKS.--Water level affected by pumping.
PERIOD OF RECORD.--March 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 24.54 ft (7.48 m) below land-surface datum, Dec. 28-29, 1975; lowest, 50.11 ft (15.27 m) below land-surface datum, July 14, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	34.04	30.79	30.56	30.12	30.80	31.32	31.06	42.64	37.36	41.21	38.11	34.79
10	31.08	30.88	30.22	30.33	30.62	31.13	34.96	39.13	33.91	47.31	35.56	36.29
15	30.85	30.71	30.48	30.55	31.38	31.59	34.59	36.29	33.09	46.95	36.82	33.18
20	31.14	31.09	31.92	30.16	39.89	31.82	35.27	29.25	25.65	38.20	26.08	33.12
25	31.28	28.73	29.40	31.00	30.33	31.26	36.62	40.97	41.35	41.41	35.18	32.53
EOM	31.15	30.95	30.56	31.36	31.57	31.08	38.42	38.93	42.29	43.67	32.63	31.79

WTR YEAR 1980 HIGHEST 27.14 NOV 26, 1979, JAN 2, 1980 LOWEST 50.07 JUL 11, 1980

445849093155802. Local number, 029N24W23CCB02.
LOCATION.--Lat 44°58'49", long 93°15'58", in NW¼SW¼SW¼ sec.23, T.29 N., R.24 W., Hydrologic Unit 07010206, at 245 Marquette Avenue, Minneapolis.
Owner: IBM Corporation.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age and Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 10 in (0.25 m), depth 430 ft (131 m), cased to 250 ft (76.2 m).
DATUM.--Altitude of land-surface datum is 840 ft (256 m). Measuring point: Edge of 2 in (0.05 m) vent pipe, 9.60 ft (2.93 m) below land-surface datum.
REMARKS.--Water level affected by pumping of nearby wells.
PERIOD OF RECORD.--July 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 76.30 ft (23.26 m) below land-surface datum, Jan. 31, 1979; lowest, 179.6 ft (54.74 m) below land-surface datum, Aug. 16, 1972.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	86.35	JAN 22	81.65	FEB 28	83.65	APR 15	86.00	JUN 17	129.7	AUG 19	143.2
DEC 07	82.20										

HENNEPIN COUNTY--Continued

445829093162901. Local number, 029N24W27ABD01.
LOCATION.--Lat 44°58'29", long 93°16'29", in SE¼NW¼NE¼ sec.27, T.29 N., R.24 W., Hydrologic Unit 07010206, at 911 LaSalle Avenue, Minneapolis.
Owner: American Linen Supply Co.
AQUIFER.--Mount Simon Sandstone of Late Cambrian Age and Hinckley Sandstone of Late Precambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 16 in (0.41 m), depth 1,094 ft (333 m), cased to 812 ft (248 m).
DATUM.--Altitude of land-surface datum is 850 ft (259 m). Measuring point: Hole in pump base, 22.00 ft (6.71 m) below land-surface datum.
REMARKS.--Water level affected by regional pumping.
PERIOD OF RECORD.--July 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 169.8 ft (51.76 m) below land-surface datum, Apr. 15, 1980; lowest, 235.1 ft (71.66 m) below land-surface datum, Oct. 6, 1970.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	184.6	JAN 22	175.0	FEB 28	178.4	APR 15	169.8	JUN 17	187.1	AUG 19	209.1
DEC 07	180.0										

445615093212301. Local number, 117N21W16CCA01.
LOCATION.--Lat 44°56'15", long 93°21'23", in NE¼SW¼SW¼ sec.16, T.117 N., R.21 W., Hydrologic Unit 07010206, at 6021 36th Street West.
Owner: City of St. Louis Park, old well 1.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age and Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 16 in (0.41 m), depth 421 ft (128 m), cased to 280 ft (85.3 m).
DATUM.--Land-surface datum is 916.8 ft (279.4 m), revised, National Geodetic Vertical Datum of 1929. Measuring point: Top of well cover, 0.70 ft (0.21 m) above land-surface datum.
REMARKS.--Water level affected by pumping of nearby wells.
PERIOD OF RECORD.--February 1953 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 66.0 ft (20.11 m) below land-surface datum, Mar. 23, 1953; lowest, 110.5 ft (33.68 m) below land-surface datum, July 31, 1959.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	82.94	78.17	76.66	75.76	76.95	76.61	76.18	96.76	86.59	101.6	.....	88.61
10	81.63	78.26	76.18	75.98	75.75	76.46	77.74	89.32	84.09	.....	.....	90.52
15	.....	78.49	77.11	75.64	77.22	76.75	77.78	86.40	83.46	.....	90.39	85.20
20	.....	76.16	78.04	75.62	77.20	77.13	84.25	86.17	86.78	.....	88.70	85.14
25	79.72	73.74	74.43	76.88	75.33	76.21	86.99	92.88	94.48	.....	89.28	83.52
EOM	79.20	76.19	74.20	77.14	76.51	75.81	90.46	91.10	95.51	93.46	86.75	82.62

WTR YEAR 1980 HIGHEST 73.20 NOV 25, 1979 LOWEST 103.6 JUL 8, 1980

445618093211801. Local number, 117N21W16CDB01.
LOCATION.--Lat 44°56'18", long 93°21'18", in NW¼SE¼SE¼ sec.16, T.117 N., R.21 W., Hydrologic Unit 07010206, at 2565 Wooddale Avenue South, St. Louis Park.
Owner: D-A Lubricant Co.
AQUIFER.--Ironton-Galesville Sandstones of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 4 in (0.10 m), depth 691 ft (211 m), screened 651 to 661 ft (198 to 202 m).
DATUM.--Altitude of land-surface datum is 917.2 ft (279.6 m), National Geodetic Vertical Datum of 1929. Measuring point: Hole in well seal, 3.60 ft (1.10 m) above land-surface datum.
REMARKS.--Water level affected by pumping.
PERIOD OF RECORD.--April 1980 to August 1980.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 133.0 ft (40.54 m) below land-surface datum, Apr. 25, 1980; lowest, 146.2 ft (44.56 m) below land-surface datum, Aug. 13, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

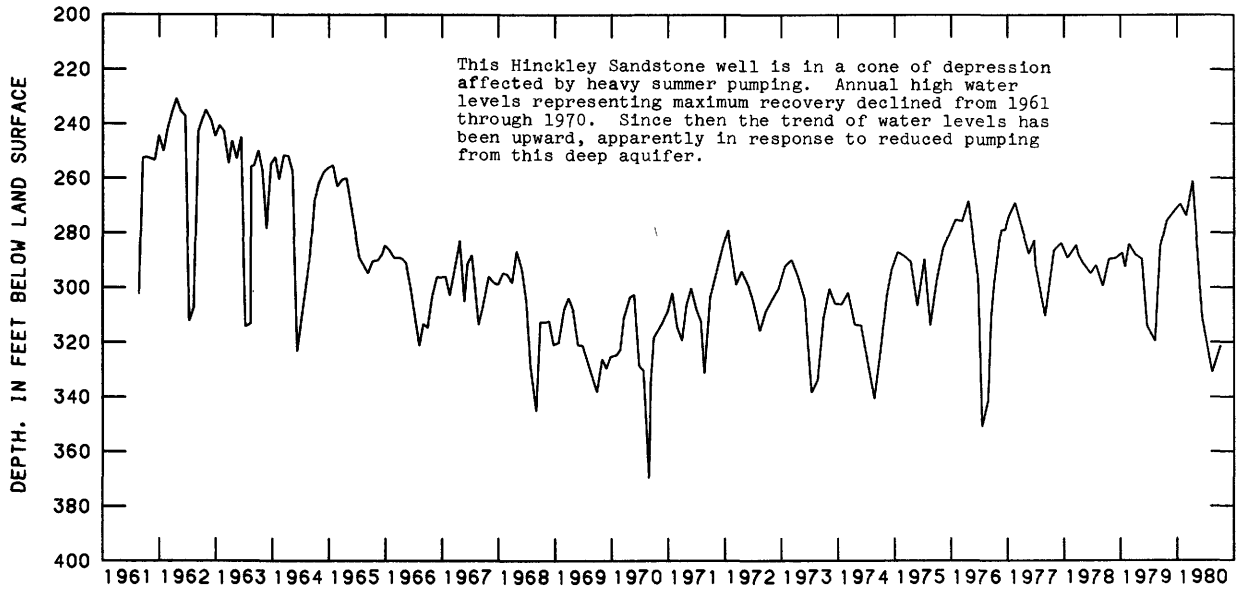
DATE	WATER LEVEL	DATE	WATER LEVEL
APR 25	133.0	AUG 13	146.2

HENNEPIN COUNTY--Continued

445347093213901. Local number, 117N21W32DAD01.
LOCATION.--Lat 44°53'47", long 93°21'39", in SE¼NE¼SE¼ sec.32, T.117 N., R.21 W., Hydrologic Unit 07010206, at Hanson Road and Benton Avenue.
Owner: City of Edina, well 9.
AQUIFER.--Hinckley Sandstone of Late Precambrian Age.
WELL CHARACTERISTICS.--Drilled public-supply artesian well, diameter 16 in (0.41 m), depth 1,130 ft (344 m), cased to 1,010 ft (308 m).
DATUM.--Land-surface datum is 933.3 ft (284.5 m) National Geodetic Vertical Datum of 1929. Measuring point: Hole in east side of pump base, 2.00 ft (0.61 m) above land-surface datum.
REMARKS.--Water level affected by pumping.
PERIOD OF RECORD.--August 1961 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 230.8 ft (70.35 m) below land-surface datum, Apr. 20, 1962; lowest, 369.6 ft (112.6 m) below land-surface datum, Aug. 28, 1970.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 22	275.7	JAN 18	269.5	FEB 25	273.9	APR 08	261.0	JUN 10	311.2	AUG 13	330.9
DEC 07	272.2										



117N21W32DAD01 WATER LEVEL

445818093264101. Local number, 117N22W03ADC01.
LOCATION.--Lat 44°58'18", long 93°26'41", in SW¼SE¼NE¼ sec.3, T.117 N., R.22 W., Hydrologic Unit 07010206, at 13106 Wayzata Boulevard.
Owner: Standard Oil Co.
AQUIFER.--Platteville Formation of Middle Ordovician Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 4 in (0.10 m), depth 143 ft (43.6 m), cased to 120 ft (36.6 m).
DATUM.--Altitude of land-surface datum is 970 ft (296 m). Measuring point: Top of casing, 1.80 ft (0.55 m) above land-surface datum.
PERIOD OF RECORD.--April 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 59.94 ft (18.27 m) below land-surface datum, Dec. 5, 1979; lowest, 61.25 ft (18.67 m) below land-surface datum, May 16, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	60.74	JAN 18	60.81	FEB 29	61.20	APR 15	60.40	JUN 17	60.58	AUG 19	60.58
DEC 05	59.94										

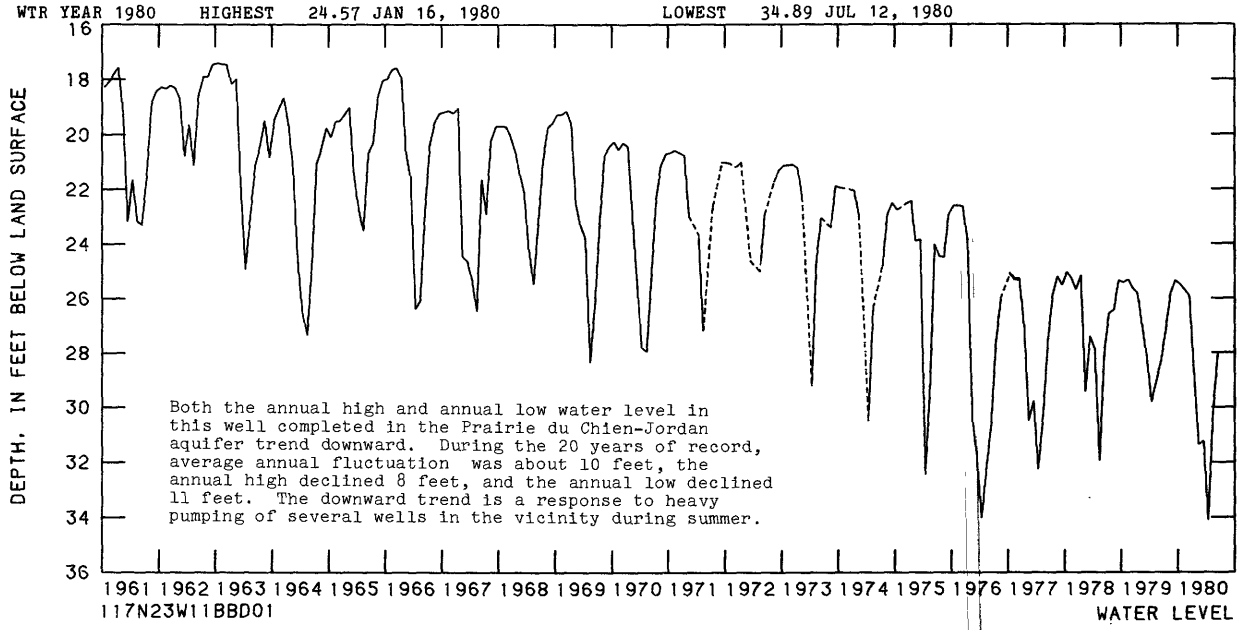
HENNEPIN COUNTY--Continued

445740093333001. Local number, 117N23W11BBD01.
LOCATION.--Lat 44°57'40", long 93°33'30", in SE¼NW¼NW¼ sec.11, T.117 N., R.23 W., Hydrologic Unit 07010206, 2 mi (3.2 km) southwest of Wayzata, at Lake Minnetonka.
Owner: Minnetonka Boat Works, Inc., Orono.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age and Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 6 in (0.15 m), depth 437 ft (133 m), cased to 270 ft (82.3 m).
DATUM.--Altitude of land-surface datum is 930.8 ft (283.7 m) National Geodetic Vertical Datum of 1929. Measuring point: Wood floor of instrument shelter, 3.30 ft (1.01 m) above land-surface datum.
REMARKS.--Water level affected by pumping.
PERIOD OF RECORD.--August 1942 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 14.05 ft (4.33 m) below land-surface datum, Apr. 30, 1954; lowest, 34.89 ft (10.63 m) below land-surface datum, July 12, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	27.14	25.83	24.94	24.99	25.23	25.41	25.95	30.60	.....	33.30	30.20	26.47
10	26.42	25.39	25.00	25.01	25.31	25.53	25.59	31.34	.....	33.92	.....	27.98
15	27.04	25.54	25.35	25.05	25.68	25.71	25.76	29.60	.....	34.11	29.44	27.07
20	26.12	25.52	25.20	25.43	25.20	25.46	26.02	28.48	28.68	32.12	27.86	26.45
25	26.00	25.04	25.12	25.36	25.47	25.67	27.36	30.58	29.78	31.51	28.20	26.11
EOM	25.62	25.30	25.12	25.51	25.70	25.91	28.75	30.86	31.23	31.30	27.42	26.12

WTR YEAR 1980 HIGHEST 24.57 JAN 16, 1980 LOWEST 34.89 JUL 12, 1980



450223093231801. Local number, 118N21W07DCB01.
LOCATION.--Lat 45°02'23", long 93°23'18", in NW¼SW¼SE¼ sec.7, T.118 N., R.21 W., Hydrologic Unit 07010206, at 47th Avenue North and Aquila Avenue.
Owner: City of New Hope.
AQUIFER.--Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 16 in (0.41 m), depth 422 ft (129 m), cased to 339 ft (103 m).
DATUM.--Altitude of land-surface datum is 933 ft (284 m). Measuring point: Top of wood platform, 3.00 ft (0.91 m) above land-surface datum.
REMARKS.--Water level affected by pumping.
PERIOD OF RECORD.--October 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 60.46 ft (18.43 m) below land-surface datum, Dec. 17, 1967; lowest, 71.35 ft (21.75 m) below land-surface datum, July 11, 1970.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	64.87	63.99	63.58	63.48	63.58	63.79	64.02	67.25	65.97	68.29	66.98	65.92
10	64.39	64.06	63.43	63.61	63.46	63.66	64.68	66.33	65.23	69.79	66.92	66.05
15	63.91	63.84	63.74	63.63	64.05	64.14	64.41	65.82	65.43	69.31	66.84	65.27
20	64.11	63.87	63.96	64.00	63.60	64.12	64.57	65.47	65.97	67.66	66.12	65.27
25	64.41	63.00	63.32	63.90	63.75	63.93	65.68	67.04	66.67	68.16	65.69	65.20
EOM	63.72	63.88	63.23	63.97	64.28	63.90	65.79	67.42	66.80	67.57	65.93	64.43

WTR YEAR 1980 HIGHEST 62.59 JAN 6, 1980 LOWEST 70.27 JUL 12, 1980

HENNEPIN COUNTY--Continued

445905093224401. Local number, 118N21W32CBB01.
LOCATION.--Lat 44°59'05", long 93°22'44", in NW¼NW¼SW¼ sec.32, T.118 N., R.21 W., Hydrologic Unit 07010206, at Winnetka Avenue and Highway 55, Golden Valley.
Owner: Red Owl Store.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in (0.16 m), depth 95 ft (29.0 m), screened 87 to 95 ft (26.5 to 29.0 m).
DATUM.--Altitude of land-surface datum is 895 ft (273 m). Measuring point: Top of well cap, 0.80 ft (0.24 m) above land-surface datum.
PERIOD OF RECORD.--May 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 19.77 ft (6.03 m) below land-surface datum, Oct. 26, 1979; lowest, 20.68 ft (6.30 m) below land-surface datum, Aug. 19, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	19.77	JAN 18	20.20	FEB 29	20.53	APR 15	20.40	JUN 17	20.47	AUG 19	20.68
DEC 07	19.99										

445857093223101. Local number, 118N21W32CBD01.
LOCATION.--Lat 44°58'57", long 93°22'31", in SE¼NW¼SW¼ sec.32, T.118 N., R.21 W., Hydrologic Unit 07010206, at 760 Harold Avenue, Golden Valley.
Owner: Golden Valley Methodist Church.
AQUIFER.--St. Peter Sandstone of Middle Ordovician Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in (0.15 m), depth 265 ft (80.8 m), cased to 200 ft (61.0 m).
DATUM.--Altitude of land-surface datum is 890 ft (271 m). Measuring point: Top of well cap, 0.70 ft (0.21 m) above land-surface datum.
PERIOD OF RECORD.--February 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 31.44 ft (9.58 m) below land-surface datum, Mar. 9, 1976; lowest, 37.51 ft (11.43 m) below land-surface datum, Aug. 24, 1971.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	32.05	JAN 18	32.65	FEB 29	32.18	APR 15	32.15	JUN 17	32.96	AUG 19	33.74
DEC 07	32.22										

450022093280501. Local number, 118N22W28ABA01.
LOCATION.--Lat 45°00'22", long 93°28'05", in NE¼NW¼NE¼ sec.28, T.118 N., R.22 W., Hydrologic Unit 07010206, at City of Plymouth water tower.
Owner: U.S. Geological Survey
AQUIFER.--Buried sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 67 ft (20.4 m), screened 65.5 to 67 ft (19.8 to 20.4 m).
DATUM.--Altitude of land-surface datum is 985 ft (300 m). Measuring point: Top of casing, 3.50 ft (1.07 m) above land-surface datum.
PERIOD OF RECORD.--August 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 62.08 ft (18.92 m) below land-surface datum, Mar. 6, 1973; lowest, dry below land-surface datum, Feb. 29, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 23	66.41	FEB 29	DRY	APR 14	65.87	JUN 17	66.54	AUG 19	66.79

HENNEPIN COUNTY--Continued

450854093212801. Local number, 119N21W04BBA01.
LOCATION.--Lat 45°08'54", long 93°21'28", in NE¼NW¼NW¼ sec.4, T.119 N., R.21 W., Hydrologic Unit 07010206, 109th Avenue North, 0.15 mi (0.24 km) east of Zane Avenue North, Brooklyn Park.
Owner: Walter Tessman.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled irrigation water-table well, diameter 12 in (0.30 m), depth 80 ft (24.4 m), screened 62 to 80 ft (18.9 to 24.4 m).
DATUM.--Altitude of land-surface datum is 876 ft (267 m). Measuring point: Hole in pump base, 1.00 ft (0.30 m) above land-surface datum.
PERIOD OF RECORD.--September 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 15.66 ft (4.77 m) below land-surface datum, July 26, 1978; lowest, 19.15 ft (5.84 m) below land-surface datum, Sept. 6, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 23	17.01	JAN 22	17.37	FEB 29	17.70	APR 14	17.49	JUN 20	17.43	AUG 19	18.03
DEC 07	17.07										

450541093225601. Local number, 119N21W19DDD01.
LOCATION.--Lat 45°05'41", long 93°22'56", in SE¼SE¼SE¼ sec.19, T.119 N., R.21 W., Hydrologic Unit 07010206, at 77th Avenue North and Highway 52.
Owner: City of Brooklyn Park, Fire Station.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.10 m), depth 47 ft (14.3 m), screen information not available.
DATUM.--Altitude of land-surface datum is 880 ft (268 m). Measuring point: Top of well cap, 1.60 ft (0.49 m) above land-surface datum.
PERIOD OF RECORD.--March 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 11.98 ft (3.65 m) below land-surface datum, July 26, 1978; lowest, 15.70 ft (4.79 m) below land-surface datum, Aug. 16, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 23	14.74	JAN 22	14.98	FEB 29	15.32	APR 14	14.72	JUN 20	14.81	AUG 19	15.42
DEC 07	14.82										

HUBBARD COUNTY

465142094433201. Local number, 139N32W16AAA01.
LOCATION.--Lat 46°51'42", long 94°43'32", in NE¼NE¼NE¼ sec.16, T.139 N., R.32 W., Hydrologic Unit 07010106, at Badoura Nursery.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial outwash sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 21 ft (6.4 m), screened 19 to 21 ft (5.8 to 6.4 m).
DATUM.--Altitude of land-surface datum is 1,419 ft (433 m). Measuring point: Top of casing, 2.00 ft (0.61 m) above land-surface datum.
REMARKS.--Measured weekly by Archie Hakala.
PERIOD OF RECORD.--September 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 10.78 ft (3.29 m) below land-surface datum, Oct. 30, 1973; lowest, 15.51 ft (4.73 m) below land-surface datum, Apr. 12, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 02	12.13	DEC 11	12.58	FEB 06	13.02	APR 07	13.24	JUN 03	13.71	AUG 05	14.08
09	12.23	17	12.61	11	13.07	17	13.30	10	13.68	12	14.11
16	12.29	26	12.68	19	13.12	21	13.32	18	13.74	19	14.12
23	12.41	JAN 01	12.74	MAR 04	13.25	29	13.41	25	13.78	25	14.13
30	12.51	09	12.80	11	13.32	MAY 06	13.48	JUL 03	13.82	SEP 02	14.16
NOV 07	12.33	15	12.84	18	13.37	13	13.52	08	13.90	09	14.12
13	12.39	21	12.86	26	13.44	20	13.60	14	13.98	22	14.09
20	12.47	29	12.94	APR 01	13.47	27	13.67	21	14.00	30	14.15
DEC 04	12.51										

ISANTI COUNTY

453125093181101. Local number, 035N24W14BCD01.
LOCATION.--Lat 45°31'25", long 93°18'11", in SE¼NW¼NW¼ sec.14, T.35 N., R.24 W., Hydrologic Unit 07010207, northwest of Isanti.
Owner: Allen Kluck.
AQUIFER.--Eau Claire - Mount Simon Formations of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 12 in (0.30 m), depth 300 ft (91.4 m), cased to 105 ft (32.0 m).
DATUM.--Altitude of land-surface datum is 940 ft (287 m). Measuring point: Hole in pump base, 0.10 ft (0.03 m) above land-surface datum.
PERIOD OF RECORD.--February 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 11.96 ft (3.65 m) below land-surface datum, July 17, 1975; lowest, 15.72 ft (4.79 m) below land-surface datum, Apr. 4, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	12.61	NOV 28	12.75	APR 04	13.01	MAY 22	13.22	JUL 10	13.77	AUG 20	13.92

453058093175901. Local number, 035N24W14CDC01.
LOCATION.--Lat 45°30'58", long 91°18'59", in SW¼SE¼SW¼ sec.14, T.35 N., R.24 W., Hydrologic Unit 07010207, northwest of Isanti.
Owner: Ernest Kluck.
AQUIFER.--Surficial outwash sand of Pleistocene Age.
WELL CHARACTERISTICS.--Driven unused water-table well, diameter 1¼ in (0.03 m), depth 3.00 ft (0.91 m), screen information not available.
DATUM.--Altitude of land-surface datum is 930 ft (283 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--March 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.49 ft (1.67 m) below land-surface datum, May 21, 1979; lowest, 10.60 ft (3.23 m) below land-surface datum, Apr. 4, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	7.36	JAN 09	8.01	APR 04	7.96	MAY 22	8.18	JUL 10	8.64	AUG 20	8.64
NOV 28	7.28										

453410093140001. Local number, 036N23W32ACB01.
LOCATION.--Lat 45°34'10", long 93°14'00", in NW¼SE¼NE¼ sec.32, T.36 N., R.23 W., Hydrologic Unit 07010207, in Cambridge.
Owner: City of Cambridge, well 4.
AQUIFER.--Hinckley Sandstone of Late Precambrian Age.
WELL CHARACTERISTICS.--Drilled public-supply artesian well, diameter 20 in (0.51 m), depth 630 ft (192 m), cased to 352 ft (107 m).
DATUM.--Altitude of land-surface datum is 960 ft (293 m). Measuring point: Edge of vent pipe, 3.00 ft (0.91 m) above land-surface datum.
REMARKS.--Measured weekly by Thomas Minar. Water level affected by pumping.
PERIOD OF RECORD.--July 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.50 ft (0.76 m) below land-surface datum, Jan. 17, 1974; lowest, 16.95 ft (5.17 m) below land-surface datum, July 11, 1974.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 04	4.66	NOV 30	5.44	JAN 24	5.15	MAR 13	5.82	MAY 09	5.72	AUG 08	8.91
12	5.41	DEC 06	5.13	31	5.03	20	5.98	16	9.50	21	7.68
18	5.53	13	5.61	FEB 07	5.74	27	6.00	22	p16.75	28	7.27
25	5.38	20	5.58	14	5.80	APR 03	4.45	JUN 13	5.96	SEP 04	6.72
NOV 01	4.34	27	4.94	21	5.73	10	4.91	19	6.40	11	6.00
08	4.15	JAN 03	4.56	28	5.54	25	5.35	JUL 03	p10.98	18	6.74
15	5.13	10	5.09	MAR 06	5.80	MAY 02	6.59	31	6.47	25	6.32
22	5.39	17	3.08								

p Well being pumped.

