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Water Resources Data
Iowa
Water Year 2001

Volume 2. Surface Water—Missouri River Basin, and Ground Water

By G.M. Nalley, J.G. Gorman, R.D. Goodrich, V.E. Miller, M.J. Turco, and S.M. Linhart

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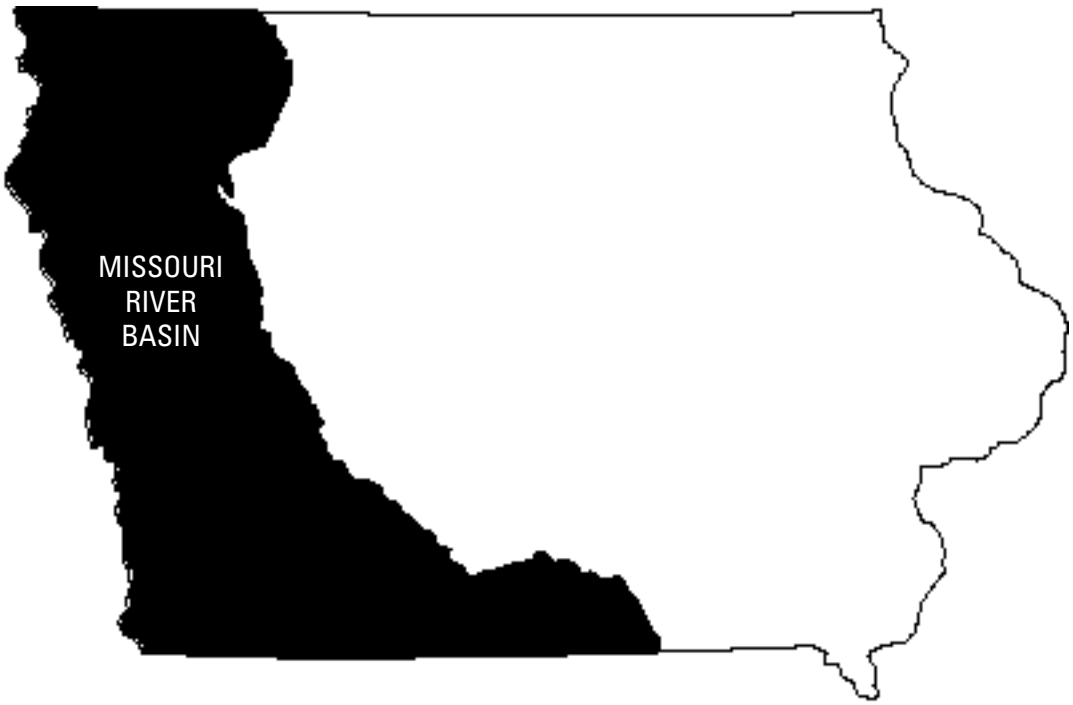

Prepared in cooperation with the Iowa Department of Natural Resources (Geological Survey Bureau), Iowa Department of Transportation, and with Federal agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

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U.S. GEOLOGICAL SURVEY

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District Chief, Water Resources Division
U.S. Geological Survey
P.O. Box 1230
Iowa City, Iowa 52244

2002

PREFACE

This volume of the annual hydrologic data report of Iowa is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by local, State, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

This report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who typed, edited, and assembled the report. The authors had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines.

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13. ABSTRACT *(Maximum 200 words)*
Water resources data for Iowa for the 2001 water year consists of records of stage, discharge, and water quality of streams; stage, and/or contents of lakes and reservoirs; ground water levels and water quality of ground-water wells. This report volume contains discharge records for 31 gaging stations; stage or contents for 3 lakes; water quality for 1 stream-gaging station, and sediment records for 2 stream-gaging stations. Also included are data for 34 crest-stage partial record stations and ground-water levels for 163 wells.

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{Letter after station name designates types of data: (d) discharge, (c) chemical, (p) precipitation, (s) sediment, (t) temperature, (e) elevations, gage heights, or contents}

SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

The following continuous-record surface-water discharge or stage-only stations (gaging stations) in Iowa have been discontinued. Daily streamflow or stage records were collected and published for the period of record, expressed in water years, shown for each station. Discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the back side of the title page of this report.

[(d), discharge station; (e), elevation (stage only) station; *, currently operated as crest-stage partial-record station]

Station name	Station number	Drainage area (mi^2)	Period of record
Upper Iowa River near Decorah, Ia. (d)	05388000	568	1913-14; 1919-27, 1933-51
Paint Creek at Waterville, Ia. (d)	05388500	42.8	1952-73
Yellow River at Ion, Ia. (d)	05389000	221	1934-51
Turkey River at Spillville, Ia. (d)	05411600	177	1957-73; 1978-91
Big Springs near Elkader, Ia. (d)	05411950	103	1938; 1982-83; 1988-95
Turkey River at Elkader, Ia. (d)	05412000	891	1932-42
Unnamed Creek near Luana, Ia. (d)	05412056	1.15	1986-92
Silver Creek near Luana, Ia (d)	05412060	4.39	1986-98
Little Maquoketa River near Durango, Ia. (d)	05414500	130	1934-82
Maquoketa River near Manchester, Ia. (d)	05417000	305	1933-73
Maquoketa River near Delhi, Ia. (d)	05417500	347	1933-40
Bear Creek near Monmouth, Ia. (d)	05417700	61.3	1957-76
Maquoketa River above North Fork Maquoketa River near Maquoketa, Ia. (d)	05418000	938	1913-14
North Fork Maquoketa River at Fulton, Ia. (d)	05418450	516	1977-91
Elk River near Almont, Ia. (d)	05420300	55.9	1995-97
Wapsipinicon River near Elma, Ia. (d)	05420560	95.2	1958-92
Wapsipinicon River at Stone City, Ia. (d)	05421500	1,324	1903-14
Crow Creek at Eldridge, Ia. (d)	05422420	2.20	1977-82
Crow Creek at Mt. Joy, Ia. (d)	05422450	6.90	1977-82
Pine Creek near Muscatine, Ia. (d)	05448150	38.9	1975-82
Eagle Lake Inlet near Britt, Ia. (e)	05448285	3.83	1975-80
Eagle Lake Outlet near Britt, Ia. (e)	05448290	11.3	1975-80
West Branch (West Fork) Iowa River near Klemme, Ia. (d)	05448500	112	1948-58
East Branch (East Fork) Iowa River near Klemme, Ia. (d)	05449000	133	1948-76; 1977-95
Iowa River near Iowa Falls, Ia. (d)	05450000	665	1911-14
Upper Pine Lake at Eldora, Ia. (e)	05450500	14.9	1936-70
Lower Pine Lake at Eldora, Ia. (e)	05451000	15.9	1936-70
Iowa River near Belle Plaine, Ia. (d)	05452500	2,455	1939-59
Lake Macbride near Solon, Ia. (e)	05453500	27.0	1937-71
Ralston Creek at Iowa City, Ia. (d)	05455000	3.01	1924-87
Cedar River at Mitchell, Ia. (d)	05457500	826	1933-42
Shell Rock River near Northwood, Ia. (d)	05459000	300	1945-86
Shell Rock River at Marble Rock, Ia. (d)	05460500	1,318	1933-53
Shell Rock River at Greene, Ia. (d)	05461000	1,357	1933-42
Flood Creek near Powersville, Ia (d)	05461390	127	1996-98
Shell Rock River near Clarksville, Ia. (d)	05461500	1,626	1915-27; 1932-34
Black Hawk Creek at Hudson, Ia. (d)	05463500	303	1952-95
Fourmile Creek near Lincoln, Ia. (d)	05464130	13.8	1962-67; 1969-74; 1976-80
Half Mile Creek near Gladbrook, Ia. (d)	05464133	1.33	1962-67; 1969-74; 1976-80
Fourmile Creek near Traer, Ia. (d)	05464137	19.5	1962-74; 1975-80
Wolf Creek near Dysart, Ia (d)	05464220	299	1996-98
Prairie Creek at Fairfax, Ia. (d)	05464640	178	1966-82
Lake Keomah near Oskaloosa, Ia. (e)	05472000	3.06	1936-71
Skunk River at Coppock, Ia. (d)	05473000	2,916	1913-44
Big Creek near Mount Pleasant, Ia. (d)	05473500	106	1955-79

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS—Continued

Station name	Station number	Drainage area (mi^2)	Period of record
Des Moines River at Estherville (d)	05476500*	1,372	1951-95
East Fork Des Moines River near Burt, Ia. (d)	05478000	462	1951-74
Des Moines River near Fort Dodge, Ia. (d)	05479500	3,753	1911-13
Lizard Creek near Clare, Ia. (d)	05480000	257	1940-82
Des Moines River near Boone, Ia. (d)	05481500	5,511	1920-68
North Raccoon River near Newell, Ia. (d)	05482135*	233	1982-95
Storm Lake at Storm Lake, Ia. (e)	05482140	28.3	1970-75
Big Cedar Creek near Varina, Ia. (d)	05482170	80.0	1960-91
East Fork Hardin Creek near Churdan, Ia. (d)	05483000	24.0	1953-91
Hazelbrush Creek near Maple River, Ia. (d)	05483343	9.22	1990-94
Springbrook Lake near Guthrie Center, Ia. (e)	05483460	5.18	1936-71
Raccoon River at Des Moines, Ia. (e)	05485000	3,628	1902-03
Lake Ahquabi near Indianola, Ia. (e)	05487000	4.93	1936-71
White Breast Creek near Knoxville, Ia. (d)	05488000	380	1945-62
South Coal Creek near Bussey, Ia. (d)	05489090	12.9	1977-81
Muchakinock Creek near Eddyville, Ia (d)	05489190	70.2	1975-79
Lake Wapello near Drakesville, Ia. (e)	05490000	7.75	1936-71
Sugar Creek near Keokuk, Ia. (d)	05491000	105	1922-31; 1958-73
Fox River at Cantril, Ia. (d)	05494500	161	1940-51
Rock River at Rock Rapids, Ia. (d)	06483270	788	1959-74
Dry Creek at Hawarden, Ia. (d)	06484000	48.4	1948-69
West Branch Floyd River near Struble, Ia. (d)	06600300*	108	1955-95
Monona-Harrison Ditch near Blencoe, IA (d)	06602410	4,440	1939-42
Loon Creek near Orleans, Ia. (d)	06603920	31.0	1971-74
Spirit Lake Outlet at Orleans, Ia. (e)	06604100	75.6	1971-74
Milford Creek at Milford, Ia. (d)	06604400	146	1971-74
Little Sioux River at Spencer, Ia. (d)	06605100	990	1936-42
Little Sioux River at Gillett Grove, Ia. (d)	06605600	1,334	1958-73
Little Sioux River near Kennebeck, Ia. (d)	06606700	2,738	1939-69
Odebolt Creek near Arthur, Ia. (d)	06607000	39.3	1957-75
Maple River at Turin, Ia. (d)	06607300	725	1939-41
Little Sioux River near Blencoe, Ia. (d)	06607510	4,440	1939-42
Steer Creek near Magnolia, Ia. (d)	06609200	9.26	1963-69
Thompson Creek near Woodbine, Ia. (d)	06609590	6.97	1963-69
Willow Creek near Logan, Ia. (d)	06609600	129	1972-75
Indian Creek at Council Bluffs, Ia. (d)	06610500	6.92	1954-76
Mosquito Creek near Earling, Ia. (d)	06610520	32.0	1965-79
Waubonsie Creek near Bartlett, Ia. (d)	06806000	30.4	1946-69
West Nishnabotna River at Harlan, Ia. (d)	06807320	316	1977-82
West Nishnabotna River at (near) White Cloud, Ia. (d)	06807500	967	1918-24
Mule Creek near Malvern, Ia. (d)	06808000	10.6	1954-69
Spring Valley Creek near Tabor, Ia. (d)	06808200	7.6	1955-64
Davids Creek near Hamlin, Ia. (d)	06809000	26.0	1952-73
Tarkio River at Stanton, Ia. (d)	06811840*	49.3	1958-91
Tarkio River at Blanchard, Ia. (d)	06812000	200	1934-40
West Nodaway River at Villisca, Ia. (d)	06816500	342	1918-25
Platte River near Diagonal, Ia. (d)	06818750*	217	1969-91
East Fork One Hundred and Two River near Bedford, Ia. (d)	06819190	92.1	1959-83
Elk River near Decatur City, Ia. (d)	06897950*	52.5	1968-94
Weldon River near Leon, Ia. (d)	06898400	104	1959-91
Honey Creek near Russell, Ia. (d)	06903500	13.2	1952-62
Chariton River near Centerville, Ia. (d)	06904000	708	1938-59

DISCONTINUED SURFACE-WATER-QUALITY STATIONS

The following water-quality stations have been discontinued in Iowa. Continuous daily records of water temperature, specific conductance, or sediment and monthly or periodic samples of chemical quality or biological data were collected and published for the period of record shown for each station.

[Type of record: Chem.–chemical quality, Cond.–specific conductance, Temp.–water temperature, Sed.–sediment, Bio.–biological; *, periodic data available subsequent to period of daily record]

Station name	Station number	Drainage area (mi^2)	Type of record	Period of record
Upper Iowa River at Decorah, Ia.	05387500	511	Sed. Temp.	1963-68 1963-83
Upper Iowa River near Dorchester, Ia.	05388250	770	Sed., Temp.*, Cond.*	1975-81
Paint Creek at Waterville, Ia.	05388500	42.8	Temp. Sed.	1952-56 1952-57
Unnamed Creek near Luana	05412056	1.15	Chem.	1986-92
Turkey River at Garber, Ia.	05412500	1,545	Temp.*, Sed.*	1957-62
Mississippi River at Dubuque, Ia.	05414700	81,600	Chem.	1969-73
Maquoketa River near Maquoketa, Ia	05418500	1,553	Sed., Temp., Cond.	1978-82; 1995-97
Elk River near Almont, Ia	05420300	55.9	Sed., Temp., Cond.	1995-97
Mississippi River at Clinton, Ia	05420500	85,600	Sed.	1995-97
Wapsipinicon River near Tripoli, Ia	05420860	343	Chem.	1996-98
Wapsipinicon River at Independence, Ia.	05421000	1,048	Cond.* Temp.*, Sed.*	1968-70 1967-70
Crow Creek at Bettendorf, Ia.	05422470	17.8	Cond.*, Temp.*, Sed.	1978-82
Iowa River near Rowan, Ia.	05449500	429	Temp.*, Sed.* Chem.	1957-62 1996-98
Iowa River at Marshalltown, Ia	05451500	1,532	Temp., Sed.	1988-95
Iowa River at Iowa City, Ia.	05454500	3,271	Chem.. Temp.*, Sed. Cond.	1906-07; 1944-54 1944-87 1968-87
Ralston Creek at Iowa City, Ia.	05455000	3.01	Cond Sed. Temp.	1968-87 1952-87 1967-87
Flood Creek near Powersville, Ia	05461390	127	Chem.	1996-98
Shell Rock River at Shell Rock, Ia.	05462000	1,746	Temp.*	1953-68
Cedar River at Cedar Falls, Ia	05463050	4,734	Chem.	1975-79; 1984; 1986-1995
Cedar River near (at) Gilbertville, Ia.	05464020	5,234	Chem.	1971; 1975-81
Fourmile Creek near Lincoln, Ia.	05464130	13.78	Chem., Temp., Sed.	1969-74
Half Mile Creek near Gladbrook, Ia.	05464133	1.33	Chem., Temp., Sed.	1969-74
Fourmile Creek near Traer, Ia.	05464137	19.51	Chem., Temp., Sed.	1969-74
Wolf Creek near Dysart, Ia	05464220	299	Chem.	1996-98
Cedar River near Palo, Ia.	05464450	6,380	Chem.	1975-79
Cedar River at Cedar Rapids, Ia.	05464500	6,510	Chem.* Temp.* Sed.	1906-07; 1944-54 1944-54 1943-54
Cedar River near Bertram, Ia.	05464760	6,955	Chem.	1975-81
Iowa River at Wapello, Ia	05465500	12, 499	Chem.	1977-95
Mississippi River at Burlington, Ia.	05469720	114,000	Chem.	1969-73
South Skunk River at Colfax, Ia	05471050	803	Cond.*, Temp.*, Sed.	1989-93
Skunk River at Augusta, Ia	05474000	4,303	Chem.	1977-95
Mississippi River at Keokuk, Ia.	05474500	119,000	Chem.	1974-87
Des Moines River at Fort Dodge, Ia.	05480500	4,190	Chem.	1972-73
Des Moines River at 2nd Avenue at Des Moines, Ia.	05482000	6,245	Chem. Temp.*, Sed.	1954-55 1954-61
East Fork Hardin Creek near Churdan, Ia.	05483000	24.0	Temp.*, Sed.*	1952-57
Hazelbrush Creek near Maple River, Ia	05483343	9.22	Cond., Temp., Sed.	1991-94
Middle Raccoon River near Bayard, Ia.	05483450	375	Cond.*, Temp.*, Sed.	1979-85
Middle Raccoon River at Panora, Ia.	05483600	440	Cond.*, Temp.*, Sed.	1979-85

DISCONTINUED SURFACE-WATER-QUALITY STATIONS—Continued

Station name	Station number	Drainage area (mi^2)	Type of record	Period of record
Raccoon River at Van Meter, Ia	05484500	3,441	Chem. Bio.	1974-79; 1986-94 1974-79
Raccoon River at Des Moines, Ia.	05485000	3,590	Chem., Temp.	1945-47
Des Moines River below Raccoon River at Des Moines, Ia.	05485500	9,879	Chem.* Temp.*, Sed.	1944-45 1944-47
Des Moines River below Des Moines, Ia.	05485520	9,901	Chem.	1971; 1974-81
Middle River near Indianola, Ia.	05486490	503	Temp.*, Sed.	1962-67
White Breast Creek near Dallas, Ia.	05487980	342	Chem. Temp.*, Sed.	1969-73 1967-73
Big Sioux River at Sioux City, Ia.	06485950	9,410	Chem.	1969-73
Missouri River at Sioux City, Ia.	06486000	314,600	Chem.	1972-86
			Sed.	1972-76; 1977-81; 1991-00
Floyd River at James, Ia.	06600500	886	Temp.*, Sed., Cond.*	1968-73
Floyd River at Sioux City, Ia.	06600520	921	Chem.	1969-73
Missouri River at Decatur, Neb.	06601200	316,160	Chem.	1974-81
Spirit Lake near Orleans, Ia.	06604000	75.6	Temp.	1968-75
Little Sioux River at Correctionville, Ia.	06606600	2,500	Chem.* Temp.* Sed.	1954-55 1951-62 1950-62
Little Sioux River near Kennebec, Ia.	06606700	2,738	Temp. Sed.	1951-55 1950-57
Little Sioux River at River Sioux, Ia.	06607513	3,600	Chem.	1969-73
Soldier River near Mondamin, Ia.	06608505	440	Chem.	1970-73
Steer Creek near Magnolia, Ia.	06609200	9.26	Temp., Sed., Cond.	1963-69
Thompson Creek near Woodbine, Ia.	06609590	6.97	Temp., Sed., Cond.	1963-69
Willow Creek near Logan, Ia.	06609600	129	Cond., Temp. Sed.	1972-75 1971-75
Missouri River at Omaha, Nebr.	06610000	322,800	Cond.*	1969-86
Mule Creek near Malvern, Ia.	06808000	10.6	Temp. Sed.	1958-69 1954-69
Davids Creek near Hamlin, Ia.	06809000	26.0	Temp.* Sed.	1952-53; 1965-68 1952-68
East Nishnabotna River at Red Oak, Ia.	06809500	894	Temp.*, Sed., Cond.*	1962-73
Nishnabotna River above Hamburg, Ia.	06810000	2,806	Chem. Temp.*, Cond. Bio.	1979-93 1979-81 1979-81
Nodaway River at Clarinda	06817000	762	Cond.*, Temp.*, Sed.	1976-92
Platte River near Diagonal, Ia.	06818750	217	Chem.	1969-73
Elk Creek near Decatur City, Ia.	06897950	52.5	Bio. Chem.	1970-72 1968-94
Thompson River at Davis City, Ia.	06898000	701	Chem. Temp.*, Sed., Cond.*	1967-73 1968-73
Weldon River near Leon, Ia.	06898400	104	Chem.	1968-73
Chariton River near Chariton, Ia.	06903400	182	Temp.*, Sed., Cond.*	1969-73
Honey Creek near Russell, Ia.	06903500	13.2	Sed.	1952-62
Chariton River near Rathbun, Ia.	06903900	549	Temp.*, Sed.*, Cond.*	1962-69

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with State, county, municipal, and other Federal agencies, obtains a large amount of data pertaining to the water resources of Iowa each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make this data readily available to interested parties outside of the Geological Survey, the data is published annually in this report series entitled "Water Resources Data - Iowa" as part of the National Water Data System.

Water resources data for water year 2001 for Iowa consists of records of stage, discharge, and water quality of streams; stage and contents of lakes and reservoirs; and water levels and water quality of ground water. This report, in two volumes, contains stage or discharge records for 132 gaging stations; stage records for 9 lakes and reservoirs; water-quality records for 4 gaging stations; sediment records for 13 gaging stations; and water levels for 163 ground-water observation wells. Also included are peak-flow data for 92 crest-stage partial-record stations, water-quality data from 86 municipal wells, and precipitation data collected at 6 gaging stations and 2 precipitation sites. Additional water data were collected at various sites not included in the systematic data-collection program, and are published here as miscellaneous measurements and analyses. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating local, State, and Federal agencies in Iowa.