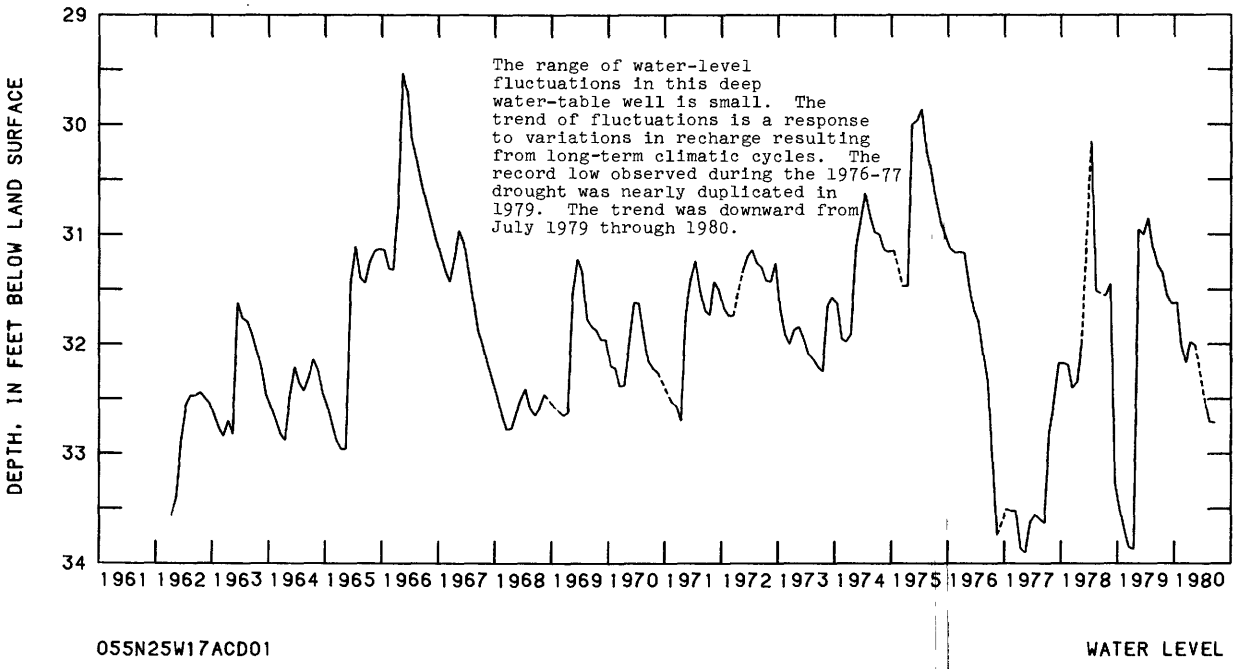
ITASCA COUNTY

471450093322001. Local number, 055N25W17ACD01.
LOCATION.--Lat 47°14'50", long 93°32'20", in SE¼SW¼NE¼ sec.17, T.55 N., R.25 W., Hydrologic Unit 07010103, at west end of 13th Street NW, Grand Rapids.
Owner: U.S. Geological Survey.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 4 in (0.10 m), depth 147 ft (44.8 m), screened 143 to 147 ft (43.6 to 44.8 m).
DATUM.--Altitude of land-surface datum is 1,318 ft (402 m). Measuring point: Top of platform, 1.60 ft (0.49 m) above land-surface datum.
PERIOD OF RECORD.--April 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 29.04 ft (8.85 m) below land-surface datum, June 1, 1966; lowest, 33.92 ft (10.34 m) below land-surface datum, May 17, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	31.35	.....	31.50	.....	31.64	32.02	.....	32.01	.....	.....	32.58	32.70
10	31.35	.....	31.52	.....	31.84	32.17	.....	31.98	.....	.....	32.51	32.69
15	.....	31.52	31.56	.....	31.87	32.11	.....	.....	.....	.....	32.63	32.63
20	.....	31.52	31.60	.....	31.89	32.12	.....	.....	.....	.....	32.64	32.65
25	.....	31.50	31.61	.....	31.97	32.13	.....	.....	.....	.....	32.62	32.72
EOM	.....	31.55	.....	31.62	32.01	32.13	31.98	.....	.....	32.51	32.71	32.65

WTR YEAR 1980 HIGHEST 31.10 OCT 1, 1979 LOWEST 32.72 SEP 25, 1980



JACKSON COUNTY

435019095060001. Local number, 104N36W01DAC01.
LOCATION.--Lat 45°50'19", long 95°06'00", in SW¼NE¼SE¼ sec.1, T.104 N., R.36 W., Hydrologic Unit 07010001, south of Windom.
Owner: U.S. Geological Survey
AQUIFER.--Surficial gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 26 ft (7.9 m), screened 24 to 26 ft (7.3 to 7.9 m).
DATUM.--Altitude of land-surface datum is 1,345 ft (410 m). Measuring point: Top of casing, 4.00 ft (1.22 m) above land-surface datum.
PERIOD OF RECORD.--October 1979 to June 1980.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.53 ft (1.69 m) below land-surface datum, June 14, 1980; lowest, 8.98 ft (2.74 m) below land-surface datum, Mar. 15, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 09	6.61	DEC 21	5.43	FEB 09	8.88	MAR 15	8.98	APR 27	6.79	JUN 14	5.33
NOV 24	5.43	JAN 18	7.08								

JACKSON COUNTY--Continued

434742095191501. Local number, 104N37W19DBD01.
LOCATION.--Lat 43°47'42", long 95°19'15", in SE¼NE¼SE¼ sec.19, T.104 N., R.37 W., Hydrologic Unit 07100001, at Heron Lake.
Owner: City of Heron Lake, old railroad well.
AQUIFER.--Sioux Quartzite of Late Precambrian Age.
WELL CHARACTERISTICS.--Drilled public-supply artesian well, diameter 16 in (0.41 m), depth 323 ft (98.4 m), screened 205 to 225 ft (62.5 to 68.6 m).
DATUM.--Altitude of land-surface datum is 1,420 ft (433 m). Measuring point: Edge of breather pipe, 2.60 ft (0.79 m) above land-surface datum.
PERIOD OF RECORD.--August 1972, July 1973, September 1976, July 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 59.16 ft (18.03 m) below land-surface datum, Aug. 11, 1972; lowest, 65.50 ft (19.96 m) below land-surface datum, Sept. 24, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	63.06	JAN 03	62.96	MAR 21	62.91	MAY 06	62.93	JUL 02	63.96	AUG 28	64.01
NOV 20	63.13	FEB 13	62.94								

KANABEC COUNTY

454744093151601. Local number, 038N23W07DBB01.
LOCATON.--Lat 45°47'44", long 93°15'16", in NW¼NW¼SE¼ sec.7, T.38 N., R.23 W., Hydrologic Unit 07030004, on Chester Belkholm farm.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 21 ft (6.4 m), screened 19 to 21 ft (5.8 to 6.4 m).
DATUM.--Altitude of land-surface datum is 963 ft (294 m). Measuring point: Top of casing, 1.60 ft (0.49 m) above land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 12.81 ft (3.90 m) below land-surface datum, Aug. 1, 1979; lowest, 14.59 ft (4.45 m) below land-surface datum, Aug. 30, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	13.53	MAY 02	14.00	JUL 02	14.22	JUL 22	14.39	AUG 30	14.59	SEP 21	14.50
MAR 12	14.16	JUN 12	14.10								

454759093243301. Local number, 038N25W12BCB01.
LOCATION.--Lat 45°47'59", long 93°24'33", in NW¼SW¼NW¼ sec.12, T.38 N., R.25 W., Hydrologic Unit 07030004, on Duane Pearson farm.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 33 ft (10.1 m), screened 31 to 33 ft (9.4 to 10.1 m).
DATUM.--Altitude of land-surface datum is 1,015 ft (309 m). Measuring point: Top of casing, 4.00 ft (1.22 m) above land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 11.71 ft (3.57 m) below land-surface datum, Aug. 1, 1979; lowest, 15.04 ft (4.58 m) below land-surface datum, Oct. 21, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	12.52	MAY 02	13.90	JUL 02	14.22	JUL 22	14.35	AUG 30	14.57	SEP 21	14.59
MAR 12	13.72	JUN 12	14.07								

KANABEC COUNTY--Continued

454523093232401. Local number, 038N25W25AAD02.
LOCATION.--Lat 45°45'23", long 93°23'24", in SE¼NE¼NE¼ sec.25, T.38 N., R.25 W., Hydrologic Unit 07030004, on Ralph Wahlstrom farm.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.04 m), depth 51 ft (15.5 m), screened 49 to 51 ft (14.9 to 15.5 m).
DATUM.--Altitude of land-surface datum is 1,018 ft (310 m). Measuring point: Top of casing, at land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 20.23 ft (6.17 m) below land-surface datum, Oct. 18, 1977; lowest, 26.18 ft (7.98 m) below land-surface datum, Mar. 21, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	22.88	JUN 19	24.65	JUL 02	24.75	JUL 22	24.92	AUG 30	25.12	SEP 21	25.31
MAY 02	23.95										

455342093134001. Local number, 039N23W05DAC01.
LOCATION.--Lat 45°53'42", long 93°13'40", in SW¼NE¼SE¼ sec.5, T.39 N., R.23 W., Hydrologic Unit 07030004, on Roman Miller property.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 47 ft (14.3 m), screened 45 to 47 ft (13.7 to 14.3 m).
DATUM.--Altitude of land-surface datum is 1,030 ft (314 m). Measuring point: Top of casing, 4.00 ft (1.22 m) above land-surface datum.
PERIOD OF RECORD.--December 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 14.28 ft (4.35 m) below land-surface datum, July 31, 1979; lowest, 17.18 ft (5.24 m) below land-surface datum, Mar. 21, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	15.57	MAY 02	16.27	JUL 02	16.67	JUL 22	16.93	AUG 30	17.10	SEP 21	17.09
MAR 12	16.57	JUN 12	16.54								

455400093194401. Local number, 039N24W04ADA01.
LOCATION.--Lat 45°54'00", long 93°19'44", in NE¼SE¼NE¼ sec.4, T.39 N., R.24 W., Hydrologic Unit 07030004, on Wes Cashman farm.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 22 ft (6.7 m), screened 20 to 22 ft (6.1 to 6.7 m).
DATUM.--Altitude of land-surface datum is 1,023 ft (312 m). Measuring point: Top of casing, 1.00 ft (0.30 m) above land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.87 ft (0.87 m) below land-surface datum, Dec. 21, 1977; lowest, 5.81 ft (1.77 m) below land-surface datum, Mar. 5, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

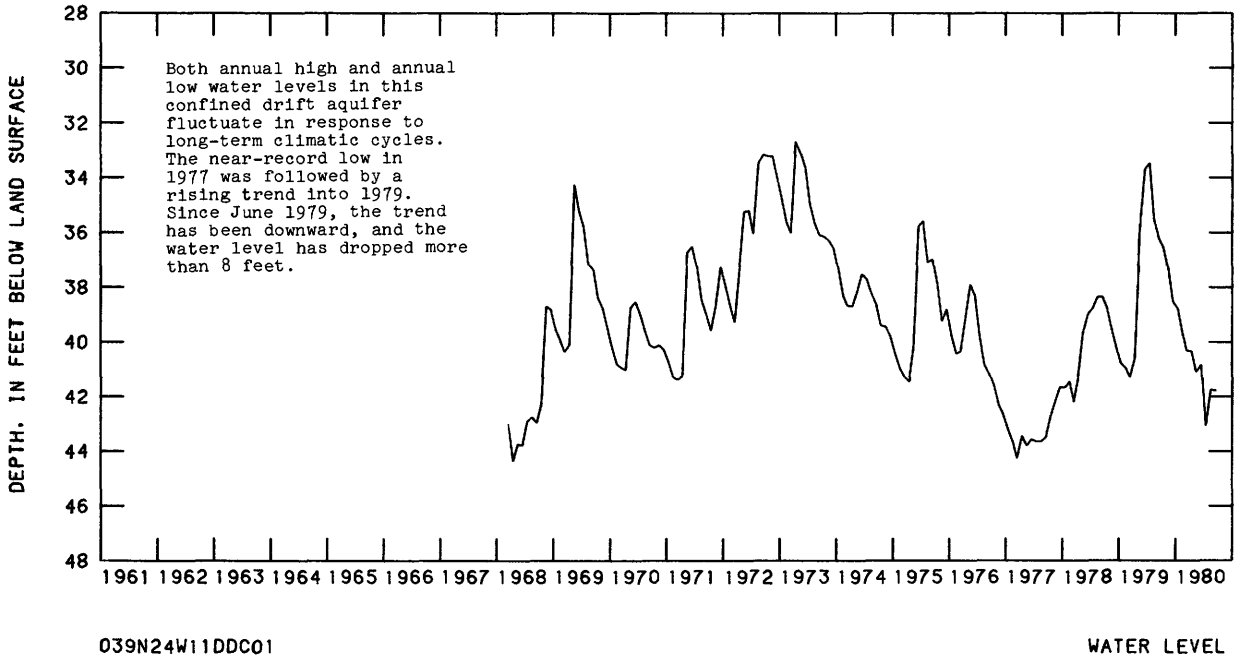
DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	3.88	MAY 02	4.15	JUL 02	4.53	JUL 22	4.96	AUG 30	5.13	SEP 21	4.65
MAR 12	5.73										

KANABEC COUNTY--Continued

455236093172301. Local number, 039N24W11DDC01.
LOCATION.--Lat 45°52'36", long 93°17'23", in SW¼SE¼SE¼ sec.11, T.39 N., R.24 W., Hydrologic Unit 07030004, intersection of Forest Avenue and U.S. Highway 65.
Owner: City of Mora, well 3.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled public-supply artesian well, diameter 12 in (0.30 m), depth 170 ft (51.8 m), screened 150 to 170 ft (45.7 to 51.8 m).
DATUM.--Altitude of land-surface datum is 1,011 ft (308 m). Measuring point: Edge of vent pipe, 2.40 ft (0.73 m) above land-surface datum.
REMARKS.--Measured weekly by Donald Dahl.
PERIOD OF RECORD.--March 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 32.28 ft (9.84 m) below land-surface datum, Apr. 6, 1973; lowest, 44.36 ft (13.52 m) below land-surface datum, Apr. 22, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 05	36.31	NOV 30	37.32	FEB 01	39.18	MAR 28	40.32	JUN 06	40.71	AUG 01	41.75
12	36.38	DEC 07	37.96	08	39.18	APR 04	40.18	13	40.84	08	41.54
19	36.38	14	37.73	15	39.22	18	39.73	20	40.42	15	41.54
26	36.56	21	37.84	22	39.40	25	40.34	27	40.60	22	41.70
NOV 02	36.90	28	38.52	29	39.67	MAY 02	40.37	JUL 05	41.40	29	41.60
09	36.99	JAN 11	38.62	MAR 07	39.92	16	39.83	11	42.10	SEP 05	41.78
16	37.10	18	38.71	14	40.23	23	41.10	18	42.40	19	41.60
23	37.25	25	38.80	21	40.30	30	41.03	25	43.07	26	41.70



455815093171101. Local number, 040N24W12BCC01.
LOCATION.--Lat 45°58'15", long 93°17'11", in SW¼SW¼NW¼ sec.12, T.40 N., R.24 W., Hydrologic Unit 07030004, on Neill Heitke farm.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 51 ft (15.2 m), screened 49 to 51 ft (14.9 to 15.2 m).
DATUM.--Altitude of land-surface datum is 1,070 ft (326 m). Measuring point: Top of casing, 3.10 ft (0.94 m) above land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 25.28 ft (7.71 m) below land-surface datum, July 31, 1979; lowest, 27.55 ft (8.40 m) below land-surface datum, Mar. 21, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	25.96	JUN 12	27.05	JUL 02	26.70	JUL 22	26.82	AUG 30	27.02	SEP 21	26.92
MAY 02	25.99										

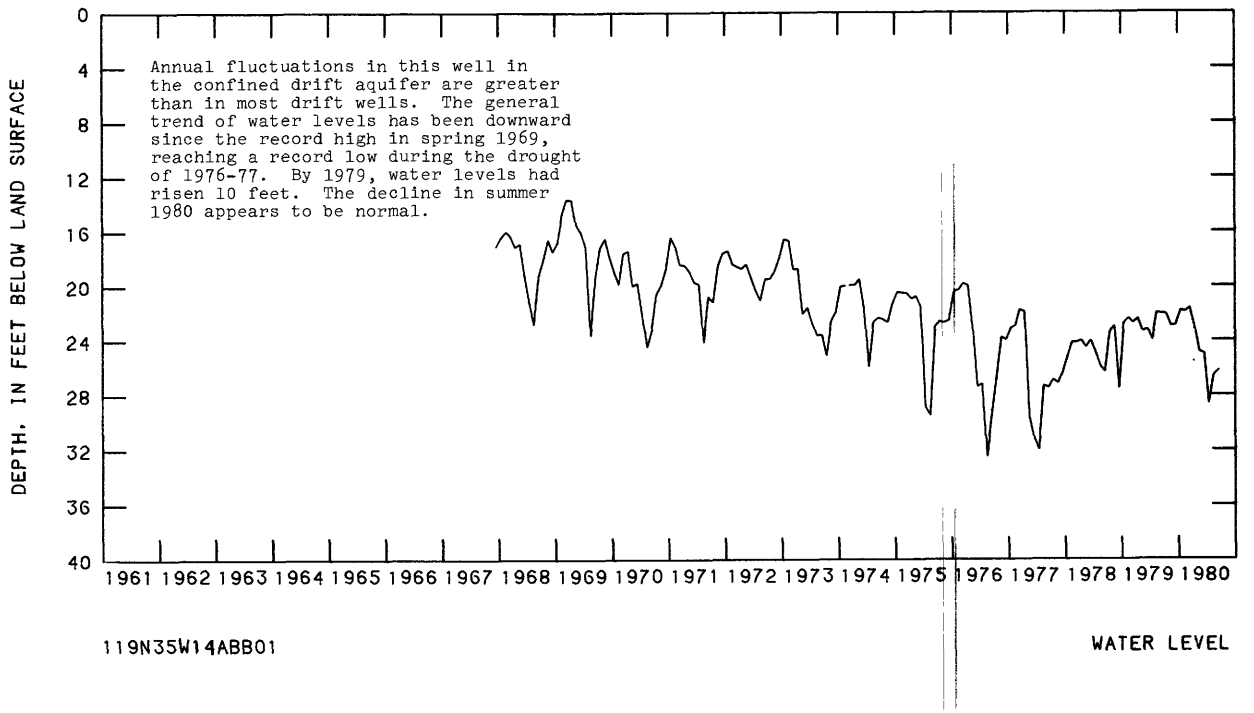
KANDIYOHI COUNTY

450730095014801. Local number, 119N35W14ABB01.
LOCATION.--Lat 45°07'30", long 95°01'48", in NW¼NW¼NE¼ sec.14, T.119 N., R.35 W., Hydrologic Unit 07020004, at Willmar.
Owner: Burlington Northern, Inc.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 10 in (0.25 m), depth 320 ft (97.5 m), screened 297 to 320 ft (89.9 to 97.5 m).
DATUM.--Altitude of land-surface datum is 1,140 ft (347 m). Measuring point: Wood floor of recorder shelter, 1.00 ft (0.30 m) above land-surface datum.
REMARKS.--Water level affected by pumping.
PERIOD OF RECORD.--December 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 12.78 ft (3.90 m) below land-surface datum, May 12, 1969; lowest, 32.50 ft (9.91 m) below land-surface datum, Aug. 27, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	22.09	20.60	21.90	21.75	21.85	21.60	21.60	24.21	24.75	24.60	26.57	25.20
10	21.95	20.30	22.26	21.50	21.70	21.50	21.45	24.85	24.71	27.75	26.22	26.20
15	20.99	20.51	22.92	21.57	21.92	21.48	21.45	24.30	24.23	28.67	26.18	.....
20	21.62	20.30	22.83	21.72	21.23	21.61	21.56	.....	24.73	28.46	25.70	.....
25	21.18	21.75	22.51	21.82	21.48	21.63	21.84	.....	24.85	28.64	25.24	.....
EOM	20.58	22.95	22.12	21.67	21.67	21.36	23.00	.....	24.99	27.35	25.09	.....

WTR YEAR 1980 HIGHEST 19.33 NOV 19, 1979 LOWEST 29.20 JUL 16, 1980



452415094503001. Local number, 122N33W04BCD01.
LOCATION.--Lat 45°24'15", long 94°50'30", in SE¼SW¼NW¼ sec.4, T.122 N., R.33 W., Hydrologic Unit 07010204, at Regal.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 2 in (0.05 m), depth 17 ft (5.2 m), screened 14 to 17 ft (4.3 to 5.2 m).
DATUM.--Altitude of land-surface datum is 1,220 ft (372 m). Measuring point: Top of casing, 4.40 ft (1.34 m) above land-surface datum.
PERIOD OF RECORD.--December 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.86 ft (1.48 m) below land-surface datum, June 26, 1979; lowest, 11.40 ft (3.47 m) below land-surface datum, Feb. 26, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	7.38	DEC 24	7.93	MAR 29	9.04	MAY 28	9.29	JUL 28	9.48	SEP 26	9.63
30	7.83	JAN 26	8.70	APR 25	8.95	JUN 26	9.08	AUG 26	9.70		

KANDIYOHI COUNTY--Continued

452400095004001. Local number, 122N34W06CBC01.
LOCATION.--Lat 45°24'00", long 95°00'40", in SW¼NW¼SW¼ sec.6, T.122 N., R.34 W., Hydrologic Unit 07010204, 3.4 mi (5.5 km) south of Belgrade.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observatin water-table well, diameter 2 in (0.05 m), depth 23 ft (7.0 m), screened 20 to 23 ft (6.1 to 7.0 m).
DATUM.--Altitude of land-surface datum is 1,237 ft (377 m). Measuring point: Top of platform, 0.80 ft (0.24 m) above land-surface datum.
PERIOD OF RECORD.--October 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.71 ft (1.44 m) below land-surface datum, Apr. 28, 1979; lowest, 11.61 ft (3.54 m) below land-surface datum, Feb. 26, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	9.59	DEC 24	9.68	FEB 28	10.15	APR 25	9.33	JUN 26	9.21	AUG 26	10.25
30	9.68	JAN 26	9.91	MAR 29	9.69	MAY 28	9.53	JUL 28	10.01	SEP 26	10.06

LE SUEUR COUNTY

442622093543801. Local number, 111N26W14ADA01.
LOCATION.--Lat 44°25'22", long 93°54'38", in NE¼SE¼NE¼ sec.14, T.111 N., R.26 W., Hydrologic Unit 07020012, 0.85 mi (1.37 km) south of Le Sueur.
Owner: Merle Moser.
AQUIFER.--Buried gravel of Pleistocene Age and Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 16 in (0.41 m), depth 242 ft (73.8 m), screened 212 to 242 ft (64.6 to 73.8 m).
DATUM.--Altitude of land-surface datum is 855 ft (261 m). Measuring point: Edge of vent pipe, 1.20 ft (0.37 m) above land-surface datum.
PERIOD OF RECORD.--January 1980 to August 1980.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 82.32 ft (25.09 m) below land-surface datum, Mar. 3, 1980; lowest, 83.83 ft (25.55 m) below land-surface datum, Aug. 21, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 23	82.57	MAR 03	82.32	APR 16	82.64	AUG 21	83.83

443234093333501. Local number, 112N23W02BAB01.
LOCATION.--Lat 44°32'34", long 93°33'35", in NW¼NE¼NW¼ sec.2, T.112 N., R.23 W., Hydrologic Unit 07020012, just east of New Prague.
Owner: Holy Trinity Lutheran Church.
AQUIFER.--St. Lawrence Formation of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 4 in (0.10 m), depth 180 ft (54.9 m), cased to 155 ft (47.2 m).
DATUM.--Altitude of land-surface datum is 1,005 ft (306 m). Measuring point: Top of casing, 1.00 ft (0.30 m) above land-surface datum.
PERIOD OF RECORD.--April 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 96.20 ft (29.32 m) below land-surface datum, Mar. 3, 1980; lowest, 99.42 ft (30.30 m) below land-surface datum, July 26, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	96.89	JAN 23	96.36	MAR 03	96.20	APR 16	96.31	JUN 16	97.45	AUG 21	98.54
DEC 11	96.54										

LE SUEUR COUNTY--Continued

443147093374501. Local number, 112N23W06DDD01.
LOCATION.--Lat 44°31'47",long 93°37'45", in SE¼SE¼SE¼ sec.6, T.112 N., R.23 W., Hydrologic Unit 07020012, 3 mi (4.8 km) southwest of New Prague.
Owner: Friedens Lutheran Church.
AQUIFER.--St. Lawrence Formation of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 5 in (0.13 m), depth 265 ft (80.8 m), cased to 209 ft (63.7 m).
DATUM.--Altitude of land-surface datum is 1,019 ft (311 m). Measuring point: Top of casing, 1.70 ft (0.52 m) above land-surface datum.
PERIOD OF RECORD.--April 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 151.1 ft (46.06 m) below land-surface datum, Apr. 26, 1979; lowest, 151.9 ft (46.30 m) below land-surface datum, July 26, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

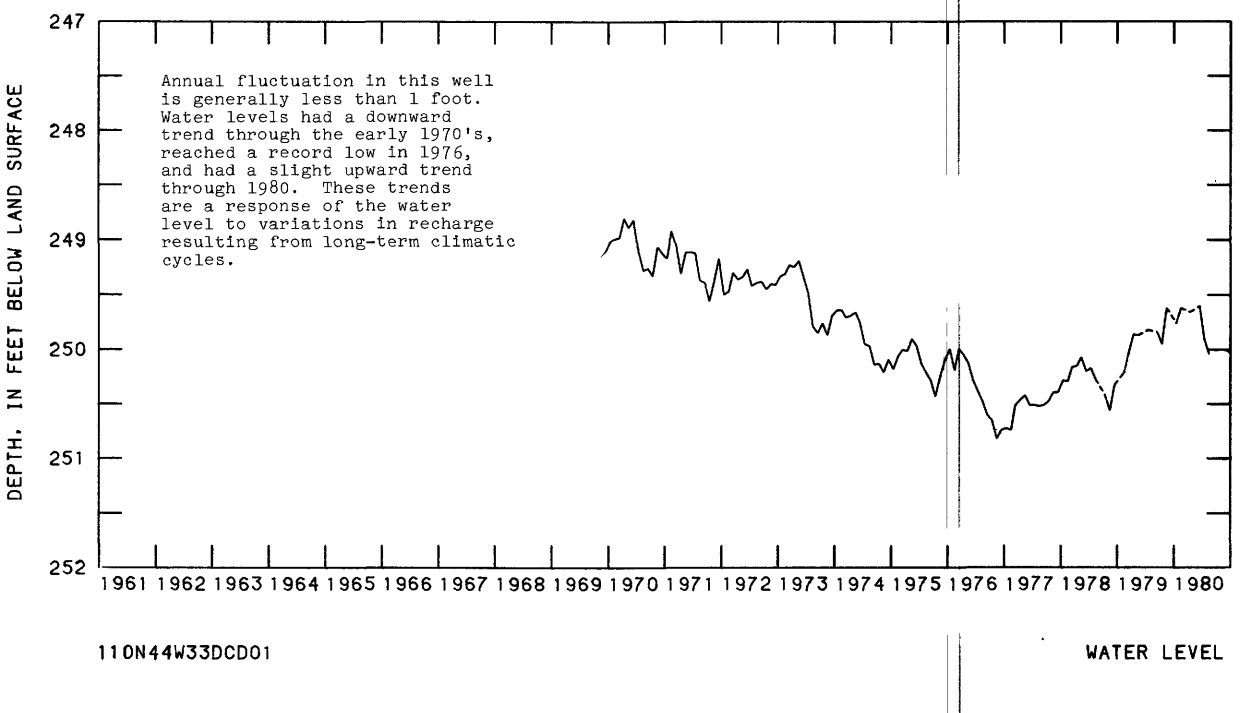
DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	151.7	JAN 23	151.6	MAR 03	151.7	APR 16	151.5	JUN 16	151.6	AUG 21	151.7
DEC 11	151.6										

LINCOLN COUNTY

441705096084501. Local number, 110N44W33DCD01.
LOCATION.--Lat 44°17'05", long 96°08'45", in SE¼SW¼SE¼ sec.33, T.110 N., R.44 W., Hydrologic Unit 07020006, at Tyler.
Owner: U.S. Geological Survey.
AQUIFER.--Dakota Sandstone of Lower Cretaceous Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 8 in (0.20 m), depth 967 ft (295 m), screened 890 to 900 ft (271 to 274 m).
DATUM.--Altitude of land-surface datum is 1,738 ft (530 m). Measuring point: Top of recorder platform, 3.50 ft (1.07 m) above land-surface datum.
PERIOD OF RECORD.--November 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 248.4 ft (75.71 m) below land-surface datum, Apr. 20, 1970; lowest, 250.8 ft (76.44 m) below land-surface datum, Nov. 12, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	250.0	JAN 02	249.8	APR 21	249.7	JUN 05	249.6	JUL 28	249.9	AUG 28	250.0
NOV 19	249.6	FEB 13	249.6								



MC LEOD COUNTY

444630094021601. Local number, 115N27W14ABA01.
LOCATION.--Lat 44°46'30", long 94°02'16", in NE¼NW¼NE¼ sec.14, T.115 N., R. 27 W., Hydrologic Unit 07010205, in City of Plato.
Owner: Kenny's Garage. Formerly Plato Creamery.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in (0.15 m), depth 67 ft (20.4 m).
DATUM.--Altitude of land-surface datum is 990 ft (302 m). Measuring point: Edge of pump base, 0.70 ft (0.21 m) above land-surface datum.
PERIOD OF RECORD.--September 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 24.97 ft (7.61 m) below land-surface datum, May 10, 1979; lowest, 30.35 ft (9.25 m) below land-surface datum, Apr. 29, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	26.16	FEB 05	26.11	MAR 24	27.08	APR 29	30.35	JUL 29	29.96	SEP 09	29.06
DEC 26	25.52										

444758094132101. Local number, 115N28W05ACC01.
LOCATION.--Lat 44°47'58", long 94°13'21", in SW¼SW¼NE¼ sec.5, T.115 N., R.28 W., Hydrologic Unit 07010205, northwest of Glencoe.
Owner: Graupmann Farms, Inc.
AQUIFER.--Mount Simon Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 12 in (0.30 m), depth 472 ft (144 m), screened 432 to 472 ft (132 to 144 m).
DATUM.--Altitude of land-surface datum is 1,036 ft (316 m). Measuring point: Edge of vent pipe, 2.00 ft (0.61 m) above land-surface datum.
PERIOD OF RECORD.--September 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 80.50 ft (24.54 m) below land-surface datum, Aug. 20, 1979; lowest, 109.6 ft (33.41 m) below land-surface datum, Oct. 1, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	109.6	DEC 12	88.25	MAR 21	84.11	APR 29	83.26	JUN 17	84.08	SEP 09	82.21
NOV 08	100.1	FEB 05	87.20								

444704094090801. Local number, 115N28W11ADD01.
LOCATION.--Lat 44°47'04", long 94°09'08", in SE¼SE¼NE¼ sec.11, T.115 N., R.28 W., Hydrologic Unit 07010205, 0.4 mi (0.6 km) north of Glencoe.
Owner: McLeod County Highway Department.
AQUIFER.--Mount Simon Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 5 in (0.13 m), depth 500 ft (152 m), cased to 446 ft (136 m).
DATUM.--Altitude of land-surface datum is 1,020 ft (311 m). Measuring point: Top of casing, 1.00 ft (0.30 m) above land-surface datum.
PERIOD OF RECORD.--November 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 137.6 ft (41.94 m) below land-surface datum, Sept. 28, 1977; lowest, 148.0 ft (45.10 m) below land-surface datum, July 18, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	145.9	DEC 26	140.8	MAR 21	139.7	JUN 17	143.0	JUL 29	142.3	SEP 09	144.2
NOV 08	145.6	FEB 05	139.5	APR 29	143.7						

MC LEOD COUNTY--Continued

444819094164701. Local number, 116N29W35DDC01.
LOCATION.--Lat 44°48'19", long 94°16'47", in SW¼SE¼SE¼ sec.35, T.116 N., R.29 W., Hydrologic Unit 07010205, 1.3 mi (2.1 km) south of Biscay.
Owner: Charles Johnson.
AQUIFER.--Buried sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 12 in (0.30 m), depth 269 ft (82.0 m), screened 229 to 269 ft (69.8 to 82.0 m).
DATUM.--Altitude of land-surface datum is 1,050 ft (320 m). Measuring point: Edge of vent pipe, 1.00 ft 0.30 m) above land-surface datum.
PERIOD OF RECORD.--September 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 25.37 ft (7.73 m) below land-surface datum, Feb. 5, 1980; lowest, 29.93 ft (9.12 m) below land-surface datum, Sept. 9, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	27.15	DEC 12	26.25	MAR 21	25.69	APR 29	25.53	JUN 17	25.45	SEP 09	29.93
NOV 08	26.95	FEB 05	25.37								

445721094031201. Local number 117N27W10DAA01.
LOCATION.--Lat 44°57'21", long 94°03'12", in NE¼NE¼SE¼ sec.10, T.117 N., R.27 W., Hydrologic Unit 07010205, 0.1 mi (0.2 km) south of Winsted.
Owner: Winsted Farmers Coop.
AQUIFER.--Buried sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled industrial artesian well, diameter 4 in (0.10 m), depth 129 ft (39.3 m), screened 125 to 129 ft (38.1 to 39.3 m).
DATUM.--Altitude of land-surface datum is 1,015 ft (309 m). Measuring point: Top of casing, 1.40 ft (0.43 m) above land-surface datum.
PERIOD OF RECORD.--November 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 32.55 (9.92 m) below land-surface datum, June 20, 1979; lowest, 41.52 (12.66 m) below land-surface datum, Nov. 3, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 02	34.37	DEC 12	33.20	MAR 20	33.60	JUN 16	34.04	JUL 30	33.28	SEP 09	35.95
NOV 08	34.08	FEB 04	33.13	APR 30	34.52						

MEEKER COUNTY

450632094290801. Local number, 119N30W19AAB01.
LOCATION.--Lat 45°06'32", long 94°29'08", in NW¼NE¼NE¼ sec.19, T.119 N., R.30 W., Hydrologic Unit 07010204, on Ted Carlson farm.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial outwash sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 26 ft (7.9 m), screened 24 to 26 ft (7.3 to 7.9 m).
DATUM.--Altitude of land-surface datum is 1,130 ft (344 m). Measuring point: Top of casing, 3.30 ft (1.01 m) above land-surface datum.
PERIOD OF RECORD.--November 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.56 ft (1.39 m) below land-surface datum, Nov. 18, 1977; lowest 6.44 ft (1.96 m) below land-surface datum, Mar. 11, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAR 11	6.44	JUN 03	5.52	JUL 08	5.27	AUG 11	6.10	SEP 11	5.86

MEEKER COUNTY--Continued

451542094322301. Local number, 121N31W26BDC01.
LOCATION.--Lat 45°15'42", long 94°32'23", in SW¼SE¼NW¼ sec.26, T.121 N., R.31 W., Hydrologic Unit 07010204, on Keith Langmo farm.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 16 ft (4.9 m), screened 14 to 16 ft (4.3 to 4.9 m).
DATUM.--Altitude of land-surface datum is 1,112 ft (339 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--November 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.20 ft (1.28 m) below land-surface datum, Aug. 1, 1979; lowest, 6.59 ft (2.01 m) below land-surface datum, Mar. 12, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAR 11	6.57	JUN 03	5.12	JUL 08	5.27	AUG 11	5.96	SEP 11	5.20

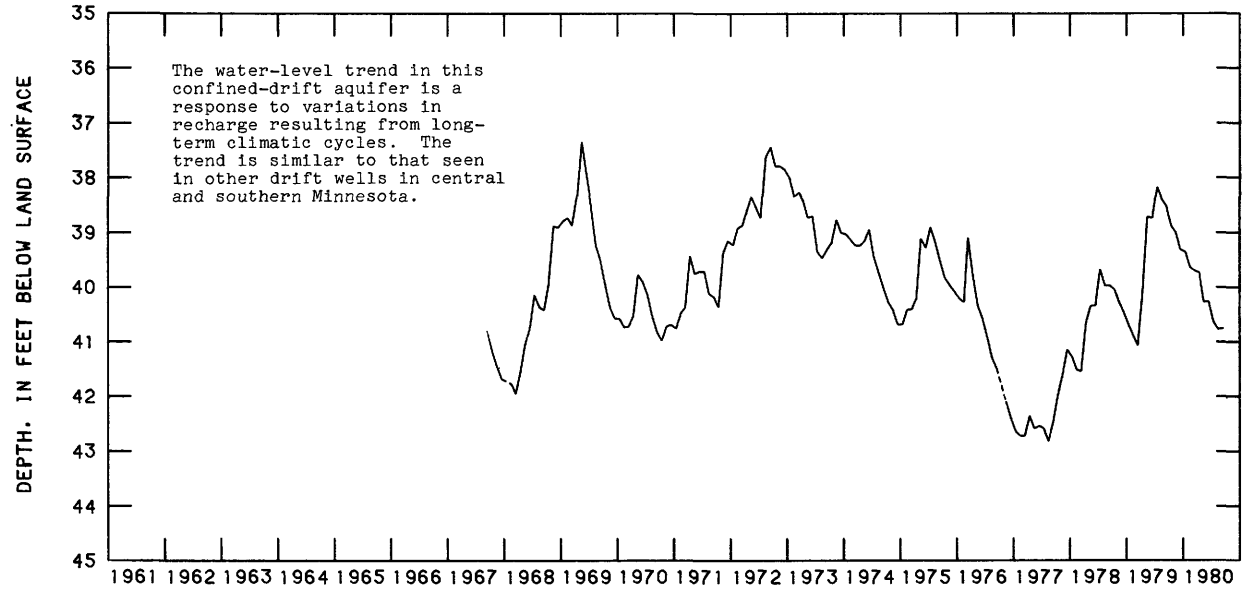
MILLE LACS COUNTY

454450093395701. Local number, 038N27W35ABC01.
LOCATION.--Lat 45°44'50", long 93°39'57", in SW¼NW¼NE¼ sec.35, T.38 N., R.27 W., Hydrologic Unit 07010207, in Milaca.
Owner: City of Milaca, creamery well.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 12 in (0.30 m), depth 82 ft (25.0 m), screened 67 to 82 ft (20.4 to 25.0 m).
DATUM.--Land-surface datum is 1,082.2 ft (329.8 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of platform, 3.00 ft (0.91 m) above land-surface datum.
REMARKS.--Water level affected by pumping.
PERIOD OF RECORD.--September 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 36.74 ft (11.20 m) below land-surface datum, July 26, 1972; lowest, 42.81 ft (13.05 m) below land-surface datum, Aug. 27, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	38.56	38.47	38.96	39.36	39.48	39.60	39.24	39.83	40.13	40.34	40.70	40.73
10	38.64	38.56	39.04	.....	39.35	39.69	39.27	39.89	40.07	40.38	40.65	40.76
15	38.72	38.76	39.22	.....	39.45	39.70	39.30	40.01	40.13	40.53	40.71	40.40
20	38.85	38.91	39.20	.....	39.53	39.70	39.43	40.05	.....	40.54	40.71	40.53
25	38.87	38.87	39.29	.....	39.58	39.65	39.57	40.15	.....	40.56	40.77	40.69
EOM	38.76	39.00	39.31	.....	39.64	39.33	39.73	40.27	40.26	40.63	40.77	40.63

WTR YEAR 1980 HIGHEST 38.30 NOV 7, 1979 LOWEST 40.78 SEP 2, 9, 1980



MORRISON COUNTY

455135094092801. Local number, 039N31W23DAA01.
LOCATION.--Lat 45°51'35", long 94°09'28", in NE¼NE¼SE¼ sec.23, T.39 N., R. 31 W., Hydrologic Unit 07010201, on Kelzenberg farm.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial outwash sand of Pleistocene Age.
WELL CHARACTERISTICS.--Driven observation water-table well, diameter 1¼ in (0.03 m), depth 12 ft (3.7 m), screened 10 to 12 ft (3.0 to 3.7 m).
DATUM.--Altitude of land-surface datum is 1,104 ft (336 m). Measuring point: Top of casing, 0.50 ft (0.15 m) above land-surface datum.
PERIOD OF RECORD.--October 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.72 ft (1.13 m) below land-surface datum, July 14, 1978; lowest, dry below land-surface datum, July and Aug. 1977.

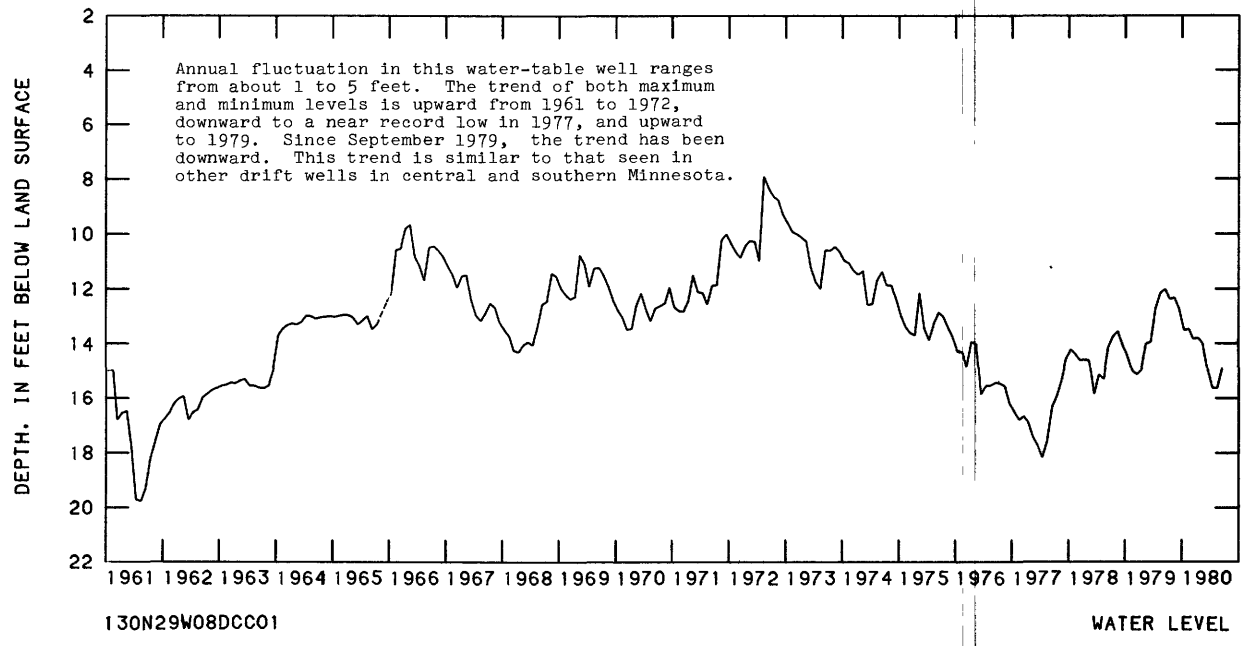
WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	6.71	DEC 19	5.30	MAR 13	8.01	JUN 24	5.98	JUL 31	7.22	SEP 02	8.14
NOV 16	5.19	FEB 06	7.78	MAY 01	6.00						

460444094212501. Local number, 130N29W08DCC01.
LOCATION.--Lat 46°04'44", long 94°21'25", in SW¼SW¼SE¼ sec.8, T.130 N., R.29 W., Hydrologic Unit 07010104, at Camp Ripley.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial outwash sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in (0.05 m), depth 59 ft (18.0 m), screened 56 to 59 ft (17.1 to 18.0 m).
DATUM--Land-surface datum is 1,149.0 ft (350.2 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.10 ft (0.64 m) above land-surface datum.
REMARKS.--Measured weekly by Theodore Wilczek. Water levels used in monthly Water Resources Review.
PERIOD OF RECORD.--April 1949 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 7.35 ft (2.24 m) below land-surface datum, July 28, 1972; lowest, 19.75 ft (6.02 m) below land-surface datum, Aug. 4, 1961.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 05	12.03	DEC 07	12.41	FEB 08	13.30	APR 11	13.53	JUN 06	14.22	AUG 01	15.65
12	11.89	14	12.49	15	13.38	18	13.67	13	14.41	08	15.55
19	12.37	21	12.63	22	13.47	25	13.79	20	14.79	15	15.24
26	12.38	28	12.73	29	13.00	MAY 02	13.73	27	14.97	22	15.34
NOV 02	12.33	JAN 04	12.76	MAR 07	13.68	09	13.87	JUL 03	14.70	29	15.05
09	12.27	11	12.84	14	13.72	16	13.76	11	14.97	SEP 05	14.91
16	12.06	18	13.06	21	13.79	23	13.92	18	15.50	12	14.91
21	12.01	25	13.52	28	13.84	30	14.00	25	15.62	26	14.59
30	12.31	FEB 01	12.23	APR 04	13.57						



MOWER COUNTY

434417093521001. Local number, 103N17W09DAA01.
LOCATION.--Lat 43°44'17", long 93°52'10", in NE¼NE¼SE¼ sec.9, T.103 N., R.17 W., Hydrologic Unit 07080201, in Brownsdale.
Owner: Land O'Lakes, creamery well.
AQUIFER.--Cedar Valley Formation of Middle Devonian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 4 in (0.10 m), depth 130 ft (39.6 m), casing information not available.
DATUM.--Altitude of land-surface datum is 1,280 ft (390 m). Measuring point: Top of well cap, 0.40 ft (0.12 m) above land-surface datum.
REMARKS.--Water level affected by pumping.
PERIOD OF RECORD.--February 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 39.83 ft (12.14 m) below land-surface datum, Jan. 29, 1980; lowest, 45.20 ft (13.78 m) below land-surface datum, Mar. 30, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 22	39.87	JAN 29	39.83	APR 28	40.14	JUN 25	41.18	AUG 06	40.38	SEP 17	41.16
DEC 12	41.81	MAR 04	44.53								

MURRAY COUNTY

435357096034701. Local number, 105N43W18BCC01.
LOCATION.--Lat 43°53'57", long 96°03'47", in SW¼SW¼NW¼ sec.18, T.105 N., R.43 W., Hydrologic Unit 10170204, 6 mi (9.6 km) southwest of Chandler.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 12 ft (3.7 m), screened 10 to 12 ft (3.0 to 3.7 m).
DATUM.--Altitude of land-surface datum is 1,600 ft (488 m). Measuring point: Top of casing, 4.25 ft (1.30 m) above land-surface datum.
PERIOD OF RECORD.--May 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.25 ft (1.60 m) below land-surface datum, July 21, 1979; lowest, 8.11 ft (2.47 m) below land-surface datum, July 20, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	7.93	DEC 21	7.89	FEB 14	8.02	APR 21	7.75	JUN 19	7.93	AUG 20	7.75
DEC 01	7.69	JAN 12	7.92	MAR 21	7.33	MAY 30	7.93	JUL 20	8.11	SEP 30	8.06

435757095314501. Local number, 106N39W21DCD01.
LOCATION.--Lat 43°57'57", long 95°31'45", in SE¼SW¼SE¼ sec.21, T.106 N., R.39 W., Hydrologic Unit 07100001, 6.7 mi (10.8 km) south of Dovray.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 8 ft (2.4 m), screened 6 to 8 ft (1.8 to 2.4 m).
DATUM.--Altitude of land-surface datum is 1,430 ft (436 m). Measuring point: Top of casing, 1.20 ft (0.37 m) above land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.76 ft (0.23 m) above land-surface datum, Apr. 21, 1979; lowest, 5.50 ft (1.68 m) below land-surface datum, Sept. 16, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 09	2.91	JAN 18	1.62	APR 05	2.45	MAY 24	3.40	JUL 25	3.25	SEP 17	3.82
DEC 21	1.57	MAR 15	2.74	27	2.49	JUN 14	1.28	AUG 30	3.73		

MURRAY COUNTY--Continued

440028095352401. Local number, 106N40W12ABB01.
LOCATION.--Lat 44°00'28", long 95°35'24", in NE¼NE¼NE¼ sec.12, T.106 N., R.40 W., Hydrologic Unit 07100012, 5.5 mi (8.8 km) southwest of Dovray.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 12.5 ft (3.8 m), screeened 10.5 to 12.5 ft (3.2 to 3.8 m).
DATUM.--Altitude of land-surface datum is 1,450 ft (442 m). Measuring point: Top of casing, 3.40 ft (1.04 m) above land-surface datum.
PERIOD OF RECORD.--December 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.09 ft (0.03 m) below land-surface datum, Apr. 21, 1979; lowest, 6.23 ft (1.90 m) below land-surface datum, Feb. 2, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 01	1.97	JAN 18	2.91	APR 05	1.70	MAY 24	4.13	JUL 17	4.55	AUG 30	4.26
21	2.21	MAR 15	2.26	27	3.21	JUN 14	2.38	25	3.85		

440355095381701. Local number, 107N40W21AAB01.
LOCATION.--Lat 44°03'55", long 95°38'17", in NW¼NE¼NE¼ sec.21, T.107 N., R.40 W., Hydrologic Unit 07100001, 0.65 mi (1.05 km) east of Currie.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 11.5 ft (3.57 m), screened 9.5 to 11.5 ft (2.9 to 3.5 m).
DATUM.--Altitude of land-surface datum is 1,485 ft (453 m). Measuring point: Top of casing, 2.80 ft (0.85 m) above land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.82 ft (0.25 m) below land-surface datum, Mar. 24, 1979; lowest, 5.97 ft (1.82 m) below land-surface datum, Sept. 17, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	4.42	DEC 15	3.20	FEB 09	4.32	APR 19	3.33	JUN 14	2.21	AUG 30	5.67
NOV 24	2.60	JAN 19	3.87	MAR 15	3.59	MAY 30	2.87	JUL 25	5.42	SEP 17	5.97

444254095071201. Local number, 108N41W36BBC01.
LOCATION.--Lat 44°42'25", long 95°07'12", in SW¼NW¼NW¼ sec.36, T.108 N., R.41 W., Hydrologic Unit 07100001, 3.8 mi (6.1 km) northeast of Slayton.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 7 ft (2.1 m), cased to 5 to 7 ft (1.5 to 2.1 m).
DATUM.--Altitude of land-surface datum is 1,490 ft (454 m). Measuring point: Top of casing, 1.50 ft (0.46 m) above land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 1.51 ft (0.46 m) above land-surface datum, Mar. 24, 1979; lowest, 4.13 ft (1.26 m) below land-surface datum, Sept. 16, 1978.

WATER LEVEL, IN FEET BELOW OR ABOVE (+) LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 21	+0.46	MAY 30	+0.57	JUN 14	+0.05	JUL 25	3.66	AUG 30	3.07	SEP 17	3.98
APR 19	+0.22										

OLMSTED COUNTY

435920092273801. Local number, 106N14W14ADB01.
LOCATION.--Lat 43°59'20", long 92°27'38", in NW¼SE¼NE¼ sec.14, T.106 N., R.14 W., Hydrologic Unit 07040004, in Rochester.
Owner: Golden Hill School Dist. #1371.
AQUIFER.--Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in (0.15 m), depth 478 ft (146 m), cased to 397 ft (121 m).
DATUM.--Altitude of land-surface datum is 1,065 ft (325 m). Measuring point: Edge of well cap, 1.80 ft (0.55 m) above land-surface datum.
REMARKS.--Water level affected by pumping.
PERIOD OF RECORD.--August 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 50.73 ft (15.46 m) below land-surface datum, Apr. 18, 1975; lowest, 62.30 ft (18.99 m) below land-surface datum, June 8, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 02	57.70	DEC 12	56.18	MAR 05	57.45	JUN 26	59.70	AUG 08	56.96	SEP 17	58.47
NOV 08	55.22	JAN 29	57.67	APR 30	55.74						

PINE COUNTY

455139092524401. Local number, 039N20W18DDD01.
LOCATION.--Lat 45°51'39", long 92°52'44", in SE¼SE¼SE¼ sec.18, T.39 N., R.20 W., Hydrologic Unit 07030004, on Robert Lindahl farm.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 24 ft (7.3 m), screened 22 to 24 ft (6.7 to 7.3 m).
DATUM.--Altitude of land-surface datum is 945 ft (288 m). Measuring point: Top of casing, 2.70 ft (0.82 m) above land-surface datum.
PERIOD OF RECORD.--December 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 8.69 ft (2.65 m) below land-surface datum, July 31, 1979; lowest, 10.65 ft (3.25 m) below land-surface datum, Aug. 30, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	9.90	MAY 02	10.15	JUL 02	10.49	JUL 22	10.58	AUG 30	10.65	SEP 19	10.30
MAR 12	10.46										

455939092365801. Local number, 041N18W33AAD01.
LOCATION.--Lat 45°59'39", long 92°36'58", in SE¼NE¼NE¼ sec.33, T.41 N., R.18 W., Hydrologic Unit 07030001, in St. Croix State Park.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 24 ft (7.3 m), screened 22 to 24 ft (6.7 to 7.3 m).
DATUM.--Altitude of land-surface datum is 975 ft (297 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--November 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 7.29 ft (2.22 m) below land-surface datum, July 31, 1979; lowest, 10.61 ft (3.23 m) below land-surface datum, Aug. 30, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	9.09	MAY 02	9.65	JUL 02	10.09	JUL 22	10.37	AUG 30	10.61	SEP 19	10.45
MAR 12	10.06	JUN 12	9.88								

PINE COUNTY--Continued

455859092454201. Local number, 041N19W33CCC01.
LOCATION.--Lat 45°58'59", long 92°45'42", in SW¼SW¼SW¼ sec.33, T.41 N., R.19 W., Hydrologic Unit 07030001, on Philip Myer farm.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 51 ft (15.5 m), screened 49 to 51 ft (14.9 to 15.5 m).
DATUM.--Altitude of land-surface datum is 990 ft (302 m). Measuring point: Top of casing, 3.80 ft (1.16 m) above land-surface datum.
PERIOD OF RECORD.--December 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 24.36 ft (7.42 m) below land-surface datum, July 31, 1979; lowest, 26.04 ft (7.94 m) below land-surface datum, Aug. 30, 1980

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	24.94	MAY 02	25.52	JUL 02	25.78	JUL 22	25.92	AUG 30	26.04	SEP 19	25.89
MAR 12	25.57	JUN 12	25.61								

455947092542301. Local number, 041N20W32BBB01.
LOCATION.--Lat 45°59'47", long 92°54'23", in NW¼NW¼NW¼ sec.32, T.41 N., R.20 W., Hydrologic Unit 07030004, on Howard Sikkink farm.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m) , depth 44 ft (13.4 m), screened 42 to 44 ft (12.8 to 13.4 m).
DATUM.--Altitude of land-surface datum is 1,014 ft (309 m). Measuring point: Top of casing, 2.30 ft (0.70 m) above land-surface datum.
PERIOD OF RECORD.--December 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 17.49 ft (5.33 m) below land-surface datum, July 31, 197) lowest, 20.23 ft (6.17 m) below land-surface datum, Dec. 21, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	17.84	MAR 12	18.74	JUL 02	19.11	JUL 22	19.28	AUG 30	19.43	SEP 19	19.46

461901092440301. Local number, 044N19W10BAB01.
LOCATION.--Lat 46°19'01", long 92°44'03", in NW¼NE¼NW¼ sec. 10, T.44 N., R. 19 W., Hydrologic Unit 07030003, on Victor Waletzko farm.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 28 ft (8.5 m), screened 26 to 28 ft (7.9 to 8.5 m).
DATUM.--Altitude of land-surface datum is 1,105 ft (337 m). Measuring point: Top of casing, 4.20 ft (1.28 m) above land-surface datum.
PERIOD OF RECORD.--December 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 9.63 ft (2.94 m) below land-surface datum, July 26, 1979; lowest, 11.53 ft (3.51 m) below land-surface datum, Mar. 12, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

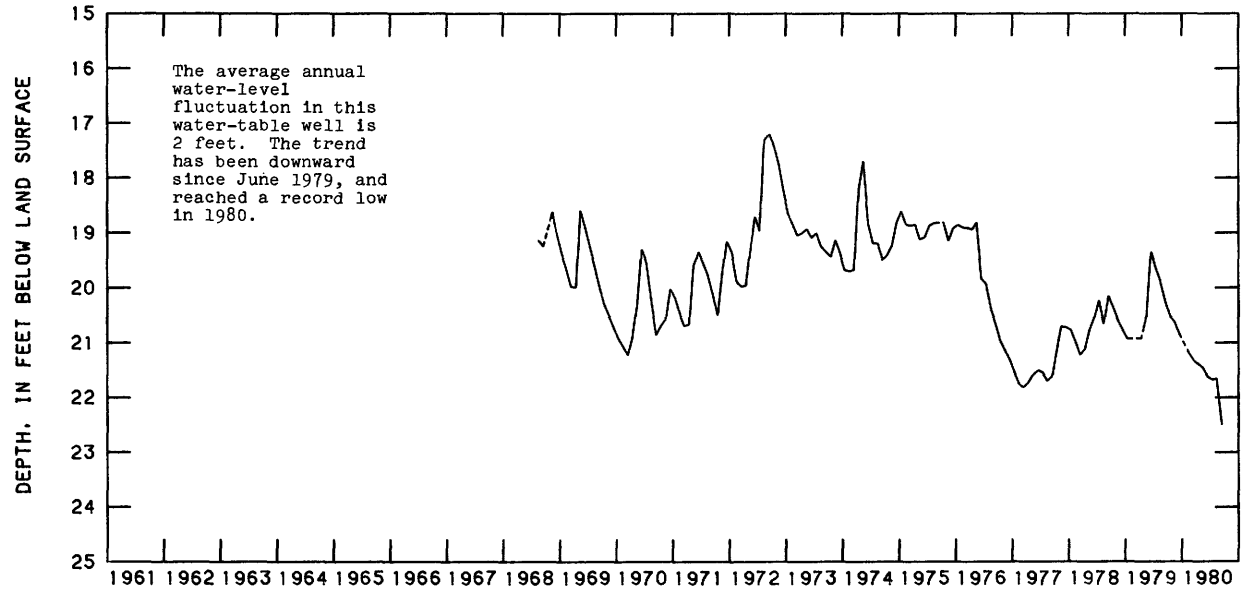
DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	10.55	APR 30	10.96	JUL 02	11.50	JUL 22	11.42	JUL 28	11.29	SEP 19	11.00
MAR 12	11.53	JUN 12	11.22								

PINE COUNTY--Continued

462112092495801. Local number, 045N20W26DBB01.
LOCATION.--Lat 46°21'12", long 92°49'58", in NW¼NW¼SE¼ sec.26, T.45 N., R.20 W., Hydrologic Unit 07030003, at General Andrews Nursery.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial outwash sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Driven observation water-table well, diameter 1¼ in (0.03 m), depth 28 ft (8.5 m), screened 26 to 28 ft (7.9 to 8.5 m).
DATUM.--Altitude of land-surface datum is 1,060 ft (323 m). Measuring point: Top of casing, 0.50 ft (0.15 m) above land-surface datum.
REMARKS.--Measured weekly by Ralph Nelson.
PERIOD OF RECORD.--August 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 16.10 ft (4.91 m) below land-surface datum, Aug. 12, 1974; lowest, 22.49 ft (6.85 m) below land-surface datum, Sept. 26, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 08	20.34	DEC 02	20.64	MAR 02	21.25	APR 27	21.30	JUL 06	21.65	AUG 17	21.59
16	20.43	15	20.71	11	21.31	MAY 04	21.32	13	21.68	24	21.62
28	20.51	24	20.78	16	21.33	25	21.46	20	21.62	31	21.66
NOV 04	20.54	30	20.83	APR 07	21.39	JUN 15	21.57	28	21.56	SEP 07	21.61
18	20.57	FEB 03	21.06	12	21.35	23	21.60	AUG 04	21.55	26	22.49
25	20.62	24	21.20	19	21.31	28	21.62	12	21.61		



PIPESTONE COUNTY

435610096082601. Local number, 106N44W33CCD01.
LOCATION.--Lat 43°56'10", long 96°08'26", in SE¼SW¼SW¼ sec.33, T.106 N., R.44 W., Hydrologic Unit 10170204, 4 mi (6.4 km) north of Edgerton.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 16 ft (4.9 m), screened 14 to 16 ft (4.3 to 4.9 m).
DATUM.--Altitude of land-surface datum is 1,610 ft (491 m). Measuring point: Top of casing 2.40 ft (0.73 m) above land-surface datum.
PERIOD OF RECORD.--May 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 1.78 ft (0.54 m) below land-surface datum, Apr. 19, 1979; lowest, 6.51 ft (1.98 m) below land-surface datum, Sept. 30, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	5.73	DEC 21	4.71	FEB 14	5.64	APR 21	5.15	JUN 19	5.41	AUG 30	6.41
DEC 01	4.41	JAN 12	5.31	MAR 21	4.98	MAY 30	5.66	JUL 20	6.46	SEP 30	6.51

PIPESTONE COUNTY--Continued

440034096242701. Local number, 106N46W05CCC01.
LOCATION.--Lat 44°00'34", long 96°24'27", in SW¼SW¼SW¼ sec.5, T.106 N., R.46 W., Hydrologic Unit 10170203, 4 mi (6.4 km) west of Pipestone.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 23 ft (7.0 m), screened 21 to 23 ft (6.4 to 7.0 m).
DATUM.--Altitude of land-surface datum is 1,610 ft (491 m). Measuring point: Top of casing, 1.00 ft (0.30 m) above land-surface datum.
PERIOD OF RECORD.--May 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.62 ft (1.71 m) below land-surface datum, May 8, 1979; lowest, 11.23 ft (3.42 m) below land-surface datum, Sept. 29, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	9.72	DEC 21	7.96	FEB 11	7.09	APR 28	6.98	JUN 19	6.91	AUG 30	7.22
DEC 01	8.33	JAN 12	7.37	MAR 21	7.02	MAY 30	7.05	JUL 20	7.26	SEP 30	7.04

440456096263201. Local number, 107N47W12CDC01.
LOCATION.--Lat 44°04'56", long 96°26'32", in SW¼SE¼SW¼ sec.12, T.107 N., R.47 W., Hydrologic Unit 10170203, 4.2 mi (6.8 km) northwest of Cazenovia.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 16 ft (4.9 m), screened 14 to 16 ft (4.3 to 4.9 m).
DATUM.--Altitude of land-surface datum is 1,600 ft (488 m). Measuring point: Top of casing, 3.90 ft (1.19 m) above land-surface datum.
PERIOD OF RECORD.--May 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 7.76 ft (2.37 m) below land-surface datum, May 8, 1979; lowest, 10.69 ft (3.26 m) below land-surface datum, Mar. 17, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	9.64	DEC 21	9.36	FEB 11	9.61	APR 28	9.70	JUN 19	9.57	AUG 30	10.28
DEC 01	9.36	JAN 12	9.35	MAR 21	9.26	MAY 30	9.57	JUL 20	10.00	SEP 30	10.32

POPE COUNTY

452940095414501. Local number, 123N40W04BDA01.
LOCATION.--Lat 45°29'40", long 95°41'45", in NE¼SE¼NW¼ sec.4, T.123 N., R.40 W., Hydrologic Unit 07020005, east of Hancock.
Owner: U.S. Geological Survey.
AQUIFER.--Shallow buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation artesian well, diameter 1¼ in (0.03 m), depth 20 ft (6.1 m), screened 17 to 20 ft (5.2 to 6.1 m).
DATUM.--Altitude of land-surface datum is 1,080 ft (329 m). Measuring point: Top of casing, 0.50 ft (0.15 m) above land-surface datum
PERIOD OF RECORD.--December 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.13 ft (0.65 m) below land-surface datum, July 27, 1972; lowest, 8.77 ft (2.67 m) below land-surface datum, Feb. 2, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	5.33	DEC 31	5.35	FEB 28	6.23	MAY 01	5.39	JUN 27	4.86	AUG 29	5.99
NOV 29	4.85	FEB 01	5.89	MAR 31	5.50	MAY 30	5.64	JUL 31	5.79	SEP 30	6.20

POPE COUNTY--Continued

452804095424001. Local number, 123N40W17AAC01.
LOCATION.--Lat 45°28'04", long 95°42'40", in SW¼NE¼NE¼ sec.17, T.123 N., R.40 W., Hydrologic Unit 07020005, on Morton farm.
Owner: Norman Morton.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled stock water-table well, diameter 4 in (0.10 m), depth 340 ft (10.4 m), screened 29 to 34 ft (8.8 to 10.4 m).
DATUM.--Altitude of land-surface datum is 1,071 ft (326 m). Measuring point: Top of casing, 2.00 ft (0.61 m) above land-surface datum.
PERIOD OF RECORD.--August 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 9.83 ft (3.00 m) below land-surface datum, Aug. 24, 1979; lowest, 11.68 ft (3.56 m) below land-surface datum, July 31, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAR 31	10.18	MAY 30	10.93	JUN 27	9.95	JUL 31	11.68	AUG 29	11.03	SEP 30	10.65
MAY 01	10.19										

452554095433801. Local number, 123N40W30DAD01.
LOCATION.--Lat 45°25'54", long 95°43'38", in SE¼NE¼SE¼ sec.30, T.123 N., R.40 W., Hydrologic Unit 07020005, 5.7 mi (9.2 km) southeast of Hancock.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.04 m), depth 13 ft (4.0 m), screened 11 to 13 ft (3.4 to 4.0 m).
DATUM.--Altitude of land-surface datum is 1,059 ft (323 m). Measuring point: Top of casing, 3.25 ft (0.99 m) above land-surface datum.
PERIOD OF RECORD.--August 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.58 ft (1.09 m) below land-surface datum, June 27, 1980; lowest, 4.89 ft (1.49 m) below land-surface datum, Sept. 30, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAR 31	4.43	MAY 30	4.14	JUN 27	3.58	JUL 31	4.67	AUG 29	4.85	SEP 30	4.89
MAY 01	3.88										

453150095130001. Local number, 124N36W20DDD01.
LOCATION.--Lat 45°31'50", long 95°13'00", in SE¼SE¼SE¼ sec.20, T.124 N., R.36 W., Hydrologic Unit 07010204, southeast of Sedan.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 2 in (0.05 m), depth 18 ft (5.5 m), screened 15 to 18 ft (4.6 to 5.5 m).
DATUM.--Altitude of land-surface datum is 1,332 ft (406 m). Measuring point: Top of casing, 3.75 ft (1.14 m) above land-surface datum.
PERIOD OF RECORD.--November 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.42 ft (1.65 m) below land-surface datum, June 27, 1972; lowest, 10.33 ft (3.15 m) below land-surface datum, Feb. 22, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	7.45	DEC 31	7.05	FEB 28	7.67	MAY 01	7.10	JUN 27	6.85	AUG 29	8.50
NOV 29	6.82	FEB 01	7.37	MAR 31	7.36	30	7.38	JUL 31	8.07	SEP 30	8.13

POPE COUNTY--Continued

453250095434501. Local number, 124N40W18DAD01.
LOCATION.--Lat 45°32'50", long 95°34'45", in SE¼NE¼SE¼ sec.18, T.124 N., R.40 W., Hydrologic Unit 07020005, south of Cyrus.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 23 ft (7.0 m), screened 20 to 23 ft (6.1 to 7.0 m).
DATUM.--Altutude of land-surface datum is 1,097 ft (334 m). Measuring point: Top of casing, 5.60 ft (1.71 m) above land-surface datum.
REMARKS.--Water level affected by pumping from nearby irrigation well.
PERIOD OF RECORD.--December 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.78 ft (1.76 m) below land-surface datum, July 27, 1972; lowest, 13.80 ft (4.21 m) below land-surface datum, July 27, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	9.10	DEC 31	8.90	FEB 28	9.13	MAY 01	8.67	JUN 27	9.32	AUG 29	10.25
NOV 29	8.88	FEB 01	9.05	MAR 31	8.81	30	9.89	JUL 31	s10.75	SEP 30	10.06

s Nearby well being pumped.