Records of discharge or stage of streams, and contents or stage of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled "Surface Water Supply of the United States." Through September 30, 1960, these water-supply papers were published in an annual series; during 1961-65 and 1966-70, they were published in 5-year series. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled "Ground-Water Levels in the United States." Water-supply papers may be consulted in the libraries of the principal cities in the United States, or they may be purchased from Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225.

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

Beginning with the 1971 water year, water data for streamflow, water quality, and ground water is published in official U.S. Geological Survey reports on a State-boundary basis. These official reports carry an identification number consisting of the two-letter State postal abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report IA-01-1." These water-data reports are for sale by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161.

Additional information 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, (319) 337-4191.

COOPERATION

The U.S. Geological Survey and organizations in the State of Iowa have had cooperative agreements for the systematic collection of streamflow records since 1914, for ground-water levels since 1935, and for water-quality records since 1943. Organizations that assisted in collecting data through cooperative agreements with the U.S. Geological Survey in Iowa during water year 2001 are:

Iowa Department of Natural Resources (Geological Survey Bureau)
Iowa Department of Transportation
Iowa Highway Research Board

Iowa State University
University of Iowa, Institute of Hydraulic Research
University of Iowa, Hygienic Laboratory
University of Iowa

Appanoose County Board of Supervisors
Buchanan County emergency Management
Davis County Board of Supervisors
Freemont County Board of Supervisors
Lake Delhi Recreation Association
Lake Panorama Association
Limestone Bluffs RC&D
Van Buren County Board of Supervisors

City of Ames
City of Bettendorf
City of Bloomfield
City of Burlington
City of Cedar Rapids
City of Charles City
City of Clear Lake
City of Clinton
City of Coralville
City of Davenport
City of Decorah Water Department
City of Des Moines
City of Des Moines Water Works
City of Fort Dodge
City of Iowa City
City of Marshalltown
City of Milford
City of Mt. Pleasant
City of Ottumwa
City of Cedar Falls
Ottumwa Water and Hydro Plant
City of Sioux City
City of Waterloo Water Pollution Control Plant
City of West Des Moines
City of Waverly

Assistance in the form of funds or services was given by the U.S. Army Corps of Engineers in collecting streamflow records for 73 stream gaging stations. Assistance also was furnished by NOAA-National Weather Service, U.S. Department of Commerce, and Biological Resources Division (BRD) of U.S. Geological Survey.

The following organizations aided in collecting records: Milford Municipal Utilities, Central Iowa Energy Cooperative, and Ameren-Union Electric Company.

Organizations that supplied data are acknowledged in the station descriptions.

SUMMARY OF HYDROLOGIC CONDITIONS

Surface Water

For water year 2001 (October 1, 2000 to September 30, 2001) climatological conditions were slightly above normal. Recorded precipitation for the year ranged from 5.94 inches greater than normal in the Southeast Iowa Climatological District to 0.92 inches greater than normal in the Central Iowa Climatological District (fig. 1). Precipitation recorded for the State averaged 38.18 inches, which was 3.07 inches below normal, or 109 percent of the normal 33.11 inches for 1961-90 (table 1). Overall, water year 2001 was the 28th wettest and 21st coldest for 128 years of record. [In this summary of hydrologic conditions, all data and statistics pertaining to precipitation and temperature in Iowa were provided by Harry Hillaker, State Climatologist, Iowa Department of Agriculture and Land Stewardship, (oral and written commun., 2001)]

Annual runoff for the period of record at index stations 05464500 Cedar River at Cedar Rapids, 05480500 Des Moines River at Fort Dodge, and 06810000 Nishnabotna River above Hamburg are shown in figure 2. The water-year 2001 runoff at Cedar Rapids was 4,384,000 acre-feet, which is 1,660,000 acre-feet greater than the mean annual runoff for the period of record, 2,724,000 acre-feet. The water-year 2001 runoff at Fort Dodge was 2,512,000 acre-feet, which is 1,240,000 acre-feet greater than the mean for the period of record, 1,272,000 acre-feet. The water-year 2001 runoff at Hamburg was 949,000 acre-feet, which is 29,200 acre-feet greater than the mean for the period of record, 919,800 acre-feet.

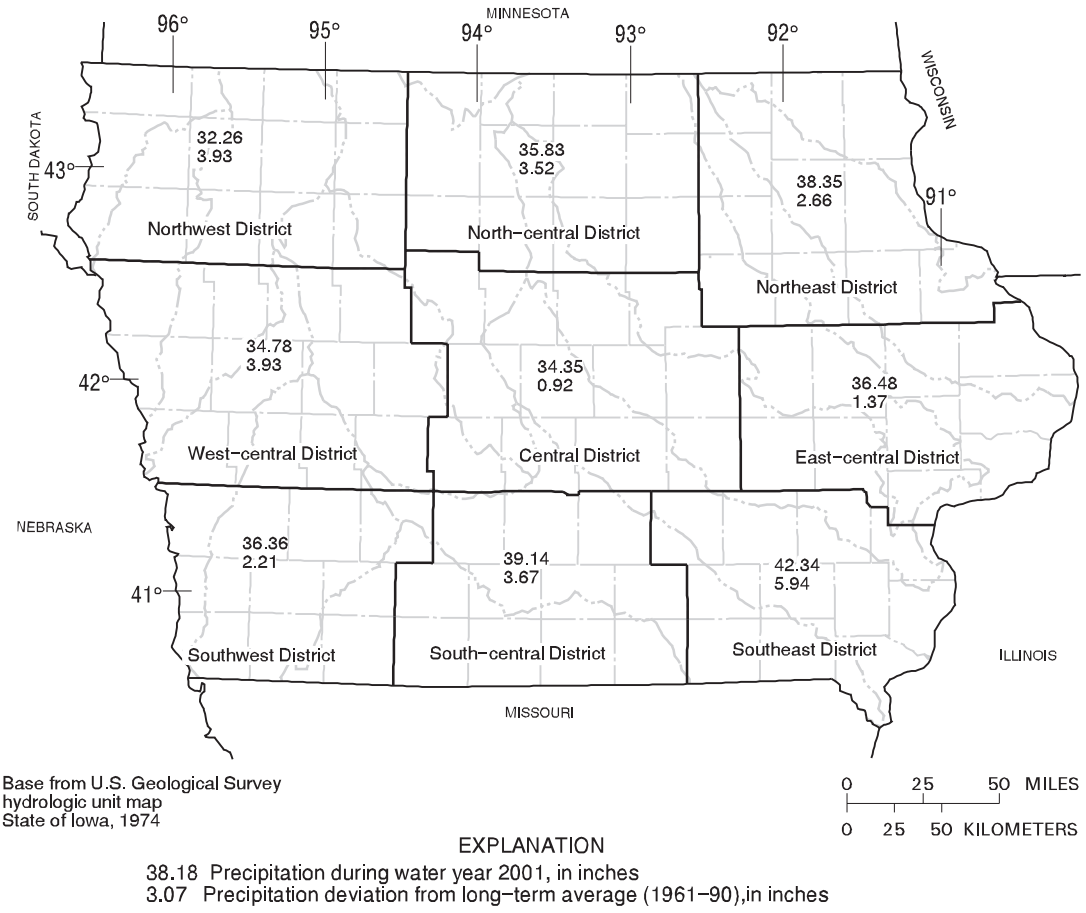

Figure 1. Precipitation record for the National Weather Service's designated Climatological Districts for water year 2001 (source: Harry Hillaker, State Climatologist, Iowa Department of Agriculture and Land Stewardship, written commun., 2001)

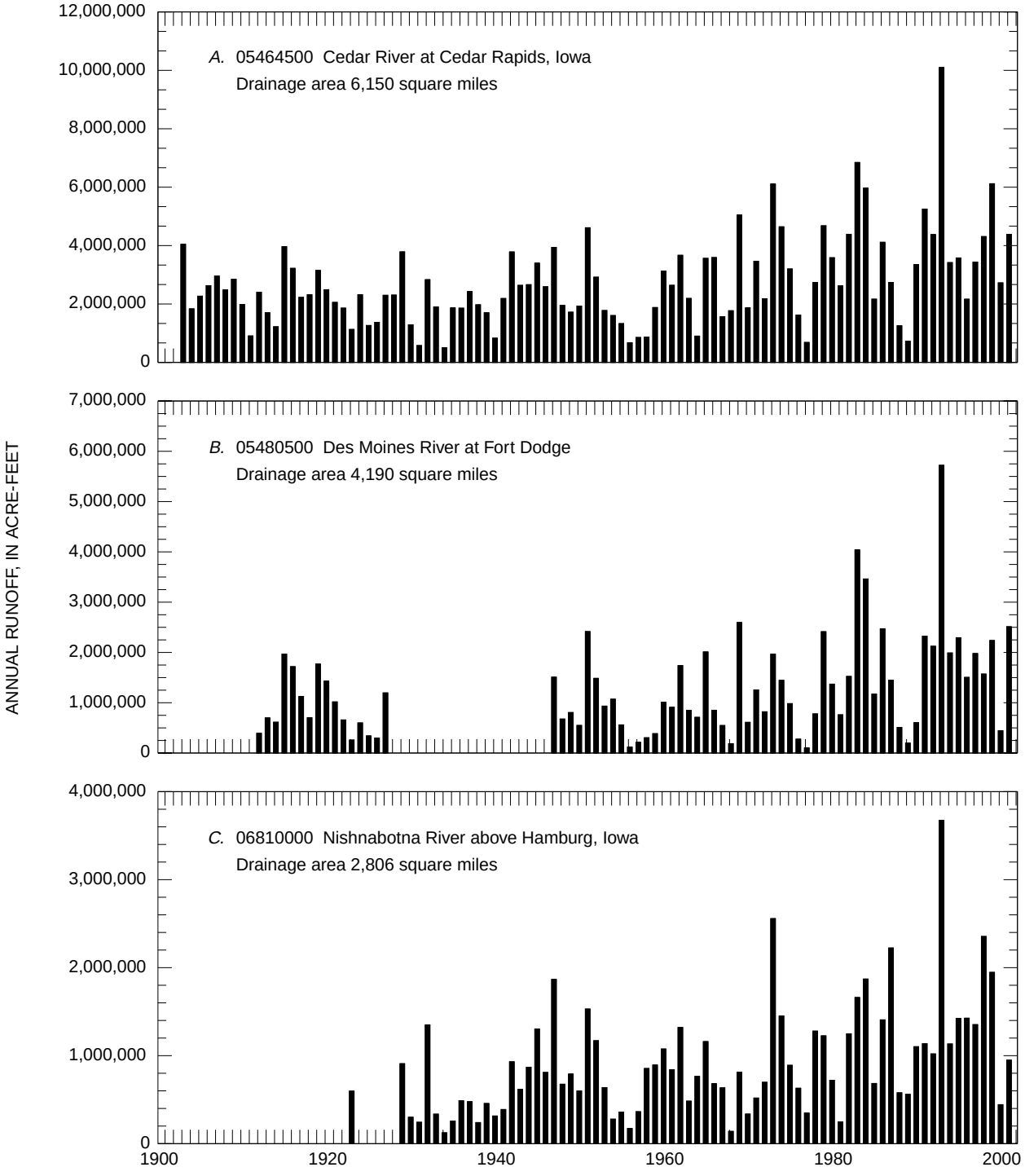

Figure 2. Annual runoff for period of record at index stations.

Table 1. Monthly and annual precipitation during the 2001 water year as a percentage of normal precipitation (1961-90).
[Source: Harry Hillaker, State Climatologist, Iowa Department of Agriculture and Land Stewardship, written commun., 2001]

National Weather Service Climatological District	2000			2001									
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Annual
Northwest	130	210	133	235	137	31	211	145	85	113	66	68	114
North-central	95	169	182	148	164	55	128	197	79	104	56	86	111
Northeast	45	127	164	140	187	49	103	155	98	76	84	152	108
West-central	93	166	156	228	184	49	113	185	87	59	113	99	113
Central	65	127	160	171	190	55	102	163	75	61	79	133	103
East-central	51	77	117	151	354	61	89	168	90	84	74	114	104
Southwest	67	141	107	224	328	69	116	171	94	82	25	113	106
South-central	50	85	139	196	299	100	103	184	127	62	65	108	110
Southeast	65	66	99	194	401	97	102	228	123	62	91	87	116
Statewide	73	124	139	183	245	63	117	177	93	78	74	108	109

The locations of the active continuous-record gaging stations in Iowa for water year 2001 are shown in figure 3. The locations of the active crest-stage gaging stations are shown in figure 4.

Suspended Sediment

Daily suspended-sediment discharge data (hereafter referred to as sediment discharge) were collected at 13 streamflow-gaging stations in Iowa during the 2001 water year. Four stations have 23 years or more of record: 05389500 Mississippi River at McGregor, 05465500 Iowa River at Wapello, 05474000 Skunk River at Augusta, and 05481650 Des Moines River near Saylorville; two stations on the Missouri River have 15 years of record: 06610000 Missouri River at Omaha, Nebraska and 06807000 Missouri River at Nebraska City, Nebraska; two stations in northeast Iowa have 10 years of record: 05389400 Bloody Run Creek near Marquette and 05411400 Sny Magill Creek near Clayton; two new sediment stations were established in northeast/east-central Iowa to monitor sediment movement in the Maquoketa River Basin; 05416900 Maquoketa River at Manchester and 05418500 Maquoketa River near Maquoketa; three stations in central Iowa have 6 years of record: 05471040 Squaw Creek near Colfax, 05487540 Walnut Creek near Prairie City, and 05487550 Walnut Creek near Vandalia. The locations of active sediment and surface water-quality stations are shown in figure 5.

The peak daily sediment discharge on 7 of 13 stations occurred between March 12-23, after a significant rain event. Two others peaked August 2.

Mississippi River at McGregor, which has most of its drainage basin in Minnesota and Wisconsin, had an annual sediment discharge of 1,385,000 tons, which was the eleventh lowest sediment discharge in 26 years of record, and 82.9 percent of the average mean sediment discharge (fig. 6).

The sediment station on the Des Moines River near Saylorville in central Iowa is downstream from a major flood-control reservoir (Saylorville Reservoir). The annual sediment discharge at this station for water year 2001 was 133,782 tons. This

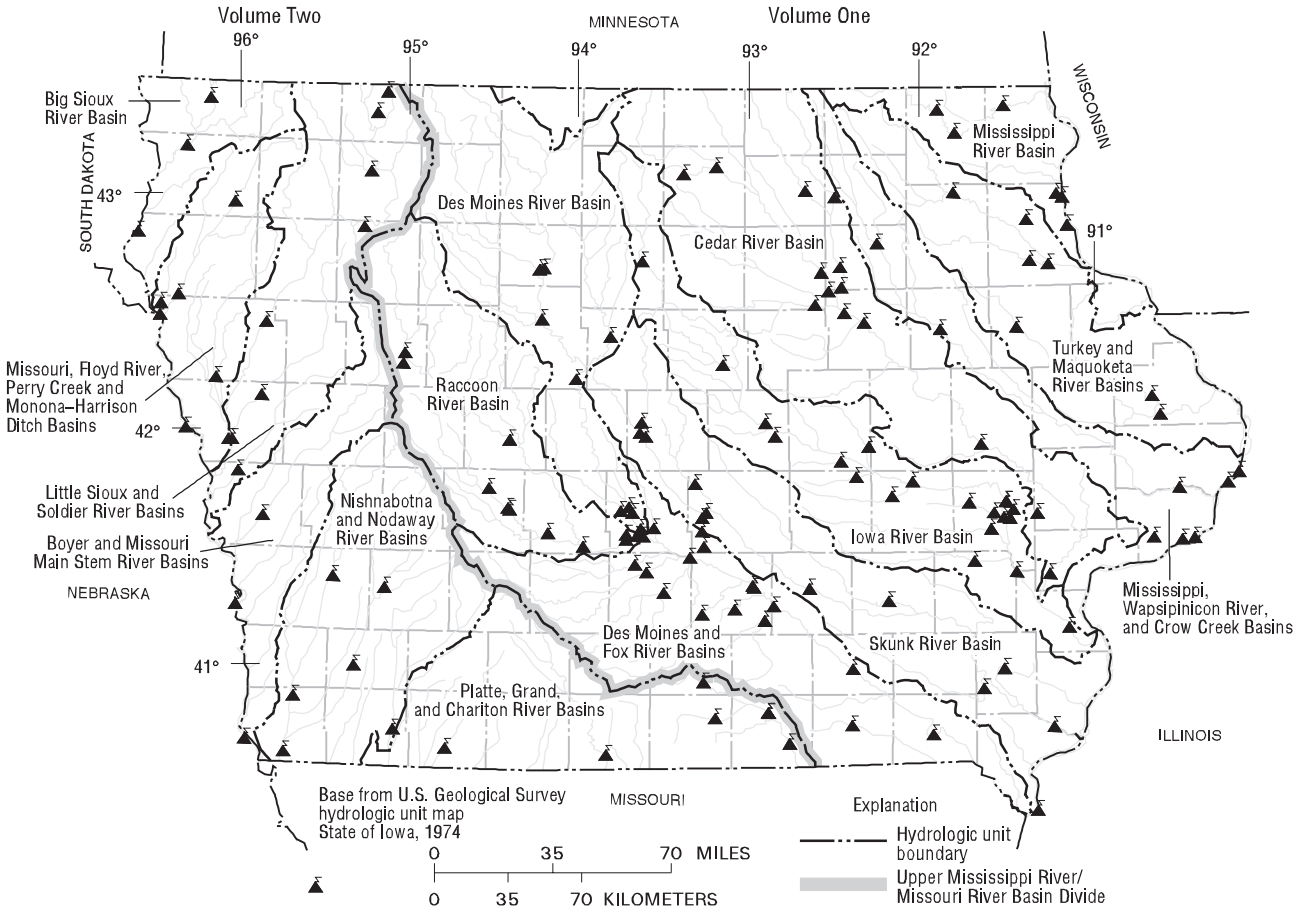

Figure 3. Location of active continuous-record gaging stations in Iowa, water year 2001. [See drainage basin maps in indicated volume for gaging-station identification.]

represents 55 percent of the 24-year mean sediment discharge. The mean annual sediment discharge since dam completion is 241,700 tons (fig. 6).

Sediment discharges for Iowa River at Wapello and Skunk River at Augusta in southeast Iowa were indicative of the near-normal precipitation in central and eastern Iowa. The Iowa River basin drainage includes parts of the Southeast, East-central, Central, Northeast, and North-central Climatological Districts, and drains an area nearly three times as large as the Skunk Basin. These districts had about 108 percent of normal precipitation. Wapello had an annual sediment discharge of 2.22 million tons. This represents 82.6 percent of the 23-year mean sediment discharge of 2.69 million tons (fig. 6). The headwaters of the Skunk River basin are in central Iowa and flow is southeasterly to the confluence with the Mississippi River. A substantial part of the drainage basin is located in the Southeast Climatological District. The annual precipitation for this district was 116 percent of normal for water year 2001. The 2001 annual sediment discharge for Skunk River at Augusta was 3.27 million tons, which is 118 percent of the 26-year mean sediment discharge of 2.77 million tons (fig. 6).

The 2001 annual sediment discharge for the two small drainage area stations located in northeast Iowa reflect the effect of precipitation patterns on small drainage basins. The annual sediment discharge for Bloody Run Creek near Marquette (05489400) was 1,722 tons, of which approximately 24.6 percent was measured during the month of August. The annual runoff was 41.9 percent of the 10-year mean sediment discharge of 4,107 tons. The annual sediment discharge for Sny Magill

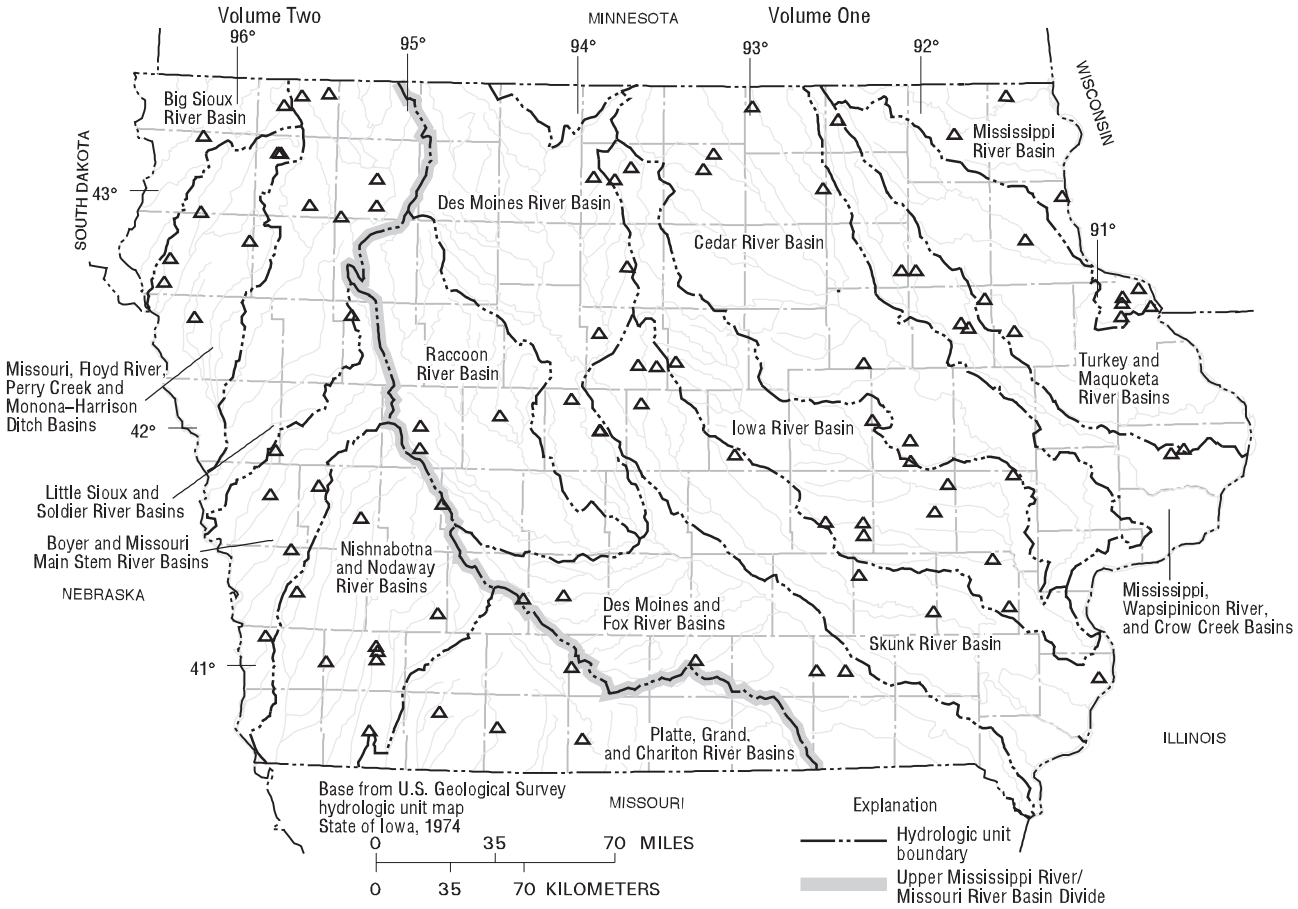

Figure 4. Location of active crest-stage gaging stations in Iowa, water year 2001. [See drainage basin maps in indicated volume for gaging-station identification.]