453117095444201. Local number, 124N40W30BCC01.
LOCATION.--Lat 45°31'17", long 95°44'42", in SW¼SW¼NW¼ sec.30, T.124 N., R.40 W., Hydrologic Unit 07020005, on Schaefer farm.
Owner: U.S. Geological Survey
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 40.5 ft (12.3 m), screened 38.5 to 40.5 ft (11.7 to 12.3 m).
DATUM.--Altitude of land-surface datum is 1,105 ft (337 m). Measuring point: Top of casing, 3.50 ft (1.07 m) above land-surface datum.
PERIOD OF RECORD.--August 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 22.80 ft (6.95 m) below land-surface datum, Aug. 28, 1979; lowest, 24.96 ft (7.61 m) below land-surface datum, Sept. 30, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAR 31	24.07	MAY 30	24.27	JUN 27	23.64	JUL 31	24.49	AUG 29	24.91	SEP 30	24.96
MAY 01	23.87										

454003095120401. Local number, 125N36W04ADA01.
LOCATION.--Lat 45°40'03", long 95°12'04", in NE¼SE¼NE¼ sec.4, T.125 N., R.36 W., Hydrologic Unit 07010202, on McKigney farm.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 20 ft (6.1 m), screened 18 to 20 ft (5.5 to 6.1 m).
DATUM.--Altitude of land-surface datum is 1,445 ft (440 m). Measuring point: Top of casing, 3.10 ft (0.94 m) above land-surface datum.
PERIOD OF RECORD.--August 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 7.07 ft (2.15 m) below land-surface datum, May 30, 1980; lowest, 9.50 ft (2.90 m) below land-surface datum, Aug. 29, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 01	7.40	MAY 30	7.07	JUN 27	7.63	JUL 31	8.78	AUG 29	8.48	SEP 30	7.83

POPE COUNTY--Continued

452554095433801. Local number, 125N36W16BBB01.
LOCATION.--Lat 45°38'33", long 95°13'18", in NW¼NW¼NW¼ sec.16, T.125 N., R.36 W., Hydrologic Unit 07010202, on Cinderland farm.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 20 ft (6.1 m), screened 18 to 20 ft (5.5 to 6.1 m).
DATUM.--Altitude of land-surface datum is 1,350 ft (411 m). Measuring point: Top of casing, 2.70 ft (0.82 m) above land-surface datum.
PERIOD OF RECORD.--August 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 15.79 ft (4.81 m) below land-surface datum, Mar. 31, 1980; lowest, 16.74 ft (5.10 m) below land-surface datum, Aug. 29, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAR 31	15.79	MAY 30	16.11	JUN 27	16.25	JUL 31	16.54	AUG 29	16.74	SEP 30	16.35
MAY 01	15.85										

453810095174501. Local number, 125N37W14DBB01.
LOCATION.--Lat 45°38'10", long 95°17'45", in NW¼NW¼SE¼ sec.14, T.125 N., R.37 W., Hydrologic Unit 07020005, 4 mi (6.4 km) east of Glenwood.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 2 in (0.05 m), depth 64 ft (19.5 m), screened 62 to 64 ft (18.9 to 19.5 m).
DATUM.--Altitude of land-surface datum is 1,368 ft (417 m). Measuring point: Top of platform, 1.50 ft (0.46 m) above land-surface datum.
PERIOD OF RECORD.--August 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 35.10 ft (10.70 m) below land-surface datum, Feb. 9, 1973; lowest, 37.89 ft (11.55 m) below land-surface datum, Feb. 14, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	36.73	DEC 31	36.70	FEB 28	36.87	MAY 01	36.52	JUN 27	36.85	AUG 29	37.09
NOV 29	36.65	FEB 01	36.78	MAR 31	36.77	30	36.75	JUL 31	37.10	SEP 30	36.79

454230095143001. Local number, 126N36W20BCC01.
LOCATION.--Lat 45°42'30", long 95°14'30", in SW¼SW¼NW¼ sec.20, T.126 N., R.36 W., Hydrologic Unit 07010202, east of Villard.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 2 in (0.05 m), depth 17 ft (5.2 m), screened 14 to 17 ft (4.3 to 5.2 m).
DATUM.--Altitude of land-surface datum is 1,354 ft (413 m). Measuring point: Top of platform, 1.00 ft (0.30 m) above land-surface datum.
PERIOD OF RECORD.--November 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.84 ft (1.17 m) below land-surface datum, July 27, 1972; lowest, 10.10 ft (3.08 m) below land-surface datum, Oct 4, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	7.56	DEC 31	7.30	FEB 28	7.85	MAY 01	7.48	JUN 27	6.89	AUG 29	7.64
NOV 29	6.97	FEB 01	7.75	MAR 31	7.62	30	7.15	JUL 31	7.36	SEP 30	6.70

RAMSEY COUNTY

445648093053402. Local number, 028N22W06ABD02.
LOCATION.--Lat 44°56'48", long 93°05'34", in SE¼NW¼NE¼ sec.6, T.28 N., R.22 W., Hydrologic Unit 07010206, at 55 East 5th Street, St. Paul.
Owner: Northwestern National Bank.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age and Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled air conditioning artesian well, diameter 16 in (0.41 m), depth 355 ft (108 m) cased to 212 ft (64.6 m).
DATUM.--Altitude of land-surface datum is 770 ft (235 m). Measuring point: Edge of vent pipe, 7.50 ft (2.29 m) below land-surface datum.
REMARKS.--Water level affected by pumping of nearby wells.
PERIOD OF RECORD.--May 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 56.00 ft (17.07 m) below land-surface datum, Apr. 5, 1979; lowest, 134.0 ft (40.84 m) below land-surface datum, Aug. 16, 1972.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 03	74.40	NOV 30	59.90	JAN 30	58.60	FEB 28	58.40	JUN 10	88.80	AUG 11	116.3

445632093084901. Local number, 028N23W03ADD01.
LOCATION.--Lat 44°56'32", long 93°08'49", in SE¼SE¼NE¼ sec.3, T.28 N., R.23 W., Hydrologic Unit 07010206, at northwest corner of Lexington and Summit Avenues, St. Paul.
Owner: U.S. Geological Survey.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 96 ft (29.3 m), screened 94 to 96 ft (28.6 to 29.3 m).
DATUM.--Altitude of land-surface datum is 920 ft (280 m). Measuring point: Top of casing, 4.00 ft (1.22 m) above land-surface datum.
PERIOD OF RECORD.--August 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 84.44 ft (25.74 m) below land-surface datum, Oct. 26, 1979, Jan. 22, 1980; lowest, 87.88 ft (26.79 m) below land-surface datum, Oct. 25, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	84.44	JAN 22	84.44	FEB 28	84.45	APR 15	84.47	JUN 17	84.60	AUG 19	84.70
DEC 07	84.45										

445955093011001. Local number, 029N22W14CAB01.
LOCATION.--Lat 44°59'55", long 93°01'10", in NW¼NE¼SW¼ sec.14, T.29 N., R.22 W., Hydrologic Unit 07010206, at Goodrich Golf Course.
Owner: Ramsey County.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age and Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 12 in (0.30 m), depth 523 ft (159 m), cased to 303 ft (92.4 m).
DATUM.--Altitude of land-surface datum is 969 ft (295 m). Measuring point: Edge of vent pipe, 2.50 ft (0.76 m) above land-surface datum.
PERIOD OF RECORD.--May 1965, April 1966 to August 1966, August 1971, May 1980 to September 1980.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 129.7 ft (39.53 m) below land-surface datum, Sept. 25, 1980; lowest, 140.6 ft (42.85 m) below land-surface datum, Apr. 6, 1966.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 14	132.3	MAY 15	133.8	SEP 25	129.7

RAMSEY COUNTY--Continued

445955093011002. Local number, 029N22W14CAB02.
LOCATION.--Lat 44°59'55", long 93°01'10", in NW¼NE¼SW¼ sec.14, T.29 N., R.22 W., Hydrologic Unit 07010206, at Goodrich Golf Course.
Owner: U.S. Geological Survey
AQUIFER.--Buried gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation artesian well, diameter 2 in (0.05 m), depth 81 ft (24.7 m), screened 78 to 81 ft (23.8 to 24.7 m).
DATUM.--Altitude of land-surface datum is 970 ft (296 m). Measuring point: Top of casing, 1.30 ft (0.40 m) above land-surface datum.
PERIOD OF RECORD.--October 1966 to August 1971, August 1977, June 1980 to September 1980.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 35.08 ft (10.69 m) below land-surface datum, Sept. 25, 1980; lowest, 45.36 ft (13.83 m) below land-surface datum, June 3, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JUN 16	36.65	JUN 17	36.46	JUN 18	36.44	AUG 07	35.88	SEP 25	35.08

445955093011003. Local number, 029N22W14CAB03.
LOCATION.--Lat 44°59'55", long 93°01'10", in NW¼NE¼SW¼ sec.14, T.29 N., R.22 W., Hydrologic Unit 07010206, at Goodrich Golf Course.
Owner: U.S. Geological Survey
AQUIFER.--Buried gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 2 in (0.05 m), depth 52 ft (15.8 m), screened 49 to 52 ft (14.9 to 15.8 m).
DATUM.--Altitude of land-surface datum is 970 ft (296 m). Measuring point: Top of casing, 1.80 ft (0.55 m) above land-surface datum.
PERIOD OF RECORD.--October 1966 to August 1971, June 1980 to September 1980.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 15.89 ft (4.84 m) below land-surface datum, Sept. 25, 1980; lowest, 25.43 ft (7.75 m) below land-surface datum, June 3, 1968.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JUN 18	17.08	AUG 07	16.54	SEP 25	15.89

445918092590901. Local number, 029N22W24ADA01.
LOCATION.--Lat 44°59'18", long 92°59'09", in NE¼SE¼NE¼ sec.24, T.29 N., R.22 W., Hydrologic Unit 07010206, at 1555 Century Avenue.
Owner: Northern States Power Co., Maplewood Gas Plant.
AQUIFER.--Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled fire protection artesian well, diameter 12 in (0.30 m), depth 523 ft (159 m), cased to 420 ft (128 m).
DATUM--Land-surface datum is 996.5 ft (303.7 m) National Geodetic Vertical Datum of 1929. Measuring point: Edge of 2 in (0.05 m) breather pipe, 2.40 ft (0.73 m) above land-surface datum.
REMARKS.--Water level affected by pumping.
PERIOD OF RECORD.--August 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 134.7 ft (41.10 m) below land-surface datum, Nov. 15, 1976; lowest, 147.7 ft (45.02 m) below land-surface datum, Aug. 7, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	136.1	JAN 15	138.0	FEB 26	139.6	APR 10	140.0	JUN 09	146.8	AUG 14	138.7
DEC 03	140.1										

RAMSEY COUNTY--Continued

445700093051001. Local number, 029N22W31DDD01.
LOCATION.--Lat 44°57'00", long 93°05'10", in SE¼SE¼SE¼ sec.31, T.29 N., R.22 W., Hydrologic Unit 07010206, at 261 East 5th Street, St. Paul.
Owner: Control Data Corp.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age and Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 12 in (0.30 m), depth 298 ft (91 m), cased to 151 ft (46.0 m).
DATUM.--Altitude of land-surface datum is 750 ft (229 m). Measuring point: Top of recorder platform, 9.00 ft (2.74 m) below land-surface datum.
REMARKS.--Water level affected by pumping of nearby wells.
PERIOD OF RECORD.--December 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 29.07 ft (8.86 m) below land-surface datum, Apr. 15-16, 1979; lowest, 83.06 ft (25.32 m) below land-surface datum, Aug. 16, 1972.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	42.84	35.57	34.95	33.99	.....	36.20	31.97	58.25	62.94	54.40	69.70	63.37
10	39.93	35.99	33.93	36.47	.....	36.07	34.05	43.14	54.04	72.80	53.78	58.99
15	40.62	35.66	35.10	33.71	.....	32.76	32.29	47.07	48.06	74.14	63.38	50.05
20	46.87	35.63	34.82	33.59	.....	33.69	41.80	57.32	60.60	52.06	69.77	47.87
25	36.43	33.00	31.54	32.31	.....	33.87	37.68	47.47	65.68	71.69	66.72	47.42
EOM	40.95	35.05	32.19	.....	36.81	33.75	50.40	54.15	61.10	70.46	48.73	52.88

WTR YEAR 1980 HIGHEST 29.84 APR 13, 1980 LOWEST 74.14 JUL 15, 1980

450136093433901. Local number, 029N23W03CBA01.
LOCATION.--Lat 45°01'36", long 93°43'39", in NE¼NW¼SW¼ sec.3, T.29 N., R.23 W., Hydrologic Unit 07010206, Reeder School in Roseville.
Owner: Mounds View School District #621.
AQUIFER.--Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 8 in (0.20 m), depth 506 ft (154 m), cased to 421 ft (128 m).
DATUM.--Altitude of land-surface datum is 920 ft (280 m). Measuring point: Hole in well cover, 0.50 ft (0.15 m) above land-surface datum.
REMARKS.--Water level affected by pumping.
PERIOD OF RECORD.--December 1970, August 1971, August 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 101.3 ft (30.88 m) below land-surface datum, Apr. 10, 1980; lowest, 116.5 ft (35.5 m) below land-surface datum, Aug. 19, 1971.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	104.1	JAN 15	101.5	FEB 26	101.8	APR 10	101.3	JUN 09	103.7	AUG 14	107.7
DEC 03	102.2										

450026093084201. Local number, 029N23W11CCC01.
LOCATION.--Lat 45°00'26", long 93°08'42", in SW¼SW¼SW¼ sec.11, T.29 N., R.23 W., Hydrologic Unit 07010206, at 2204 North Lexington Avenue, Roseville.
Owner: Lexington Court Apartments.
AQUIFER.--St. Peter Sandstone of Middle Ordovician Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in (0.15 m), depth 325 ft (99.1 m), cased to 192 ft (58.5 m).
DATUM.--Altutude of land-surface datum is 945 ft (288 m). Measuring point: Top of well cap, 1.40 ft (0.43 m) above land-surface datum.
PERIOD OF RECORD.--January 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 107.5 ft (32.77 m) below land-surface datum, Mar. 4, 1974; lowest, 111.2 ft (33.89 m) below land-surface datum, Aug. 18, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	109.8	JAN 15	109.1	FEB 26	109.4	APR 10	109.4	JUN 09	110.0	AUG 14	110.4
DEC 03	109.4										

RAMSEY COUNTY--Continued

445751093072301. Local number, 029N23W25CCD01.
LOCATION.--Lat 44°57'51", long 93°07'23", SE¼SW¼SW¼ sec.25, T.29 N., R.23 W., Hydrologic Unit 07010206, at 760 North Dale Street, St. Paul.
Owner: Burlington Northern, Inc., Dale Street Shops.
AQUIFER.--Hinckley Sandstone of Precambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 8 in (0.20 m), depth 999 ft (304 m), cased to 955 ft (291 m).
DATUM.--Land-surface datum is 859.5 ft (262.0 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of recorder floor, 4.60 ft (1.40 m) above land-surface datum.
REMARKS.--Water level affected by pumping.
PERIOD OF RECORD.--December 1970, November 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 161.0 ft (49.07 m) below land-surface datum, May 10, 1980; lowest, 205.0 ft (62.48 m) below land-surface datum, Dec. 15, 1970.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	.....	165.1	163.2	.....	.....	163.2	163.4	161.2	162.9	166.2	170.7	174.1
10	.....	164.9	.....	.....	.....	162.4	163.2	161.2	163.6	166.6	171.5	174.3
15	.....	164.7	.....	.....	.....	162.2	162.5	161.9	164.2	167.3	172.3	174.3
20	.....	164.4	.....	.....	.....	161.6	162.4	161.6	165.0	168.2	172.4	174.6
25	.....	164.0	.....	.....	.....	161.3	162.0	162.0	165.3	169.3	173.0	175.0
EOM	165.0	163.9	.....	.....	164.7	163.3	161.4	162.5	165.6	170.2	173.7	174.4

WTR YEAR 1980 HIGHEST 161.0 MAY 10, 1980 LOWEST 175.0 SEP 25-26, 1980

450723093071801. Local number, 030N23W01BAB01.
LOCATION.--Lat 45°07'23", long 93°07'18", in NW¼NE¼NW¼ sec.1, T.30 N., R.23 W., Hydrologic Unit 07010206, at Bucher Playground.
Owner: City of Shoreview.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age.
WELL CHARACTERISTICS.--Drilled recreation artesian well, diameter 8 in (0.20 m), depth 155 ft (47.2 m), cased to 101 ft (30.8 m).
DATUM.--Altitude of land-surface datum is 900 ft (274 m). Measuring point: Top of breather pipe, 2.40 ft (0.73 m) above land-surface datum.
PERIOD OF RECORD.--August 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 22.47 ft (6.85 m) below land-surface datum, Apr. 19, 1976; lowest, 29.73 ft (9.06 m) below land-surface datum, Sept. 8, 1970.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	26.60	JAN 15	26.31	FEB 26	26.35	APR 10	26.05	JUN 09	28.64	AUG 14	29.02
DEC 03	26.25										

450238093082501. Local number, 030N23W35BDC01.
LOCATION.--Lat 45°02'38", long 93°08'25", in SW¼SE¼NW¼ sec.35, T.30 N., R.23 W., Hydrologic Unit 07010206, southeast corner of Arbogast Steet and Richmond Avenue.
Owner: City of Shoreview.
AQUIFER.--Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 12 in (0.30 m), depth 510 ft (155 m), cased to 465 ft (142 m).
DATUM.--Altitude of land-surface datum is 960 ft (293 m). Measuring point: Hole in shelter floor, 1.50 ft (0.46 m) above land-surface datum.
PERIOD OF RECORD.--April 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 134.7 ft (41.06 m) below land-surface datum, Apr. 9, 1980; lowest, 140.8 ft (42.67 m) below land-surface datum, July 27, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	139.5	138.1	137.7	.....	137.3	137.4	136.0	137.7	137.6	138.9	138.9	138.2
10	138.9	138.2	137.5	.....	137.1	137.2	135.4	137.0	137.0	140.2	138.7	138.5
15	138.4	138.1	137.8	137.3	137.6	137.7	.....	137.0	137.4	140.2	138.8	137.8
20	138.5	138.2	137.7	137.8	137.3	137.6	.....	136.7	137.9	139.4	138.1	138.7
25	138.6	137.7	137.5	137.9	137.7	137.4	.....	138.3	138.6	139.2	138.1	137.6
EOM	137.9	138.0	137.3	137.7	138.0	137.7	136.5	138.1	138.1	139.2	138.5	136.5

WTR YEAR 1980 HIGHEST 134.7 APR 9, 1980 LOWEST 140.5 JUL 12, 1980

REDWOOD COUNTY

441327095110701. Local number, 109N36W21DCC01.
LOCATION.--Lat 44°13'27", long 95°11'07", in SW¼SW¼SE¼ sec.21, T.109 N., R.36 W., Hydrologic Unit 07020008, 2 mi (3.2 km) west of Sanborn.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 15 ft (4.6 m), screened 13 to 15 ft (4.0 to 4.6 m).
DATUM.--Altitude of land-surface datum is 1,040 ft (317 m). Measuring point: Top of casing, 2.00 ft (0.61 m) above land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.46 ft (1.36 m) below land-surface datum, Sept. 8, 1979; lowest, 12.11 ft (3.69 m) below land-surface datum, Aug. 26, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	9.80	DEC 21	8.42	FEB 09	10.39	APR 19	8.85	JUN 14	6.48	AUG 30	11.45
NOV 24	7.35	JAN 19	9.65	MAR 15	10.75	MAY 24	10.47	JUL 25	10.93	SEP 17	11.78

441513095183001. Local number, 109N37W09CCC01.
LOCATION.--Lat 44°15'13", long 95°18'30", in SW¼SW¼SW¼ sec.9, T.109 N., R.37 W., Hydrologic Unit 07020008, 3 mi (4.8 km) northwest of Lamberton.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 19 ft (5.8 m), screened 17 to 19 ft (5.2 to 5.8 m).
DATUM.--Altitude of land-surface datum is 1,065 ft (325 m). Measuring point: Top of casing, 3.70 ft (1.13 m) above land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 8.37 ft (2.55 m) below land-surface datum, Mar. 24, 1979; lowest, 17.03 ft (5.19 m) below land-surface datum, Oct. 20, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	14.42	DEC 21	13.25	FEB 10	14.40	APR 19	13.83	JUN 14	11.87	AUG 30	15.98
NOV 24	12.79	JAN 19	13.91	MAR 15	14.22	MAY 24	14.74	JUL 25	15.97	SEP 17	16.29

441323095280701. Local number, 109N38W30BBD01.
LOCATION.--Lat 44°13'23", long 95°28'07", in SE¼NW¼NW¼ sec.30, T.109 N., R.38 W., Hydrologic Unit 07020008, at City of Walnut Grove.
Owner: Plum Creek Cheese Co.
AQUIFER.--Sandstone of Cretaceous Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 5 in (0.13 m), depth 240 ft (73.2 m), casing depth not available.
DATUM.--Altitude of land-surface datum is 1,218 ft (371 m). Measuring point: Top of recorder floor, 1.80 ft (0.55 m) above land-surface datum.
PERIOD OF RECORD.--August 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 24.65 ft (7.51 m) below land-surface datum, Mar. 13, 14, Apr. 23, May 8, 9, 1978; lowest, 25.53 ft (7.78 m) below land-surface datum, Feb. 6, 14, 15, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	25.07	JAN 02	24.88	MAR 20	24.83	JUL 02	25.01	JUL 29	25.28	AUG 29	25.24
NOV 20	24.97	FEB 13	24.83	MAY 08	25.00						

REDWOOD COUNTY--Continued

441844095265301. Local number, 110N38W20CCD01.
LOCATION.--Lat 44°18'44", long 95°26'53", in SE¼SW¼SW¼ sec.20, T.110 N., R.38 W., Hydrologic Unit 07020008, 6.7 mi (10.8 km) north of Walnut Grove.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 18 ft (5.5 m), screened 16 to 18 ft (4.9 to 5.5 m).
DATUM.--Altitude of land-surface datum is 1,090 ft (332 m). Measuring point: Top of casing, 2.50 ft (0.76 m) above land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.57 ft (0.78 m) below land-surface datum, Apr. 21, 1979; lowest, 9.40 ft (2.87 m) below land-surface datum, Dec. 9, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	7.13	DEC 21	5.14	FEB 09	7.25	MAY 05	6.39	JUN 14	3.69	AUG 30	7.86
NOV 24	4.13	JAN 19	6.44	MAR 15	7.55	24	7.08	JUL 25	7.83	SEP 17	8.04

442027095341401. Local number, 110N39W17AAA01.
LOCATION.--Lat 44°20'27", long 95°34'14", in NE¼NE¼NE¼ sec.17, T.110 N., R.39 W., Hydrologic Unit 07020008, 5 mi (8.1 km) south of Milroy.
Owner: U.S. Geological Survey
AQUIFER.--Buried sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 15 ft (4.6 m), screened 13 to 15 ft (4.0 to 4.6 m).
DATUM.--Altitude of land-surface datum is 1,110 ft (338 m). Measuring point: Top of casing, 0.10 ft (0.03 m) above land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.51 ft (0.77 m) below land-surface datum, Mar. 24, 1979; lowest, 8.82 ft (2.69 m) below land-surface datum, May 5, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

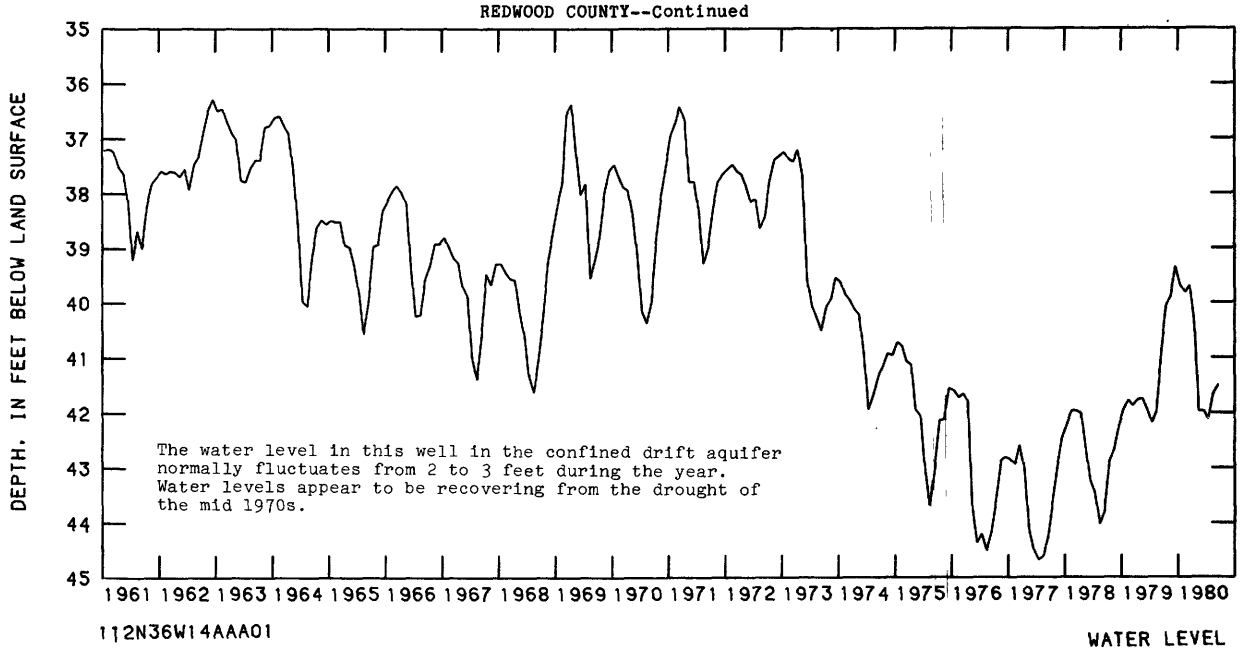
DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	6.61	DEC 21	5.51	MAY 05	8.82	JUN 14	5.63	AUG 30	8.26	SEP 17	8.51
NOV 24	5.16	MAR 19	6.22	24	8.35	JUL 25	7.95				

443051095074201. Local number, 112N36W14AAA01.
LOCATION.--Lat 44°30'51", long 95°07'42", in NE¼NE¼NE¼ sec.14, T.112 N., R.36 W., Hydrologic Unit 07020007, 2 mi (3.2 km) south of Redwood Falls.
Owner: Frank Boots.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 4 in (0.10 m), measured depth 214 ft (65.2 m), reported screened 213 to 218 ft (64.9 to 66.4 m).
DATUM.--Land-surface datum is 1,038.9 ft (316.7 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 2.00 ft (0.61 m) above land-surface datum.
REMARKS.--Measured weekly by Kenneth Daby. Water level affected by regional pumping.
PERIOD OF RECORD.--July 1952 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 30.72 ft (9.36 m) below land-surface datum, Sept. 10, 1953; lowest, 44.68 ft (13.62 m) below land-surface datum, July 16, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 05	39.61	DEC 07	39.05	FEB 09	39.60	APR 12	39.25	JUN 14	41.42	AUG 06	41.66
12	40.06	15	39.05	16	39.64	19	39.79	21	41.68	13	41.37
19	39.86	22	39.20	23	39.11	26	40.32	25	41.97	20	41.15
26	39.99	29	39.34	29	39.40	MAY 03	40.80	JUL 02	42.12	27	41.25
NOV 03	39.88	JAN 05	39.35	MAR 08	39.30	10	40.95	09	42.00	SEP 03	41.40
10	39.79	12	39.46	15	39.37	17	41.53	16	41.94	10	41.42
16	39.17	19	39.69	22	39.50	24	41.97	23	41.89	17	41.47
24	38.70	26	39.59	29	39.70	31	41.97	30	41.73	24	41.50
DEC 01	38.96	FEB 02	39.82	APR 05	39.38	JUN 07	41.55				

REDWOOD COUNTY--Continued



442906095064101. Local number, 112N36W24DDC01.
LOCATION.--Lat 44°29'06", long 95°06'41", in SW¼SE¼SE¼ sec.24, T.112 N., R.36 W., Hydrologic Unit 07020007, 3.6 mi (5.8 km) south of Redwood Falls.
Owner: City of Redwood Falls.
AQUIFER.--Buried sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in (0.05 m), depth 144 ft (43.9 m), screened 141 to 144 ft (43.0 to 43.9 m).
DATUM.--Altitude of land-surface datum is 1,041 ft (317 m). Measuring point: Top of casing, 2.50 ft (0.76 m) above land-surface datum.
REMARKS.--Water level affected by pumping from nearby well field.
PERIOD OF RECORD.--December 1967 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 39.52 ft (12.05 m) below land-surface datum, Mar. 13, 1971; lowest, 51.21 ft (15.61 m) below land-surface datum, July 16, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 05	45.50	07	44.30	FEB 09	46.17	APR 12	44.09	JUN 14	47.85	AUG 06	47.39
12	45.82	15	44.16	16	44.44	19	46.29	21	47.93	13	47.13
19	45.14	22	45.38	23	43.72	26	46.30	25	49.05	20	46.94
26	45.26	28	45.55	29	45.00	MAY 03	47.20	JUL 02	48.80	27	47.20
NOV 03	45.25	JAN 05	45.56	MAR 08	44.90	10	47.54	09	48.39	SEP 03	47.19
10	45.13	12	45.60	15	45.62	17	48.70	16	48.30	10	46.54
16	44.49	19	45.17	22	46.08	24	49.59	23	48.00	17	47.69
24	43.55	26	44.52	29	44.60	31	47.99	30	47.45	24	47.59
DEC 01	44.15	FEB 02	46.05	APR 05	44.29	JUN 07	47.88				

442917095183701. Local number, 112N37W21CCC01.
LOCATION.--Lat 44°29'17", long 95°18'37", in SW¼SW¼SW¼ sec.21, T.112 N., R.37 W., Hydrologic Unit 07020006, 1 mi (1.6 km) northeast of Seaforth.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 17 ft (5.2 m), screened 15 to 17 ft (4.6 to 5.2 m).
DATUM.--Altitude of land-surface datum is 1,020 ft (311 m). Measuring point: Top of casing, 3.40 ft (1.04 m) above land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 9.73 ft (2.97 m) below land-surface datum, June 2, 1979; lowest, 14.11 ft (4.30 m) below land-surface datum, Mar. 11, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	11.20	DEC 21	10.73	FEB 09	11.69	APR 25	11.48	JUN 14	11.62	AUG 30	12.37
NOV 24	11.20	JAN 19	11.32	MAR 15	12.43	MAY 24	11.91	JUL 21	12.07	SEP 17	12.57

REDWOOD COUNTY--Continued

442950095255301. Local number, 112N38W21BBC01.
LOCATION.--Lat 44°29'50", long 95°25'53", in SW¼NW¼NW¼ sec.21, T.112 N., R.37 W., Hydrologic Unit 07020006, 0.2 mi (0.3 km) southwest of Vesta.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 21 ft (6.4 m), screened 19 to 21 ft (5.8 to 6.4 m).
DATUM.--Altitude of land-surface datum is 1,040 ft (317 m). Measuring point: Top of casing, 2.00 ft (0.61 m) above land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 1.66 ft (0.51 m) below land-surface datum, May 5, 1979; lowest, 7.09 ft (2.16 m) below land-surface datum, Sept. 16, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	5.21	DEC 21	4.96	FEB 09	4.33	APR 25	4.23	JUN 14	4.51	AUG 30	6.56
NOV 24	4.25	JAN 19	3.95	MAR 15	4.90	MAY 24	4.58	JUL 21	5.69	SEP 17	6.95

442959095315901. Local number, 112N39W22BBB01.
LOCATION.--Lat 44°29'59", long 95°31'59", in NW¼NW¼NW¼ sec.22, T.112 N., R.39 W., Hydrologic Unit 07020006, 5.7 mi (9.2 km) west of Vesta.
Owner: U.S. Geological Survey
AQUIFER.--Surficial gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 12 ft (3.7 m), screened 10 to 12 ft (3.0 to 3.7 m).
DATUM.--Altitude of land-surface datum is 1,055 ft (322 m). Measuring point: Top of casing, 3.90 ft (1.19 m) above land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.91 ft (0.28 m) below land-surface datum, Apr. 21, 1979; lowest, 7.65 ft (2.33 m) below land-surface datum, Oct. 26, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	6.92	DEC 21	5.74	FEB 09	6.83	APR 25	6.34	JUN 14	6.09	AUG 30	7.26
NOV 24	6.34	JAN 19	6.71	MAR 15	6.85	MAY 24	6.68	JUL 21	6.92	SEP 17	7.46

RICE COUNTY

441912093162901. Local number, 110N20W19BDC01.
LOCATION.--Lat 44°19'12", long 93°16'29", in SW¼SE¼NW¼ sec.19, T.110 N., R.20 W., Hydrologic Unit 07040002, just north of Faribault.
Owner: St. Lawrence Cemetery Assn.
AQUIFER.--Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 4 in (0.10 m), depth 400 ft (122 m), cased to 357 ft (110 m).
DATUM.--Altitude of land-surface datum is 985 ft (300 m). Measuring point: Top of casing, 1.60 ft (0.49 m) above land-surface datum.
PERIOD OF RECORD.--June 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 7.60 ft (2.32 m) below land-surface datum, Dec. 10, 1979; lowest, 10.44 ft (3.18 m) below land-surface datum, July 19, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	8.20	JAN 17	8.32	MAR 06	8.25	APR 11	7.78	JUN 16	8.45	AUG 20	9.42
DEC 10	7.60										

ROCK COUNTY

433515096114901. Local number, 102N45W35DDC01.
LOCATION.--Lat 43°35'15", long 96°11'49", in SW¼SE¼SE¼ sec.35, T.102 N., R.45 W., Hydrologic Unit 10170204, 4 mi (6.4 km) south of Luverne.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 14 ft (4.3 m), screened 12 to 14 ft (3.7 to 4.3 m).
DATUM.--Altitude of land-surface datum is 1,400 ft (427 m). Measuring point: Top of casing, 3.40 ft (1.04 m) above land-surface datum.
PERIOD OF RECORD.--May 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 1.90 ft (0.58 m) below land-surface datum, Apr. 19, 1979; lowest, 6.78 ft (2.07 m) below land-surface datum, Sept. 30, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	4.82	DEC 21	4.36	FEB 11	4.79	APR 21	4.68	JUN 16	4.50	AUG 20	5.35
DEC 01	4.26	JAN 12	4.40	MAR 21	4.64	MAY 30	4.67	JUL 20	5.42	SEP 30	6.78

433843096184701. Local number, 102N46W14AAA01.
LOCATION.--Lat 43°38'43", long 96°18'47", in NE¼NE¼NE¼ sec.14, T.102 N., R.46 W., Hydrologic Unit 10170203, 4.5 mi (7.2 km) west of Luverne.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 14 ft (4.3 m), screened 12 to 14 ft (3.7 to 4.3 m).
DATUM.--Altitude of land-surface datum is 1,450 ft (442 m). Measuring point: Top of casing, 1.65 ft (0.50 m) above land-surface datum.
PERIOD OF RECORD.--May 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.20 ft (0.98 m) below land-surface datum, Apr. 19, 1979; lowest, 8.74 ft (2.66 m) below land-surface datum, Nov. 9, Dec. 23, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	6.89	DEC 21	6.25	FEB 11	7.20	APR 21	7.15	JUN 16	5.57	AUG 20	7.75
DEC 01	5.89	JAN 12	6.61	MAR 21	7.27	MAY 30	7.19	JUL 20	6.97	SEP 30	8.32

434726096073201. Local number, 104N44W21CDC01.
LOCATION.--Lat 43°47'26", long 96°07'32", in SW¼SE¼SW¼ sec.21, T.104 N., R.44 W., Hydrologic Unit 10170204, 3.8 mi (6.1 km) northeast of Hardwick.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1½ in (0.04 m), depth 16 ft (4.9 m), screened 14 to 16 ft (4.3 to 4.9 m).
DATUM.--Altitude of land-surface datum is 1,510 ft (460 m). Measuring point: Top of casing, 3.70 ft (1.13 m) above land-surface datum.
PERIOD OF RECORD.--May 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.90 ft (1.49 m) below land-surface datum, Apr. 19, 1979; lowest, 9.96 ft (3.04 m) below land-surface datum, June 15, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	6.97	DEC 21	6.63	FEB 14	7.21	APR 21	6.79	JUN 16	6.85	AUG 20	7.09
DEC 01	6.22	JAN 12	6.84	MAR 21	6.33	MAY 30	6.77	JUL 19	7.45	SEP 30	7.34

SCOTT COUNTY

443732093460301. Local number, 113N24W06BCB01.
LOCATION.--Lat 44°37'32", long 93°46'03", in NW¼SW¼NW¼ sec.6, T.113 N., R.24 W., Hydrologic Unit 07020012, in Belle Plaine.
Owner: Creative Tool and Engineering. Formerly Belle Plaine Coop Creamery.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in (0.30 m), depth 272 ft (82.9 m), screen information not available.
DATUM.--Altitude of land-surface datum is 840 ft (256 m). Measuring point: Top of well cap, 2.30 ft (0.70 m) above land-surface datum.
PERIOD OF RECORD.--July 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 118.1 ft (36.00 m) below land-surface datum, Aug. 27, 1979; lowest, 128.1 ft (39.04 m) below land-surface datum, Aug. 8, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	118.8	FEB 08	121.5	MAR 05	119.7	MAY 05	119.0	JUN 30	122.2	AUG 08	128.1
DEC 20	121.0										

443715093480801. Local number, 113N25W02CAC01.
LOCATION.--Lat 44°37'15", long 93°48'08", in SW¼NE¼SW¼ sec.2, T.113 N., R.25 W., Hydrologic Unit 07020012, 0.75 mi (1.21 km) west of Belle Plaine at Shep's Gravel Pit.
Owner: U.S. Geological Survey
AQUIFER.--Ironton-Galesville Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 4 in (0.10 m), depth 323 ft (98.4 m), cased to 193 ft (58.8 m).
DATUM.--Altitude of land-surface datum is 750 ft (229 m). Measuring point: Top of casing, 0.25 ft (0.08 m) above land-surface datum.
PERIOD OF RECORD.--October 1979 to August 1980.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 8.07 ft (2.46 m) below land-surface datum, June 18, 1980; lowest, 9.34 ft (2.85 m) below land-surface datum, Aug. 21, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 04	8.35	APR 16	8.27	JUN 18	8.07	AUG 21	9.34

444025093220801. Local number, 114N21W20BAA01.
LOCATION.--Lat 44°40'25", long 93°22'08", in NE¼NE¼NW¼ sec.20, T.114 N., R.21 W., Hydrologic Unit 07020012, 0.5 mi (0.8 km) east of Credit River.
Owner: Credit River Town Hall
AQUIFER.--Buried sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 4 in (0.10 m), depth 98 ft (29.9 m), screened 93 to 98 ft (28.4 to 29.9 m).
DATUM.--Altitude of land-surface datum is 946 ft (288 m). Measuring point: Top of casing, 1.10 ft (0.34 m) above land-surface datum.
PERIOD OF RECORD.--September 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 39.02 ft (11.89 m) below land-surface datum, Mar. 3, 1980; lowest, 40.35 ft (12.30 m) below land-surface datum, Sept. 6, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	40.13	JAN 23	39.33	MAR 03	39.02	APR 16	39.52	JUN 16	39.95	AUG 21	39.92
DEC 04	39.55										

SCOTT COUNTY--Continued

443752093254401. Local number, 114N22W35DCC01.
LOCATION.--Lat 44°37'52", long 93°25'44", in SW¼SW¼SE¼ sec.35, T.114 N., R.22 W., Hydrologic Unit 07020012, southwest of Credit River.
Owner: St. Catherine's Church
AQUIFER.--Prairie du Chien Group of Early Ordovician Age.
WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 4 in (0.10 m), depth 235 ft (71.6 m), cased to 194 ft (59.1 m).
DATUM.--Altitude of land-surface datum is 1,015 ft (309 m). Measuring point: Top of casing, 1.20 ft (0.37 m) above land-surface datum.
PERIOD OF RECORD.--September 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 89.28 ft (27.21 m) below land-surface datum, Mar. 3, 1980; lowest, 90.30 ft (27.52 m) below land-surface datum, Sept. 6, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	90.04	JAN 23	89.64	MAR 03	89.28	APR 16	89.59	JUN 16	89.89	AUG 21	89.44
DEC 04	89.64										

444633093212901. Local number, 115N21W09CCC01.
LOCATION.--Lat 44°46'33", long 93°21'29", in SW¼SW¼SW¼ sec.9, T.115 N., R.21 W., Hydrologic Unit 07020012,at Savage waste treatment plant.
Owner: City of Savage, well 2.
AQUIFER.--Mount Simon Sandstone of Late Cambrian Age and Hinckley Sandstone of Late Precambrian Age.
WELL CHARACTERISTICS.--Drilled public-supply artesian well, depth 846 ft (258 m), 16 in (0.41 m) casing 0 ft to 280 ft (85.3 m), 10 in (0.25 m) casing 250 ft to 660 ft (85.3 m to 201 m).
DATUM.--Land-surface datum is 730 ft (222.5 m). Measuring point: Edge of vent pipe 0.75 ft (0.23 m) above land-surface datum.
PERIOD OF RECORD.--February 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 18.98 ft (5.79 m) below land-surface datum, Aug. 9, 1979; lowest, 42.59 ft (12.98 m) below land-surface datum, Dec. 14, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	28.72	DEC 05	25.15	JAN 23	23.65	FEB 29	23.80	JUN 12	27.19	AUG 13	35.75

444720093241801. Local number, 115N22W12ABA01.
LOCATION.--Lat 44°47'20", long 93°24'18", in NE¼NW¼NE¼ sec.12, T.115 N., R.22 W., Hydrologic Unit 07020012, west of Savage at Wilkie State Park.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 21 ft (6.4 m), screened 19 to 21 ft (5.8 to 6.4 m).
DATUM.--Altitude of land-surface datum is 725 ft (221 m). Measuring point: Top of casing, 2.40 ft (0.73 m) above land-surface datum.
PERIOD OF RECORD.--August 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 8.05 ft (2.45 m) below land-surface datum, Sept. 13, 1979; lowest, 11.10 ft (3.38 m) below land-surface datum, Mar. 4, 1975.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	8.55	JAN 23	8.92	FEB 29	8.99	APR 16	8.57	JUN 12	8.60	AUG 13	9.85
DEC 05	8.61										

SCOTT COUNTY--Continued

444442093351001. Local number, 115N23W28AAC01.
LOCATION.--Lat 44°44'42", long 93°35'10", in SW¼NE¼NE¼ sec.28, T.115 N., R.23 W., Hydrologic Unit 07020012, 2.75 mi (6.03 km) south of Shakopee.
Owner: Leonard Granzow.
AQUIFER.--Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 8 in (0.20 m), depth 150 ft (45.7 m), cased to 116 ft (35.4 m).
DATUM.--Altitude of land-surface datum is 801 ft (244 m). Measuring point: Top of casing, 0.40 ft (0.12 m) above land-surface datum.
PERIOD OF RECORD.--April 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 84.76 ft (25.83 m) below land-surface datum, Apr. 16, 1980; lowest, 86.12 ft (26.25 m) below land-surface datum, Apr. 26, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	84.90	JAN 23	85.05	MAR 03	85.25	APR 16	84.76	JUN 18	85.10	AUG 21	85.72
DEC 05	84.82										

SHERBURNE COUNTY

451954093424801. Local number, 033N27W21CCA01.
LOCATION.--Lat 45°19'54", long 93°42'48", in NE¼SW¼SW¼ sec.21, T.33 N., R.27 W., Hydrologic Unit 07010203, on Bromeling farm, 0.9 mi (1.4 km) east of Big Lake.
Owner: U.S. Geological Survey
AQUIFER.--Surficial outwash sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 2 in (0.05 m), depth 20 ft (6.1 m), screened 18 to 20 ft (5.5 to 6.1 m).
DATUM.--Altitude of land-surface datum is 933.8 ft (284.6 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 3.60 ft (1.10 m) above land-surface datum.
PERIOD OF RECORD.--October 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 9.03 ft (2.75 m) below land-surface datum, Nov. 27, 1973; lowest, 14.43 ft (4.40 m) below land-surface datum, Aug. 25, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	DATE	WATER LEVEL
5	10.51	10.60	10.62	10.86	11.07	11.33	11.09	11.26	JUN 20	10.81
10	.....	10.55	10.67	.....	11.09	11.37	11.11	11.29		
15	.....	10.55	.....	.....	11.15	11.40	11.13	11.36		
20	.....	10.60	10.76	.....	11.18	11.26	11.14	11.39		
25	10.73	10.59	10.78	10.99	11.23	11.17	11.16	11.43		
EOM	10.72	10.65	10.82	11.04	11.27	11.08	11.18	11.48		

WTR YEAR 1980 HIGHEST 10.49 OCT 1, 1979 LOWEST 11.48 MAY 31, JUN 1, 1980

451954093424802. Local number, 033N27W21CCA02.
LOCATION.--Lat 45°19'54", long 93°42'48", in NE¼SW¼SW¼ sec.21, T.33 N., R.27 W., Hydrologic Unit 07010203, on Bromeling farm.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 52 ft (15.8 m), screened 50 to 52 ft (15.2 to 15.8 m).
DATUM.--Altitude of land-surface datum is 934 ft (285 m). Measuring point: Top of casing, 2.80 ft (0.85 m) above land-surface datum.
PERIOD OF RECORD.--October 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 9.76 ft (1.09 m) below land-surface datum, Apr. 1, 1976; lowest, 14.49 ft (4.42 m) below land-surface datum, Aug. 17, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	10.58	JAN 02	10.89	MAR 12	11.42	MAY 06	11.48	JUN 06	11.19	JUL 08	11.31
DEC 04	10.64	FEB 12	11.22	APR 08	11.19						

SHERBURNE COUNTY--Continued

451954093424805. Local number, 033N27W21CCA05.
LOCATION.--Lat 45°19'54", long 93°42'48", in NE¼SW¼SW¼ sec.21, T.33 N., R.27 W., Hydrologic Unit 07010203, on Bromeling farm.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 35 ft (10.7 m), screened 32.5 to 35 ft (9.9 to 10.7 m).
DATUM.--Altitude of land-surface datum is 934 ft (285 m). Measuring point: Top of casing, 2.50 ft (0.76 m) above land-surface datum.
PERIOD OF RECORD.--September 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 10.00 ft (3.05 m) below land-surface datum, June 29, 1979; lowest, 13.04 ft (3.96 m) below land-surface datum, Sept. 23, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	10.32	JAN 02	10.63	MAR 12	11.07	MAY 06	11.08	JUN 06	10.72	JUL 08	WELL
DEC 04	10.36	FEB 12	10.92	APR 08	10.88						DESTROYED

451943093425001. Local number, 033N27W21CCC01.
LOCATION.--Lat 45°19'43", long 93°42'50", in SW¼SW¼SW¼ sec.21, T.33 N., R.27 W., Hydrologic Unit 07010203, 3 mi (3.2) km) east of stoplight in Big Lake.
Owner: Remmelle Engineering.
AQUIFER.--Mount Simon Sandstone of Late Cambrian Age and Hinckley Sandstone of Late Precambrian Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 12 in (0.30 m), depth 250 ft (76.2 m), cased to 102 ft (31.1 m).
DATUM.--Altitude of land-surface datum is 935 ft (285 m). Measuring point: Hole in pump base, 0.90 ft (0.27 m) above land-surface datum.
PERIOD OF RECORD.--March 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 11.87 ft (3.62 m) below land-surface datum, Nov. 7, 1979; lowest, 14.89 ft (4.54 m) below land-surface datum, June 14, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	11.87	JAN 02	12.27	MAR 12	13.83	MAY 06	13.62	JUN 06	12.98	JUL 08	13.21
DEC 04	14.75	FEB 12	13.11	APR 08	12.85						

451852093435301. Local number, 033N27W29CDC01.
LOCATION.--Lat 45°18'52", long 93°43'53", in SW¼SE¼SW¼ sec.29, T.33 N., R.27 W., Hydrologic Unit 07010203, southeast of Big Lake.
Owner: Truman (Pete) Sanford.
AQUIFER.--Mount Simon Sandstone of Late Cambrian Age and Hinckley Sandstone of Late Precambrian Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 12 in (0.30 m), depth 218 ft (66.4 m), cased to 92 ft (28.0 m).
DATUM.--Altitude of land-surface datum is 931 ft (284 m). Measuring point: Top of casing, 0.50 ft (0.15 m) above land-surface datum.
REMARKS.--Water level affected by pumping of nearby wells.
PERIOD OF RECORD.--September, November 1973, October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 9.48 ft (2.89 m) below land-surface datum, June 29, 1979; lowest, 18.69 ft (5.70 m) below land-surface datum, Aug. 10, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	9.76	JAN 02	10.29	MAR 12	11.27	APR 08	11.04	MAY 06	11.65	JUN 06	11.31
DEC 04	9.77	FEB 12	11.18								

SHERBURNE COUNTY--Continued

452040093491202. Local number, 033N28W16DDD02.
LOCATION.--Lat 45°20'40", long 93°49'12", in SE¼SE¼SE¼ sec.16, T.33 N., R.28 W., Hydrologic Unit 07010203, 0.8 mi (1.3 km) south of Salida.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 48 ft (14.6 m), screened 46 to 48 ft (14.0 to 14.6 m).
DATUM.--Altitude of land-surface datum is 952 ft (290 m). Measuring point: Top of casing, 3.50 ft (1.07 m) above land-surface datum.
PERIOD OF RECORD.--May 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 27.70 ft (8.44 m) below land-surface datum, Apr. 28, 1979; lowest, 35.66 ft (10.87 m) below land-surface datum, Aug. 18, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	28.62	JAN 02	29.05	MAR 12	30.11	MAY 06	30.43	JUN 06	31.05	JUL 08	31.37
DEC 04	28.80	FEB 12	28.66	APR 08	30.09						

452638093402802. Local number, 034N27W10DDD02.
LOCATION.--Lat 45°26'38", long 93°40'28", in SE¼SE¼SE¼ sec.10, T.34 N., R.27 W., Hydrologic Unit 07010203, 3 mi (4.8 km) east of Orrock.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 35 ft (10.7 m), screened 33 to 35 ft (10.1 to 10.7 m).
DATUM.--Altitude of land-surface datum is 980.1 ft (298.7 m). Measuring point: Top of casing, 2.00 ft (0.61 m) above land-surface datum.
PERIOD OF RECORD.--December 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 24.10 ft (7.35 m) below land-surface datum, June 30, 1979; lowest, 27.16 ft (8.28 m) below land-surface datum, Aug. 1, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	24.15	JAN 02	24.44	MAR 12	24.90	MAY 06	25.25	JUN 06	25.33	JUL 08	25.39
DEC 04	24.30	FEB 12	24.98	APR 08	25.05						

452638093442001. Local number, 034N27W18AAB01.
LOCATION.--Lat 45°26'38", long 93°44'20", in NW¼NE¼NE¼ sec.18, T.34 N., R.27 W., Hydrologic Unit 07010203, in Orrock, 0.15 mi (0.24 km) west of County Road 5.
Owner: Morton Arneson.
AQUIFER.--Buried gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled irrigation artesian well, diameter 12 in (0.30 m), depth 115 ft (35.0 m), screened 95 to 115 ft (29.0 to 35.0 m).
DATUM.--Altitude of land-surface datum is 985 ft (300 m). Measuring point: 3/4-in (0.02 m) pipe inside of pump base, 1.40 ft (0.43 m) above land-surface datum.
PERIOD OF RECORD.--December 1979 to June 1980.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 11.95 ft (3.64 m) below land-surface datum, Dec. 6, 1979; lowest, 12.66 ft (3.86 m) below land-surface datum, Mar. 5, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 06	11.95	JAN 21	12.32	MAR 05	12.66	APR 14	12.30	JUN 25	12.30

SHERBURNE COUNTY--Continued

452804093491302. Local number, 034N28W04ADA02.
LOCATION.--Lat 45°28'04", long 93°49'13", in NE¼SE¼NE¼ sec.4, T.34 N., R.28 W., Hydrologic Unit 07010203, 7.5 mi (12.1 km) north of Salida.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 13 ft (4.0 m), screened 11 to 13 ft (3.4 to 4.0 m).
DATUM.--Altitude of land-surface datum is 998 ft (304 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.82 ft (0.86 m) below land-surface datum, June 30, 1979; lowest, 8.78 ft (2.68 m) below land-surface datum, Feb. 8, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	4.95	JAN 02	5.51	MAR 12	6.32	MAY 06	5.14	JUN 06	5.20	JUL 08	5.64
DEC 04	4.99	FEB 12	6.03	APR 08	5.70						

452339093521402. Local number, 034N28W31BDD02.
LOCATION.--Lat 45°23'39", long 93°52'14", in SE¼SE¼NW¼ sec.31, T.34 N., R.28 W., Hydrologic Unit 07010203, 0.4 mi (0.6 km) north of U.S. Highway 10 in Becker.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 27 ft (8.2 m), screened 25 to 27 ft (7.6 to 8.2 m).
DATUM.--Altitude of land-surface datum is 970 ft (296 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--December 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 18.37 ft (5.60 m) below land-surface datum, June 29, 1979; lowest, 22.51 ft (6.86 m) below land-surface datum, Feb. 8, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	18.47	JAN 02	18.82	MAR 12	19.71	MAY 06	20.02	JUN 06	20.26	JUL 08	19.95
DEC 04	18.51	FEB 12	19.39	APR 08	19.65						

452312093463802. Local number, 034N28W36CCC02.
LOCATION.--Lat 45°23'12", long 93°46'38", in SW¼SW¼SW¼ sec.36, T.34 N., R.28 W., Hydrologic Unit 07010203, 5 mi (8.0 km) north of Highway 10 in Big Lake.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 20.5 ft (6.2 m), screened 18.5 to 20.5 ft (5.6 to 6.2 m).
DATUM.--Altitude of land-surface datum is 940 ft (286 m). Measuring point: Top of casing, 2.50 ft (0.76 m) above land-surface datum.
PERIOD OF RECORD.--December 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 10.53 ft (3.21 m) below land-surface datum, July 14, 1978; lowest, 14.12 ft (4.30 m) below land-surface datum, Feb. 7, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	11.29	JAN 02	12.39	MAR 12	12.88	MAY 06	11.89	JUN 06	11.75	JUL 08	12.07
DEC 04	11.85	FEB 12	12.65	APR 08	11.78						

SHERBURNE COUNTY--Continued

452545093571002. Local number, 034N29W21ABB02.
LOCATION.--Lat 45°25'45", long 93°57'10", in NW¼NW¼NE¼ sec.21, T.34 N., R.29 W., Hydrologic Unit 07010203, 2.5 mi (4.0 km) east of Clear Lake on Mel Goenner farm.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 2 in (0.05 m), depth 36 ft (11.0 m), screened 34 to 36 ft (10.4 to 11.0 m).
DATUM.--Altitude of land-surface datum is 985 ft (300 m). Measuring point: Top of casing, 4.00 ft (1.22 m) above land-surface datum.
PERIOD OF RECORD.--October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 20.00 ft (6.10 m) below land-surface datum, June 30, July 1, 1979; lowest, 25.12 ft (7.66 m) below land-surface datum, July 11, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	DATE	WATER LEVEL
5	20.34	.....	.....	20.28	.....	20.53	20.30	20.62	JUN 20	20.73
10	20.40	.....	20.15	20.30	.....	20.56	20.36	20.62		
15	20.43	.....	20.17	.....	.....	20.59	20.39	20.67		
20	20.40	.....	20.18	.....	.....	20.58	20.42	20.89		
25	20.47	.....	20.23	20.34	.....	20.49	20.46	20.88		
EOM	20.46	.....	20.25	20.41	.....	20.30	20.50	20.92		

WTR YEAR 1980 HIGHEST 20.09 DEC 6-7, 1979 LOWEST 20.94 MAY 29-30, 1980

452545093571003. Local number, 034N29W21ABB03.
LOCATION.--Lat 45°25'45", long 93°57'10", in NW¼NW¼NE¼ sec.21, T.34 N., R.29 W., Hydrologic Unit 07010203, on Mel Goenner farm.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 112 ft (34.1 m), screened 109 to 112 ft (33.2 to 34.1 m).
DATUM.--Altitude of land-surface datum is 985 ft (300.2 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--September 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 20.01 ft (6.10 m) below land-surface datum, Dec. 4, 1979; lowest, 24.13 ft (7.35 m) below land-surface datum, Sept. 22, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	20.19	JAN 02	20.19	MAR 12	20.44	MAY 06	20.66	JUN 06	20.87	JUL 08	21.02
DEC 04	20.01	FEB 12	20.39	APR 08	20.29						

452708094015601. Local number, 034N30W11ACD02.
LOCATION.--Lat 45°27'08", long 94°01'56", in SE¼SE¼NE¼ sec.11, T.34 N., R.30 W., Hydrologic Unit 07010203, 2.8 mi (4.5 km) west of Clear Lake.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 26 ft (7.9 m), screened 24 to 26 ft (7.3 to 7.9 m).
DATUM.--Altitude of land-surface datum is 982.0 ft (299.3 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 4.00 ft (1.22 m) above land-surface datum.
PERIOD OF RECORD.--October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 15.69 ft (4.78 m) below land-surface datum, June 29, 1979; lowest, 20.27 ft (6.18 m) below land-surface datum, Aug. 20, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	15.99	JAN 02	16.13	MAR 12	16.32	MAY 06	16.35	JUN 06	16.47	JUL 08	16.55
DEC 04	16.00	FEB 12	16.26	APR 08	16.10						

SHERBURNE COUNTY--Continued

453121093334401. Local number, 035N26W15DBB01.
LOCATION.--Lat 45°31'21", long 93°33'44", in NW¼NW¼SE¼ sec.15, T.35 N., R.26 W., Hydrologic Unit 07010207, on Sanborn farm, 2.5 mi (4.0 km) south of Princeton.
Owner: U.S. Geological Survey
AQUIFER.--Surficial outwash sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 56 ft (17.1 m), screened 54 to 56 ft 16.5 to 17.1 m).
DATUM.--Altitude of land-surface datum is 965 ft (294 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--October 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.42 ft (1.04 m) below land-surface datum, Aug. 9, 1972; lowest, 9.19 ft (2.80 m) below land-surface datum, Aug. 17, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	6.72	DEC 04	6.29	FEB 05	7.36	MAR 12	7.56	MAY 06	6.51	JUL 08	7.28
NOV 06	6.04	JAN 02	6.87	12	7.39	APR 08	6.62	JUN 06	6.58		

453121093334402. Local number, 035N26W15DBB02.
LOCATION.--Lat 45°31'21", long 93°33'44", in NW¼NW¼SE¼ sec.15, T.35 N., R.26 W., Hydrologic Unit 07010207, on Sanborn farm, 2.5 mi (4.0 km) south of Princeton.
Owner: U.S. Geological Survey
AQUIFER.--Surficial outwash sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 2 in (0.05 m), depth 15 ft (4.6 m), screened 13 to 15 ft 4.04 to 4.6 m).
DATUM.--Altitude of land-surface datum is 965 ft (294 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--October 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.37 ft (1.03 m) below land-surface datum, Aug. 9, 1972; lowest, 8.90 ft (2.71 m) below land-surface datum, Aug. 17, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	6.49	DEC 04	6.09	FEB 05	7.21	MAR 12	7.34	MAY 06	6.25	JUL 08	7.10
NOV 06	5.79	JAN 02	6.54	12	7.29	APR 08	6.41	JUN 06	6.32		