Creek near Clayton (05411400) was 3,161 tons. This runoff represents 68.6 percent of the 10-year mean sediment discharge of 4,610 tons. Fifty-four percent of Sny Magill's annual sediment discharge was measured in August, and approximately 39 percent of the yearly total was measured on August 2. These stations are paired in a study on sediment-reduction techniques, with the Sny Magill Basin having the techniques implemented and the Bloody Run Basin not implemented.

The annual sediment discharge for the new station in northeast Iowa, Maquoketa River at Manchester (05416900), was 33,680 tons; 45.9 percent of the yearly total was measured in March. The station in east-central Iowa, Maquoketa River near Maquoketa (05418500), had an annual sediment discharge of 334,400 tons. Thirty-six percent of the yearly total was measured in March.

The annual sediment discharge for the three stations located in central Iowa with less than approximately 20 square miles of drainage reflect precipitation patterns on small drainage basins. The annual sediment discharge for Squaw Creek near Colfax (05471040) was 5,942 tons. Sixty-eight percent of Squaw Creek's annual sediment discharge was measured in March. The annual sediment discharge for Walnut Creek near Prairie City (05487540) was 916 tons, while Walnut Creek near Vandalia (05487550) was 6,357 tons of annual sediment discharge. Vandalia has a drainage area approximately three times the size of Prairie City, but had about 6.9 times the amount of sediment discharge of Prairie City.

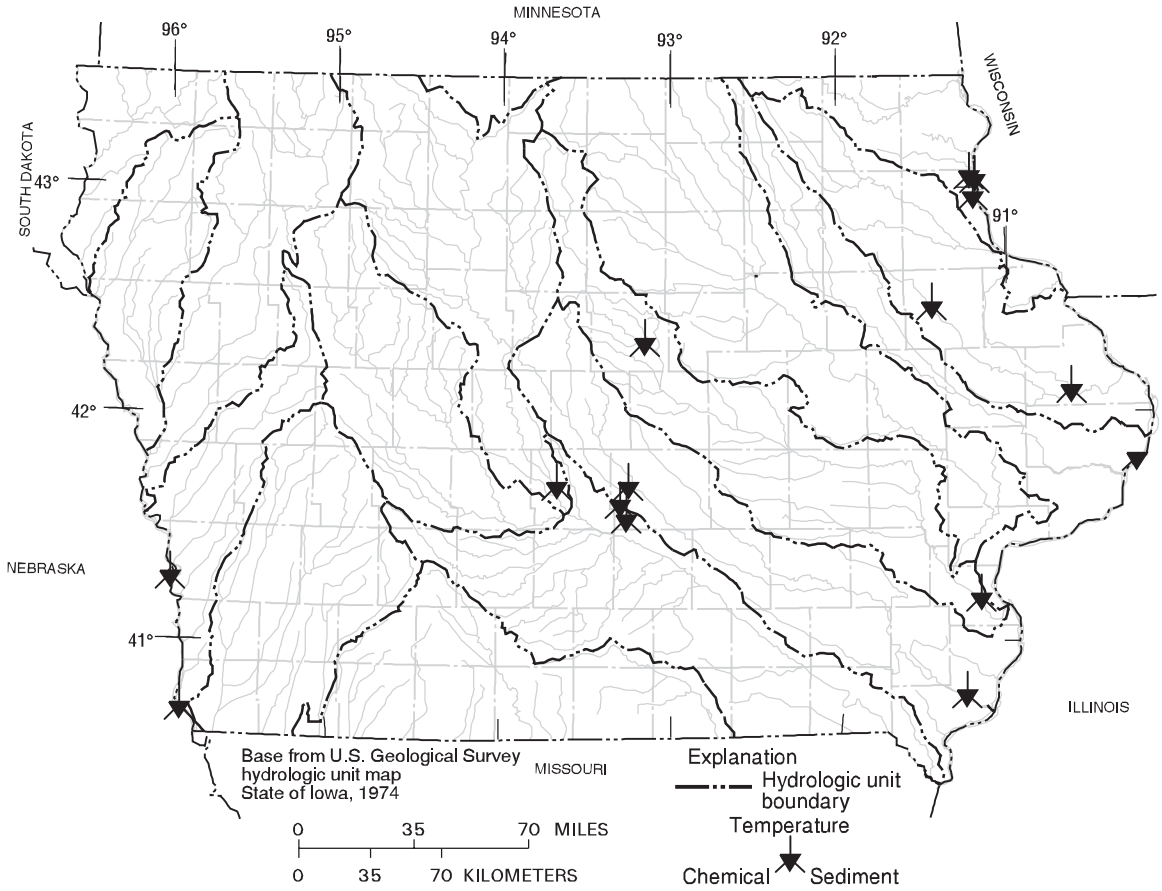

Figure 5. Location of active sediment and surface-water quality stations in Iowa, water year 2001.

The two Missouri River stations (fig. 5) have large drainage areas, which the sediment discharges reflect. The annual sediment discharge at Omaha was 15.9 million tons, which was 75 percent of the 15-year mean of 21.3 million tons. The annual sediment discharge at Nebraska City was 23.0 million tons, which was 70 percent of the 15-year mean of 32.9 million tons.

Ground-Water-Level Observation Network

The ground-water monitoring network in Iowa provides a historical record of the water-level changes in the Nation's most important aquifers. The locations of the 163 wells monitored on a quarterly, monthly, or intermittent basis in Iowa during water year 2001 are shown in figure 7.

In this report, records of water levels are presented for a network of observation wells. However, many other water levels are measured through Federal, State, and local agency cooperative projects and entered into computer storage. Information for specific projects may be obtained from the District Chief, Iowa District, or via the world wide web using the following universal resource locator address: <http://iowa.usgs.gov/>.

Measurements of water levels are made in many types of wells under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well ensure that measurements at each well are of consistent accuracy and reliability.

Tables of water-level data are presented by counties arranged in alphabetical order. The principal identification number for a given well is the 15-digit number that appears in the upper left corner of the table. The secondary identification number is the local well number, an alphanumeric number, derived from the township-range location of the well.

Water-level records are obtained from direct measurements with a steel tape or from an airline. The water-level measurements in this report are given in feet with reference to land-surface datum. Land-surface datum is a datum plane that is approximately at land surface at each well. The measuring point is the height above or below the land-surface datum and the point where the water level is measured. Both the measuring point and land-surface datum are provided for each well.

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

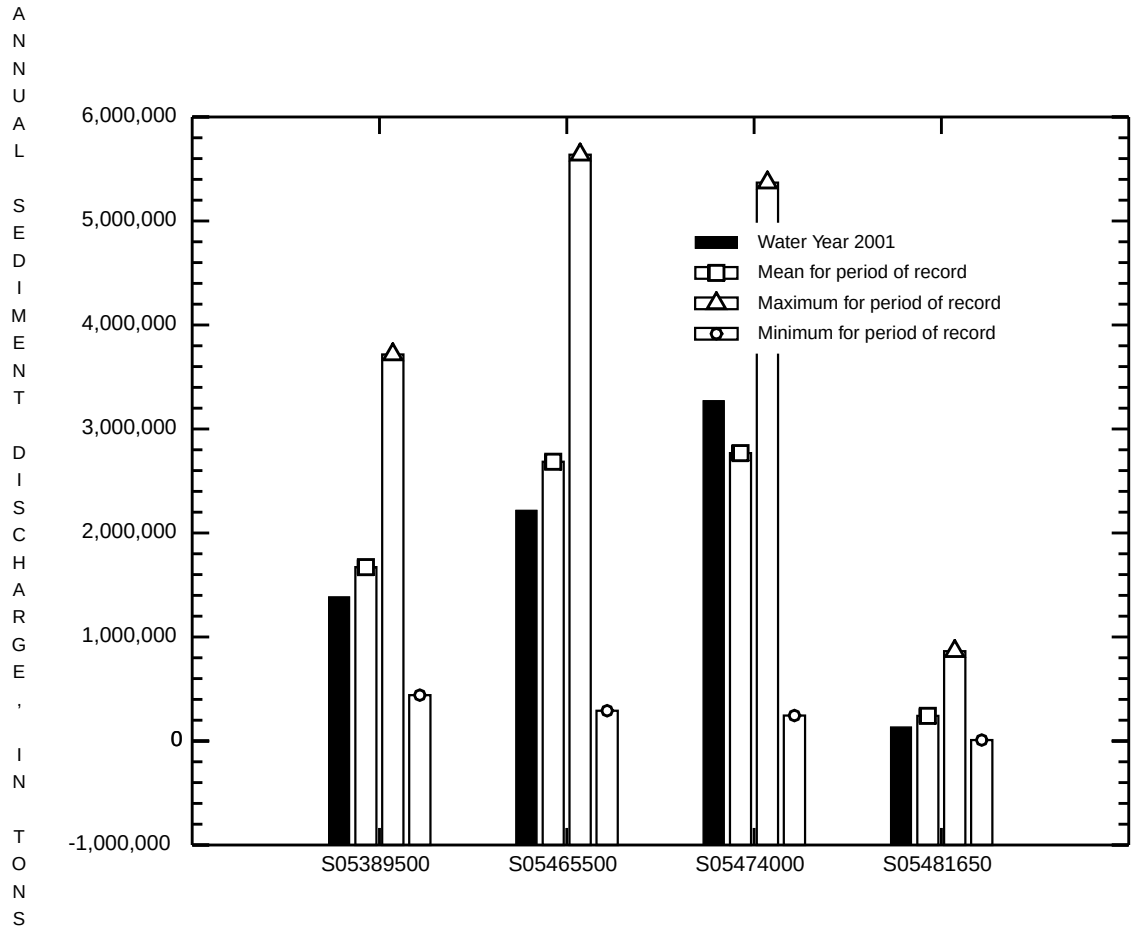

Figure 6. Comparison of annual sediment discharge for water year 2001 with mean, previous maximum, and previous minimum annual sediment discharges for periods of record at four long-term daily sediment stations in Iowa.

Ground-water supplies in Iowa are withdrawn from unconsolidated and bedrock aquifers. There are three types of unconsolidated aquifers: (1) alluvial aquifers, which consist of sand-and-gravel deposits associated with present-day fluvial systems; (2) glacial-drift aquifers, which consist of shallow, discontinuous, permeable lenses of sand and gravel interbedded with less-permeable glacial drift; and (3) buried-channel aquifers. Buried-channel aquifers are formed in areas where coarse sand and gravel were deposited in bedrock valleys and overlain by a thick layer of glacial drift.

Four wells completed in an unconsolidated aquifer recorded a new historical water level during the 2001 water year. One well recorded a high historical water level (table 2). Three wells recorded low historical water levels (table 3).

Table 2. Historical high water level measured during the 2001 water year in a well completed in an unconsolidated aquifer.
[Water-level measurements are in feet below land surface]

County	Well number	Aquifer type	New historical high water level	Date measured	Previous historical high water level	Date measured
Adams	410247094324801	Glacial Drift	2.30	05/08/2001	1.38	05/09/1996

Table 3. Historical low water level measured during the 2001 water year in wells completed in unconsolidated aquifers

. Water-level measurements are in feet below land surface]

County	Well number	Aquifer type	New historical low water level	Date measured	Previous historical low water level	Date measured
Adams	410248094324801	Glacial Drift	5.45	11/30/2000	3.08	12/06/1996
Carroll	420643094403701	Alluvial	12.53	02/12/2001	11.99	05/07/1996
Mills	405641095365101	Buried Channel	170.00	07/30/2001	144.30	06/13/1990

The five major bedrock-aquifer units in Iowa are the Cambrian-Ordovician, Silurian-Devonian, Mississippian, Pennsylvanian, and Dakota. The Cambrian-Ordovician aquifer system consists of aquifers in sandstone of Early Cambrian age and dolomite and sandstone of Late Cambrian to Early Ordovician age. The Dresbach is the basal aquifer of the Cambrian-Ordovician aquifer system and is present locally in northeastern and east-central Iowa. Overlying the Dresbach aquifer is the more aerially extensive Jordan-St. Peter aquifer. A confining shale unit separates the Jordan-St. Peter aquifer from the Galena aquifer, the uppermost aquifer in the Cambrian-Ordovician aquifer system. Overlying the Cambrian-Ordovician aquifer system is the Silurian-Devonian aquifer, which yields water from fractures in Silurian dolomite and Devonian limestone. Overlying the Silurian-Devonian aquifer is the Mississippian aquifer, which is composed of limestone and dolomite of Mississippian age and underlies about 60 percent of Iowa. Overlying the Mississippian aquifer are discontinuous lenses of sandstone in the Cherokee and Kansas City Groups of Pennsylvanian age, which form small, localized aquifers. The Dakota aquifer is the youngest bedrock-aquifer unit in the State and yields water from sandstone of Cretaceous age in northwest and western Iowa.

Eighteen wells completed in bedrock aquifers recorded new historical water levels during the 2001 water year. Four wells recorded historical high water levels (table 4), and 14 wells recorded historical low water levels (table 5).

Table 4. Historical high water level measured during the 2001 water year in wells completed in bedrock aquifers.

[Water-level measurements are in feet below land surface
readings above land surface indicated by "+"]

County	Well number	Aquifer type	New historical high water level	Date measured	Previous historical high water level	Date measured
Jasper	413908093071100	Cambrian-Ordovician	182	12/18/2000	--	--
Linn	421207091312201	Silurian	8.0	05/09/2001	10	08/09/1999
Pottawat-tamie	412407095391201	Cambrian-Ordovician	72.17	05/09/2001	122.74	05/11/2000
Washington	412750091495201	Mississippian	0.31	05/08/2001	0.59	11/04/1998

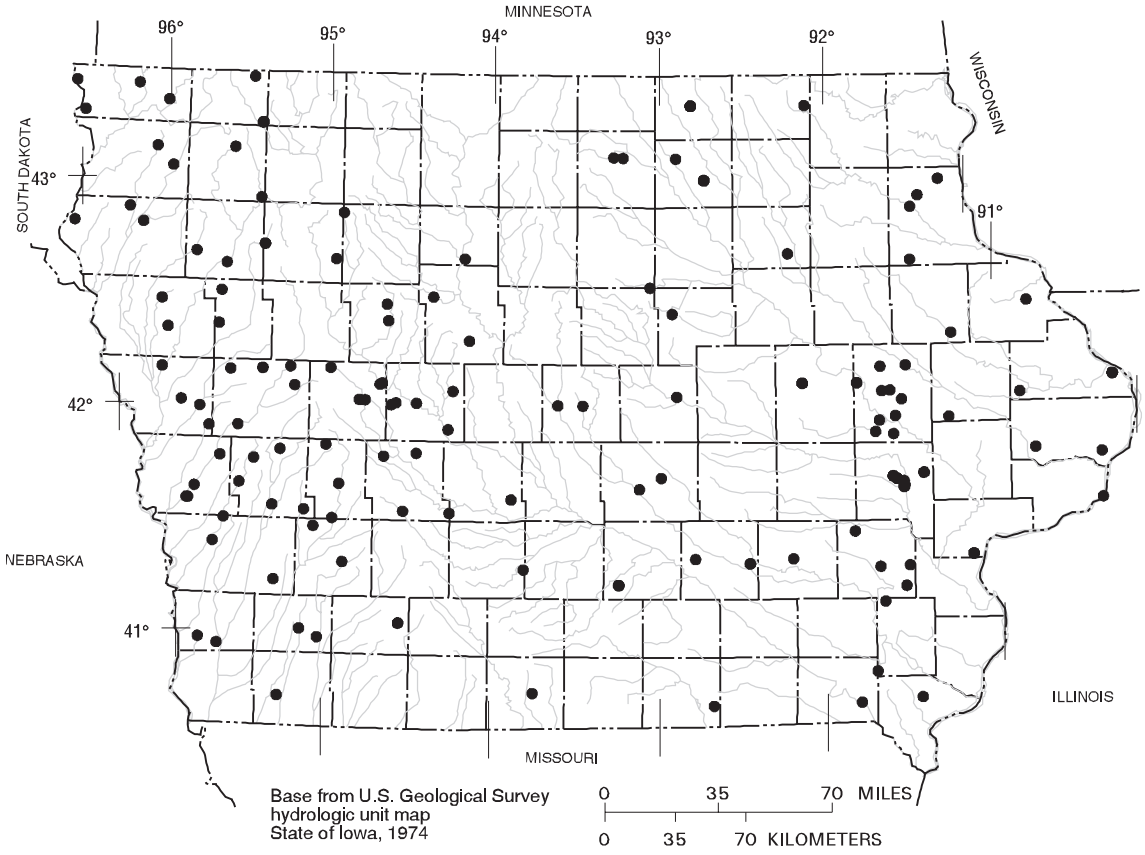

Figure 7. Location of wells in the ground-water-level observation network in Iowa, water year 2001.

Table 5. Historical low water level measured during the 2001 water year in wells completed in bedrock aquifers.

[Water-level measurements are in feet below land surface]

County	Well number	Aquifer type	New historical low water level	Date measured	Previous historical low water level	Date measured
Carroll	420233094475901	Cretaceous	24.85	11/08/2000	23.72	11/07/1995
Clinton	414921090450401	Silurian	104	08/09/2001	97	05/15/2000 08/15/2000
Decatur	4044220934456002	Cambrian-Ordovician	445.22	07/26/2001	443.10	05/11/2000 08/09/2000
Floyd	430200092435303	Devonian	83.41	02/14/2001	82.06	02/06/1996
Floyd	430200092435304	Devonian	89.07	02/14/2001	88.43	02/06/1996
Ida	422215095390811	Cretaceous	208.27	11/20/2000	207.84	08/07/2000
Jasper	413908093071100	Cambrian-Ordovician	205	03/24/2001	--	--
Johnson	413929091322401	Cambrian-Ordovician	222	06/21/2001	216	04/30/1998
Johnson	414132091345502	Silurian	252.77	07/31/2000	253.83	07/09/2001
Johnson	414132091345503	Silurian	314	08/13/2001 08/28/2001	310	07/27/2000
Johnson	414145091350101	Cambrian-Ordovician	419	08/13/2001 08/28/2001	419	12/19/2000
Lee	404306091270201	Cambrian-Ordovician	271.77	08/07/2001	269.12	08/14/2000
Madison	411727093483001	Mississippian	281.43	07/26/2001	281.01	08/09/2000
Shelby	413255095070401	Shelby	43.23	12/04/2000	43.03	02/24/2000

Surface-Water Quality

Surface-water-quality data was collected in Iowa during water year 2001 at two National Stream-Quality Accounting Network (NASQAN) stations. The NASQAN stations in Iowa are the Mississippi River at Clinton (station number 05420500) and Missouri River at Omaha(06610000). The combined drainage area of the two stations is approximately 408,000 square miles. Land use throughout the two drainage basins is primarily agricultural. Fifteen water samples were collected at Missouri River at Omaha, and fourteen water sample were collected at Mississippi River at Clinton during the 2001 water year.

Nearly all the samples collected at the two stations contained detectable concentrations of agricultural chemicals. Dissolved nitrite plus nitrate as nitrogen (hereafter referred to as nitrate) were common during the 2001 water year, with all samples containing concentrations greater than the detection level of 0.05 mg/L (milligrams per liter).

Nitrate concentrations at Clinton ranged from 0.209 mg/L on August 15 to 2.95 mg/L, on April 24.