453157093451402. Local number, 035N27W07CCA02.
LOCATION.--Lat 45°31'15", long 93°45'14", in NE¼SW¼SW¼ sec.7, T.35 N., R.27 W., Hydrologic Unit 07010203, 4 mi (6.4 km) east of Santiago.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 13 ft (4.0 m), screened 11 to 13 ft (3.4 to 4.0 m).
DATUM.--Altitude of land-surface datum is 991 ft (302 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--May 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.45 ft (1.36 m) below land-surface datum, June 6, 1980; lowest, 8.66 ft (2.64 m) below land-surface datum, Aug. 18, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	4.85	JAN 02	5.35	MAR 12	6.84	MAY 06	4.82	JUN 06	4.45	JUL 08	5.19
DEC 04	4.90	FEB 12	6.36	APR 08	5.00						

SHERBURNE COUNTY--Continued

453058093393501. Local number, 035N27W14DCD01.
LOCATION.--Lat 45°30'58", long 93°39'35", in SE¼SW¼SE¼ sec.14, T.35 N., R.27 W., Hydrologic Unit 07010203, 5.5 mi (8.8 km) southwest of Princeton.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 21 ft (6.4 m), screened 19 to 21 ft (5.8 to 6.4 m).
DATUM.--Altitude of land-surface datum is 975 ft (297 m). Measuring point: Top of casing, 2.00 ft (0.61 m) above land-surface datum.
PERIOD OF RECORD.--October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 15.25 ft (4.65 m) below land-surface datum, June 30, 1979; lowest, 18.52 ft (5.64 m) below land-surface datum, Feb. 7, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	15.94	JAN 02	16.33	MAR 12	16.90	MAY 06	16.59	JUN 06	16.74	JUL 08	16.87
DEC 04	16.09	FEB 12	16.74	APR 08	16.61						

452938093432701. Local number, 035N27W29DBB02.
LOCATION.--Lat 45°29'38", long 93°43'27", in NW¼NW¼SE¼ sec.29, T.35 N., R.27 W., Hydrologic Unit 07010203, 3.2 mi (5.2 km) north of Orrock in Sherburne National Wildlife Refuge.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 2 in (0.05 m), depth 15 ft (4.6 m), screened 13 to 15 ft (4.0 to 4.6 m).
DATUM.--Altitude of land-surface datum is 985 ft (300 m). Measuring point: Top of casing, 4.20 ft (1.28 m) above land-surface datum.
PERIOD OF RECORD.--October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.00 ft (1.22 m) below land-surface datum, May 14, 1979; lowest, 8.48 ft (2.58 m) below land-surface datum, Nov. 30, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 23	6.45	FEB 15	7.03	MAR 15	7.16	APR 15	5.41	MAY 15	6.09	JUL 10	6.88
DEC 06	6.06	20	7.05	20	6.96	20	5.27	JUN 05	5.87	25	7.16
JAN 25	6.85	25	7.05	25	6.73	25	5.39	25	6.21	29	6.91
31	6.93	28	7.08	31	6.36	30	5.60	30	6.22	AUG 20	6.89
FEB 05	6.99	MAR 05	7.10	APR 05	6.11	MAY 05	5.82	JUL 05	6.44	SEP 22	5.56
10	6.99	10	7.15	10	5.72	10	5.96				

453230093530002. Local number, 035N29W12AAD02.
LOCATION.--Lat 45°32'30", long 93°53'00", in SE¼NE¼NE¼ sec.12, T.35 N., R.29 W., Hydrologic Unit 07010203, 3.5 mi (5.6 km) west of Santiago.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 12 ft (3.7 m), screened 10 to 12 ft (3.1 to 3.7 m).
DATUM.--Altitude of land-surface datum is 1,012 ft (308 m). Measuring point: Top of casing, 4.00 ft (1.22 m) above land-surface datum.
PERIOD OF RECORD.--October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.30 ft (0.09 m) below land-surface datum, June 30, 1979; lowest, 6.12 ft (1.87 m) below land-surface datum, Feb. 8, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	0.76	JAN 02	1.63	MAR 12	2.32	MAY 06	1.62	JUN 06	1.42	JUL 08	1.99
DEC 04	0.99	FEB 12	2.09	APR 08	1.70						

SHERBURNE COUNTY--Continued

452952093570801. Local number, 035N29W28ABC01.
LOCATION.--Lat 45°29'52", long 93°57'08", in SW¼NW¼NE¼ sec.28, T.35 N., R.29 W., Hydrologic Unit 07010203, on Gilyard farm, north of Clear Lake.
Owner: U.S. Geological Survey
AQUIFER.--Surficial outwash sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 31 ft (9.4 m), screened 29 to 31 ft (8.8 to 9.4 m).
DATUM.--Altitude of land-surface datum is 998 ft (304 m). Measuring point: Top of casing, 2.30 ft (0.70 m) above land-surface datum.
PERIOD OF RECORD.--August 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 17.00 ft (5.18 m) below land-surface datum, Aug. 3, 1979; lowest, 22.32 ft (6.80 m) below land-surface datum, Aug. 18, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 22	17.85	DEC 04	18.35	FEB 12	19.38	APR 08	19.60	JUN 06	20.07	JUL 08	20.44
NOV 06	18.10	JAN 02	18.76	MAR 12	19.80	MAY 06	20.00				

453156094040501. Local number, 035N30W10CCB01.
LOCATION.--Lat 45°31'56", long 94°04'05", in NW¼SW¼SW¼ sec.10, T.35 N., R.30 W., Hydrologic Unit 07010203, 1.7 mi (2.7 km) north of Cable.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel to 12 ft, sandy till to 32 ft of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 32 ft (9.8 m), screened 30 to 32 ft (9.1 to 9.8 m).
DATUM.--Altitude of land-surface datum is 1,015 ft (309 m). Measuring point: Top of casing, 5.20 ft (1.58 m) above land-surface datum.
PERIOD OF RECORD.--October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 9.42 ft (2.87 m) below land-surface datum, June 30, 1979; lowest, 15.59 ft (4.75 m) below land-surface datum, Feb. 8, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	10.92	JAN 02	12.16	MAR 12	13.08	MAY 06	11.72	JUN 06	12.09	JUL 08	11.79
DEC 04	11.72	FEB 12	12.75	APR 08	11.79						

STEARNS COUNTY

452357094145302. Local number, 122N28W07ABA02.
LOCATION.--Lat 45°23'57" in 94°14'52", in NE¼NW¼NE¼ sec.7, T.122 N., R.28 W., Hydrologic Unit 07010203, on Mark John farm.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 22 ft (6.7 m), screened 20 to 22 ft (6.1 to 6.7 m).
DATUM.--Land-surface datum is 1,132.3 ft (345.1 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 4.70 ft (1.43 m) above land-surface datum.
PERIOD OF RECORD.--October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 11.75 ft (3.58 m) below land-surface datum, June 30, 1979; lowest, 15.67 ft (4.78 m) below land-surface datum, Mar. 10, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	DATE	WATER LEVEL
5	12.99	13.14	13.30	13.48	13.65	13.79	13.45	13.56	JUN 23	13.62
10	13.02	13.18	13.32	13.49	13.65	13.82	13.42	13.60	SEP 12	13.38
15	13.08	13.21	13.38	13.53	13.70	13.84	13.43	13.66		
20	13.10	13.24	13.40	13.56	13.72	13.78	13.44	13.69		
25	13.16	13.25	13.43	13.59	13.76	13.66	13.47	13.73		
EOM	13.15	13.29	13.45	13.63	13.78	13.46	13.51	13.78		

WTR YEAR 1980 HIGHEST 12.93 OCT 1, 1979 LOWEST 13.87 MAR 8, 1980

STEARNS COUNTY--Continued

452100094154002. Local number, 122N28W30BCC02.
LOCATION.--Lat 45°21'00", long 94°15'40", in SW¼SW¼NW¼ sec.30, T.122 N., R.28 W., Hydrologic Unit 07010203, on Stein farm, 2 mi (3.2 km) north of Kimball.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 41 ft (12.5 m), screened 39 to 41 ft (11.9 to 12.5 m).
DATUM.--Land-surface datum is 1,160.5 ft (353.7 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--December 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 30.90 ft (9.42 m) below land-surface datum, June 29, 1979; lowest, 34.75 ft (10.59 m) below land-surface datum, Aug. 19, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 03	31.56	MAR 24	32.28	APR 28	32.09	MAY 28	32.75	JUL 01	32.85	SEP 12	33.00

4521470094173102. Local number, 122N29W23CAA02.
LOCATION.--Lat 45°21'47", long 94°17'31", in NE¼NE¼SE¼ sec.23, T.122 N., R.29 W., Hydrologic Unit 07010202, 3.2 mi (5.2 km) north of Kimball.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 34 ft (10.4 m), screened 32 to 34 ft (9.8 to 10.4 m).
DATUM.--Land-surface datum is 1,157.9 ft (352.9 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--May 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 26.97 ft (8.22 m) below land-surface datum, June 29, 1979; lowest, 31.00 ft (9.45 m) below land-surface datum, Aug. 19, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 03	27.99	MAR 24	28.77	APR 28	28.53	MAY 28	29.05	JUL 01	28.86	SEP 12	29.25
JAN 29	28.37										

452903094090402. Local number, 123N28W12BAB02.
LOCATION.--Lat 45°29'03", long 94°09'04", in NW¼NE¼NW¼ sec.12, T.123 N., R.28 W., Hydrologic Unit 07010203, 0.2 mi (0.5 km) north of St. Augusta at Cedar Point Ballroom.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 20.5 ft (6.2 m), screened 18.5 to 20.5 ft (5.6 to 6.2 m).
DATUM.--Altitude of land-surface datum is 1,015 ft (309 m). Measuring point: Top of casing, 2.50 ft (0.76 m) above land-surface datum.
PERIOD OF RECORD.--November 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 14.23 ft (4.34 m) below land-surface datum, June 29, 1979; lowest, 19.22 ft (5.86 m) below land-surface datum, May 7, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 03	15.18	MAR 24	16.30	APR 28	16.48	MAY 28	15.95	JUL 01	16.75	SEP 12	16.54
JAN 24	15.71										

STEARNS COUNTY--Continued

452632094145102. Local number, 123N28W30ABA02.
LOCATION.--Lat 45°26'32", long 94°14'51", in NE¼NW¼ sec.30, T.123 N., R.28 W., Hydrologic Unit 07010203, 0.7 mi (1.1 km) south of Luxemburg at Alber's Feed Mill.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 20 ft (6.1 m), screened 18 to 20 ft (5.5 to 6.1 m).
DATUM.--Land-surface datum is 1,112.6 ft (339.1 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--September 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 10.69 ft (3.26 m) below land-surface datum, June 29, 1979; lowest, 14.45 ft (4.40 m) below land-surface datum, Feb. 10, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 03	12.39	MAR 24	12.96	APR 28	12.67	MAY 28	12.76	JUL 01	12.43	SEP 12	12.12
JAN 24	12.71										

452834094222102. Local number, 123N29W07DBC02.
LOCATION.--Lat 45°28'34", long 94°22'21", in SW¼NW¼SE¼ sec.7, T.123 N., R.29 W., Hydrologic Unit 07010202, 2 mi (3.2 km) west of Rockville.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand, gravel, and cobbles of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 20 ft (6.1 m), screened 18 to 20 ft (5.5 to 6.1 m).
DATUM.--Altitude of land-surface datum is 1,107 ft (337 m). Measuring point: Top of casing, 3.50 ft (1.07 m) above land-surface datum.
PERIOD OF RECORD.--December 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.18 ft (1.88 m) below land-surface datum, Sept. 8, 1977; lowest, 10.99 ft (3.35 m) below land-surface datum, Feb. 10, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 03	9.61	MAR 24	10.23	APR 28	9.69	MAY 28	9.78	JUL 28	9.76	SEP 12	9.71
JAN 24	10.25										

452543094191902. Local number, 123N29W27CCC02.
LOCATION.--Lat 45°25'43", long 94°19'19", in SW¼SW¼SW¼ sec.27, T.123 N., R.29 W., Hydrologic Unit 07010202, 3 mi (4.8 km) south of Rockville.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 20 ft (6.1 m), screened 18 to 20 ft (5.5 to 6.1 m).
DATUM.--Altitude of land-surface datum is 1,121 ft (342 m). Measuring point: Top of casing, 2.60 ft (0.79 m) above land-surface datum.
PERIOD OF RECORD.--June 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 10.70 ft (3.26 m) below land-surface datum, June 29, 1979; lowest, 12.77 ft (3.89 m) below land-surface datum, July 18, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 03	11.75	MAR 24	11.65	APR 28	11.47	MAY 28	12.26	JUL 01	11.95	SEP 12	11.44
JAN 24	11.71										

STEARNS COUNTY--Continued

452751094301802. Local number, 123N30W18BCC02.
LOCATION.--Lat 45°27'51", long 94°30'18", in SW¼SW¼NW¼ sec.18, T.123 N., R.30 W., Hydrologic Unit 07010202, 1.3 mi (2.1 km) north of Richmond.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 13 ft (4.0 m), screened 11 to 13 ft (3.4 to 4.0 m).
DATUM.--Altitude of land-surface datum is 1,111 ft (339 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.40 ft (1.65 m) below land-surface datum, June 26, 1978; lowest, 8.09 ft (2.47 m) below land-surface datum, Feb. 9, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 03	6.84	MAR 24	7.02	APR 28	7.03	MAY 28	7.43	JUL 28	7.84	SEP 12	7.42
JAN 24	7.08										

452527094420702. Local number, 123N32W33AAD02.
LOCATION.--Lat 45°25'27", long 94°42'07", in SE¼NE¼NE¼ sec.33, T.123 N., R.32 W., Hydrologic Unit 07010202, 2.8 mi (4.5 km) north of Paynesville.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 14 ft (4.3 m), screened 12 to 14 ft (3.7 to 4.3 m).
DATUM.--Altitude of land-surface datum is 1,187 ft (362 m). Measuring point: Top of casing, 2.00 ft (0.61 m) above land-surface datum.
PERIOD OF RECORD.--October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.58 ft (1.09 m) below land-surface datum, July 13, 1978; lowest, 11.84 ft (3.61 m) below land-surface datum, May 22, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 03	7.65	MAR 24	9.01	APR 28	9.18	MAY 28	9.67	JUL 01	9.14	SEP 12	10.15
JAN 24	8.46										

453434094113002. Local number, 124N28W03CDB02.
LOCATION.--Lat 45°34'34", long 94°11'30", in NW¼SE¼SW¼ sec.3, T.124 N., R.29 W., Hydrologic Unit 07010203, 0.25 mi (0.40 km) north of intersection of 29th Avenue North and 12th Street North in St. Cloud.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 20 ft (6.1 m), screened 18 to 20 ft (5.5 to 6.1 m).
DATUM.--Altitude of land-surface datum is 1,036 ft (316 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 10.10 ft (3.08 m) below land-surface datum, June 30, 1979; lowest, 13.20 ft (4.02 m) below land-surface datum, Mar. 24, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	11.20	JAN 24	11.69	APR 28	11.55	JUL 01	11.76	JUL 29	11.73	SEP 12	11.08
DEC 12	11.30	MAR 24	11.93	MAY 28	11.84						

STEARNS COUNTY--Continued

453428094150201. Local number, 124N28W06CDD01.
LOCATION.--Lat 45°34'28", long 94°15'02", in SE¼SE¼SW¼ sec.6, T.124 N., R.28 W., Hydrologic Unit 07010202, on Robert Murreim farm.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 20 ft (6.1 m), screened 18 to 20 ft (5.5 to 6.1 m).
DATUM.--Altitude of land-surface datum is 1,065 ft (323 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--December 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.16 ft (1.57 m) below land-surface datum, May 30, June 30, 1979; lowest, 10.93 ft (3.33 m) below land-surface datum, Dec. 15, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 13	8.32	MAR 24	8.84	MAY 28	8.68	JUL 01	8.77	JUL 28	8.34	SEP 12	7.65
JAN 24	8.75	APR 28	8.29								

453158094123701. Local number, 124N28W21CDA01.
LOCATION.--Lat 45°31'58", long 94°12'37", in NE¼SE¼SW¼ sec.21, T.124 N., R.28 W., Hydrologic Unit 07010203, on Reinert farm, south of St. Cloud.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 2 in (0.05 m), depth 11 ft (3.4 m), screened 9 to 11 ft (2.7 to 3.4 m).
DATUM.--Altitude of land-surface datum is 1,078 ft (329 m). Measuring point: Top of casing, 0.50 ft (0.15 m) above land-surface datum.
PERIOD OF RECORD.--October 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.82 ft (1.47 m) below land-surface datum, July 13, 1978; lowest, 9.92 ft (3.02 m) below land-surface datum, Apr. 5, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	7.98	DEC 13	7.81	JAN 29	8.92	MAR 14	8.59	APR 28	9.07	JUL 01	9.05
NOV 16	7.81	21	7.95	FEB 06	8.56	24	9.12	MAY 28	9.27	SEP 12	9.56

453700094262801. Local number, 125N30W22CDD01.
LOCATION.--Lat 45°37'00", long 94°26'28", in SE¼SE¼SW¼ sec.22, T.125 N., R.30 W., Hydrologic Unit 07010201, on Alcott farm, 0.5 mi (0.8 km) north of Avon.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 13 ft (4.0 m), screened 11 to 13 ft (3.4 to 4.0 m).
DATUM.--Altitude of land-surface datum is 1,128 ft (344 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--September 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 2.39 ft (0.73 m) below land-surface datum, July 13, 1978; lowest, 7.41 ft (2.26 m) below land-surface datum, Dec. 15, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 30	4.75	MAR 24	5.08	MAY 28	5.26	JUL 01	4.74	JUL 28	4.88	SEP 12	4.62
JAN 24	5.23	APR 28	4.77								

STEARNS COUNTY--Continued

453937094491102. Local number, 125N33W03CDA02.
LOCATION.--Lat 45°39'37", long 94°49'11", in NE¼SE¼SW¼ sec.3, T.125 N., R.33 W., Hydrologic Unit 07010202, on Melrose Golf Course.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 13 ft (4.0 m), screened 11 to 13 ft (3.4 to 4.0 m).
DATUM.--Altitude of land-surface datum is 1,209 ft (368 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--December 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.63 ft (1.11 m) below land-surface datum, Apr. 30, 1979; lowest, 7.88 ft (2.40 m) below land-surface datum, Feb. 9, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 03	4.80	JAN 24	5.46	MAR 24	5.18	APR 28	5.06	MAY 28	6.02	JUL 01	5.71

454328094135901. Local number, 126N28W17CAA01.
LOCATION.--Lat 45°43'28", long 94°13'59", in NE¼NE¼SW¼ sec.17, T.126 N., R.28 W., Hydrologic Unit 07010201, 7.7 mi (12.4 km) north of bridge across Mississippi River in Sartell.
Owner: Gordon Hiscock.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in (0.10 m), depth 41 ft (12.5 m).
DATUM.--Altitude of land-surface datum is 1,047 ft (319 m). Measuring point: Top of casing, 0.50 ft (0.15 m) above land-surface datum.
PERIOD OF RECORD.--September 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 14.03 ft (4.28 m) below land-surface datum, July 13, 1978; lowest, 21.04 ft (6.41 m) below land-surface datum, Feb. 9, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 03	17.68	MAR 24	19.05	MAY 28	18.29	JUL 01	18.94	JUL 28	19.14	SEP 12	19.06
JAN 24	18.58	APR 28	18.42								

454346094284602. Local number, 126N30W17ABC02.
LOCATION.--Lat 45°43'46", long 94°28'46", in SW¼NW¼NE¼ sec.17, T.126 N., R.30 W., Hydrologic Unit 07010201, 0.2 mi (0.3 km) west of bridge in Holdingford.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 21 ft (6.4 m), screened 19 to 21 ft (5.8 to 6.4 m).
DATUM.--Altitude of land-surface datum is 1,142 ft (348 m). Measuring point: Top of casing, 2.00 ft (0.61 m) above land-surface datum.
PERIOD OF RECORD.--September 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 8.83 ft (2.69 m) below land-surface datum, July 13, 1978; lowest, 13.26 ft (4.04 m) below land-surface datum, Feb. 9, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 03	11.18	MAR 24	11.65	MAY 28	10.42	JUL 01	9.31	JUL 28	9.88	SEP 12	10.33
JAN 24	11.75	APR 28	10.57								

STEARNS COUNTY--Continued

454216094552801. Local number, 126N34W23CDA01.
LOCATION.--Lat 45°42'16", long 94°55'28", in NE¼SE¼SW¼ sec.23, T.126 N., R.34 W., Hydrologic Unit 07010202, 2.2 mi (3.5 km) southeast of Sauk Centre.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 27 ft (8.2 m), screened 25 to 27 ft (7.6 to 8.2 m).
DATUM.--Altitude of land-surface datum is 1,243 ft (379 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--December 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 19.22 ft (5.86 m) below land-surface datum, Apr. 30, 1979; lowest, 22.23 ft (6.78 m) below land-surface datum, Nov. 13, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 03	19.70	JAN 24	19.02	MAR 24	20.22	APR 28	20.02	MAY 28	20.33	JUL 01	20.11

SWIFT COUNTY

450959095550801. Local number, 120N42W28DDD01.
LOCATION.--Lat 45°09'59", long 95°55'08", in SE¼SE¼SE¼ sec.28, T.120 N., R.42 W., Hydrologic Unit 07020005, southeast of Appleton.
Owner: U.S. Geological Survey
AQUIFER.--Surficial silt of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 11 ft (3.4 m), screened 9 to 11 ft (2.7 to 3.4 m).
DATUM.--Altitude of land-surface datum is 1,023 ft (312 m). Measuring point: Top of casing, 5.00 ft (1.52 m) above land-surface datum.
PERIOD OF RECORD.--September 1972 to October 1973, January 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.25 ft (0.08 m) below land-surface datum, Apr. 16, 1973; lowest, 9.77 ft (2.98 m) below land-surface datum, Feb. 8, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 11	5.84	JAN 10	4.86	APR 30	4.41	JUN 23	4.41	AUG 11	6.97	SEP 12	7.10
NOV 26	3.79	MAR 04	6.59								

451329096000101. Local number, 120N43W02DDD01.
LOCATION.--Lat 45°13'29", long 96°00'01", in SE¼SE¼SE¼ sec.2, T.120 N., R.43 W., Hydrologic Unit 07020002, at Appleton Airport.
Owner: U.S. Geological Survey
AQUIFER.--Surficial outwash sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 34 ft (10.4 m), screened 32 to 34 ft (9.8 to 10.4 m).
DATUM.--Altitude of land-surface datum is 1,020 ft (311 m). Measuring point: Top of casing, 3.00 ft (0.91 m) above land-surface datum.
PERIOD OF RECORD.--September 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 18.44 ft (5.62 m) below land-surface datum, Sept. 14, 1972; lowest, 24.99 ft (7.62 m) below land-surface datum, Dec. 15, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 11	22.27	JAN 10	22.66	APR 30	22.50	JUN 23	22.70	AUG 11	22.92	SEP 12	23.25
NOV 26	22.57	MAR 04	22.79								

SWIFT COUNTY--Continued

451913095370201. Local number, 121N39W06BDB01.
LOCATION.--Lat 45°19'13", long 95°37'02", in NW¼SE¼NW¼ sec.6, T.121 N., R.39 W., Hydrologic Unit 07020005, in Ambush Park.
Owner: City of Benson
AQUIFER.--Buried sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 3 in (0.08 m), depth 143 ft (43.6 m), screened 123 to 143 ft (37.5 to 43.6 m).
DATUM.--Altitude of land-surface datum is 1,030 ft (314 m). Measuring point: Top of shelter floor, 3.10 ft (0.94 m) above land-surface datum.
REMARKS.--Water level affected by pumping.
PERIOD OF RECORD.--May 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.48 ft (1.98 m) below land-surface datum, June 29, 1979; lowest, 19.90 ft (6.07 m) below land-surface datum, July 24, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 11	10.09	NOV 30	10.65	DEC 25	10.50	MAR 25	11.11	JUN 10	11.49	JUL 16	16.88
NOV 05	11.82	DEC 05	9.69	MAR 05	11.76	31	10.80	15	11.12	24	19.90
10	11.29	10	10.90	10	11.34	APR 05	10.83	25	10.64	AUG 11	15.56
15	14.69	15	9.29	15	10.40	MAY 31	12.36	JUL 11	18.95	SEP 12	11.26
26	10.41	20	10.62	20	11.41	JUN 05	12.63				

451832095362101. Local number, 121N39W07AAC01.
LOCATION.--Lat 45°18'32", long 95°36'21", in SW¼NE¼NE¼ sec.7, T.121 N., R.39 W., Hydrologic Unit 07020005, southwest corner of 15th Street and Clark Avenue.
Owner: City of Benson.
AQUIFER.--Buried sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 3 in (0.08 m), depth 164 ft (50.0 m), screened 154 to 164 ft (46.9 to 50.0 m).
DATUM.--Altitude of land-surface datum is 1,038 ft (316 m). Measuring point: Top of valve box at land-surface datum.
PERIOD OF RECORD.--April 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 6.50 ft (1.98 m) below land-surface datum, June 23, 1980; lowest, 11.40 ft (3.47 m) below land-surface datum, Apr. 16, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 11	8.09	NOV 26	7.80	JAN 16	7.23	MAR 04	7.23	JUN 23	6.50	AUG 11	7.52
15	8.20	DEC 17	7.60	FEB 15	7.90	APR 16	6.58	JUL 16	7.34	SEP 12	7.62
NOV 15	7.10	JAN 10	7.27								

452211095570701. Local number, 122N42W21BBB01.
LOCATION.--Lat 45°22'11", long 95°57'07", in NW¼NW¼NW¼ sec.21, T.122 N., R.42 W., Hydrologic Unit 07020002, north of Holloway.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 27 ft (8.2 m), screened 25 to 27 ft (7.6 to 8.2 m).
DATUM.--Altitude of land-surface datum 1,048 ft (319 m). Measuring point: Top of casing, 2.80 ft (0.85 m) above land-surface datum.
PERIOD OF RECORD.--September 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 14.81 ft (4.51 m) below land-surface datum, July 9, 1979; lowest, 18.97 ft (5.78 m) below land-surface datum, Sept. 19, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 11	16.43	JAN 10	17.00	APR 30	16.74	JUN 23	16.66	AUG 11	16.93	SEP 12	17.42
NOV 26	16.81	MAR 04	17.09								

TODD COUNTY

462130095035201. Local number, 133N35W02CAC01.
LOCATION.--Lat 46°21'30", long 95°03'52", in SE¼NE¼SW¼ sec.2, T.133 N., R.35 W., Hydrologic Unit 07010107, northeast of Hewitt.
Owner: Walt Peterson.
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 18 in (0.46 m), depth 28 ft (8.5 m), slotted pipe 10 to 28 ft (3.1 to 8.5 m).
DATUM.--Altitude of land-surface datum 1,356 ft (413 m). Measuring point: Top of casing, 0.60 ft (0.18 m) above land-surface datum.
PERIOD OF RECORD.--August 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.10 ft (1.25 m) below land-surface datum, Aug. 8, 1972; lowest, 11.23 ft (3.42 m) below land-surface datum, Feb. 12, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	6.86	DEC 13	7.24	FEB 15	7.89	APR 16	7.63	JUN 16	7.18	AUG 15	7.35
NOV 16	7.08	JAN 14	7.52	MAR 14	8.16	MAY 20	7.66	JUL 14	6.70	SEP 15	7.80

462024095091401. Local number, 133N35W07CCC01.
LOCATION.--Lat 46°20'24", long 95°09'14", in SW¼SW¼SW¼ sec.7, T.133 N., R.35 W., Hydrologic Unit 07010107, east of Kramer farm.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 15 ft (4.6 m), screened 13 to 15 ft (4.0 to 4.6 m).
DATUM.--Altitude of land-surface datum is 1,384 ft (422 m). Measuring point: Top of casing, 3.20 ft (0.98 m) above land-surface datum.
REMARKS.--Water level subject to freezing during winter.
PERIOD OF RECORD.--November 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.10 ft (0.03 m) below land-surface datum, Aug. 8, 1972; lowest, 6.13 ft (1.87 m) below land-surface datum, Aug. 10, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	3.06	DEC 13	2.48	FEB 15	3.04	APR 16	1.20	JUN 16	0.85	AUG 15	3.53
NOV 16	1.80	JAN 14	2.86	MAR 14	3.16	MAY 20	2.33	JUL 14	3.32	SEP 15	2.58

WABASHA COUNTY

442708092155401. Local number, 111N12W04BBD01.
LOCATION.--Lat 44°27'08", long 92°15'54", in SE¼NW¼NW¼ sec.14, T.111 N., R.12 W., Hydrologic Unit 07040001, at Lake City.
Owner: City of Lake City, well 3.
AQUIFER.--Mount Simon Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 16 in (0.41 m), depth 430 ft (131 m), cased to 258 ft (78.6 m).
DATUM.--Altitude of land-surface datum is 685 ft (209 m). Measuring point: Top of casing, 1.00 ft (0.30 m) above land-surface datum.
REMARKS.--Measured weekly by David Finley.
PERIOD OF RECORD.--August 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.63 ft (1.11 m) below land-surface datum, May 5, 1975; lowest, 11.50 ft (3.51 m) below land-surface datum, Jan. 31, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	10.36	DEC 03	9.00	FEB 04	10.77	APR 14	7.32	JUN 16	8.99	AUG 11	10.20
09	10.72	10	9.91	11	10.68	21	8.00	23	9.77	18	10.76
15	10.66	17	9.81	19	10.56	28	8.60	30	10.33	25	10.17
21	10.42	26	10.14	25	10.85	MAY 04	9.70	JUL 07	10.59	SEP 02	10.77
29	10.00	JAN 02	10.44	MAR 03	10.57	12	10.39	14	10.74	08	9.79
NOV 05	10.02	07	10.52	10	10.67	20	10.58	21	10.96	15	9.48
13	9.46	14	10.58	24	9.40	JUN 03	10.45	28	10.74	22	8.90
19	9.48	21	9.40	31	9.10	09	8.80	AUG 04	10.90	29	9.04
26	9.47	28	10.76	APR 07	8.30						