Nitrate concentrations at Omaha ranged from 0.084 mg/L on October 3 to 2.96 mg/L, on May 7. Nitrate concentrations in water samples did not exceed 10 mg/L, which is the U.S. Environmental Protection Agency (USEPA), Maximum Contaminate

Level (MCL) for public drinking water (USEPA), 1990 Maximum contaminant levels, subpart B of part 141, National primary drinking water regulations: U.S.Code of Federal Regulations, Title 40, Parts 100 to 149, revised as of July 1, 1990, p.553-677). Pesticide analysis were completed for 29 water samples collected at the two NASQAN stations. Atrazine and metolachlor, two of the most commonly used herbicides in Iowa, were detected throughout the year at both NASQAN stations. Some of the detections of herbicide concentrations were at very low detection limits and are marked with an "E" code for an estimated value. An "E" code means the compound was detected but that the value is approaching quantifiable limits. Acetochlor was detected 11 times at Omaha and ten times at Clinton. The largest herbicide concentration was 4.38 ug/L (micrograms per liter) of atrazine in the water sample collected from the Missouri River on June 15. The largest overall concentration of acetochlor, alachlor, atrazine, cyanazine, and metolachlor in a single event was also on the Missouri River on June 15. This water sample had 0.420 ug/L of acetochlor, 0.014 ug/L of alachlor, 4.38 ug/L of atrazine, E0.014 ug/L of cyanazine, and 0.976 ug/L of metolachlor. The only herbicide that exceeded USEPA MCL's (USEPA,1992, Fact sheet: EPA 570/9-91-012FS, December 1992) was atrazine on June 15.

Herbicide concentrations were generally larger in samples collected during May, June, and July than in samples collected at other times during water year 2001. Water samples collected in October through February had the lowest overall concentrations of the five herbicides during the 2001 water year.

Ground-Water Quality

The Iowa ground-water-quality monitoring program has been operated since 1982 by the U.S. Geological Survey in cooperation with the Iowa Department of Natural Resources, Geological Survey Bureau. The purpose of the program is twofold: (1) provide consistent and representative data describing the chemical water quality of the principal aquifers of the State; and (2) determine possible trends in both water quality and spatial distribution of water quality.

The ground-water-quality monitoring program was initiated to continue a program begun in 1950 by the State Health Department that consisted of periodic, nonspecific sampling of untreated water from municipal supply wells. Each year, approximately 250 wells, primarily municipal supply, were randomly-selected for sampling between April and November. Between 1985 and 1989, the emphasis of the program was on the analysis of nitrate and herbicide concentrations in samples from wells less than 200 feet in depth. Because of the random pattern of sampling both spatially (different wells each year) and seasonally (different times during the year), trends in ground-water quality were difficult to determine from the data. Therefore, in 1990, to provide year-to-year continuity of data and a more statistically sound basis for the study of long-term water-quality trends, a sampling strategy based on a random selection of wells weighted by aquifer vulnerability was implemented. Aquifer vulnerability was determined by the frequency of atrazine detections in water samples collected from wells in the respective aquifers. In 1990 and 1991, a fixed network of 50 wells was selected to be sampled annually, and approximately 200 wells continued to be selected on a rotational basis.

In 1992, the investigation of water-quality trends became the primary focus of the program, and a 10-year work plan was designed to eliminate spatial and seasonal variance, yet allow flexibility within the schedule to address additional data needs. For sampling site selection in 1992, the well inventory was divided into categories based on aquifer type and again on well depth for surficial aquifers, and into categories designated "vulnerable to contamination" and "not vulnerable to contamination" based on the map *Groundwater Vulnerability Regions of Iowa* (Hoyer, B.E., and Hallberg, G.R., 1991, Special Map Series 11: Iowa Department of Natural Resources, scale 1:500,000) for bedrock aquifers. Vulnerability was determined by the combination and interpretation of factors including geologic and soil data, thickness of Quaternary cover, proximity to agricultural injection wells and sinkholes through which contaminants can be introduced to the aquifer, and evaluation of historical ground water and well contamination. A total of 90 sites were selected for sampling from a well inventory comprising approximately 1,640 public supply wells. From the 90 sites in the fixed network, 45 wells from two surficial aquifer types were selected to be sampled annually. The other 45 wells (from the bedrock aquifers) were selected to be sampled on a rotational schedule based on aquifer vulnerability to contamination. The wells determined to be vulnerable to contamination would be sampled every 2 years and those wells categorized as not vulnerable to contamination would be sampled every 4 years. All 90 wells were sampled in the first 2 years (1992 and 1993) and the sampling rotation began in

1994. The sampling effort during the 2000 water year is the ninth year of this 10-year program to determine possible ground-water-quality trends.

Ground-Water Monitoring Network

During the 2001 water year, a total of 86 ground-water samples were collected from municipal wells located throughout the State (fig. 8). These wells were sampled as part of the Iowa ground-water-quality monitoring (GWM) program to determine water-quality trends. Two types of surficial aquifers and four types vulnerable bedrock aquifers were sampled. The aquifer types include: (1) alluvial aquifers comprising sand and gravel associated with present-day fluvial systems and (2) glacial drift and buried-channel aquifers associated with previous glaciation (3) Cretaceous aquifers comprised of fine- to coarse-grained sandstones of the Dakota Group (4) Mississippian aquifers composed primarily of porous limestones and dolomites (5) Silurian-Devonian aquifers composed of porous and fractured limestones and dolomites; and (6) Cambrian-Ordovician aquifers comprised of sandstones and dolomitic sandstones of the Jordon Formation. Samples were collected during July, August, and September 2001. All samples were analyzed by the University of Iowa Hygienic Laboratory. All samples were analyzed for common ions, nutrients, and herbicides. In addition, most samples were sampled for volatile organic compounds (VOCs) and radio chemistry. However, in a few cases only wells less than 300 feet deep were analyzed for VOCs and only wells deeper than 300 feet were analyzed for radio chemistry. Results for all constituent analyses are published in this report. Discussion of analytical results will be limited to the nitrogen species nitrate and ammonia, and herbicides.

A summary of results for nutrient and herbicide analyses are listed by compound in table 6. Nitrate was detected in 37 of the 86 samples and ammonia was detected in 52 of the 86 samples analyzed for these compounds. One or more herbicides were detected in 24 of the 86 samples. The laboratory minimum reporting level (MRL) for ammonia and nitrate is 0.10 mg/L. The MRL's for the herbicides listed below are 0.05 µg/L. The MRL is the lowest concentration reliably measured by the laboratory.

Table 6. Summary of nitrogen species and herbicides detected in samples from the Ground-Water-Quality Monitoring project, water year 2001
[µg/L, micrograms per liter; mg/L, milligrams per liter; <, less than detection limit]

Compound	Number of samples analyzed	Number of samples in which compound was detected	Median value	Maximum concentration detected
Acetochlor	86	1	<0.05 µg/L	0.51 µg/L
Ammonia	86	52	.20 mg/L	6.5 mg/L
Alachlor	86	1	< 0.05 µg/L	0.22 µg/L
Atrazine	86	12	< 0.05 µg/L	0.19 µg/L
Butylate	86	0	< 0.05 µg/L	< 0.05 µg/L
Cyanazine	86	0	< 0.05 µg/L	< 0.05 µg/L
Deethylatrazine	86	10	< 0.05 µg/L	0.097 µg/L
Deisopropylatrazine	86	1	< 0.05 µg/L	0.12 µg/L
Metolachlor	86	6	< 0.05 µg/L	2.3 µg/L
Metribuzin	86	0	< 0.05 µg/L	< 0.05 µg/L
Nitrate	86	37	< 0.10 mg/L	18.0 mg/L
Prometone	86	2	< 0.05 µg/L	0.11 µg/L
Trifluralin	86	2	< 0.05 µg/L	0.05 µg/L

Concentrations of nitrate greater than 3.0 mg/L generally can be attributed to human activities, whereas concentrations less than 3.0 mg/L may indicate ambient concentrations from naturally occurring soil nitrogen or geologic deposits (Madison, R.J., and Brunett, J.O., 1984, Overview of the occurrence of nitrate in ground water of the United States, *in* National Water Summary 1984 -- Water quality trends: U.S. Geological Survey Water-Supply Paper 2275, p. 93-105). Nitrate concentrations were greater than 3.0 mg/L in 24 of 86 samples. The median concentration for the 24 samples with detections above 3.0 mg/L was 3.7 mg/L. Concentrations in five samples exceeded 10 mg/L, which is the U.S. Environmental Protection Agency (USEPA) Maximum Contaminant Level (MCL) for public drinking water. The median nitrate concentration for all samples was <0.10 mg/L. The maximum nitrate concentration detected was 18 mg/L. Of the 37 samples with detectable nitrate concentrations, 49 percent were from the alluvial aquifers, 13 percent were from the glacial drift and buried channel aquifers, and 38 percent were from the bedrock aquifers.

Nine commonly used herbicides and two atrazine degradation products (deethylatrazine and deisopropylatrazine) were analyzed for during the 2001 water year. Atrazine was the most commonly detected herbicide (14 percent), followed by deethylatrazine (12 percent) and metolachlor (7 percent). No sample contained herbicide concentrations that exceeded the MCL or proposed MCL of any of the analytes. The largest concentration of any herbicide compound detected was a metolachlor concentration of 2.3 µg/L. No detectable amounts of butylate, cyanazine, or metribuzin were found in any of the samples.

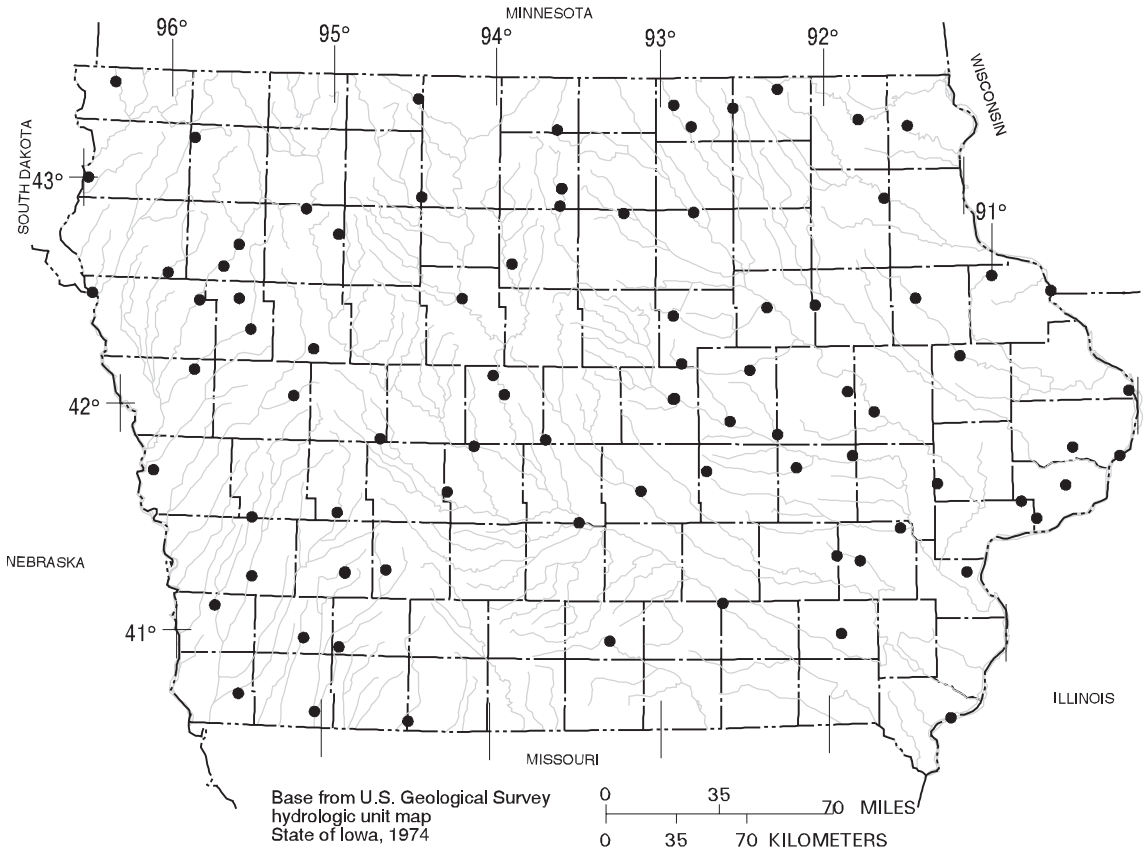

Figure 8. Location of active ground-water-quality monitoring wells in Iowa.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Benchmark Network is a network of 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by human activities.

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within four of the Nation's largest river basins--the Mississippi, Columbia, Colorado, and Rio Grande. The network consists of 39 stations. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents; (2) to test findings of the National Water-Quality Assessment Program (NAWQA); (3) to characterize processes unique to large-river systems such as storage and re-mobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical climate of precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to accomplish the following objectives: (1) provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of approximately 200 precipitation chemistry monitoring sites. (2) provide the mechanism to evaluate the effectiveness of the significant reduction in SO2 emissions that began in 1995 as implementation of the Clean Air Act Amendments (CAAA) occurred. (3) provide the scientific basis and nationwide evaluation mechanism for implementation of the Phase II CAAA emission reductions for SO2 and NOx scheduled to begin in 2000.

Data from the network, as well as information about individual sites, are available through the World Wide Web at:

`http://nadp.sws.uiuc.edu/`

The National Trends Network (NTN) is a 200-station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of wet atmospheric deposition, which includes snow, rain, sleet, and hail. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

The National Water-Quality Assessment (NAWQA) Program of the U.S. Geological Survey is a long-term program with goals to describe the status and trends of water-quality conditions for a large, representative part of the Nation's ground- and surface-water resources; provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

Assessment activities are being conducted in 53 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and account for a large percentage of the Nation's water use. A wide array of chemical constituents will be measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for decision making by water-resources managers and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Communication and coordination between USGS personnel and other local, State, and federal interests are critical components of the NAWQA Program. Each study unit has a local liaison committee consisting of representatives from key federal, State, and local water resources agencies, Indian nations, and universities in the study unit. Liaison committees

typically meet semiannually to discuss their information needs, monitoring plans and progress, desired information products, and opportunities to collaborate efforts among the agencies.

Additional information about the NAWQA Program is available through the world wide web at:

http://wwwrvares.er.usgs.gov/nawqa/nawqa_home.html

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

Tritium Network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the 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 THE RECORDS

The surface-water and ground-water records published in this report are for the 2000 water year that began October 1, 1999 and ended September 30, 2000. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, water-quality data for surface and ground water, and ground-water-level data. The locations of the stations and wells where the data was collected are shown in figures 3-5, 7, 9, 10. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report was collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station, whether streamsite or well, in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream order" system is used for regular surface-water stations, and the "latitude-longitude" system is used for wells.

Downstream Order System

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 mainstream station are listed before that station. A station on a tributary that enters between two mainstream 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, with respect to the stream to which it is immediately tributary, is indicated by an indention in the "List of Stations" in the front of this report. Each indention represents one rank. This downstream order and system of indention shows which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. 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 eight-digit number for each station, such as 05388250, which appears just to the left of the station name, includes the two-digit Part number "05" plus the six-digit downstream-order number "388250." The Part number designates the major river basin; for example, Part "05" is the Mississippi River Basin.

Latitude-Longitude System

The identification numbers for wells and miscellaneous surface-water sites are assigned according to the grid system of latitude and longitude. The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the wells or other sites within a 1-second grid. This site-identification number, once assigned, is a pure number and has no additional significance. In the rare instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number; however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description (fig. 9).

Latitude and longitude coordinates for wells:

1. 414315091252001
2. 414315091252002
3. 414316091251901

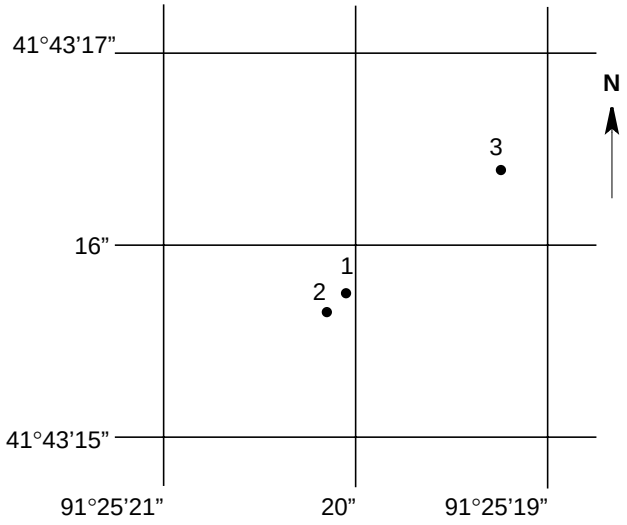

Figure 9. Latitude-longitude well number.

Numbering System For Wells

Each well is identified by means of (1) a 15-digit number that is based on the grid system of latitude and longitude, and (2) a local number that is provided for continuity with older reports and for other use as dictated by local needs. For maximum utility, latitude and longitude code numbers are determined to seconds in order that each well may have a unique number. The first six digits denote degrees, minutes, and seconds of north latitude; the next seven digits are degrees, minutes, and seconds of west longitude; and the last two numbers are a sequential number assigned in the order in which the wells are located in a 1-second quadrangle.

The local well numbers are in accordance with the Bureau of Land Management's system of land subdivision. Each well number is made up of three segments. The first segment indicates the township, the second the range, and the third the section

in which the well is located (fig. 10). The letters after the section number, which are assigned in a counter-clockwise direction (beginning with “A” in the northeast quarter), represent subdivisions of the section. The first letter denotes a 160-acre tract, the second a 40-acre tract, the third a 10-acre tract, and the fourth a 2.5 acre tract. Numbers are added as suffixes to distinguish wells in the same tract. Thus, the number 96-20-3CDBD1 designates the well in the SE 1/4 NW 1/4 SE 1/4 SW 1/4 sec.3, T.96 N., R.20 W.

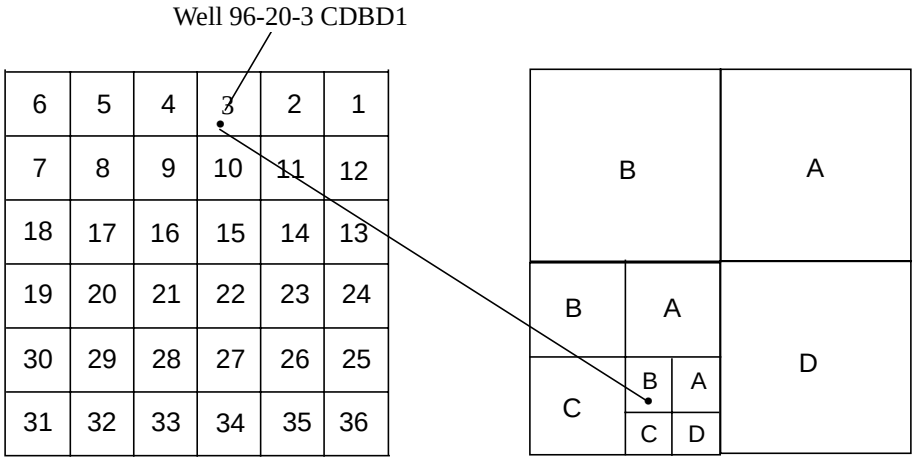

Figure 10. Local well-numbering system.

Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as “daily stations.” Location of all complete-record surface water stations which are given in this report are shown in figure 3.

Partial records are obtained through discrete measurements without using a continuous stage-recording device, and generally pertain only to a characteristic of either high, medium or low flow. The location of all active, crest-stage gaging stations are shown in figure 4.

Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consists of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relationships between stage and discharge. This data, together with supplemental information, such as weather records, are

used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consists of a record of stage and of notations regarding factors that may affect the relationship between stage and lake content. This data is used with stage-capacity curves or tables to compute lake storage.

Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage or with digital recorders that punch stage values on paper tapes at selected time intervals. Measurements of discharge are made with current meters using methods adopted by the Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, in Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations, Book 3, Chapter A6.

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge for any stage within the range of the measurements are prepared. If it is necessary to define extremes of discharge outside the range of the current-meter measurements, the curves are extended using: (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow over dams or weirs; or (4) step-backwater techniques.

Daily mean discharges are computed by applying the daily mean stages (gage heights) to the stage-discharge curves or tables. 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 determined by the shifting-control method, in which correction factors based on the individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control. For some stations, formation of ice in the winter may so obscure the stage-discharge relations that daily mean discharges must be estimated from other information such as temperature and precipitation records, notes of observations, and records for other stations in the same or nearby basins for comparable periods.

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.

In computing records of lake or reservoir contents, it is necessary to have available from surveys, curves or tables defining the relationship of stage and content. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly, or yearly changes then are determined. If the stage-content relation changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relation. Even when this is done, the contents computed may become increasingly in error as the lapsed time since the last survey increases. Discharges over lake or reservoir spillways are computed using stage-discharge relations.

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 these periods, the daily discharges are estimated from the recorded range in stage, discharge computed before and after the missing record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

Data Presentation

Streamflow data in this report are presented in a new format that is considerably different from the format in data reports prior to the 1991 water year. The major changes are that statistical characteristics of discharge now appear in tabular summaries following the water-year data table, and less information is provided in the text or station manuscript above the table. These changes represent the results of a pilot program to reformat the annual water-data report to meet current user needs and data preference.

The records published for each continuous-record surface-water discharge station (gaging station) consist of four parts, the manuscript or station description; the data table of daily mean values of discharge for the current water year with summary data; a tabular statistical summary of monthly mean flow data for a designated period, by water year; and a summary statistics table that includes statistical data of annual, daily, and instantaneous flows as well as data pertaining to annual runoff, 7-day low-flow minimums, and flow duration.

Station Manuscript

The manuscript provides, under various headings, descriptive information, such as station location; period of record; historical extremes outside period of record; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

LOCATION.--Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages were determined by methods given in “River Mileage Measurement,” Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers.

DRAINAGE AREA.--Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

PERIOD OF RECORD.--This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not, and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

REVISED RECORDS.--Because of new information, published records occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted 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 most recently revised figure was first published is given

GAGE.--The type of gage in current use, the datum of the current gage sea level (see “Definition of Terms”), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

REMARKS.--All periods of estimated daily-discharge record will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily-discharge table. (See next section, “Identifying Estimated Daily Discharge.”) If a REMARKS paragraph is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, to special methods of computation, and to conditions that affect natural flow at the station. In addition, information may be presented pertaining to average discharge data for the period of record; to extremes data for the period of record and the current year; and, possibly, to other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

EXTREMES FOR PERIOD OF RECORD.--Extremes may include maximum and minimum stages and maximum and minimum discharges or content. Extremes are published only for stations with significant flow regulation and where extremes occurred in pre-regulation periods. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, a crest-stage gage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and is reported in the same manner as the maximum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Included here is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the U.S. Geological Survey.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made in the U.S. Geological Survey's distributed data system, NWIS, and subsequently to its web-based National data system, NWISWEB [http://water.usgs.gov/nwis/nwis]. Because of the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from NWIS or NWISWEB to ensure the most recent updates. Updates to NWISWEB are currently made on an annual basis.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the District Office (address given on the back of the title page of this report) to determine if the published records were ever revised after the station was discontinued. Of course, if the data for a discontinued station were obtained by computer retrieval, the data would be current, and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and in the inclusion of a skeleton stage-capacity table when daily contents are given.

Headings for AVERAGE DISCHARGE, EXTREMES FOR PERIOD OF RECORD, and EXTREMES FOR CURRENT YEAR have been deleted, and the information contained in these paragraphs is now presented in the tabular summaries following the discharge table or in the REMARKS paragraph, as appropriate. EXTREMES FOR PERIOD OF RECORD are now presented only for stations with significant flow regulation and where extremes occurred in pre-regulation periods. No changes have been made to the data presentations of lake contents or reservoir storage.

Data Table of Daily Mean Values

The daily table for stream-gaging stations gives 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 is usually 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 or if the drainage area includes large noncontributing areas. In the yearly summary below the monthly summary, the figures shown are the appropriate discharges for the calendar and water years. At some stations, monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversions or reservoir contents are given. These figures are identified by a symbol and corresponding footnote.

Statistics of Monthly Mean Data

A tabular summary of the mean (line headed “MEAN”), maximum (line headed “MAX”), and minimum (line headed “MIN”) of monthly mean flows for each month for a designated period is provided below the mean values table. The water years of the first occurrence of the maximum and minimum monthly flows are provided immediately below those figures. The designated period will be expressed as “FOR PERIOD OF RECORD, BY WATER YEAR (WY),” for unregulated streams for the water years listed in the PERIOD OF RECORD paragraph in the station manuscript. It will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript. For significantly regulated streams, the first and last water years of the range of years will be given for the post-regulation period.

Summary Statistics

A table titled “SUMMARY STATISTICS” follows the statistics of monthly mean data tabulation. This table consists of four columns, with the first column containing the line headings of the statistics being reported. The table provides a statistical summary of yearly, daily, and instantaneous flows, not only for the current water year, but also for the previous calendar year and for a designated period, as appropriate. The designated period selected, “PERIOD OF RECORD,” for unregulated streams, will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript. For significantly regulated streams, the period selected will be designated as “WATER YEARS ___ - ___ ,” for the post regulation period. All of the calculations for the statistical characteristics designated ANNUAL (See line headings below.), except for the “ANNUAL 7-DAY MINIMUM” statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. Because the designated period may not be the same as the station period of record published in the manuscript, occasionally the dates of occurrence listed for the daily and instantaneous extremes in the designated-period column may not be within the selected water years listed in the heading. When this occurs, it will be noted in the REMARKS paragraph or in footnotes. Selected streamflow duration curve statistics and runoff data are also given. Runoff data may be omitted if there is extensive regulation or diversion of flow in the drainage basin.

The following summary statistics data, as appropriate, are provided with each continuous record of discharge. Comments to follow clarify information presented under the various line headings of the summary statistics table.

ANNUAL TOTAL.--The sum of the daily mean values of discharge for the year. At some stations, the annual total discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

ANNUAL MEAN.--The arithmetic mean of the individual daily mean discharges for the year noted or for the designated period. At some stations, the yearly mean discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

HIGHEST ANNUAL MEAN.--The maximum annual mean discharge occurring for the designated period.

LOWEST ANNUAL MEAN.--The minimum annual mean discharge occurring for the designated period.

HIGHEST DAILY MEAN.--The maximum daily mean discharge for the year or for the designated period.

LOWEST DAILY MEAN.--The minimum daily mean discharge for the year or for the designated period.

ANNUAL 7-DAY MINIMUM.--The lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1 - March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

INSTANTANEOUS PEAK FLOW.--The maximum instantaneous discharge occurring for the water year or for the designated period. Note that secondary instantaneous peak discharges above a selected base discharge are stored in District computer files for stations meeting certain criteria. Those discharge values may be obtained by writing to the District Office. (See address on back of title page of this report.)

INSTANTANEOUS PEAK STAGE.--The maximum instantaneous stage occurring for the water year or for the designated period. If the dates of occurrence for the instantaneous peak flow and instantaneous peak stage differ, the REMARKS paragraph in the manuscript or a footnote may be used to provide further information.

INSTANTANEOUS LOW FLOW.--The minimum instantaneous discharge occurring for the water year or for the designated period.

ANNUAL RUNOFF.--Indicates the total quantity of water in runoff for a drainage area for the year. Data reports may use any of the following units of measurement in presenting annual runoff data:

Acre-foot (AC-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.

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

Inches (INCHES) indicates the depth to which the drainage area would be covered if all of the runoff for a given time period were uniformly distributed on it.

10 PERCENT EXCEEDS.--The discharge that is exceeded 10 percent of the time for the designated period.

50 PERCENT EXCEEDS.--The discharge that is exceeded 50 percent of the time for the designated period.

90 PERCENT EXCEEDS.--The discharge that is exceeded 90 percent of the time for the designated period.

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 annual maximum stage and discharge at crest-stage stations, and the second is a table of discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge made at sites other than continuous-record or partial-record stations. 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.

Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual State data reports are identified by listing the dates of the estimated record in the REMARKS paragraph of the station description, and are flagged “e” in tables.

Accuracy of the Records

The accuracy of streamflow records 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 measurements of stage, measurements of discharge, and interpretation of records.

The accuracy attributed to the records is indicated under "REMARKS." "Excellent" means that about 95 percent of the daily discharges are within 5 percent of their true values; "good," within 10 percent; and "fair," within 15 percent. Records that do not meet the criteria mentioned are rated "poor." Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft^3/s the nearest tenth between 1.0 and 10 ft^3/s; to whole numbers between 10 and 1,000 ft^3/s; and to 3 significant figures for more than 1,000 ft^3/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

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.

Other Records Available

Information used in the preparation of the records in this publication, such as discharge-measurement notes, gage-height records, temperature measurements, and rating tables is on file in various field offices of the Iowa District. Also, most of the daily mean discharges are in computer-readable form and have been analyzed statistically. Information on the availability of the unpublished information or on the results of statistical analyses of the published records may be obtained from the offices whose addresses are given on the back of the title page of this report.

Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near streamgaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A continuing-record station is a site where data is collected on a regularly scheduled basis. Frequency may be once or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where limited water-quality data is collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location other than a continuing or partial-record station, where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between "continuing records" as used in this report and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data is obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figure 5.

Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-

order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

On-Site Measurements and Sample Collection

In obtaining water-quality data, a major concern needs to be assuring that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, alkalinity and dissolved oxygen, are made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures are followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in publications on "Techniques of Water-Resources Investigations," Book 1, Chap. D2; Book 3, Chap. A1, A3, and A4; Book 9, Chap.A1-A9.

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 the representative sample needed for an accurate mean concentration and for use in calculating load. All samples obtained for the National Stream Quality Accounting Network are obtained from at least several verticals. Whether samples are obtained from the centroid of flow or from several verticals depends on flow conditions and other factors, which must be evaluated by the collector.

Chemical-quality data published in this report are considered to be the most representative values available for 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.

Water Temperature and Specific Conductance

Water temperatures are measured at most of the water-quality stations. The measurement of temperature and specific conductance is performed during each regular site visit (usually at a six week interval) to streamgaging stations. Records of stream temperature indicate significant thermal characteristics of the stream when analyzed over a long period of record. Large streams have small daily temperature variations, while shallow streams may have a daily range of several degrees and may closely follow the changes in air temperature. Furthermore, some streams may be affected by waste-heat discharge.

Specific conductance can be used as a general indicator of stream quality. This determination is easily made in the field with a portable meter, and the results are very useful as general indicators of dissolved-solids concentration or as a base for extrapolating other analytical data. Records for temperature and specific conductance appear in the section "Analyses of samples collected at miscellaneous sites".

Sediment

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

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily, or in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges 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 and 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. Miscellaneous suspended-sediment samples were collected during flood events have been included with the station's water quality data or in the section "Analyses of samples at miscellaneous sites".

Laboratory Measurements

Sediment samples, samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the U.S. Geological Survey laboratory in Arvada, Colorado and the University of Iowa Hygienic Laboratory. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the U.S. Geological Survey laboratories are given in TWRI, Book 1, Chap. D2, Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.--This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor temperature record, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.--Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

EXTREMES.--Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently, because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, WATSTORE, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from the appropriate computer file to insure the most recent updates.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

Remarks Codes

The following remarks codes may appear with the water-quality data in this report:

PRINTED OUTPUT	REMARK
E	Estimated value
>	Actual value is know to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant
V	Analyte was detected in both the environmental sample and the associated blank

Water Quality-Control Data

Data generated from quality-control (QC) samples are a requisite for evaluating the quality of the sampling and processing techniques as well as data from the actual samples themselves. Without QC data, environmental sample data cannot be adequately interpreted because the errors associated with the sample data are unknown. The various types of QC samples collected by this district are described in the following section. Procedures have been established for the storage of water-quality-control data within the USGS. These procedures allow for storage of all derived QC data and are identified so that they can be related to corresponding environmental samples.

Blank Samples

Blank samples are collected and analyzed to ensure that environmental samples have not been contaminated by the overall data-collection process. The blank solution used to develop specific types of blank samples is a solution that is free of the analytes of interest. Any measured value signal in a blank sample for an analyte (a specific component measured in a chemical analysis) that was absent in the blank solution is believed to be due to contamination. There are many types of blank samples possible, each designed to segregate a different part of the overall data-collection process. The types of blank samples collected in this District are:

Field blank - a blank solution that is subjected to all aspects of sample collection, field processing preservation, transportation, and laboratory handling as an environmental sample.

Trip blank - a blank solution that is put in the same type of bottle used for an environmental sample and kept with the set of sample bottles before and after sample collection.

Equipment blank - a blank solution that is processed through all equipment used for collecting and processing an environmental sample (similar to a field blank but normally done in the more controlled conditions of the office).

Sampler blank - a blank solution that is poured or pumped through the same field sampler used for collecting an environmental sample.

Filter blank - a blank solution that is filtered in the same manner and through the same filter apparatus used for an environmental sample.

Splitter blank - a blank solution that is mixed and separated using a field splitter in the same manner and through the same apparatus used for an environmental sample.

Preservation blank - a blank solution that is treated with the sampler preservatives used for an environmental sample.

Reference Samples

Reference material is a solution or material prepared by a laboratory whose composition is certified for one or more properties so that it can be used to assess a measurement method. Samples of reference material are submitted for analysis to ensure that an analytical method is accurate for the known properties of the reference material. Generally, the selected reference material properties are similar to the environmental sample properties.

Replicate Samples

Replicate samples are a set of environmental samples collected in a manner such that the samples are thought to be essentially identical in composition. Replicate is the general case for which a duplicate is the special case consisting of two samples. Replicate samples are collected and analyzed to establish the amount of variability in the data contributed by some part of the collection and analytical process. There are many types of replicate samples possible, each of which may yield slightly different results in a dynamic hydrologic setting, such as a flowing stream. The types of replicate samples collected in this District are:

Sequential samples - a type of replicate sample in which the samples are collected one after the other, typically over a short time.

Split sample - a type of replicate sample in which a sample is split into subsamples contemporaneous in time and space.

Spike Samples

Spike samples are samples to which known quantities of a solution with one or more well-established analyte concentrations have been added. These samples are analyzed to determine the extent of matrix interference or degradation on the analyte concentration during sample processing and analysis.

Dissolved Trace-Element Concentrations

NOTE.--Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter (µg/L) level. Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are within the range of 10's to 100's of nanograms per liter (ng/L). Data above the µg/L level should be viewed with caution. Such data may actually represent elevated environmental concentrations from natural or human causes; however, these data could reflect contamination introduced during sampling, processing, or analysis. To confidently produce dissolved trace-element data with insignificant contamination, the U.S. Geological Survey began

using new trace-element protocols at some stations in water year 1994.

Change in National Trends Network Procedures

Sample handling procedures at all National Trends Network stations were changed substantially on January 11, 1994, in order to reduce contamination from the sample shipping container. The data for samples before and after that date are different and not directly comparable. A tabular summary of the differences based on a special intercomparison study is available from the NADP Program Office, Illinois State Water Survey, 2204 Griffith Drive, Champaign, Il 61820-7495 (217-333-7873).

Records of Ground-Water Levels

Ground-water level data from a network of observation wells in Iowa is published in this report. This data provides a limited historical record of water-level changes in the State's most important aquifers. Locations of the observation wells in this network in Iowa are shown in figure 6. Information about the availability of the data in the water-level files and reports of the U.S. Geological Survey may be obtained from the Iowa District Office (see address on back of title page).

Data Collection and Computation

Measurements of water levels are made in many types of wells under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well ensures that measurements at each well are of consistent accuracy and reliability.

Tables of water-level data are arranged alphabetically by counties. The site identification number, based on latitude and longitude, for a given well is the 15-digit numeric value that appears in the upper left corner of the station description. The secondary identification number is the local well number, an alphanumeric value, derived from the township, range, and section location of the well (fig. 7).

Water-level records are obtained from direct measurements with a chalked steel tape, electric line, airline, or from the graph of a water-level recorder. The water-level measurements in this report are in feet with reference to land-surface datum. Land-surface datum is a plane that is approximately at land surface at each well. The elevation of the land-surface datum is given in the well description. The height of the measuring point 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-level measurements are reported to the nearest hundredth of a foot. Estimates, indicated by an "e" may be reported in tenths of a foot. Adjustments to the water level recorder chart are indicated by an "a". The error of water-level measurements may be, at most, a few hundredths of a foot.

Data Presentation

Each well record consists of two parts: the station description, and the table of water levels observed during the water year. The description of the well is presented by headings preceding the tabular data. The following explains the information presented under each heading.

LOCATION.--This paragraph follows the well identification number and includes the latitude and longitude (given in degrees, minutes, and seconds), the hydrologic unit number, the distance and direction from a geographic point of reference, and the well owner's name.

AQUIFER.--This entry is the aquifer(s) name (if one exists) and geologic age of the strata open to the well.

WELL CHARACTERISTICS.--This entry describes the well depth, casing diameter, casing depth, opening or screened interval(s), method of construction, and use of water from the well.

INSTRUMENTATION.--This paragraph provides information on the frequency of measurement and the collection method used.

DATUM.--This entry includes the land-surface elevation and the measuring point at the well. The elevation of the land-surface datum is described in feet above (or below) sea level; it is reported with a precision depending on the method of determination. The measuring point is described physically and in relation to land surface.

REMARKS.--This entry describes factors that may influence the water level in a well or the measurement of the water level, and any information not presented in the other parts of the station description but considered useful.

PERIOD OF RECORD.--This entry indicates the period for which there are published records for the well. It reports the month and year of the beginning of publication of water-level records by the U.S. Geological Survey.

REVISED RECORDS.--If any revisions of previously published data were made for water-levels, the Water Data Report in which they appeared and year published would appear here.

EXTREMES FOR PERIOD OF RECORD.--This entry contains the highest and lowest water levels for the period of record, below land-surface datum, and the dates of their occurrence.

A table of water levels follows the station description for each well. Water levels are reported in feet below land-surface datum. For wells equipped with recorders, only abbreviated tables are published. The highest and lowest water levels of the water year and the dates of occurrence are shown on a line below the abbreviated table. Because all values are not published for wells with recorders, the extremes may be values that are not listed in the table. Missing records are indicated by dashes in place of the water level.

Hydrographs are included for 59 wells which are representative of hydrologic conditions in the important aquifers in Iowa.

Only water-level data from a national network of observation wells are given in this report. This data is intended to provide a sampling and historical record of water-level changes in the Nation’s most important aquifers. Locations of the observation wells in this network in Iowa are shown in figure 7.

Records of Ground-Water Quality

Records of ground-water quality in this report differ from other types of records in that for most sampling sites, they consist of only one set of measurements for the water year. The quality of ground water ordinarily changes only slowly; therefore, for most general purposes: one annual sampling, or only a few samples taken at infrequent intervals during the year, is sufficient. Frequent measurement of the same constituents is not necessary unless one is concerned with a particular problem, such as monitoring for trends in nitrate concentration. In the special cases where the quality of ground water may change more rapidly, more frequent measurements are made to identify the nature of the changes.

The records of ground-water quality in this report were obtained as a part a statewide ground-water quality monitoring network operated by the Iowa District. All samples were obtained from municipal wells throughout Iowa. This program is conducted in cooperation with the University of Iowa Hygienic Laboratory (UHL) and the Iowa Department of Natural Resources (Geological Survey Bureau). All samples are collected by USGS personnel, field-preserved and submitted to UHL for analysis. Chemical analyses include common constituents (major ions), nutrients, organic compounds, radio nuclides and pesticides. Approximately 10 percent of the samples receive additional analyses for about 90 organic priority pollutants; however, these analyses are not presented in this report, but are on file in the Iowa District Office.

Most methods for collecting and analyzing water samples are described in the "U.S. Geological Survey Techniques of Water-Resources Investigations" manuals listed on a following page. The values reported in this report represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. All samples were obtained by trained personnel. The wells sampled were pumped long enough to assure that the water collected came directly from the aquifer and had not stood for a long time in the well casing where it would have been exposed to the atmosphere and to the material comprising the casings. The samples collected represent raw water.

Data Presentation

The records of ground-water quality are published in a section titled GROUND-WATER QUALITY DATA immediately following the ground-water-level records. Data for quality of ground water are listed alphabetically by county, and are identified by station number. The prime identification number for wells sampled is the 15-digit station number derived from the latitude-longitude locations. No descriptive statements are given for ground-water-quality records; however, the station number, date and time of sampling, depth of well, and other pertinent data are given in the table containing the chemical analyses of the ground water. The REMARK codes listed for surface-water-quality records are also applicable to ground-water-quality records.

Explanation of Quality of Ground-Water Data Tables -- Descriptive Headings

STATION NUMBER	LOCAL WELL NUMBER	DATE	LOCAL WELL NAME	COUNTY	SAMPLE DATE	SAMPLE TIME	AQUI-FER CODE	DEPTH OF WELL, TOTAL (FT)
411441094401602	075N33W32CDDD	1943	BRIDGEWATER 1	ADAIR	08-11-92	1130	111ALVM	49

STATION NUMBER**:** 15-digit number based on grid system of latitude and longitude.
LOCAL WELL NUMBER**:** Refers to the Bureau of Land Management System of land subdivision.
DATE: The date that construction on the well was completed.
LOCAL WELL NAME**:** Name used by community to identify well.
COUNTY: The name of the county where the well is located.
SAMPLE DATE: Date the well was sampled.
SAMPLE TIME: Time the sample was collected.
AQUIFER CODE: Refers to the lithologic unit in which the well is completed. Derived from two digits of the geologic unit, the principal unit which provides the majority of water to the well:

11 - Quaternary	33- Mississippian	36 - Ordovician
21 - Cretaceous	34 - Devonian	37 - Cambrian
32 - Pennsylvanian	35 - Silurian	

The third digit and remaining alphabetic characters refer to the more specific lithologic unit which the well is tapping. The following examples are commonly used units:

Code	General	Specific
111ALVM	Quaternary	(alluvium)
217DKOT	Cretaceous	(Dakota sandstone)
344CDVL	Devonian	(Cedar Valley limestone)

DEPTH OF WELL, TOTAL (FT): Total depth of well in feet.

ACCESS TO USGS WATER DATA

The USGS provides near real-time stage and discharge data for many of the gaging stations equipped with the necessary telemetry and historic daily-mean and peak-flow discharge data for most current or discontinued gaging stations through the world wide web (WWW). This data may be accessed at:

`http://www.usgs.gov`

Some water-quality and ground-water data also are available through the WWW. In addition, data can be provided in various machine-readable formats on magnetic tape or 3-1/2 inch floppy disk. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each of the Water Resources Division District Offices (See address on the back of the title page.)

The Iowa District maintains a web site highlighting many of the District's activities. Many of the continuous stream gages presented in these reports have near-real-time data available, and all gages have historic data available. This data may be accessed at:

`http://ia.water.usgs.gov`

DEFINITION OF TERMS

Specialized technical terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. Terms such as algae, water level, precipitation are used in their common everyday meanings, definitions of which are given in standard dictionaries. Not all terms defined in this alphabetical list apply to every State. See also table for converting English units to International System (SI) Units on the inside of the back cover.