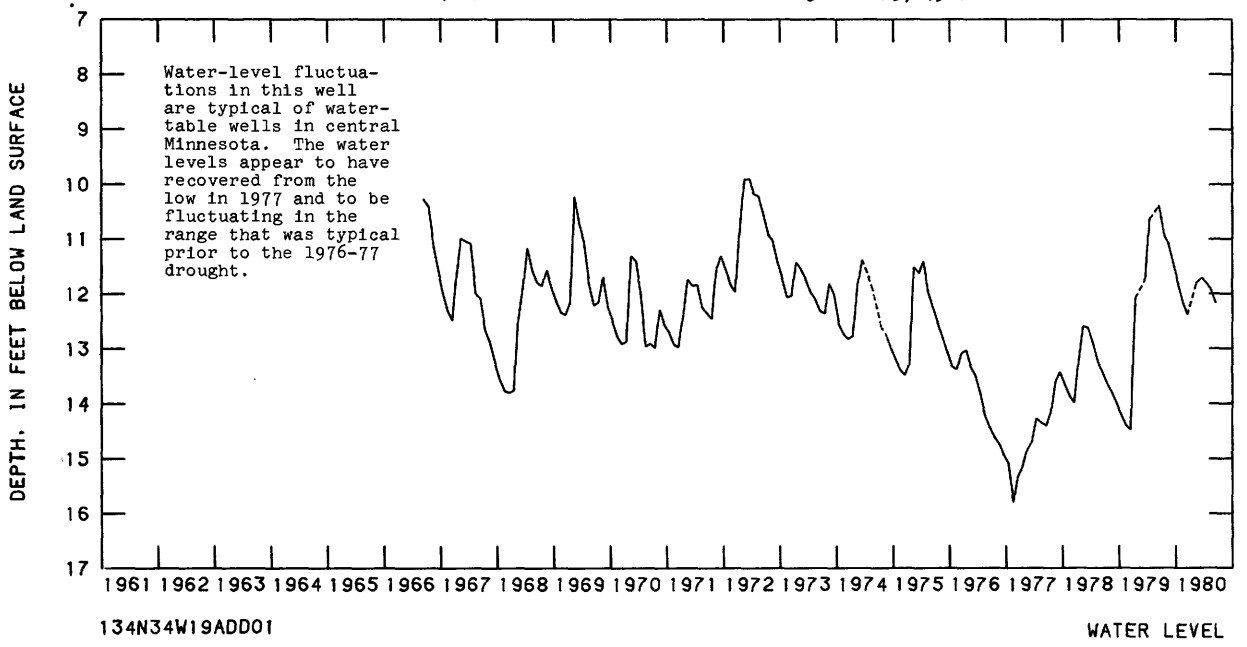
WADENA COUNTY

462421095003601. Local number, 134N34W19ADD01.
LOCATION.--Lat 46°24'21", long 95°00'36", in SE¼SE¼NE¼ sec.19, T.134 N., R.34 W., Hydrologic Unit 07010107, 0.05 mi (0.08 km) north of Verndale.
Owner: U.S. Geological Survey
AQUIFER.--Surficial outwash sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 2 in (0.05 m), depth 37 ft (11.3 m), screened 34 to 37 ft (10.4 to 11.3 m).
DATUM.--Altitude of land-surface datum is 1,342 ft (409 m). Measuring point: Top of casing, 1.00 ft (0.30 m) above land-surface datum.
PERIOD OF RECORD.--September 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 9.48 ft (2.89 m) below land-surface datum, June 2, 1972; lowest, 15.33 ft (4.41 m) below land-surface datum, Mar. 10-11, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
LOWEST VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	.....	.....	11.08	11.50	11.88	12.18	.....	11.65	11.70	11.50	11.87	11.88
10	10.91	.....	11.16	11.52	11.94	12.24	.....	11.65	11.59	11.52	11.91	11.90
15	.....	.....	11.26	11.64	12.00	12.28	.....	11.70	11.52	11.56	11.60	12.00
20	.....	.....	11.32	11.70	12.04	12.34	.....	11.72	11.49	11.62	11.62	12.02
25	.....	10.99	11.37	11.76	12.11	12.38	.....	11.76	11.47	11.62	11.70	12.08
EOM	.....	11.08	11.44	11.82	12.16	.....	.....	11.79	11.48	11.79	11.78	12.16

WTR YEAR 1980 HIGHEST 11.47 JUN 25, 1980 LOWEST 12.38 MAR 25, 1980



WASHINGTON COUNTY

445125092464001. Local number, 027N20W02BCC01.
LOCATION.--Lat 44°51'25", long 92°46'40", in SW¼SW¼NW¼ sec.2, T.27 N., R.20 W., Hydrologic Unit 07030005, in Afton State Park by Afton Alps.
Owner: U.S. Geological Survey
AQUIFER.--St. Lawrenoe Formation and Franconian Sandstone of Late Precambrian Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 6 in (0.15 m), depth 285 ft (86.9 m), cased to 105 ft (32.0 m).
DATUM.--Altitude of land-surface datum is 695 ft (212 m). Measuring point: Center of pressure guage, 4.50 ft (1.37 m) above land-surface datum.
PERIOD OF RECORD.--March 1980 to August 1980.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 33.94 ft (10.38 m) above land-surface datum, May 2, 1980; lowest, 29.11 ft (8.87 m) above land-surface datum, Mar. 25, 1980.

WATER LEVEL, IN FEET ABOVE LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAR 25	29.11	MAY 02	33.94	JUN 09	30.49	JUN 11	30.26	AUG 15	29.80

WASHINGTON COUNTY--Continued

445125092464002. Local number, 027N20W02BCC02.
LOCATION.--Lat 44°51'25", long 92°46'40", in SW¼SW¼NW¼ sec.2, T.27 N., R.20 W., Hydrologic Unit 07030005, in Afton State Park by Afton Alps.
Owner: U.S. Geological Survey
AQUIFER.--Ironton-Galesville Sandstones of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 4 in (0.10 m), depth 385 ft (117 m), cased to 365 ft (111 m).
DATUM.--Altitude of land-surface datum is 695 ft (212 m). Measuring point: Center of pressure guage, 4.50 ft (1.37 m) above land-surface datum.
PERIOD OF RECORD.--March 1980 to August 1980.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 42.35 ft (12.91 m) above land-surface datum, May 2, 1980; lowest, 34.27 ft (10.45 m) above land-surface datum, Aug. 15, 1980.

WATER LEVEL, IN FEET ABOVE LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAR 25	35.78	MAY 02	42.35	JUN 09	38.08	JUN 11	38.08	AUG 15	34.27

445125092464003. Local number, 027N20W02BCC03.
LOCATION.--Lat 44°51'25", long 92°46'40", in SW¼SW¼NW¼ sec.2, T.27 N., R.20 W., Hydrologic Unit 07030005, in Afton State Park by Afton Alps.
Owner: U.S. Geological Survey
AQUIFER.--Mount Simon Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 1½ in (0.04 m), depth 535 ft (163 m), screened 530 to 535 ft (162 to 163 m).
DATUM.--Altitude of land-surface datum is 695 ft (212 m). Measuring point: Center of pressure guage, 4.70 ft (1.43 m) above land-surface datum.
PERIOD OF RECORD.--March 1980 to August 1980.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 22.05 ft (6.72 m) above land-surface datum, May 2, 1980; lowest, 16.43 ft (5.01 m) above land-surface datum, Mar. 25, 1980.

WATER LEVEL, IN FEET ABOVE LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAR 25	16.43	MAY 02	22.05	JUN 09	17.58	JUN 11	17.61	AUG 15	17.58

444751092563101. Local number, 027N21W28BCC01.
LOCATION.--Lat 44°47'51", 92°56'31", in SW¼SW¼NW¼ sec.28, T.27 N., R.21 W., Hydrologic Unit 07010206, 0.1 mi (0.2 km) east of Ideal Avenue South
Owner: Eugene Smallidge.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age and Jordan Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled irrigation water-table well, diameter 16 in (0.41 m), depth 345 ft (105 m), cased to 60 ft (18.3 m).
DATUM.--Altitude of land-surface datum is 807 ft (246 m). Measuring point: Hole in pump base, 2.10 ft (0.64 m) above land-surface datum.
PERIOD OF RECORD.--August 1977, January 1978, December 1979 to September 1980.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.58 62.34 (19.00 m) below land-surface datum, Dec. 10, 1979; lowest, 81.87 ft (24.95 m) below land-surface datum, Aug. 3, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 10	62.34	JAN 22	63.92	FEB 19	64.79	APR 11	65.16	JUN 11	66.67	AUG 25	67.28

WASHINGTON COUNTY--Continued

445536092462401. Local number, 028N20W11CAA01.
LOCATION.--Lat 44°55'36", long 92°46'24", in NE¼NE¼SW¼ sec.11, T.28 N., R.20 W., Hydrologic Unit 07030005, at Lake St. Croix Beach.
Owner: Lower St. Croix Valley Fire Department.
AQUIFER.--Franconian Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 4 in (0.10 m), depth 94 ft (28.6 m), cased to 78 ft (23.8 m).
DATUM.--Altitude of land-surface datum is 720 ft (220 m). Measuring point: Top of electrical housing, 1.70 ft (0.52 m) above land-surface datum.
PERIOD OF RECORD.--June 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 31.78 ft (9.69 m) below land-surface datum, May 14, 1979; lowest, 38.34 ft (11.69 m) below land-surface datum, Feb. 27, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	37.35	JAN 15	37.77	FEB 26	38.34	APR 10	37.16	JUN 09	37.17	AUG 15	37.66
DEC 03	37.72										

445220092465901. Local number, 028N20W34ADA01.
LOCATION.--Lat 44°52'20", long 92°46'59", in NE¼SE¼NE¼ sec.34, T.28 N., R.20 W., Hydrologic Unit 07030005, in Afton State Park.
Owner: State of Minnesota.
AQUIFER.--Franconia Sandstone of Late Cambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 4 in (0.10 m), depth 306 ft (93.2 m), cased to 276 ft (84.1 m).
DATUM.--Altitude of land-surface datum is 970 ft (296 m). Measuring point: Top of casing, 0.90 ft (0.27 m) above land-surface datum.
PERIOD OF RECORD.--August 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 242.0 ft (73.76 m) below land-surface datum, June 9, 1980; lowest, 244.5 ft (74.52 m) below land-surface datum, Aug. 15, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	242.1	DEC 10	242.6	FEB 26	243.0	APR 10	242.2	JUN 09	242.0	AUG 15	244.5
DEC 03	242.7	JAN 16	243.0								

450134092583101. Local number, 029N21W06CAD01.
LOCATION.--Lat 45°01'34", long 92°58'31", in SE¼NE¼SW¼ sec.6, T.29 N., R.21 W., Hydrologic Unit 07010206, at 6488 North Highway 36 Boulevard.
Owner: Twenty Nine Pines Trailer Park.
AQUIFER.--St. Peter Sandstone of Middle Ordovician Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in (0.15 m), depth 210 ft (64.0 m), cased to 141 ft (43.0 m).
DATUM.--Altitude of land-surface datum is 980 ft (299 m). Measuring point: Hole in pump base, 2.20 ft (0.67 m) above land-surface datum.
PERIOD OF RECORD.--April 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 74.03 ft (22.56 m) below land-surface datum, Apr. 10, 1980; lowest, 77.47 ft (23.61 m) below land-surface datum, Sept. 13, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	75.28	JAN 15	74.32	FEB 26	74.07	APR 10	74.03	JUN 09	74.82	AUG 14	75.90
DEC 03	74.73										

WASHINGTON COUNTY--Continued

445958092523901. Local number, 029N21W13CAB01.
LOCATION.--Lat 44°59'58", long 92°52'39", in NW¼NE¼SW¼ sec.13, T.29 N., R.21 W., Hydrologic Unit 07010206, in City of Lake Elmo.
Owner: Elmo Lumber and Plywood. Formerly Lake Elmo Creamery.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 12 in (0.30 m), depth 122 ft (37.2 m), screened 106 to 122 ft (32.3 to 37.2 m).
DATUM.--Altitude of land-surface datum is 938 ft (286 m). Measuring point: Hole in pump base, 1.30 ft (0.40 m) above land-surface datum.
PERIOD OF RECORD.--August 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 47.18 ft (14.38 m) below land-surface datum, Aug. 15, 1980; lowest, 51.37 ft (15.66 m) below land-surface datum, June 12, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	47.83	JAN 15	47.45	FEB 26	47.27	APR 10	47.52	JUN 09	47.24	AUG 15	47.18
DEC 03	47.47										

450505092552501. Local number, 030N21W15CBB01.
LOCATION.--Lat 45°05'05", long 92°55'25", in NW¼NW¼SW¼ sec.15, T.30 N., R.21 W., Hydrologic Unit 07010206, 1.1 mi (1.8 km) east of Dellwood.
Owner: Victoria Station.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 4 in (0.10 m), depth 132 ft (40.2 m), cased to 125 ft (38.1 m).
DATUM.--Altitude of land-surface datum is 995 ft (303 m). Measuring point: Top of well cap, 2.80 ft (0.85 m) above land-surface datum.
PERIOD OF RECORD.--October 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 66.52 ft (20.28 m) below land-surface datum, Jan. 15, 1980; lowest, 69.27 ft (21.11 m) below land-surface datum, Feb. 2, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	67.32	DEC 03	66.72	JAN 15	66.52	FEB 27	66.54	JUN 09	66.53	AUG 21	67.03

WATONWAN COUNTY

440037094372601. Local number, 106N32W01DDB01.
LOCATION.--Lat 44°00'37", long 94°37'26", in NW¼SE¼SE¼ sec.1, T.106 N., R.32 W., Hydrologic Unit 07020010, north of St. James.
Owner: U.S. Geological Survey
AQUIFER.--Surficial outwash sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 2 in (0.05 m), depth 22 ft (6.7 m), screened 19 to 22 ft (5.8 to 6.7 m).
DATUM.--Altitude of land-surface datum is 1,056.2 ft (321.9 m) National Geodetic Vertical Datum of 1929. Measuring point: Top of wood platform, 0.80 ft (0.24 m) above land-surface datum.
PERIOD OF RECORD.--November 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.11 ft (1.25 m) below land-surface datum, Apr. 27, 1969; lowest, 14.34 ft (4.37 m) below land-surfaoe datum, Mar. 1, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

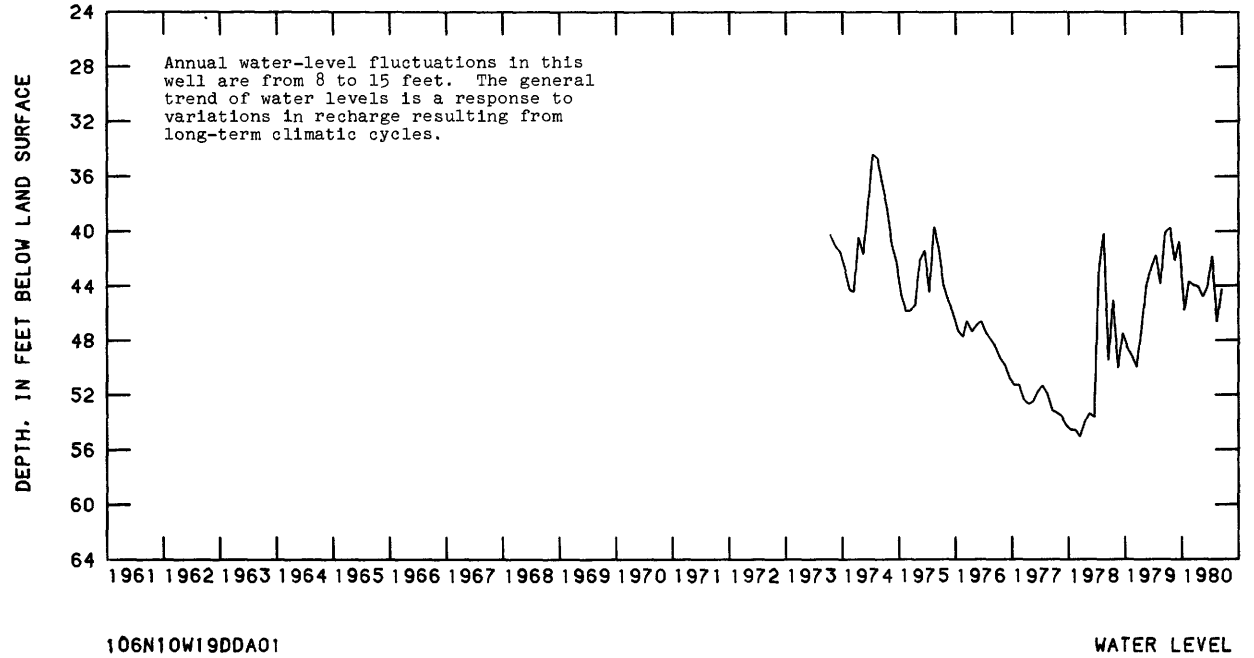
DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	10.08	JAN 02	9.90	MAR 21	10.27	JUL 02	10.04	JUL 29	10.46	AUG 28	10.77
NOV 20	9.93	FEB 14	10.35	MAY 07	10.60						

WINONA COUNTY

435756092034201. Local number, 106N10W19DDA01.
LOCATION.--Lat 43°57'56", long 92°03'42", in NE¼SE¼SE¼ sec.19, T.106 N., R.10 W., Hydrologic Unit 07040003, at St. Charles.
Owner: City of St. Charles, well 1.
AQUIFER.--Prairie du Chien Group of Early Ordovician Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 10 in (0.25 m), depth 175 ft (53.3 m), cased to 30 ft (9.1 m).
DATUM.--Altitude of land-surface datum is 1,160 ft (354 m). Measuring point: Hole in pump base, 2.25 ft (0.69 m) above land-surface datum.
REMARKS.--Measured weekly by Jim Braun. Water level affected by pumping.
PERIOD OF RECORD.--October 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 32.72 ft (9.97 m) below land-surface datum, July 19, 1974; lowest, 55.04 ft (16.78 m) below land-surface datum, Mar. 23, 1978.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 04	38.55	NOV 30	39.95	JAN 25	41.45	MAR 21	43.75	JUN 02	44.05	AUG 01	46.65
12	38.85	DEC 07	39.45	FEB 01	42.15	28	43.75	09	43.65	08	42.65
19	39.15	14	40.35	08	42.65	APR 04	43.75	13	42.05	25	43.57
26	39.75	20	40.15	15	42.75	11	43.85	20	41.85	29	43.75
NOV 02	42.15	27	40.75	22	42.75	18	44.05	27	41.17	SEP 05	44.15
09	41.45	JAN 04	45.79	29	45.65	MAY 07	44.25	JUL 03	41.83	12	44.05
16	40.05	11	41.57	MAR 07	43.75	12	43.75	11	41.41	19	44.25
23	35.15	18	41.95	14	43.95	23	44.80	25	41.55	26	43.25



WRIGHT COUNTY

450318094040602. Local number, 118N27W03CAC01.
LOCATION.--Lat 45°03'18", long 94°04'06", in SW¼NE¼SW¼ sec.3, T.118 N., R.27 W., Hydrologic Unit 07010204, at Howard Lake, well 1
Owner: City of Howard Lake.
AQUIFER.--Mount Simon Sandstone of Late Cambrian Age and Hinckley Sandstone of Late Precambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 8 in (0.20 m), depth 510 ft (155 m), originally drilled to 900 ft (274 m), cased to 483 ft (147 m).
DATUM.--Altitude of land-surface datum is 1,045 ft (318 m). Measuring point: Top of casing, 2.00 ft (0.61 m) above land-surface datum.
REMARKS.--Water level affected by pumping from well 115 ft (35.05 m) away.
PERIOD OF RECORD.--September 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 144.7 ft (44.10 m) below land-surface datum, Oct. 15, 1979; lowest, 154.7 ft (47.15 m) below land-surface datum, Apr. 6, 1979.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	144.7	FEB 04	149.1	APR 28	147.4	JUN 16	147.2	JUL 28	147.0	SEP 09	147.0
NOV 20	150.3	MAR 20	146.4								

WRIGHT COUNTY--Continued

450318094040603. Local number, 118N27W03CAC03.
LOCATION.--Lat 45°03'18", long 94°04'06", in SW¼NE¼SW¼ sec.3, T.118 N., R.27 W., Hydrologic Unit 07010204, at Howard Lake water tower.
Owner: City of Howard Lake, well 3.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled public-supply artesian well, diameter 12 in (0.30 m), depth 148 ft (45.1 m), screened 138 to 148 ft (42.1 to 45.1 m).
DATUM.--Altitude of land-surface datum is 1,045 ft (319 m). Measuring point: Top of breather pipe, 1.80 ft (0.55 m) above land-surface datum.
PERIOD OF RECORD.--September 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 62.78 ft (19.14 m) below land-surface datum, May 29, 1979; lowest, 72.19 ft (22.00 m) below land-surface datum, June 24, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 12	67.37	FEB 04	67.68	MAR 20	67.83	APR 28	67.95	JUN 16	67.79

450121094040401. Local number, 118N27W15CDC01.
LOCATION.--Lat 45°01'21", long 94°04'04", in SW¼SE¼SW¼ sec.15, T.118 N., R.27 W., Hydrologic Unit 07010204, 2 mi (3.2 km) south of Howard Lake.
Owner: Victor Town Hall.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 4 in (0.10 m), depth 128 ft (39.0 m), screened 124 to 128 ft (37.8 to 39.0 m).
DATUM.--Altitude of land-surface datum is 998 ft (304 m). Measuring point: Top of casing, 1.60 ft (0.49 m) above land-surface datum.
PERIOD OF RECORD.--March 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 11.31 ft (3.45 m) below land-surface datum, May 29, 1979; lowest, 17.18 ft (5.24 m) below land-surface datum, June 24, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	12.32	DEC 12	12.04	MAR 20	12.58	APR 28	12.93	JUN 16	12.76	SEP 09	13.51
NOV 20	12.37	FEB 04	12.21								

450628093542102. Local number, 119N26W24BAB02.
LOCATION.--Lat 45°06'28", long 93°54'21", in NW¼NE¼NW¼ sec.24, T.119 N., R.26 W., Hydrologic Unit 07010204, 5.4 mi (1.65 km) south of Buffalo.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 13 ft (4.0 m), screened 11 to 13 ft (3.4 to 4.0 m).
DATUM.--Altitude of land-surface datum is 936 ft (285 m). Measuring point: Top of casing, 3.50 ft (1.07 m) above land-surface datum.
PERIOD OF RECORD.--December 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.63 ft (1.11 m) below land-surface datum, July 14, 1978; lowest, 8.03 ft (2.45 m) below land-surface datum, Aug. 17, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	4.52	JAN 05	5.09	MAR 05	5.91	MAY 02	4.52	JUL 01	5.08	SEP 03	5.77
DEC 03	4.72	FEB 04	5.26	APR 01	4.93	JUN 02	5.22	AUG 12	6.03		

WRIGHT COUNTY--Continued

450403093544501. Local number, 119N26W35DDA01.
LOCATION.--Lat 45°04'03", long 93°54'45", in NE¼SE¼SE¼ sec.35, T.119 N., R.26 W., Hydrologic Unit 07010204, at Montrose.
Owner: City of Montrose, well 1.
AQUIFER.--Mount Simon Sandstone of Late Cambrian Age and Hinckley Sandstone of Late Precambrian Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 10 in (0.25 m), depth 693 ft (211 m), cased to 526 ft (160 m).
DATUM.--Altitude of land-surface datum is 1,000 ft (305 m). Measuring point: Edge of breather pipe, 1.50 ft (0.46 m) above land-surface datum.
PERIOD OF RECORD.--September 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 75.61 ft (23.05 m) below land-surface datum, June 16, 1980; lowest, 78.38 ft (23.89 m) below land-surface datum, Nov. 3, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	76.79	DEC 12	76.56	MAR 19	76.02	JUN 16	75.61	AUG 27	76.97	SEP 08	77.02
NOV 20	76.85	FEB 04	76.48	APR 28	76.49	JUL 28	76.70				

451632093341301. Local number, 121N23W22ACC01.
LOCATION.--Lat 45°16'32", long 93°34'13", in SW¼SW¼NE¼ sec.22, T.121 N., R.23 W., Hydrologic Unit 07010203, 2.2 mi (3.5 km) south of old bridge across Mississippi River at Elk River.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 20 ft (6.1 m), soreened 18 to 20 ft (5.5 to 6.1 m).
DATUM.--Altitude of land-surface datum is 871 ft (266 m). Measuring point: Top of casing, 3.30 ft (1.01 m) above land-surface datum.
PERIOD OF RECORD.--December 1976 to ourrent year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.35 ft (1.63 m) below land-surface datum, June 30, 1979; lowest, 8.75 ft (2.67 m) below land-surface datum, July 16, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	6.10	JAN 05	6.52	MAR 05	6.97	MAY 02	6.55	JUL 01	6.93	SEP 03	7.51
DEC 03	6.29	FEB 04	6.76	APR 01	6.45	JUN 02	6.89	AUG 12	7.33		

451738093492402. Local number, 121N25W15BBA02.
LOCATION.--Lat 45°17'38", long 93°49'24", in NE¼NW¼NW¼ sec.15, T.121 N., R.25 W., Hydrologic Unit 07010203, 1.4 mi (2.2 km) south of I-94.
Owner: U.S. Geologioal Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 40 ft (12.2 m), screened 38 to 40 ft (11.6 to 12.2 m).
DATUM.--Altitude of land-surface datum is 966 ft (294 m). Measuring point: Top of casing, 4.00 ft (1.22 m) above land-surface datum.
PERIOD OF RECORD.--November 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 33.00 ft (10.06 m) below land-surface datum, July 29, 1978; lowest, 35.34 ft (10.77 m) below land-surface datum, Aug. 17, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	33.28	JAN 04	33.68	MAR 05	33.90	MAY 02	33.71	JUL 01	33.76	SEP 03	34.21
DEC 03	33.54	FEB 04	33.63	APR 01	33.64	JUN 02	33.50	AUG 12	34.18		

WRIGHT COUNTY--Continued

452344094022202. Local number, 122N27W11AAC02.
LOCATION.--Lat 45°23'44", long 94°02'22", in SW¼NE¼NE¼ sec.11, T.122 N., R.27 W., Hydrologic Unit 07010203, 0.5 mi (0.80 km) south of I-94 Clearwater Exit.
Owner: U.S. Geological Survey
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 1¼ in (0.03 m), depth 46 ft (14.0 m), screened 44 to 46 ft (13.4 to 14.0 m).
DATUM.--Altitude of land-surface datum is 1,010 ft (308 m). Measuring point: Top of casing, 4.50 ft (1.37 m) above land-surface datum.
PERIOD OF RECORD.--November 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 36.83 ft (11.23 m) below land-surface datum, June 29, 1979; lowest, 40.65 ft (12.39 m) below land-surface datum, Aug. 3, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	39.98	JAN 05	38.07	MAR 05	37.79	MAY 02	37.90	JUL 02	37.35	SEP 03	38.72
DEC 03	38.02	FEB 04	37.33	APR 01	37.82	JUN 02	38.01	AUG 12	38.29		

YELLOW MEDICINE COUNTY

444111095404701. Local number, 114N40W16BAC01.
LOCATION.--Lat 44°41'11", long 95°40'47", in SW¼NE¼NW¼ sec.16, T.114 N., R.40 W., Hydrologic Unit 07020004, 3.3 mi (5.2 km) west of Hanley Falls.
Owner: Gilbert Orwoll.
AQUIFER.--Buried sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 5 in (0.13 m), depth 135 ft (41.1 m).
DATUM.--Altitude of land-surface datum is 1,055 ft (322 m). Measuring point: Top of casing, 1.30 ft (0.40 m) above land-surface datum.
REMARKS.--Water level affected by pumping from nearby irrigation well.
PERIOD OF RECORD.--June 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 22.62 ft (6.89 m) below land-surface datum, Nov. 29, 1979; lowest, 31.63 ft (9.64 m) below land-surface datum, Aug. 14, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	23.56	NOV 29	22.62	MAR 18	22.92	JUL 03	23.20	SEP 04	24.12	SEP 22	24.05
NOV 19	23.19	JAN 28	22.90	JUN 04	23.12	AUG 06	24.42				

444219096165501. Local number, 114N45W04DCD01.
LOCATION.--Lat 44°42'19", long 96°16'55", in SE¼SW¼SE¼ sec.4, T.114 N., R.45 W., Hydrologic Unit 07020003, at Canby City Park.
Owner: City of Canby, well 6.
AQUIFER.--Surficial sand and gravel of Pleistocene Age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in (0.30 m), depth 62 ft (18.9 m), screened 44 to 68 ft (13.4 to 20.7 m).
DATUM.--Altitude of land-surface datum is 1,255 ft (382 m). Measuring point: Top of casing, 2.90 ft (0.88 m) above land-surface datum.
PERIOD OF RECORD.--January 1964 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 4.67 ft (1.42 m) below land-surface datum, June 5, 1965; lowest, 11.32 ft (3.45 m) below land-surface datum, Oct. 7, 1976.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	9.99	JAN 02	9.09	FEB 13	9.58	APR 21	8.46	JUL 28	9.64	AUG 28	9.64
NOV 19	8.77										

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

STATION NUMBER	LOCAL IDENTIFIER	GEO-LOGIC UNIT	DATE OF SAMPLE	TIME	SAMP-LING DEPTH (FEET) (00003)	DEPTH OF WELL, TOTAL (FEET) (72008)
	DODGE COUNTY					
435333092503901	105N17W15DCD HAYFIELD CITY WELL #2	364STPR	80-09-02	1430	678	--
440237093000701	107N18W28CAB CLAREMONT 2	364GLEN	80-09-02	1330	245	250
	FARIBAULT COUNTY					
433615093403001	102N24W26DCA WALTERS CITY WELL #1	344CDVL	80-09-02	1600	187	--
	HENNEPIN COUNTY					
445704093215611	117N21W08DCD SLP CITY WELL #11	371MSHK	80-09-04	0800	900	1100
	LE SUEUR COUNTY					
441851093341801	110N23W22DCA KILKENNY	371JRDN	80-09-03	1300	380	380
	SCOTT COUNTY					
443710093453501	113N24W06CAD BELLE PLAINE CITY WELL #2	112PLSC	80-09-03	0230	282	--
	WASECA COUNTY					
435543093414501	105N24W03ACC WALDORF CITY WELL #1	364STPR	80-01-29	1100	190	--
	WASHINGTON COUNTY					
445125092464001	027N20W02BAC AFTON WELL #1	371SLCF	79-11-20	1330	--	--
445125092464002	027N20W02BAC AFTON WELL #2	371IGLV	79-11-20	1500	--	--
445125092464003	027N20W02BAC AFTON WELL #3	371MSMN	79-11-21	0930	495	--
	WATONWAN COUNTY					
440026094355401	106N31W07ABB ST JAMES CITY WELL #1	112PLSC	80-09-03	0930	--	--