Acid neutralizing capacity (ANC) is the equivalent sum of all bases or base-producing materials, solutes plus particulates, in an aqueous system that can be titrated with acid to an equivalence point. This term designates titration of an "unfiltered" sample (formerly reported as alkalinity).

Acre-foot (AC-FT, acre-ft) is a unit of volume, commonly used to measure quantities of water used or stored, equivalent to the volume of water required to cover 1 acre to a depth of 1 foot and equivalent to 43,560 cubic feet, 325,851 gallons, or 1,233 cubic meters. (See also "Annual runoff")

Adenosine triphosphate (ATP) is an organic, phosphate-rich, compound important in the transfer of energy in organisms. Its central role in living cells makes ATP an excellent indicator of the presence of living material in water. A measurement of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter.

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.

Alkalinity is the capacity of solutes in an aqueous system to neutralize acid. This term designates titration of a "filtered" sample.

Annual runoff is the total quantity of water that is discharged ("runs off") from a drainage basin in a year. Data reports may present annual runoff data as volumes in acre-feet, as discharges per unit of drainage area in cubic feet per second per square mile, or as depths of water on the drainage basin in inches.

Annual 7-day minimum is the lowest mean value for any 7-consecutive-day period in a year. Annual 7-day minimum values are reported herein for the calendar year and the water year (October 1 to September 30). Most low-flow frequency analyses use a climatic year (April 1-March 31), which tends to prevent the low-flow period from being artificially split between adjacent years. The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

Aroclor is the registered trademark for a group of polychlorinated biphenyls that were manufactured by the Monsanto Company prior to 1976. Aroclors are assigned specific 4-digit reference numbers dependent upon molecular type and degree of substitution of the biphenyl ring hydrogen atoms by chlorine atoms. The first two digits of a numbered aroclor represent the molecular type and the last two digits represent the weight percent of the hydrogen substituted chlorine.

Artificial substrate is a device that 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 multiplate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection. (See also "Substrate")

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. Ash mass of zooplankton and phytoplankton is expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2). (See also "Biomass")

Bacteria are microscopic unicellular organisims, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, while 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.

Base discharge (for peak discharge) is a discharge value, determined for selected stations, above which peak discharge data are published. The base discharge at each station is selected so that an average of about three peaks per year will be published.

Base flow is sustained flow of a stream in the absence of direct runoff. It includes natural and human-induced streamflows. Natural base flow is sustained largely by ground-water discharge.

Bedload is material in transport that is supported primarily by the streambed. In this report, bedload is considered to consist of particles in transit from the bed to an elevation equal to the top of the bedload sampler nozzle (ranging from 0.25 to 0.5 ft) that are retained in the bedload sampler. A sample collected with a pressure-differential bedload sampler may also contain a component of the suspended load.

Bedload discharge (tons per day) is rate of sediment moving as bedload, reported as dry weight, that passes through a cross section in a given time. NOTE: Bedload discharge values in this report may include a component of the suspended-sediment discharge. A correction may be necessary when computing the total sediment discharge by summing the bedload discharge and the suspended-sediment discharge. (See also "Bedload" and "Sediment")

Bed material is the sediment mixture of which a streambed, lake, pond, reservoir, or estuary bottom is composed. (See also "Bedload" and "Sediment")

Benthic organisms are the group of organisms inhabiting the bottom of an aquatic environment. They include a number of types of organisms, such as bacteria, fungi, insect larvae and nymphs, snails, clams, and crayfish. They are useful as indicators of water quality.

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

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

Biomass pigment ratio is an indicator of the total proportion of periphyton which are autotrophic (plants). This is also called the Autotrophic Index.

Blue-green algae (*Cyanophyta*) 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. Concentrations are expressed as a number of cells per milliliter (cells/mL) of sample. (See also "Phytoplankton")

Bottom material (See "Bed material")

Cells/volume refers to the number of cells of any organism that 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 volume, and are generally reported as cells or units per milliliter (mL) or liter (L).

Cells volume (biovolume) determination is one of several common methods used to estimate biomass of algae in aquatic systems. Cell members of algae are frequently used in aquatic surveys as an indicator of algal production. However, cell numbers alone cannot represent true biomass because of considerable cell-size variation among the algal species. Cell volume (μm^3) is determined by obtaining critical cell measurements on cell dimensions (for example, length, width, height, or radius) for 20 to 50 cells of each important species to obtain an average biovolume per cell. Cells are categorized according to the correspondence of their cellular shape to the nearest geometric solid or combinations of simple solids (for example, spheres, cones, or cylinders). Representative formulae used to compute biovolume are as follows:

$$\text{sphere } 4/3\ \pi r^3 \quad \text{cone } 1/3\ \pi r^3 h \quad \text{cylinder } \pi r^3 h.$$

pi is the ratio of the circumference to the diameter of a circle; pi = 3.14159…
From cell volume, total algal biomass expressed as biovolume ($\mu m^3/mL$) is thus determined by multiplying the number of cells of a given species by its average cell volume and then summing these volumes over all species.

Cfs-day (See "Cubic foot per second-day")

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 BOD or with carbonaceous organic pollution from sewage or industrial wastes. [See also "Biochemical oxygen demand (BOD)"]

Clostridium perfringens *(C. perfringens)* is a spore-forming bacterium that is common in the feces of human and other warm-blooded animals. Clostridial spores are being used experimentally as an indicator of past fecal contamination and presence of microorganisms that are resistant to disinfection and environmental stresses. (See also "Bacteria")

Coliphages are viruses that infect and replicate in coliform bacteria. They are indicative of sewage contamination of waters and of the survival and transport of viruses in the environment.

Color unit is produced by 1 milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Confined aquifer is a term used to describe an aquifer containing water between two relatively impermeable boundaries. The water level in a well tapping a confined aquifer stands above the top of the confined aquifer and can be higher or lower than the water table that may be present in the material above it. In some cases, the water level can rise above the ground surface, yielding a flowing well. (See also "Aquifer")

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.

Continuous-record station is a site where data are collected with sufficient frequency to define daily mean values and variations within a day.

Control designates a feature in the channel downstream from a gaging station that physically influences the water-surface elevation and thereby determines the stage-discharge relation at the gage. This feature may be a constriction of the channel, a bedrock outcrop, a gravel bar, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure as used in this report is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of saltwater.

Cubic foot per second (CFS, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point in 1 second. It is equivalent to approximately 7.48 gallons per second or approximately 449 gallons per minute, or 0.02832 cubic meters per second. The term "second-feet" sometimes is used synonymously with "cubic feet per second" but is now obsolete.

Cubic foot per second-day (CFS-DAY, Cfs-day, [$(ft^3/s)/d$]) 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, 1.98347 acre-feet, 646,317 gallons, or 2,446.6 cubic meters. The daily-mean discharges reported in the daily-value data tables are numerically equal to the daily volumes in cfs-days, and the totals also represent volumes in cfs-days.

Cubic foot per second per square mile [CFSM, $(ft^3/s)/mi^2$] is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming the runoff is distributed uniformly in time and area. (See also "Annual runoff")

Daily mean suspended-sediment concentration is the time-weighted concentration of suspended sediment passing a stream cross section during a 24-hour day. (See also "Daily mean suspended-sediment concentration," "Sediment," and "Suspended-sediment concentration")

Daily-record station is a site where data are collected with sufficient frequency to develop a record of one or more data values per day. The frequency of data collection can range from continuous recording to periodic sample or data collection on a daily or near-daily basis.

Data Collection Platform (DCP) is an electronic instrument that collects, processes, and stores data from various sensors, and transmits the data by satellite data relay, line-of-sight radio, and/or landline telemetry.

Data logger is a microprocessor-based data acquisition system designed specifically to acquire, process, and store data. Data are usually downloaded from onsite data loggers for entry into office data systems.

Datum is a surface or point relative to which measurements of height and/or horizontal position are reported. A vertical datum is a horizontal surface used as the zero point for measurements of gage height, stage, or elevation; a horizontal datum is a reference for positions given in terms of latitude-longitude, State Plane coordinates, or UTM coordinates. (See also "Gage datum," "Land-surface datum," "National Geodetic Vertical Datum of 1929," and "North American Vertical Datum of 1988")

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

Diel is of or pertaining to a 24-hour period of time; a regular daily cycle.

Discharge, or flow, is the rate that matter passes through a cross section of a stream channel or other water body per unit of time. The term commonly refers to the volume of water (including, unless otherwise stated, any sediments or other constituents suspended or dissolved in the water) that passes a cross section in a stream channel, canal, pipeline, etc., within a given period of time (cubic feet per second). Discharge also can apply to the rate at which constituents such as suspended sediment, bedload, and dissolved or suspended chemical constituents, pass through a cross section, in which cases the quantity is expressed as the mass of constituent that passes the cross section in a given period of time (tons per day).

Dissolved refers to that material in a representative water sample that passes through a 0.45-micrometer membrane filter. This is a convenient operational definition used by Federal and State agencies that collect water-quality data. Determinations of "dissolved" constituent concentrations are made on sample water that has been filtered.

Dissolved oxygen (DO) is the molecular oxygen (oxygen gas) dissolved in water. The concentration in water is a function of atmospheric pressure, temperature, and dissolved-solids concentration of the water. The ability of water to retain oxygen decreases with increasing temperature or dissolved-solids concentration. Photosynthesis and respiration by plants commonly cause diurnal variations in dissolved-oxygen concentration in water from some streams.

Dissolved-solids concentration in water is the quantity of dissolved material in a sample of water. It is determined either analytically by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. In the mathematical calculation, the bicarbonate value, in milligrams per liter, is multiplied by 0.4926 to convert it to carbonate. Alternatively, alkalinity concentration (as mg/L $CaCO_3$) can be converted to carbonate concentration by multiplying by 0.60.

Diversity index (H) (Shannon 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. 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 specific location is that area upstream from the location, measured in a horizontal plane, that has a common outlet at the site for its surface runoff from precipitation that normally drains by gravity into a stream. Drainage areas given herein include all closed basins, or noncontributing areas, within the area unless otherwise specified.

Drainage basin is a part of the Earth's surface that contains a drainage system with a common outlet for its surface runoff. (See "Drainage area")

Dry mass refers to the mass of residue present after drying in an oven at 105 °C, 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. (See also "Ash mass," "Biomass," and "Wet mass")

Dry weight refers to the weight of animal tissue after it has been dried in an oven at 65 ˚C until a constant weight is achieved. Dry weight represents total organic and inorganic matter in the tissue. (See also "Wet weight")

Enterococcus bacteria are commonly found in the feces of humans and other warm-blooded animals. Although some strains are ubiquitous and not related to fecal pollution, the presence of enterococci in water is an indication of fecal pollution and the possible presence of enteric pathogens. Enterococcus bacteria are those bacteria that produce pink to red colonies with black or reddish-brown precipitate after incubation at 41 °C on mE agar and subsequent transfer to EIA medium. Enterococci include *Streptococcus feacalis, Streptococcus feacium, Streptococcus avium,* and their variants. (See also "Bacteria")

EPT Index is the total number of distinct taxa within the insect orders Ephemeroptera, Plecoptera, and Trichoptera. This index summarizes the taxa richness within the aquatic insects that are generally considered pollution sensitive, the index usually decreases with pollution.

Escherichia coli (E. coli) are bacteria present in the intestine and feces of warm-blooded animals. *E. coli* are a member species of the fecal coliform group of indicator bacteria. In the laboratory, they are defined as those bacteria that produce yellow or yellow-brown colonies on a filter pad saturated with urea substrate broth after primary culturing for 22 to 24 hours at 44.5 ˚C on mTEC medium. Their concentrations are expressed as number of colonies per 100 mL of sample. (See also "Bacteria")

Estimated (E) value of a concentration is reported when an analyte is detected and all criteria for a positive result are met. If the concentration is less than the method detection limit (MDL), an 'E' code will be reported with the value. If the analyte is qualitatively identified as present, but the quantitative determination is substantially more uncertain, the National Water Quality Laboratory will identify the result with an 'E' code even though the measured value is greater than the MDL. A value reported with an 'E' code should be used with caution. When no analyte is detected in a sample, the default reporting value is the MDL preceded by a less than sign (<).

Euglenoids (*Euglenophyta*) are a group of algae that are usually free-swimming and rarely creeping. They have the ability to grow either photosynthetically in the light or heterotrophically in the dark. (See also "Phytoplankton")

Extractable organic halides (EOX) are organic compounds that contain halogen atoms such as chlorine. These organic compounds are semi-volatile and extractable by ethyl acetate from air-dried streambed sediments. The ethyl acetate extract is combusted, and the concentration is determined by microcoulometric determination of the halides formed. The concentration is reported as micrograms of chlorine per gram of the dry weight of the streambed sediments.

Fecal coliform bacteria are present in the intestine or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory, they are defined as all organisms that produce blue colonies within 24 hours when incubated at 44.5 °C plus or minus 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. (See also "Bacteria")

Fecal streptococcal bacteria are present in the intestine of warm-blooded animals and are ubiquitous in the environment. They are characterized as gram-positive, cocci bacteria that are capable of growth in brain-heart infusion broth. In the laboratory, they are defined as all the organisms that produce red or pink colonies within 48 hours at 35 °C plus or minus 1.0 °C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample. (See also "Bacteria")

Fire algae (*Pyrrhophyta*) are free-swimming unicells characterized by a red pigment spot. (See also "Phytoplankton")

Flow-duration percentiles are values on a scale of 100 that indicate the percentage of time for which a flow is not exceeded. For example, the 90th percentile of river flow is greater than or equal to 90 percent of all recorded flow rates.

Gage datum is a horizontal surface used as a zero point for measurement of stage or gage height. This surface usually is located slightly below the lowest point of the stream bottom such that the gage height is usually slightly larger than the maximum depth of water. Because the gage datum itself is not an actual physical object, the datum usually is defined by specifying the elevations of permanent reference marks such as bridge abutments and survey monuments, and the gage is set to agree with the reference marks. Gage datum is a local datum that is maintained independently of any National geodetic datum. However, if the elevation of the gage datum relative to the National datum (North American Vertical Datum of 1988 or National Geodetic Vertical Datum of 1929) has been determined, then the gage readings can be converted to elevations above the National datum by adding the elevation of the gage datum to the gage reading.

Gage height (G.H.) is the water-surface elevation, in feet above the gage datum. If the water surface is below the gage datum, the gage height is negative. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used in reference to a reading on a gage.

Gage values are values that are recorded, transmitted and/or computed from a gaging station. Gage values typically are collected at 5-, 15-, or 30-minute intervals.

Gaging station is a site on a stream, canal, lake, or reservoir where systematic observations of stage, discharge, or other hydrologic data are obtained. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is computed.

Gas chromatography/flame ionization detector (GC/FID) is a laboratory analytical method used as a screening technique for semivolatile organic compounds that are extractable from water in methylene chloride.

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

Habitat quality index is the qualitative description (level 1) of instream habitat and riparian conditions surrounding the reach sampled. Scores range from 0 to 100 percent with higher scores indicative of desirable habitat conditions for aquatic life. Index only applicable to wadable streams.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is computed as the sum of equivalents of polyvalent cations (primarily calcium and magnesium) and is expressed as the equivalent concentration of calcium carbonate ($CaCO_3$).

High tide is the maximum height reached by each rising tide. The high-high and low-high tides are the higher and lower of the two high tides, respectively, of each tidal day. *See NOAA web site: http://www.co-ops.nos.noaa.gov/tideglos.html*

Hilsenhoff's Biotic Index (HBI) is an indicator of organic pollution which uses tolerance values to weight taxa abundances; usually increases with pollution. It is calculated as follows:

$$HBI = sum\frac{(n)(a)}{N}$$

where *n* is the number of individuals of each taxon, a is the tolerance value of each taxon, and *N* is the total number of organisms in the sample.

Horizontal datum (See "Datum")

Hydrologic benchmark 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 benchmark station may be used to separate effects of natural from human-induced changes in other basins that have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped benchmark basin.

Hydrologic index stations referred to in this report are four continuous-record gaging stations that have been selected as representative of streamflow patterns for their respective regions. Station locations are shown on index maps.

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

Inch (IN., in.), as used in this report, refers to the depth to which the drainage area would be covered with water if all of the runoff for a given time period were uniformly distributed on it. (See also "Annual runoff")

Instantaneous discharge is the discharge at a particular instant of time. (See also "Discharge")

Laboratory Reporting Level (LRL) is generally equal to twice the yearly determined long-term method detection level (LT-MDL). The LRL controls false negative error. The probability of falsely reporting a non-detection for a sample that contained an analyte at a concentration equal to or greater than the LRL is predicted to be less than or equal to 1 percent. The value of the LRL will be reported with a "less than" (<) remark code for samples in which the analyte was not detected. The National Water Quality Laboratory collects quality-control data from selected analytical methods on a continuing basis to determine LT-MDLs and to establish LRLs. These values are reevaluated annually based on the most current quality-control data and may, therefore, change. [Note: In several previous NWQL documents (Connor and others, 1998; NWQL Technical Memorandum 98.07, 1998), the LRL was called the non-detection value or NDV—a term that is no longer used.)

Land-surface datum (lsd) is a datum plane that is approximately at land surface at each ground-water observation well.

Light-attenuation coefficient, also known as the extinction coefficient, is a measure of water clarity. Light is attenuated according to the Lambert-Beer equation

$$I = I_o e^{-\lambda L},$$

where I_o is the source light intensity, I is the light intensity at length L (in meters) from the source, λ is the light-attenuation coefficient, and e is the base of the natural logarithm. The light attenuation coefficient is defined as

$$\lambda = -\frac{1}{L}\log_e\frac{I}{I_o} .$$

Lipid is any one of a family of compounds that are insoluble in water and that make up one of the principal components of living cells. Lipids include fats, oils, waxes, and steroids. Many environmental contaminants such as organochlorine pesticides are lipophilic.

Long-Term Method Detection Level (LT–MDL) is a detection level derived by determining the standard deviation of a minimum of 24 method detection limit (MDL) spike sample measurements over an extended period of time. LT–MDL data are collected on a continuous basis to assess year-to-year variations in the LT–MDL. The LT–MDL controls false positive error. The chance of falsely reporting a concentration at or greater than the LT–MDL for a sample that did not contain the analyte is predicted to be less than or equal to 1 percent.

Low tide is the minimum height reached by each falling tide. The high-low and low-low tides are the higher and lower of the two low tides, respectively, of each tidal day. *See NOAA web site: http://www.co-ops.nos.noaa.gov/tideglos.html*

Macrophytes are the macroscopic plants in the aquatic environment. The most common macrophytes are the rooted vascular plants that are usually arranged in zones in aquatic ecosystems and restricted in the area by the extent of illumination through the water and sediment deposition along the shoreline.

Mean concentration of suspended sediment (Daily mean suspended-sediment concentration) is the time-weighted concentration of suspended sediment passing a stream cross section during a given time period. (See also "Daily mean suspended-sediment concentration" and "Suspended-sediment concentration")

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

Mean high or low tide is the average of all high or low tides, respectively, over a specific period.

Mean sea level is a local tidal datum. It is the arithmetic mean of hourly heights observed over the National Tidal Datum Epoch. Shorter series are specified in the name; for example, monthly mean sea level and yearly mean sea level. In order that they may be recovered when needed, such datums are referenced to fixed points known as benchmarks. (See also "Datum")

Measuring point (MP) is an arbitrary permanent reference point from which the distance to water surface in a well is measured to obtain water level.

Membrane filter is a thin microporous material of specific pore size used to filter bacteria, algae, and other very small particles from water.

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.

Method Detection Limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99-percent confidence that the analyte concentration is greater than zero. It is determined from the analysis of a sample in a given matrix containing the analyte. At the MDL concentration, the risk of a false positive is predicted to be less than or equal to 1 percent.

Methylene blue active substances (MBAS) are apparent detergents. The determination depends on the formation of a blue color when methylene blue dye reacts with synthetic anionic detergent compounds.

Micrograms per gram (UG/G, µg/g) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

Micrograms per kilogram (UG/KG, µg/kg) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the constituent per unit mass (kilogram) of the material analyzed. One microgram per kilogram is equivalent to 1 part per billion.

Micrograms per liter (UG/L, µg/L) is a unit expressing the concentration of chemical constituents in water as mass (micrograms) of constituent per unit volume (liter) of water. One thousand micrograms per liter is equivalent to 1 milligram per liter. One microgram per liter is equivalent to 1 part per billion.

Microsiemens per centimeter (US/CM, µS/cm) is a unit expressing the amount of electrical conductivity of a solution as measured between opposite faces of a centimeter cube of solution at a specified temperature. Siemens is the International System of Units nomenclature. It is synonymous with mhos and is the reciprocal of resistance in ohms.

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

Minimum Reporting Level (MRL) is the smallest measured concentration of a constituent that may be reliably reported by using a given analytical method (Timme, 1995).

Miscellaneous site, miscellaneous station, or miscellaneous sampling site is a site where streamflow, sediment, and/or water-quality data or water-quality or sediment samples are collected once, or more often on a random or discontinuous basis to provide better areal coverage for defining hydrologic and water-quality conditions over a broad area in a river basin.

Most probable number (MPN) is an index of the number of coliform bacteria that, more probably than any other number, would give the results shown by the laboratory examination; it is not an actual enumeration. MPN is determined from the distribution of gas-positive cultures among multiple inoculated tubes.

Multiple-plate samplers are artificial substrates of known surface area used for obtaining benthic invertebrate samples. They consist of a series of spaced, hardboard plates on an eyebolt.

Nanograms per liter (NG/L, ng/L) is a unit expressing the concentration of chemical constituents in solution as mass (nanograms) of solute per unit volume (liter) of water. One million nanograms per liter is equivalent to 1 milligram per liter.

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a fixed reference adopted as a standard geodetic datum for elevations determined by leveling. It was formerly called "Sea Level Datum of 1929" or "mean sea level." Although the datum was derived from the mean sea level at 26 tide stations**,** it does not necessarily represent local mean sea level at any particular place. *See NOAA web site: http://www.ngs.noaa.gov/faq.shtml#WhatVD29VD88* (See "North American Vertical Datum of 1988")

Natural substrate refers to any naturally occurring immersed or submersed solid surface, such as a rock or tree, upon which an organism lives. (See also "Substrate.")

Nekton are the consumers in the aquatic environment and consist of large free-swimming organisms that are capable of sustained, directed mobility.

Nephelometric turbidity unit (NTU) is the measurement for reporting turbidity that is based on use of a standard suspension of Formazin. Turbidity measured in NTU uses nephelometric methods that depend on passing specific light of a specific wavelength through the sample.

North American Vertical Datum of 1988 (NAVD 1988) is a fixed reference adopted as the official civilian vertical datum for elevations determined by Federal surveying and mapping activities in the U.S. This datum was established in 1991 by minimum-constraint adjustment of the Canadian**,** Mexican, and U.S. first-order terrestrial leveling networks.

Open or screened interval is the length of unscreened opening or of well screen through which water enters a well, in feet below land surface.

Organic carbon (OC) is a measure of organic matter present in aqueous solution, suspension, or bottom sediments. May be reported as dissolved organic carbon (DOC), particulate organic carbon (POC), or total organic carbon (TOC).

Organic mass or volatile mass of the living substance is the difference between the dry mass and ash mass and represents the actual mass of the living matter. Organic mass is expressed in the same units as for ash mass and dry mass. (See also "Ash mass," "Biomass," and "Dry mass")

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 meter (m^2), acre, or hectare. 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 milliliter (mL) or liter (L). Numbers of planktonic organisms can be expressed in these terms.

Organochlorine compounds are any chemicals that contain carbon and chlorine. Organochlorine compounds that are important in investigations of water, sediment, and biological quality include certain pesticides and industrial compounds.

Parameter Code is a 5-digit number used in the USGS computerized data system, National Water Information System (NWIS), to uniquely identify a specific constituent or property.

Partial-record station is a site where discrete measurements of one or more hydrologic parameters are obtained over a period of time without continuous data being recorded or computed. A common example is a crest-stage gage partial-record station at which only peak stages and flows are recorded.

Particle size is the diameter, in millimeters (mm), of a particle determined by sieve or sedimentation methods. The sedimentation method utilizes the principle of Stokes Law to calculate sediment particle sizes. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube, Sedigraph) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification, as used in this report, agrees with the recommendation 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	0.004 - 0.062	Sedimentation
Sand	0.062 - 2.0	Sedimentation/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 matter is removed, and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native water analysis.

Peak flow (peak stage) is an instantaneous local maximum value in the continuous time series of streamflows or stages, preceded by a period of increasing values and followed by a period of decreasing values. Several peak values ordinarily occur in a year. The maximum peak value in a year is called the annual peak; peaks lower than the annual peak are called secondary peaks. Occasionally, the annual peak may not be the maximum value for the year; in such cases, the maximum value occurs at midnight at the beginning or end of the year, on the recession from or rise toward a higher peak in the adjoining year. If values are recorded at a discrete series of times, the peak recorded value may be taken as an approximation to the true peak, which may occur between the recording instants. If the values are recorded with finite precision, a sequence of equal recorded values may occur at the peak; in this case, the first value is taken as the peak.

Percent composition or **percent of total** 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, weight, mass, or volume.

Percent shading is determined by using a clinometer to estimate left and right bank shading. The values are added together and divided by 180 to determine percent shading relative to a horizontal surface.

Periodic-record station is a site where stage, discharge, sediment, chemical, physical, or other hydrologic measurements are made one or more times during a year, but at a frequency insufficient to develop a daily record.

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

Pesticides are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

pH of water is the negative logarithm of the hydrogen-ion activity. Solutions with pH less than 7 are termed "acidic," and solutions with a pH greater than 7 are termed "basic." Solutions with a pH of 7 are neutral. The presence and concentration of many dissolved chemical constituents found in water are, in part, influenced by the hydrogen-ion activity of water. Biological processes including growth, distribution of organisms, and toxicity of the water to organisms are also influenced, in part, by the hydrogen-ion activity of water.

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. (See also "Plankton")

Picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactive nuclide represented by a curie (Ci). A curie is the quantity of radioactive nuclide that yields 3.7×10^{10} radioactive disintegrations per second (dps). A picocurie yields 0.037 dps, or 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. Concentrations are expressed as a number of cells per milliliter (cells/mL of sample).

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.

Polychlorinated naphthalenes (PCNs) are industrial chemicals that are mixtures of chlorinated naphthalene compounds. They have properties and applications similar to polychlorinated biphenyls (PCBs) and have been identified in commercial PCB preparations.

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 (carbon method) by the plants.

Primary productivity (carbon method) is expressed as milligrams of carbon per area per unit time [mg C/(m^2/time)] for periphyton and macrophytes or per volume [mg C/(m^3/time)] for phytoplankton. Carbon method defines 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. (See also "Primary productivity")

Primary productivity (oxygen method) is expressed as milligrams of oxygen per area per unit time [mg O/(m^2/time)] for periphyton and macrophytes or per volume [mg O/(m^3/time)] for phytoplankton. Oxygen method defines 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. (See also "Primary productivity")

Radioisotopes are isotopic forms of an element that exhibit radioactivity. Isotopes are varieties of a chemical element that differ in atomic weight, but are very nearly alike in chemical properties. The difference arises because the atoms of the isotopic forms of an element differ in the number of neutrons in the nucleus; for example, ordinary chlorine is a mixture of isotopes having atomic weights of 35 and 37, and the natural mixture has an atomic weight of about 35.453. Many of the elements similarly exist as mixtures of isotopes, and a great many new isotopes have been produced in the operation of nuclear devices such as the cyclotron. There are 275 isotopes of the 81 stable elements, in addition to more than 800 radioactive isotopes.

Recoverable from bed (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 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. (See also "Bed material")

Recurrence interval, also referred to as return period, is the average time, usually expressed in years, between occurrences of hydrologic events of a specified type (such as exceedances of a specified high flow or non-exceedance of a specified low flow). The terms "return period" and "recurrence interval" do not imply regular cyclic occurrence. The actual times between occurrences vary randomly, with most of the times being less than the average and a few being substantially greater than the average. For example, the 100-year flood is the flow rate that is exceeded by the annual maximum peak flow at intervals whose average length is 100 years (that is, once in 100 years, on average); almost two-thirds of all exceedances of the 100-year flood occur less than 100 years after the previous exceedance, half occur less than 70 years after the previous exceedance, and about one-eighth occur more than 200 years after the previous exceedance. Similarly, the 7-day 10-year low flow ($7Q_{10}$) is the flow rate below which the annual minimum 7-day-mean flow dips at intervals whose average length is 10 years (that is, once in 10 years, on average); almost two-thirds of the non-exceedances of the $7Q_{10}$ occur less than 10 years after the previous non-exceedance, half occur less than 7 years after, and about one-eighth occur more than 20 years after the previous non-exceedance. The recurrence interval for annual events is the reciprocal of the annual probability of occurrence. Thus, the 100-year flood has a 1-percent chance of being exceeded by the maximum peak flow in any year, and there is a 10-percent chance in any year that the annual minimum 7-day-mean flow will be less than the $7Q_{10}$.

Replicate samples are a group of samples collected in a manner such that the samples are thought to be essentially identical in composition.

Return period (See "Recurrence interval")

River mileage is the curvilinear distance, in miles, measured upstream from the mouth along the meandering path of a stream channel in accordance with Bulletin No. 14 (October 1968) of the Water Resources Council, and typically used to denote location along a river.

Runoff is the quantity of water that is discharged ("runs off") from a drainage basin in a given time period. Runoff data may be presented as volumes in acre-feet, as mean discharges per unit of drainage area in cubic feet per second per square mile, or as depths of water on the drainage basin in inches. (See also "Annual runoff")

Sea level, as used in this report, refers to one of the two commonly used national vertical datums, (NGVD 1929 or NAVD 1988). See separate entries for definitions of these datums. See conversion of units page (inside back cover) for identification of the datum used in this report.

Sediment is solid material that originates mostly from disintegrated rocks; when transported by, suspended in, or deposited from water, it is referred to as "fluvial sediment." Sediment 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 and land-use factors. Some major factors are topography, soil characteristics, land cover, and depth and intensity of precipitation.

Seven-day 10-year low flow (7Q10) is the discharge below which the annual 7-day minimum flow falls in 1 year out of 10 on the long-run average. The recurrence interval of the 7Q10 is 10 years; the chance that the annual 7-day minimum flow will be less than the 7Q10 is 10 percent in any given year. (See also "Recurrence interval" and "Annual 7-day minimum")

Sodium adsorption ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions within soil and is an index of sodium or alkali hazard to the soil. Sodium hazard in water is an index that can be used to evaluate the suitability of water for irrigating crops.

Specific electrical conductance (conductivity) is a measure of the capacity of water (or other media) to conduct an electrical current. It is expressed in microsiemens per centimeter at 25 °C. Specific electrical conductance is a function of the types and quantity of dissolved substances in water and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is from 55 to 75 percent

of the specific conductance (in microsiemens). 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.

Stable isotope ratio (per MIL/MIL) is a unit expressing the ratio of the abundance of two radioactive isotopes. Isotope ratios are used in hydrologic studies to determine the age or source of specific waters, to evaluate mixing of different waters, as an aid in determining reaction rates, and other chemical or hydrologic processes.

Stage (See "Gage height")

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

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 lives.

Substrate Embeddedness Class is a visual estimate of riffle streambed substrate larger than gravel that is surrounded or covered by fine sediment (<2mm, sand or finer). Below are the class categories expressed as percent covered by fine sediment:

0	< no gravel or larger substrate		
1	> 75%		
2	51-75%	4	5-25%
3	26-50%	5	< 5%

Surface area of a lake is that area (acres) encompassed by the boundary of the lake as shown on USGS topographic maps, or other available maps or photographs. Because surface area changes with lake stage, surface areas listed in this report represent those determined for the stage at the time the maps or photographs were obtained.

Surficial bed material is the upper surface (0.1 to 0.2 ft) of the bed material such as that material which is sampled using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. It is operationally defined as the 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 suspended water-sediment sample that is retained on a 0.45-micrometer 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 are 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 directly analyzing the suspended material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent. (See also "Suspended")

Suspended sediment is the sediment maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid. (See also "Sediment")

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). The analytical technique uses the mass of all of the sediment and the net weight of the water-sediment mixture in a sample to compute the suspended-sediment concentration. (See also "Sediment" and "Suspended sediment")

Suspended-sediment discharge (tons/day) is the rate of sediment transport, as measured by dry mass or volume, that passes a cross section in a given time. It is calculated in units of tons per day as follows: concentration (mg/L) x discharge (ft^3/s) x 0.0027. (See also "Sediment," "Suspended sediment," and "Suspended-sediment concentration")

Suspended-sediment load is a general term that refers to a given characteristic of the material in suspension that passes a point during a specified period of time. The term needs to be qualified, such as "annual suspended-sediment load" or "sand-size suspended-sediment load," and so on. It is not synonymous with either suspended-sediment discharge or concentration. (See also "Sediment")

Suspended, total is the total amount of a given constituent in the part of a water-sediment sample that is retained on a 0.45-micrometer membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. 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 directly analyzing portions of the suspended material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent. (See also "Suspended")

Suspended solids, total residue at 105 ˚C concentration is the concentration of inorganic and organic material retained on a filter, expressed as milligrams of dry material per liter of water (mg/L). An aliquot of the sample is used for this analysis.

Synoptic studies are short-term investigations of specific water-quality conditions during selected seasonal or hydrologic periods to provide improved spatial resolution for critical water-quality conditions. For the period and conditions sampled, they assess the spatial distribution of selected water-quality conditions in relation to causative factors, such as land use and contaminant sources.

Taxa richness is the total number of distinct species or groups and usually decreases with pollution. (See also "Percent Shading")

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

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

Temperature preferences:

Cold – preferred water temperature for the species is less than 20 ˚C or spawning temperature preference less than 16 ˚C and native distribution is considered to be predominantly north of 45˚ N. latitude.

Warm – preferred water temperatures for the species is greater than 20 ˚C or spawning temperature preference greater than 16 ˚C and native distribution is considered to be predominantly south of 45˚ N. latitude.

Cool – intermediate between cold and warm water temperature preferences.

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder' is used in the table descriptions and refers to any instrument that records temperature whether on a chart, a tape, or any other medium.

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 resulting from the mixing of flow proportionally to the duration of the concentration.

Tons per acre-foot (T/acre-ft) is the dry mass (tons) of a constituent per unit volume (acre-foot) of water. It is computed by multiplying the concentration of the constituent, in milligrams per liter, by 0.00136.

Tons per day (T/DAY, tons/d) is a common chemical or sediment discharge unit. It is the quantity of a substance in solution, in suspension, or as bedload that passes a stream section during a 24-hour period. It is equivalent to 2,000 pounds per day, or 0.9072 metric tons per day.

Total is the amount of a given constituent in a representative whole-water (unfiltered) 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 determined at least 95 percent of the constituent in the sample.)

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. This group includes coliforms that inhabit the intestine of warm-blooded animals and those that inhabit soils. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria that ferment lactose with gas formation within 48 hours at 35 °C. In the laboratory, these bacteria are defined as all the organisms that produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35 °C plus or minus 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. (See also "Bacteria")

Total discharge is the quantity of a given constituent, measured as dry mass or volume, that passes a stream cross section per unit of time. When referring to constituents other than water, this term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total in bottom material is the 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 length (fish) is the straight-line distance from the anterior point of a fish specimen's snout, with the mouth closed, to the posterior end of the caudal (tail) fin, with the lobes of the caudal fin squeezed together.

Total load refers to all of a constituent in transport. When referring to sediment, it includes suspended load plus bed load.

Total organism count is the number of organisms collected and enumerated in any particular sample. (See also "Organism count/volume.")

Total recoverable is the amount of a given constituent in a whole-water sample after a 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 present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data for whole-water samples, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures may produce different analytical results.

Total sediment discharge is the mass of suspended-
sediment plus bed-load transport, measured as dry weight, that passes a cross section in a given time. It is a rate and is reported as tons per day. (See also "Sediment," "Suspended sediment," "Suspended-Sediment Concentration," "Bedload," and "Bedload discharge")

Total sediment load or total load is the sediment in transport as bedload and suspended-sediment load. The term may be qualified, such as "annual suspended-sediment load" or "sand-size suspended-sediment load," and so on. It differs from total sediment discharge in that load refers to the material whereas discharge refers to the quantity of material, expressed in units of mass per unit time. (See also "Sediment," "Suspended-Sediment Load," and "Total load")

Trophic group:

Filter feeder – diet composed of suspended plant and/or animal material.

Herbivore – diet composed predominantly of plant material.

Invertivore – diet composed predominantly of invertebrates.

Omnivore – diet composed of at least 25-percent plant and 25-percent animal material.

Piscivore – diet composed predominantly of fish.

Turbidity is the reduction in the transparency of a solution due to the presence of suspended and some dissolved substances. The measurement technique records the collective optical properties of the solution that cause light to be scattered and attenuated rather than transmitted in straight lines; the higher the intensity of scattered or attenuated light, the higher the value of the turbidity. Turbidity is expressed in nephelometric turbidity units (NTU). Depending on the method used, the turbidity units as NTU can be defined as the intensity of light of a specified wavelength scattered or attenuated by suspended particles or absorbed at a method specified angle, usually 90 degrees, from the path of the incident light. Currently approved methods for the measurement of turbidity in the USGS include those that conform to EPA Method 180.1, ASTM D1889-00, and ISO 7027. Measurements of turbidity by these different methods and different instruments are unlikely to yield equivalent values. Consequently, the method of measurement and type of instrument used to derive turbidity records should be included in the "REMARKS" column of the Annual Data Report.

Ultraviolet (UV) absorbance (absorption) at 254 or 280 nanometers is a measure of the aggregate concentration of the mixture of UV absorbing organic materials dissolved in the analyzed water, such as lignin, tannin, humic substances, and various aromatic compounds. UV absorbance (absorption) at 254 or 280 nanometers is measured in UV absorption units per centimeter of pathlength of UV light through a sample.

Vertical datum (See "Datum")

Volatile organic compounds (VOCs) are organic compounds that can be isolated from the water phase of a sample by purging the water sample with inert gas, such as helium, and subsequently analyzed by gas chromatography. Many VOCs are human-made chemicals that are used and produced in the manufacture of paints, adhesives, petroleum products, pharmaceuticals, and refrigerants. They are often components of fuels, solvents, hydraulic fluids, paint thinners, and dry cleaning agents commonly used in urban settings. VOC contamination of drinking-water supplies is a human health concern because many are toxic and are known or suspected human carcinogens (U.S. Environmental Protection Agency, 1996).

Water table is the level in the saturated zone at which the pressure is equal to the atmospheric pressure.

Water-table aquifer is an unconfined aquifer within which is found the water table.

Water year in USGS reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 2001, is called the "2001 water year."

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports. (WRD was used as an abbreviation for "Water-Resources Data" in reports published prior to 1976.)

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

Wet mass is the mass of living matter plus contained water. (See also "Biomass" and "Dry mass")

Wet weight refers to the weight of animal tissue or other substance including its contained water. (See also "Dry weight")

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

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. (See also "Plankton")

TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS OF THE U.S. GEOLOGICAL SURVEY

The U.S.G.S. publishes a series of manuals describing procedures for planning and conducting 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) pertains to 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.G.S., Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be made in the form of a check or money order payable to the "U.S. Geological Survey." Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and mention the "U.S. Geological Survey Techniques of Water-Resources Investigations."

Book 1. Collection of Water Data by Direct Measurement

Section D. Water Quality

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, chap. D1. 1975. 65 p.

1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W.W. Wood: USGS–TWRI book 1, chap. D2. 1976. 24 p.

Book 2. Collection of Environmental Data

Section D. Surface Geophysical Methods

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, chap. D1. 1974. 116 p.

2-D2. *Application of seismic-refraction techniques to hydrologic studies,* by F.P. Haeni: USGS–TWRI book 2, chap. D2. 1988. 86 p.

Section E. Subsurface Geophysical Methods

2-E1. *Application of borehole geophysics to water-resources investigations,* by W.S. Keys and L.M. MacCary: USGS–TWRI book 2, chap. E1. 1971. 126 p.

2-E2. *Borehole geophysics applied to ground-water investigations,* by W.S. Keys: USGS–TWRI book 2, chap. E2. 1990. 150 p.

Section F. Drilling and Sampling Methods

2-F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and W.E. Teasdale: USGS–TWRI book 2, chap. F1. 1989. 97 p.

Book 3. Applications of Hydraulics

Section A. Surface-Water Techniques

3-A1. *General field and office procedures for indirect discharge measurements,* by M.A. Benson and Tate Dalrymple: USGS–TWRI book 3, chap. A1. 1967. 30 p.

3-A2. *Measurement of peak discharge by the slope-area method,* by Tate Dalrymple and M.A. Benson: USGS–TWRI book 3, chap. A2. 1967. 12 p.

3-A3. *Measurement of peak discharge at culverts by indirect methods,* by G.L. Bodhaine: USGS–TWRI book 3, chap. A3. 1968. 60 p.

3-A4. *Measurement of peak discharge at width contractions by indirect methods,* by H.F. Matthai: USGS-TWRI book 3, chap. A4. 1967. 44 p.

3-A5. *Measurement of peak discharge at dams by indirect methods,* by Harry Hulsing: USGS–TWRI book 3. chap. A5. 1967. 29 p.

3-A6. *General procedure for gaging streams,* by R.W. Carter and Jacob Davidian: USGS–TWRI book 3, chap. A6. 1968. 13 p.

3-A7. *Stage measurement at gaging stations,* by T.J. Buchanan and W.P. Somers: USGS–TWRI book 3, chap. A7. 1968. 28 p.

3-A8. *Discharge measurements at gaging stations,* by T.J. Buchanan and W.P. Somers: USGS–TWRI book 3, chap. A8. 1969. 65 p.

3-A9. *Measurement of time of travel in streams by dye tracing,* by F.A. Kilpatrick and J.F. Wilson, Jr.: USGS–TWRI book 3, chap. A9. 1989. 27 p.

3-Al0. *Discharge ratings at gaging stations,* by E.J. Kennedy: USGS–TWRI book 3, chap. A10. 1984. 59 p.

3-A11. *Measurement of discharge by the moving-boat method,* by G.F. Smoot and C.E. Novak: USGS–TWRI book 3, chap. A11. 1969. 22 p.

3-A12. *Fluorometric procedures for dye tracing*, Revised, by J.F. Wilson, Jr., E.D. Cobb, and F.A. Kilpatrick: USGS–TWRI book 3, chap. A12. 1986. 34 p.

3-A13. *Computation of continuous records of streamflow*, by E.J. Kennedy: USGS–TWRI book 3, chap. A13. 1983. 53 p.

3-A14. *Use of flumes in measuring discharge,* by F.A. Kilpatrick and V.R. Schneider: USGS–TWRI book 3, chap. A14. 1983. 46 p.