DATE OF SAMPLE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	BROMIDE DIS-SOLVED (MG/L AS BR) (71870)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
					DODGE COUNTY							
80-09-02	1.1	.4	.0	7.6	1	80	<1	90	10	<3	30	200
80-09-02	1.0	.4	.0	21	1	300	<1	60	10	<3	<10	1400
					FARIBAULT COUNTY							
80-09-02	2.1	.3	.1	22	5	60	<1	250	11	<3	<10	210
					HENNEPIN COUNTY							
80-09-04	33	.4	.3	7.2	1	150	<1	210	8	<3	<10	610
					LE SUEUR COUNTY							
80-09-03	1.6	.4	.0	22	1	110	<1	210	10	<3	<10	39
					SCOTT COUNTY							
80-09-03	36	.3	.4	24	5	70	<1	220	9	<3	<10	1500
					WASECA COUNTY							
80-01-29	1.6	.2	--	17	2	--	--	0	0	<1	7	2020
					WASHINGTON COUNTY							
79-11-20	.9	.3	.0	9.3	2	50	<1	0	3	<3	<10	840
79-11-20	1.8	.3	.0	9.0	2	40	<1	0	2	<3	<10	480
79-11-21	14	.2	.0	9.8	0	30	<1	10	4	<3	<10	1200
					WATONWAN COUNTY							
80-09-03	5.0	.2	.0	29	9	160	<1	110	11	<3	<10	1800

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	DENSITY (GM/ML AT 20 C) (71820)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY (MG/L AS CACO3) (00410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)
DODGE COUNTY												
80-09-02	--	--	--	1.002	260	3	72	20	4.3	3.1	260	21
80-09-02	--	--	--	1.000	300	52	81	24	8.7	1.3	250	.3
FARIBAULT COUNTY												
80-09-02	--	--	--	1.002	230	0	58	20	100	2.6	420	66
HENNEPIN COUNTY												
80-09-04	362	7.8	12.8	1.001	220	24	58	19	33	7.6	200	47
LE SUEUR COUNTY												
80-09-03	--	--	--	1.002	370	59	90	35	22	4.2	310	33
SCOTT COUNTY												
80-09-03	--	--	--	1.002	350	39	82	35	80	3.6	310	100
WASECA COUNTY												
80-01-29	--	--	--	--	390	--	108	29	56	3.5	--	101
WASHINGTON COUNTY												
79-11-20	335	7.7	10.0	.996	190	--	46	18	3.7	2.6	180	20
79-11-20	337	7.7	10.0	.996	180	--	45	16	4.7	2.7	170	20
79-11-21	428	7.4	10.0	.997	200	--	50	19	16	2.6	210	15
WATONWAN COUNTY												
80-09-03	--	--	--	1.000	320	96	87	24	18	2.2	220	130

DATE OF SAMPLE	LEAD, DISSOLVED (UG/L AS PB) (01049)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
DODGE COUNTY								
80-09-02	51	8	22	<10	1	320	<6.0	48
80-09-02	42	19	25	<10	0	220	<6.0	<4
FARIBAULT COUNTY								
80-09-02	55	22	100	<10	0	190	<6.0	24
HENNEPIN COUNTY								
80-09-04	34	20	14	<10	0	690	<6.0	5
LE SUEUR COUNTY								
80-09-03	44	29	330	<10	0	450	<6.0	<4
SCOTT COUNTY								
80-09-03	34	20	710	<10	0	370	<6.0	<4
WASECA COUNTY								
80-01-29	1	20	200	2	2	--	--	--
WASHINGTON COUNTY								
79-11-20	<10	7	61	<10	0	96	<6.0	32
79-11-20	22	6	60	<10	0	96	<6.0	41
79-11-21	<10	11	140	<10	0	140	<6.0	150
WATONWAN COUNTY								
80-09-03	34	17	320	<10	1	240	<6.0	<4

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

STATION NUMBER	LOCAL IDENTIFIER	GEO-LOGIC UNIT	DATE OF SAMPLE	TIME	SAMP-LING DEPTH (FEET) (00003)
	HUBBARD COUNTY				
465650094393401	140N32W13AAA WELL 2 WILLIAMS LAKE	112PLSC	80-06-06	1000	--
	140N32W13AAA WELL 2 WILLIAMS LAKE	112PLSC	80-07-21	1300	--
465705094400701	140N32W12CAD2 ERICKSON SND PNT	112PLSC	80-09-11	1420	9.0
465705094400702	140N32W12CAD3 WELL 5 ERICKSON SND PNT	112PLSC	80-09-11	1410	11.2
465705094400703	140N32W12CAD4 WELL 10 ERICKSON SND PNT	112PLSC	80-09-11	1400	7.7
465707094400701	140N32W12CAD1 WELL 4 WILLIAMS LAKE	112PLSC	80-06-06	1000	--
	140N32W12CAD1 WELL 4 WILLIAMS LAKE	112PLSC	80-07-24	1300	--
	140N32W12CAD1 WELL 4 WILLIAMS LAKE	112PLSC	80-08-29	1530	--
465708094403201	140N32W12CBD WELL 6 WILLIAMS LAKE	112PLSC	80-06-06	1000	--
	140N32W12CBD WELL 6 WILLIAMS LAKE	112PLSC	80-08-29	1330	--
465710094395101	140N32W12DBD1 WELL 8 WILLIAMS LAKE	112PLSC	80-06-06	1000	--
	140N32W12DBD1 WELL 8 WILLIAMS LAKE	112PLSC	80-07-24	1300	--
	140N32W12DBD1 WELL 8 WILLIAMS LAKE	112PLSC	80-08-29	1230	--
465710094395102	140N32W12DBD2 ADELMANS DOMESTIC WELL	112PLSC	80-08-29	1430	--
465721094403001	140N32W12BCA WELL1 WILLIAMS LAKE	112PLSC	80-06-06	1000	--
465726094402701	140N32W12BCD2 WLN 40	112PLSC	79-10-19	1600	40.0
	140N32W12BCD2 WLN 40	112PLSC	80-06-06	1000	--
	140N32W12BCD2 WLN 40	112PLSC	80-07-24	1300	--
465726094402702	140N32W12BCD3 WLN 70	112PLSC	79-10-19	1630	70.0
465726094402703	140N32W12BCD5 WLN 130	112PLSC	79-10-19	1700	130
465746094402704	140.32.12BCD04 WLN 100	112PLSC	79-10-19	1730	100
	ITASCA COUNTY				
470700093312500	054N25W33ACC RON SANDMOEN	210CRCS	80-04-24	1020	374
471600093320200	055N25W08AAA00 ALICE STOLLEY	400BBKF	80-04-29	1300	170
	JACKSON COUNTY				
433817095052201	102N35W18BCD GERALD VACURA	210CRCS	80-07-23	1700	530

DATE OF SAMPLE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY (MG/L AS CACO3) (00410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
					HUBBARD COUNTY							
80-06-06	--	--	--	--	--	--	--	--	--	--	--	--
80-07-21	--	--	--	--	--	--	--	--	--	--	--	--
80-09-11	--	--	--	--	--	--	--	--	--	--	--	--
80-09-11	--	--	--	--	--	--	--	--	--	--	--	--
80-09-11	--	--	--	--	--	--	--	--	--	--	--	--
80-06-06	--	--	--	--	--	--	--	--	--	--	--	--
80-07-24	--	--	--	--	--	--	--	--	--	--	--	--
80-08-29	--	--	--	--	--	--	--	--	--	--	--	--
80-06-06	--	--	--	--	--	--	--	--	--	--	--	--
80-08-29	--	--	--	--	--	--	--	--	--	--	--	--
80-06-06	--	--	--	--	--	--	--	--	--	--	--	--
80-07-24	--	--	--	--	--	--	--	--	--	--	--	--
80-08-29	--	--	--	--	--	--	--	--	--	--	--	--
80-08-29	--	--	--	--	--	--	--	--	--	--	--	--
80-06-06	--	--	--	--	--	--	--	--	--	--	--	--
79-10-19	2.4	.1	1.5	200	12	.2	1.4	.1	24	229	.00	.000
80-06-06	--	--	--	--	--	--	--	--	--	--	--	--
80-07-24	--	--	--	--	--	--	--	--	--	--	--	--
79-10-19	2.7	.1	1.3	190	4.7	2.7	1.1	.1	18	227	.00	.000
79-10-19	3.2	.1	1.2	200	4.9	4.5	1.0	.1	17	227	.00	.000
79-10-19	4.0	.1	1.4	180	5.0	5.0	1.1	.1	15	188	.04	.000
					ITASCA COUNTY							
80-04-24	23	.7	3.7	220	--	2.0	16	.3	15	--	--	--
80-04-29	3.1	.1	1.6	140	--	7.1	1.3	.2	14	--	--	--
					JACKSON COUNTY							
80-07-23	52	.8	7.3	280	--	620	3.3	.2	18	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	COLOR (PLATINUM COBALT UNITS) (00080)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)
HUBBARD COUNTY								
80-06-06	--	--	--	--	--	--	--	--
80-07-21	--	--	--	--	--	--	--	--
80-09-11	--	--	--	--	--	--	--	--
80-09-11	--	--	--	--	--	--	--	--
80-09-11	--	--	--	--	--	--	--	--
80-06-06	--	--	--	--	--	--	--	--
80-07-24	--	--	--	--	--	--	--	--
80-08-29	--	--	--	--	--	--	--	--
80-06-06	--	--	--	--	--	--	--	--
80-08-29	--	--	--	--	--	--	--	--
80-06-06	--	--	--	--	--	--	--	--
80-07-24	--	--	--	--	--	--	--	--
80-08-29	--	--	--	--	--	--	--	--
80-08-29	--	--	--	--	--	--	--	--
80-06-06	--	--	--	--	--	--	--	--
79-10-19	400	7.5	9.6	5	190	0	61	9.7
80-06-06	--	--	--	--	--	--	--	--
80-07-24	--	--	--	--	--	--	--	--
79-10-19	365	7.9	9.4	5	180	0	57	10
79-10-19	380	7.9	9.6	2	200	0	55	14
79-10-19	365	7.8	9.4	5	190	6	53	13
ITASCA COUNTY								
80-04-24	425	7.7	9.5	--	180	0	47	15
80-04-29	265	7.8	10.5	--	140	0	39	9.5
JACKSON COUNTY								
80-07-23	1650	7.2	11.0	--	810	530	210	69

DATE OF SAMPLE	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS, ORTHOPHOSPHATE DISSOL. (MG/L AS P) (00671)	BORON, DISSOLVED (UG/L AS B) (01020)	IRON, DISSOLVED (UG/L AS FE) (01046)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)
HUBBARD COUNTY							
80-06-06	--	--	.089	--	--	--	--
80-07-21	--	--	.059	--	--	--	--
80-09-11	--	--	.014	--	--	--	--
80-09-11	--	--	.035	--	--	--	--
80-09-11	--	--	.013	--	--	--	--
80-06-06	--	--	.055	--	--	--	--
80-07-24	--	--	.178	--	--	--	--
80-08-29	--	--	.115	--	--	--	--
80-06-06	--	--	.308	--	--	--	--
80-08-29	--	--	.205	--	--	--	--
80-06-06	--	--	.042	--	--	--	--
80-07-24	--	--	.008	--	--	--	--
80-08-29	--	--	.097	--	--	--	--
80-08-29	--	--	.032	--	--	--	--
80-06-06	--	--	.396	--	--	--	--
79-10-19	.00	3.9	--	.000	20	2300	240
80-06-06	--	--	.361	--	--	--	--
80-07-24	--	--	.034	--	--	--	--
79-10-19	.00	1.8	--	.000	20	210	190
79-10-19	.00	.50	--	.000	10	660	130
79-10-19	.04	.24	--	.000	10	180	140
ITASCA COUNTY							
80-04-24	.03	--	--	.030	270	800	140
80-04-29	.02	--	--	.010	50	550	40
JACKSON COUNTY							
80-07-23	.01	--	--	.000	260	6000	170

STATION NUMBER	LOCAL IDENTIFIER	GEO-LOGIC UNIT	DATE OF SAMPLE	TIME	SAMP-LING DEPTH (FEET) (00003)
	REDWOOD COUNTY				
441719095001701	110N35W3LCBB GARY JENSEN	400GRNT	80-07-18	0930	430
	SHERBURNE COUNTY				
452639093390301	034N27W12CCD SR-14 TURTLE	112PLSC	80-06-05	2130	--
	034N27W12CCD SR-14 TURTLE	112PLSC	80-06-23	1300	--
	034N27W12CCD SR-14 TURTLE	112PLSC	80-09-04	1300	--
452719093430301	034N27W08ACC SR-01 CEMETARY	112PLSC	80-05-22	1030	--
	034N27W08ACC SR-01 CEMETARY	112PLSC	80-09-03	1800	--
452735093441301	034N27W06DDD SR-02 SANDY ROAD	112PLSC	80-05-22	1200	--
	034N27W06DDD SR-02 SANDY ROAD	112PLSC	80-09-04	1130	--
452845093385501	035N26W36CAB SR-13 PINE	112PLSC	80-06-23	1552	--
452912093472301	034N28W26DCC SR-04 LOG	112PLSC	80-06-06	1000	--
	034N28W26DCC SR-04 LOG	112PLSC	80-09-04	1030	--
452926093411301	035N27W27ABC SR-07 RESTROOM	112PLSC	80-05-22	1400	--
	035N27W27ABC SR-07 RESTROOM	112PLSC	80-09-03	1430	--
453147093394401	035N27W14ABB SR-09 DOG	112PLSC	80-06-23	1040	--
	035N27W14ABB SR-09 DOG	112PLSC	80-09-03	1530	--
453200093490801	035N28W10CCB SR-11 SANTIAGO	112PLSC	80-06-06	0910	--
	035N28W10CCB SR-11 SANTIAGO	112PLSC	80-09-03	1130	--
453213093440701	035N27W08CBC SR-12 N-INFO	112PLSC	80-06-06	0830	--
	035N27W08CBC SR-12 N-INFO	112PLSC	80-09-03	1330	--
453215093453201	035N28W07CBB SR-06 HORSES	112PLSC	80-06-23	1420	--
	035N28W07CBB SR-06 HORSES	112PLSC	80-09-03	0945	--

DATE OF SAMPLE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY (MG/L AS CACO3) (00410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
					REDWOOD COUNTY						
80-07-18	200	9.2	6.7	320	160	20	1.5	14	--	--	--
					SHERBURNE COUNTY						
80-06-05	--	--	--	--	--	--	--	--	142	.70	1.300
80-06-23	--	--	--	--	--	--	--	--	120	.64	.360
80-09-04	--	--	--	--	--	3.9	--	--	195	7.5	.010
80-05-22	--	--	--	--	--	--	--	--	157	.98	.000
80-09-03	--	--	--	--	--	--	--	--	171	.98	.000
80-05-22	--	--	--	--	--	--	--	--	120	3.6	.030
80-09-04	--	--	--	--	--	--	--	--	120	4.7	.000
80-06-23	--	--	--	--	--	4.5	--	--	100	.03	.000
80-06-06	--	--	--	--	--	--	--	--	83	.06	.020
80-09-04	--	--	--	--	--	--	--	--	110	1.6	.000
80-05-22	--	--	--	--	--	--	--	--	206	1.2	.040
80-09-03	--	--	--	--	--	--	--	--	199	1.3	.000
80-06-23	--	--	--	--	--	--	--	--	160	2.2	.010
80-09-03	--	--	--	--	--	--	--	--	186	2.4	.000
80-06-06	--	--	--	--	--	--	--	--	169	.01	.000
80-09-03	--	--	--	--	--	--	--	--	294	.00	.000
80-06-06	--	--	--	--	--	--	--	--	277	.03	.010
80-09-03	--	--	--	--	--	--	--	--	272	.00	.000
80-06-23	--	--	--	--	--	.7	--	--	119	.47	.010
80-09-03	--	--	--	--	--	--	--	--	84	.03	.000

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	OXYGEN DEMAND, CHEMICAL (HIGH LEVEL) (MG/L) (00340)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)
REDWOOD COUNTY											
80-07-18	950	7.8	11.0	--	--	--	--	90	0	21	9.2
SHERBURNE COUNTY											
80-06-05	292	8.2	13.0	5	K100	--	--	--	--	--	--
80-06-23	167	9.2	17.0	50	86	--	--	--	--	--	--
80-09-04	--	--	--	0	<1	--	--	--	--	--	--
80-05-22	228	7.6	8.4	1	--	<1	<1	--	--	--	--
80-09-03	244	8.0	13.0	0	K2	--	--	--	--	--	--
80-05-22	157	8.0	9.4	11	--	<1	<1	--	--	--	--
80-09-04	159	8.2	11.0	0	<1	--	--	--	--	--	--
80-06-23	--	7.0	--	29	<1	--	--	--	--	--	--
80-06-06	141	8.6	15.0	15	K180	--	--	--	--	--	--
80-09-04	152	7.9	11.5	0	<1	--	--	--	--	--	--
80-05-22	313	7.3	8.8	10	--	<1	<1	--	--	--	--
80-09-03	293	7.7	12.0	9	<1	--	--	--	--	--	--
80-06-23	206	7.9	18.0	8	K7	--	--	--	--	--	--
80-09-03	270	8.0	13.0	15	K11	--	--	--	--	--	--
80-06-06	303	7.2	13.0	29	8	--	--	--	--	--	--
80-09-03	413	7.6	11.0	6	32	--	--	--	--	--	--
80-06-06	605	7.1	14.0	28	>80	--	--	--	--	--	--
80-09-03	444	6.8	14.0	10	K19	--	--	--	--	--	--
80-06-23	--	7.8	--	8	46	--	--	--	--	--	--
80-09-03	149	7.0	15.5	40	K20	--	--	--	--	--	--

DATE OF SAMPLE	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	PHOSPHORUS, ORTHOPHOSPHATE DISSOL. (MG/L AS P) (00671)	BORON, DISSOLVED (UG/L AS B) (01020)	IRON, DISSOLVED (UG/L AS FE) (01046)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	CYANIDE TOTAL (MG/L AS CN) (00720)
REDWOOD COUNTY							
80-07-18	.02	--	.020	430	80	20	.00
SHERBURNE COUNTY							
80-06-05	2.0	1.100	--	--	--	--	--
80-06-23	1.0	1.600	--	--	--	--	--
80-09-04	7.5	.070	--	--	--	--	--
80-05-22	.98	.000	--	--	--	--	--
80-09-03	.98	.000	--	--	--	--	--
80-05-22	3.6	.050	--	--	--	--	--
80-09-04	4.7	.030	--	--	--	--	--
80-06-23	.03	.580	--	--	--	--	--
80-06-06	.08	.780	--	--	--	--	--
80-09-04	1.6	.010	--	--	--	--	--
80-05-22	1.2	.080	--	--	--	--	--
80-09-03	1.3	.010	--	--	--	--	--
80-06-23	2.2	.130	--	--	--	--	--
80-09-03	2.4	.000	--	--	--	--	--
80-06-06	.01	.430	--	--	--	--	--
80-09-03	.00	.140	--	--	--	--	--
80-06-06	.04	.060	--	--	--	--	--
80-09-03	.00	.000	--	--	--	--	--
80-06-23	.48	.160	--	--	--	--	--
80-09-03	.03	.050	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

STATION NUMBER	LOCAL IDENTIFIER	GEO-LOGIC UNIT	DATE OF SAMPLE	TIME	SAMP-LING DEPTH (FEET) (00003)	DEPTH OF WELL, TOTAL (FEET) (72008)
	TODD COUNTY					
454821094502001	129N33W21BBD LONG PRAR 3	112PLSC	79-11-28	1200	83.0	102
460512094520001	130N33W08BDD2 BROWERVIL2	112PLSC	79-11-28	1300	50.0	50
460748094571001	131N34W27ABB2 CLRSSA CMY	112PLSC	79-11-28	1000	30.0	35
	WATONWAN COUNTY					
440409094304901	107N31W14DAC WILLIAM LASSAS	210CRCS	80-07-16	1300	135	--

DATE OF SAMPLE	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPER-ATURE, WATER (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY (MG/L AS CACO3) (00410)
					TODD COUNTY						
79-11-28	568	7.4	8.0	340	33	93	27	11	.3	2.4	310
79-11-28	580	7.2	8.0	360	25	96	28	11	.3	2.0	330
79-11-28	908	7.3	8.0	350	59	97	26	36	.8	3.7	290
					WATONWAN COUNTY						
80-07-16	1700	7.3	10.0	830	370	210	74	54	.8	5.1	460

DATE OF SAMPLE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE, AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHOPH OSPHATE DISSOL. (MG/L AS P) (00671)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
						TODD COUNTY						
79-11-28	45	15	.2	21	396	.21	.72	.060	--	0	1400	160
79-11-28	38	12	.2	23	324	.03	.49	.060	--	0	2100	180
79-11-28	25	92	.1	18	503	4.5	.00	.050	--	20	10	1
						WATONWAN COUNTY						
80-07-16	580	.5	.3	23	--	.25	--	--	.000	380	6900	230

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

STATION NUMBER	LOCAL IDENTIFIER	GEO-LOGIC UNIT	DATE OF SAMPLE	TIME	SAMP-LING DEPTH (FEET) (00003)	DEPTH OF WELL, TOTAL (FEET) (72008)
	CARLTON COUNTY					
462710092454001	046N19W21CAB MOOSE LAKE CITY WELL	112PLSC	80-02-20	1000	--	76
	CARVER COUNTY					
444613093464101	115N25W13BDA COLOGNE 1	371FRNC	80-09-04	0300	344	--
	DAKOTA COUNTY					
444409093120702	115N20W27AABF1SCHERSAND2	112PLSC	80-09-05	0200	67.0	--
	DODGE COUNTY					
435333092503901	105N17W15DCD HAYFIELD CITY WELL #2	364STPR	80-09-02	1430	678	--
440237093000701	107N18W28CAB CLAREMONT 2	364GLEN	80-09-02	1330	245	250
	FARIBAULT COUNTY					
433458093455201	101N24W06BBA KINGSTROM #1	371MSMN	80-01-31	1700	1335	--
433615093403001	102N24W26DCA WALTERS CITY WELL #1	344CDVL	80-09-02	1600	187	--
434122093432201	103N24W28CDC SCHROEDER #1	371ECLR	80-01-31	1200	1052	--
434122093432202	103N24W28CDC SCHROEDER #2	371GLVL	80-01-31	1500	892	--
434122093432204	103N24W28CDC SCHROEDER #4	371JRDN	80-01-30	1700	580	--
434122093432205	103N24W28CDC SCHROEDER 5	371MSMN	80-01-30	1230	--	--
434547094095802	104N28W35CCB WINNEBAGO CITY WELL #2	367PRDC	80-01-29	1000	--	368
	GOODHUE COUNTY					
441805092472501	110N16W30CBC WANAMINGO 2	371JRDN	80-09-02	0900	590	--
443300092302901	113N14W32ADA RED WING 3	371MSHK	80-02-12	1100	--	770
443354092323201	113N14W30ACC RED WING 1	371MSMN	80-02-12	0900	--	436
	HENNEPIN COUNTY					
445704093215611	117N21W08DCD SLP CITY WELL #11	371MSHK	80-09-04	0800	900	1100
460757092583001	042N20W10CAD SANDSTONE CITY WELL #2	371MSHK	80-02-20	1400	--	392
	LE SUEUR COUNTY					
441714093575001	110N26W33DBC KASOTA 1	378PDCJ	80-09-03	1100	110	--
441851093341801	110N23W22DCA KILKENNY	371JRDN	80-09-03	1300	380	380
	MCLEOD COUNTY					
445306094021901	116N26W02ACD LEST.PRAR.1	112PLSC	80-09-04	1230	190	--
	MOWER COUNTY					
433935092595601	102N18W09ABB AUSTIN 8	378PDCJ	80-02-13	1200	--	1020
434039092553201	103N17W31CCD AUSTIN CITY WELL #4	344CDVL	80-01-30	1700	505	--
	PINE COUNTY					
460051092562901	041N21W24CDA HINCKLEY 2	371MSHK	80-02-20	1800	--	459
461209093550701	043N20W18CDD FINLAYSON 1	371MSHK	80-02-21	1400	--	185
	SCOTT COUNTY					
443710093453501	113N24W06CAD BELLE PLAINE CITY WELL #2	112PLSC	80-09-03	0230	282	--
	SIBLEY COUNTY					
443623094042801	113N27W10CBC ARLINGTON 2	371MSHK	80-09-04	1345	595	--
	WABASHA COUNTY					
441454092101001	108N11W17BAD PLAINVIEW	371JRDN	80-02-12	1530	--	419
	WASECA COUNTY					
435543093414501	105N24W03ACC WALDORF CITY WELL #1	364STPR	80-01-29	1100	190	--
	WASHINGTON COUNTY					
445125092464001	027N20W02BAC AFTON WELL #1	371SLCF	79-11-20	1330	--	--
445125092464002	027N20W02BAC AFTON WELL #2	371IGLV	79-11-20	1500	--	--
445125092464003	027N20W02BAC AFTON WELL #3	371MSMN	79-11-21	0930	495	--
	WATONWAN COUNTY					
440026094355401	106N31W07ABB ST JAMES CITY WELL #1	112PLSC	80-09-03	0930	--	--
	WINONA COUNTY					
440318091388180	107N07W22ADD WINONA 5	371MSMN	80-02-13	0800	160	501
440324091401501	107N07W21BDB WINONA CITY WELL #13	371MSMN	80-02-13	1200	188	517
440518092010601	107N10W10BCB ELBA CITY 1	371IGLV	80-09-02	1100	326	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH FIELD (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	RA-226, DISSOLVED, PLANCHET COUNT (PCI/L) (09510)	URANIUM NATURAL DISSOLVED (UG/L AS U) (22703)	C-13/C-12 STABLE ISOTOPE RATIO PER MIL (82081)	H-2/H-1 STABLE ISOTOPE RATIO PER MIL (82082)	O-18/O-16 STABLE ISOTOPE RATIO PER MIL (82085)
CARLTON COUNTY								
80-02-20	--	--	--	.1	1.1	--	--	--
CARVER COUNTY								
80-09-04	660	7.1	10.0	.4	2.8	-12.4	-59.0	-9.1
DAKOTA COUNTY								
80-09-05	309	7.7	19.0	<.1	.8	-9.2	-55.0	-8.0
DODGE COUNTY								
80-09-02	--	--	--	.8	<.5	-11.4	-59.0	-9.0
80-09-02	--	--	--	6.7	1.0	-10.1	-66.5	-9.6
FARIBAULT COUNTY								
80-01-31	810	7.4	9.0	1.2	3.2	--	--	--
80-09-02	--	--	--	.3	1.2	-14.4	-63.0	-9.6
80-01-31	670	7.3	8.0	.5	<.6	--	--	--
80-01-31	780	7.1	8.5	5.1	<.5	--	--	--
80-01-30	700	7.2	6.0	2.6	<.6	--	--	--
80-01-30	810	7.3	7.0	.9	3.4	--	--	--
80-01-29	--	7.5	8.5	3.7	1.0	--	--	--
GOODHUE COUNTY								
80-09-02	--	--	--	1.2	.6	-10.0	-65.0	-9.4
80-02-12	--	7.0	11.0	11	<.6	-10.2	-68.0	-10.2
80-02-12	--	6.7	11.5	5.5	<.6	--	--	--
HENNEPIN COUNTY								
80-09-04	362	7.8	12.8	2.8	<.5	-13.2	-64.5	-9.6
80-02-20	76	6.1	7.0	.6	<.5	--	--	--
LE SUEUR COUNTY								
80-09-03	--	--	--	<.1	2.1	-9.4	-60.0	-8.3
80-09-03	--	--	--	.4	3.1	-12.4	-54.5	-7.6
MCLEOD COUNTY								
80-09-04	436	7.3	10.5	.3	<.5	-11.8	-59.0	-9.1
MOWER COUNTY								
80-02-13	450	7.1	11.0	--	--	--	--	--
80-01-30	450	7.3	9.0	.2	1.0	--	--	--
PINE COUNTY								
80-02-20	355	6.8	9.0	8.4	<.5	-15.3	-65.0	-10.1
80-02-21	160	6.5	8.5	1.7	<.6	--	--	--
SCOTT COUNTY								
80-09-03	--	--	--	.2	3.2	-13.8	-55.5	-7.8
SIBLEY COUNTY								
80-09-04	640	7.4	11.1	3.7	1.9	-13.0	-65.5	-9.5
WABASHA COUNTY								
80-02-12	--	--	10.0	4.3	1.2	-9.0	-62.5	-9.5
WASECA COUNTY								
80-01-29	--	--	--	--	--	-14.1	-73.0	-10.6
WASHINGTON COUNTY								
79-11-20	335	7.7	10.0	1.4	2.1	--	--	--
79-11-20	337	7.7	10.0	2.8	1.4	--	--	--
79-11-21	428	7.4	10.0	1.8	2.7	--	--	--
WATONWAN COUNTY								
80-09-03	--	--	--	.2	<.6	-10.2	-67.0	-9.5
WINONA COUNTY								
80-02-13	780	6.9	11.0	2.8	<.6	--	--	--
80-02-13	--	7.0	--	4.6	<.5	--	--	--
80-09-02	--	--	--	.5	<.5	-10.3	-59.0	-8.8

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

STATION NUMBER	LOCAL IDENTIFIER	GEO-LOGIC UNIT	DATE OF SAMPLE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV-ERABLE (UG/L AS BA) (01007)
		ITASCA COUNTY				
470700093312500	054N25W33ACC RON SANDMOEN	210CRCS	80-04-24	1020	4	100
		REDWOOD				
441719095001701	110N35W3LCBB GARY JENSEN	400GRNT	80-07-18	0930	1	<50

DATE OF SAMPLE	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, TOTAL RECOV-ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
					ITASCA COUNTY						
80-04-24	3	20	3	960	4	140	.1	0	0	140	--
					REDWOOD COUNTY						
80-07-18	0	50	2	120	0	20	.2	0	1	110	.00

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FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
	Length	
inches (in)	2.54×10^{1}	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^{0}	kilometers (km)
	Area	
acres	4.047×10^{3}	square meters (m^2)
	4.047×10^{-1}	square hectometers (hm^2)
	4.047×10^{-3}	square kilometers (km^2)
square miles (mi^2)	2.590×10^{0}	square kilometers (km^2)
	Volume	
gallons (gal)	3.785×10^{0}	liters (L)
	3.785×10^{0}	cubic decimeters (dm^3)
	3.785×10^{-3}	cubic meters (m^3)
million gallons	3.785×10^{3}	cubic meters (m^3)
	3.785×10^{-3}	cubic hectometers (hm^3)
cubic feet (ft^3)	2.832×10^{1}	cubic decimeters (dm^3)
	2.832×10^{-2}	cubic meters (m^3)
cfs-days	2.447×10^{3}	cubic meters (m^3)
	2.447×10^{-3}	cubic hectometers (hm^3)
acre-feet (acre-ft)	1.233×10^{3}	cubic meters (m^3)
	1.233×10^{-3}	cubic hectometers (hm^3)
	1.233×10^{-6}	cubic kilometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	2.832×10^{1}	liters per second (L/s)
	2.832×10^{1}	cubic decimeters per second (dm^3/s)
	2.832×10^{-2}	cubic meters per second (m^3/s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm^3/s)
	6.309×10^{-5}	cubic meters per second (m^3/s)
million gallons per day	4.381×10^{1}	cubic decimeters per second (dm^3/s)
	4.381×10^{-2}	cubic meters per second (m^3/s)
	Mass	
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

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