3-A15. *Computation of water-surface profiles in open channels,* by Jacob Davidian: USGS–TWRI book 3, chap. A15. 1984. 48 p.

3-A16. *Measurement of discharge using tracers*, by F.A. Kilpatrick and E.D. Cobb: USGS–TWRI book 3, chap. A16. 1985. 52 p.

3-A17. *Acoustic velocity meter systems,* by Antonius Laenen: USGS–TWRI book 3, chap. A17. 1985. 38 p.

3-A18. *Determination of stream reaeration coefficients by use of tracers,* by F.A. Kilpatrick, R.E. Rathbun, Nobuhiro Yotsukura, G.W. Parker, and L.L. DeLong: USGS–TWRI book 3, chap. A18. 1989. 52 p.

3-A19. *Levels at streamflow gaging stations*, by E.J. Kennedy: USGS–TWRI book 3, chap. A19. 1990. 31 p.

3-A20. *Simulation of soluble waste transport and buildup in surface waters using tracers*, by F.A. Kilpatrick: USGS–TWRI book 3, chap. A20. 1993. 38 p.

3-A21 *Stream-gaging cableways,* by C. Russell Wagner: USGS–TWRI book 3, chap. A21. 1995. 56 p.

Section B. Ground-Water Techniques

3-B1. *Aquifer-test design, observation, and data analysis,* by R.W. Stallman: USGS–TWRI book 3, chap. B1. 1971. 26 p.

3-B2. *Introduction to ground-water hydraulics, a programed text for self-instruction*, by G.D. Bennett: USGS–TWRI book 3, chap. B2. 1976. 172 p.

3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J.E. Reed: USGS–TWRI book 3, chap. B3. 1980. 106 p.

3-B4. *Regression modeling of ground-water flow,* by R.L. Cooley and R.L. Naff: USGS–TWRI book 3, chap. B4. 1990. 232 p.

3-B4. *Supplement 1. Regression modeling of ground-water flow --Modifications to the computer code for nonlinear regression solution of steady-state ground-water flow problems,* by R.L. Cooley: USGS–TWRI book 3, chap. B4. 1993. 8 p.

3-B5. *Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems—An introduction*, by O.L. Franke, T.E. Reilly, and G.D. Bennett: USGS–TWRI book 3, chap. B5. 1987. 15 p.

3-B6. *The principle of superposition and its application in ground-water hydraulics,* by T.E. Reilly, O.L. Franke, and G.D. Bennett: USGS–TWRI book 3, chap. B6. 1987. 28 p.

3-B7. *Analytical solutions for one-, two-, and three-dimensional solute transport in ground-water systems with uniform flow,* by E.J. Wexler: USGS–TWRI book 3, chap. B7. 1992. 190 p.

3-B8. *System and boundary conceptualization in ground-water flow simulation,* by T.E. Reilly: USGS–TWRI book 3, chap. B8. 2001. 29 p.

Section C. Sedimentation and Erosion Techniques

3-C1. *Fluvial sediment concepts,* by H.P. Guy: USGS–TWRI book 3, chap. C1. 1970. 55 p.

3-C2. *Field methods for measurement of fluvial sediment*, by T.K. Edwards and G.D. Glysson: USGS–TWRI book 3, chap. C2. 1999. 89 p.

3-C3. *Computation of fluvial-sediment discharge,* by George Porterfield: USGS–TWRI book 3, chap. C3. 1972. 66 p.

Book 4. Hydrologic Analysis and Interpretation

Section A. Statistical Analysis

4-A1. *Some statistical tools in hydrology*, by H.C. Riggs: USGS–TWRI book 4, chap. A1. 1968. 39 p.

4-A2. *Frequency curves,* by H.C. Riggs: USGS–TWRI book 4, chap. A2. 1968. 15 p.

Section B. Surface Water

4-B1. *Low-flow investigations,* by H.C. Riggs: USGS–TWRI book 4, chap. B1. 1972. 18 p.

4-B2. *Storage analyses for water supply*, by H.C. Riggs and C.H. Hardison: USGS–TWRI book 4, chap. B2. 1973. 20 p.

4-B3. *Regional analyses of streamflow characteristics,* by H.C. Riggs: USGS–TWRI book 4, chap. B3. 1973. 15 p.

Section D. Interrelated Phases of the Hydrologic Cycle

4-D1. *Computation of rate and volume of stream depletion by wells*, by C.T. Jenkins: USGS–TWRI book 4, chap. D1. 1970. 17 p.

Book 5. Laboratory Analysis

Section A. Water Analysis

5-A1. *Methods for determination of inorganic substances in water and fluvial sediments,* by M.J. Fishman and L.C. Friedman, editors: USGS–TWRI book 5, chap. A1. 1989. 545 p.

5-A2. *Determination of minor elements in water by emission spectroscopy,* by P.R. Barnett and E.C. Mallory, Jr.: USGS–TWRI book 5, chap. A2. 1971. 31 p.

5-A3. *Methods for the determination of organic substances in water and fluvial sediments*, edited by R.L. Wershaw, M.J. Fishman, R.R. Grabbe, and L.E. Lowe: USGS–TWRI book 5, chap. A3. 1987. 80 p.

5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples,* by L.J. Britton and P.E. Greeson, editors: USGS–TWRI book 5, chap. A4. 1989. 363 p.

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, chap. A5. 1977. 95 p.

5-A6. *Quality assurance practices for the chemical and biological analyses of water and fluvial sediments,* by L.C. Friedman and D.E. Erdmann: USGS–TWRI book 5, chap. A6. 1982. 181 p.

Section C. Sediment Analysis

5-C1. *Laboratory theory and methods for sediment analysis*, by H.P. Guy: USGS–TWRI book 5, chap. C1. 1969. 58 p.

Book 6. Modeling Techniques

Section A. Ground Water

6-A1. *A modular three-dimensional finite-difference ground-water flow model*, by M.G. McDonald and A.W. Harbaugh: USGS–TWRI book 6, chap. A1. 1988. 586 p.

6-A2. *Documentation of a computer program to simulate aquifer-system compaction using the modular finite-difference ground-water flow model,* by S.A. Leake and D.E. Prudic: USGS–TWRI book 6, chap. A2. 1991. 68 p.

6-A3. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 1: Model Description and User's Manual,* by L.J. Torak: USGS–TWRI book 6, chap. A3. 1993. 136 p.

6-A4. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 2: Derivation of finite-element equations and comparisons with analytical solutions,* by R.L. Cooley: USGS–TWRI book 6, chap. A4. 1992. 108 p.

6-A5. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 3: Design philosophy and programming details,* by L.J. Torak: USGS–TWRI book 6, chap. A5, 1993. 243 p.

6-A6. A coupled surface-water and ground-water flow model (MODBRANCH) for simulation of stream-aquifer interaction, by Eric D. Swain and Eliezer J. Wexler: USGS–TWRI book 6, chap. A5,1996. 125 p.

Book 7. Automated Data Processing and Computations

Section C. Computer Programs

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, chap. C1. 1976. 116 p.

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, chap. C2. 1978. 90 p.

7-C3. *A model for simulation of flow in singular and interconnected channels,* by R.W. Schaffranek, R.A. Baltzer, and D.E. Goldberg: USGS–TWRI book 7, chap. C3. 1981. 110 p.

Book 8. Instrumentation

Section A. Instruments for Measurement of Water Level

8-A1. *Methods of measuring water levels in deep wells,* by M.S. Garber and F.C. Koopman: USGS–TWRI book 8, chap. A1. 1968. 23 p.

8-A2. *Installation and service manual for U.S. Geological Survey manometers*, by J.D. Craig: USGS–TWRI book 8, chap. A2. 1983. 57 p.

Section B. Instruments for Measurement of Discharge

8-B2. *Calibration and maintenance of vertical-axis type current meters,* by G.F. Smoot and C.E. Novak: USGS–TWRI book 8, chap. B2. 1968. 15 p.

Book 9. Handbooks for Water-Resources Investigations

Section A. National Field Manual for the Collection of Water-Quality Data

9-A1. *National Field Manual for the Collection of Water-Quality Data: Preparations for Water Sampling*, by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A1. 1998. 47 p.

9-A2. *National Field Manual for the Collection of Water-Quality Data: Selection of Equipment for Water Sampling*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A2. 1998. 94 p.

9-A3. *National Field Manual for the Collection of Water-Quality Data: Cleaning of Equipment for Water Sampling*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A3. 1998. 75 p.

9-A4. *National Field Manual for the Collection of Water-Quality Data: Collection of Water Samples*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A4. 1999. 156 p.

9-A5. *National Field Manual for the Collection of Water-Quality Data: Processing of Water Samples*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A5. 1999, 149 p.

9-A6. *National Field Manual for the Collection of Water-Quality Data: Field Measurements*, edited by F.D. Wilde and D.B. Radtke: USGS–TWRI book 9, chap. A6. 1998. Variously paginated.

9-A7. *National Field Manual for the Collection of Water-Quality Data: Biological Indicators*, edited by D.N. Myers and F.D. Wilde: USGS–TWRI book 9, chap. A7. 1997 and 1999. Variously paginated.

9-A8. *National Field Manual for the Collection of Water-Quality Data: Bottom-material samples*, by D.B. Radtke: USGS–TWRI book 9, chap. A8. 1998. 48 p.

9-A9. *National Field Manual for the Collection of Water-Quality Data: Safety in Field Activities*, by S.L. Lane and R.G. Fay: USGS–TWRI book 9, chap. A9. 1998. 60 p.

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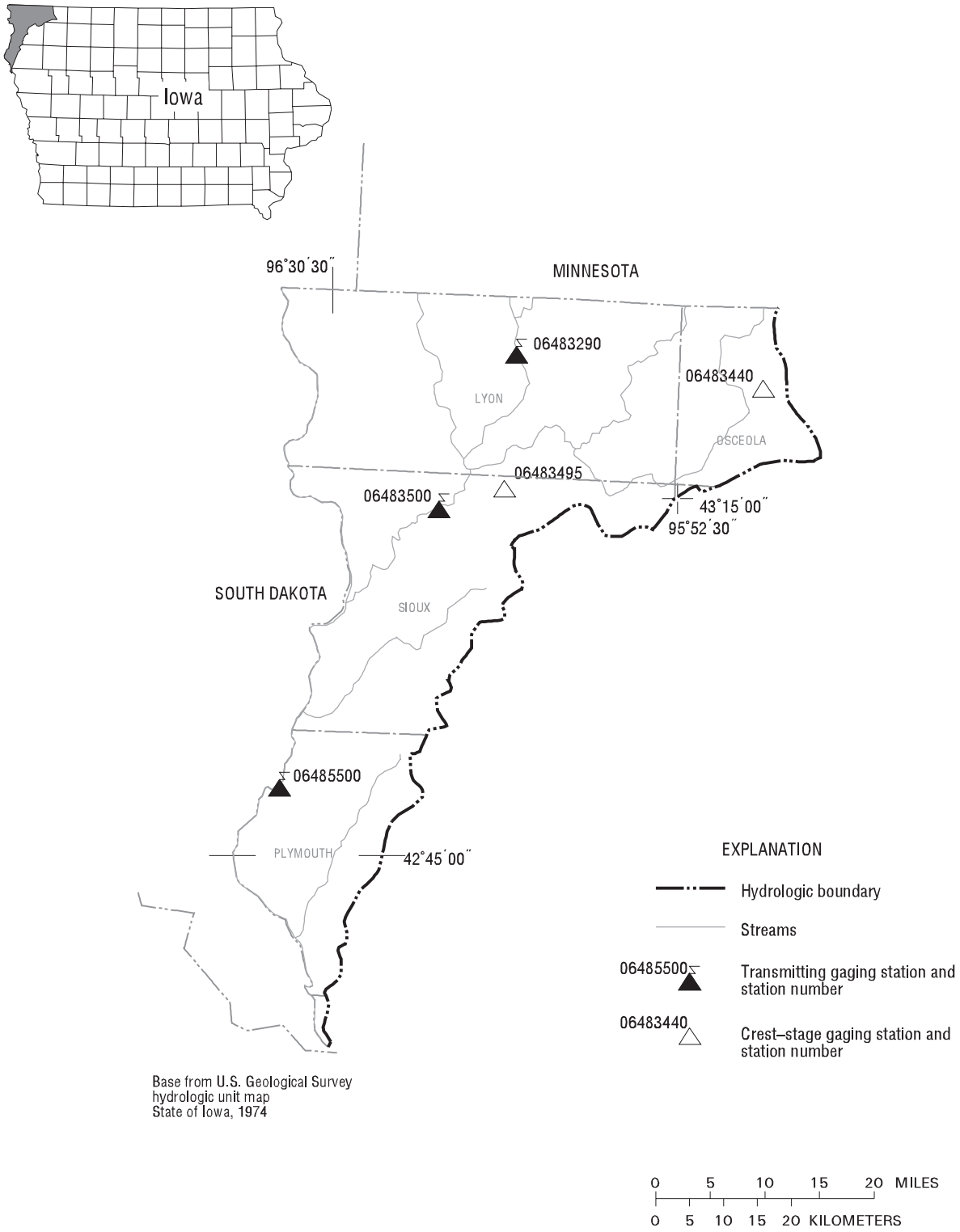

Iowa
96°30′30″
MINNESOTA
06483290
06483440
LYON
OSCEOLA
06483495
06483500
43°15′00″
95°52′30″
SOUTH DAKOTA
SIOUX
06485500
PLYMOUTH
42°45′00″
EXPLANATION
Hydrologic boundary
Streams
06485500
Transmitting gaging station and station number
06483440
Crest–stage gaging station and station number
Base from U.S. Geological Survey
hydrologic unit map
State of Iowa, 1974
0 5 10 15 20 MILES
0 5 10 15 20 KILOMETERS

Gaging Stations

Crest Stage Gaging Stations

06483290 ROCK RIVER BELOW TOM CREEK AT ROCK RAPIDS, IA

LOCATION.--Lat 43°25'23", long 96°09'52", in SW$^1/_4$ NW$^1/_4$ SE$^1/_4$ sec. 4, T.99 N., R.45 W., Lyon County, Hydrologic Unit 10170204, on right bank 5 ft downstream from bridge on gravel road in Campbell Park, near waterworks lift station, 200 ft east of Tama St and 8th Ave, 1.1 mi downstream of mouth of Tom Creek, and at mile 41.4.

DRAINAGE AREA.--853 mi^2.

PERIOD OF RECORD.--May 1, 2001 to September 30, 2001.

GAGE.--Water-stage recorder. Datum of gage is 1,308.57 ft above sea level.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 8, 1969 reached a stage of 10.23 ft, discharge 29,000 ft^3/s, at discontinued gaging station 1.4 mile upstream and above Tom Creek.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	e1410	581	1080	402	69
2	---	---	---	---	---	---	---	e1350	546	926	352	67
3	---	---	---	---	---	---	---	1280	e473	804	315	64
4	---	---	---	---	---	---	---	1170	e435	714	289	61
5	---	---	---	---	---	---	---	1230	487	611	260	58
6	---	---	---	---	---	---	---	2190	508	545	227	57
7	---	---	---	---	---	---	---	2660	485	515	203	60
8	---	---	---	---	---	---	---	1960	443	485	181	59
9	---	---	---	---	---	---	---	1480	411	443	168	60
10	---	---	---	---	---	---	---	1240	460	400	153	58
11	---	---	---	---	---	---	---	1110	493	367	146	55
12	---	---	---	---	---	---	---	1020	699	337	137	52
13	---	---	---	---	---	---	---	973	8870	311	126	51
14	---	---	---	---	---	---	---	940	5680	288	123	55
15	---	---	---	---	---	---	---	868	2920	265	121	62
16	---	---	---	---	---	---	---	799	1800	262	124	78
17	---	---	---	---	---	---	---	723	1520	250	128	82
18	---	---	---	---	---	---	---	662	1270	242	119	78
19	---	---	---	---	---	---	---	615	1090	218	112	76
20	---	---	---	---	---	---	---	805	953	201	105	72
21	---	---	---	---	---	---	---	2600	862	198	101	69
22	---	---	---	---	---	---	---	2330	788	232	99	67
23	---	---	---	---	---	---	---	1290	718	298	98	64
24	---	---	---	---	---	---	---	1130	652	1040	95	61
25	---	---	---	---	---	---	---	1060	585	1700	94	60
26	---	---	---	---	---	---	---	968	784	1240	88	60
27	---	---	---	---	---	---	---	902	1200	913	83	60
28	---	---	---	---	---	---	---	840	1270	770	79	59
29	---	---	---	---	---	---	---	772	919	680	75	58
30	---	---	---	---	---	---	---	690	934	566	77	58
31	---	---	---	---	---	---	---	623	---	484	74	---
TOTAL	---	---	---	---	---	---	---	37690	38836	17385	4754	1890
MEAN	---	---	---	---	---	---	---	1216	1295	561	153	63.0
MAX	---	---	---	---	---	---	---	2660	8870	1700	402	82
MIN	---	---	---	---	---	---	---	615	411	198	74	51
AC-FT	---	---	---	---	---	---	---	74760	77030	34480	9430	3750
CFSM	---	---	---	---	---	---	---	1.43	1.52	.66	.18	.07
IN.	---	---	---	---	---	---	---	1.64	1.69	.76	.21	.08

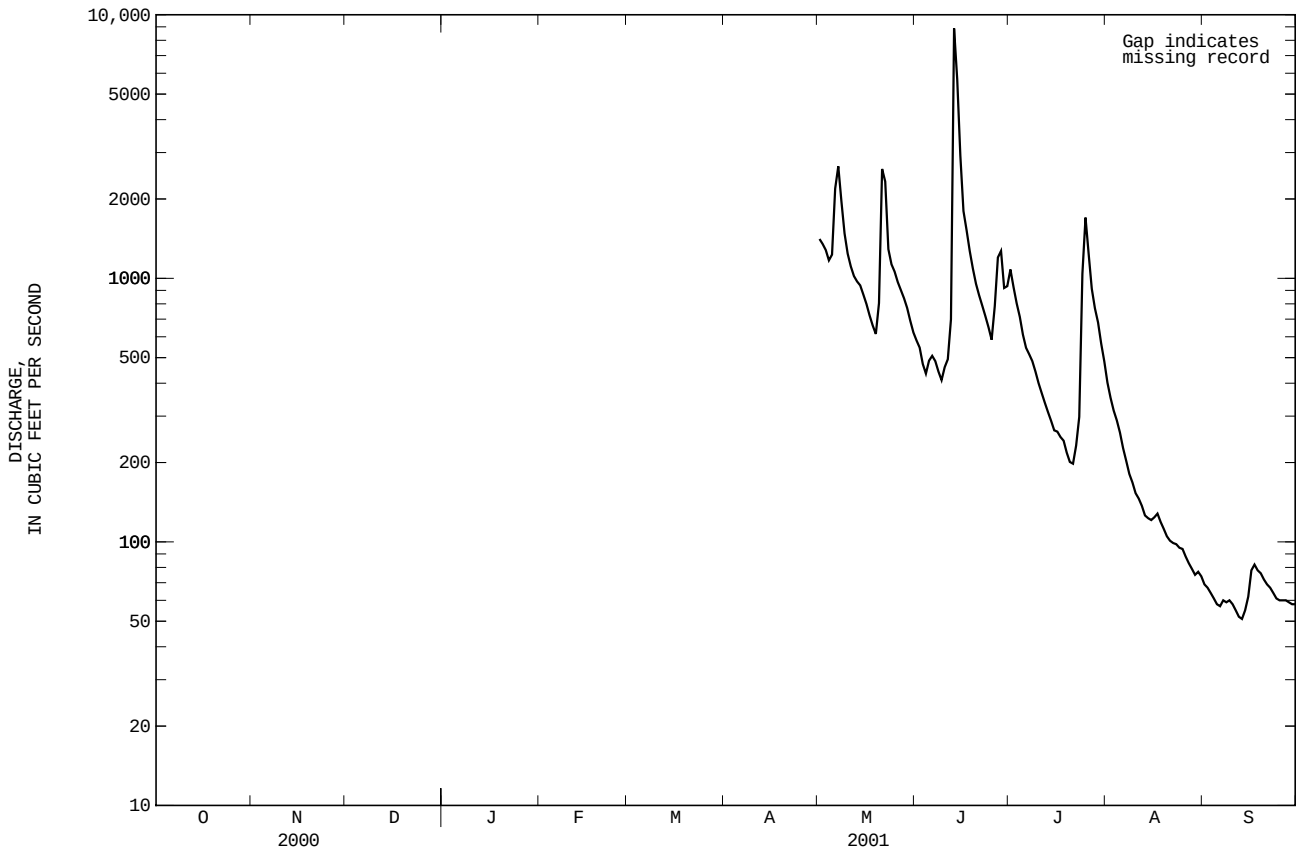
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2001, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	---	---	1216	1295	561	153	63.0
MAX	---	---	---	---	---	---	---	1216	1295	561	153	63.0
(WY)	---	---	---	---	---	---	---	2001	2001	2001	2001	2001
MIN	---	---	---	---	---	---	---	1216	1295	561	153	63.0
(WY)	---	---	---	---	---	---	---	2001	2001	2001	2001	2001

06483290 ROCK RIVER BELOW TOM CREEK AT ROCK RAPIDS, IA--Continued

SUMMARY STATISTICS	FOR 2001 WATER YEAR	
HIGHEST DAILY MEAN	8870	Jun 13
LOWEST DAILY MEAN	51	Sep 13
ANNUAL SEVEN-DAY MINIMUM	56	Sep 8
10 PERCENT EXCEEDS	1290	
50 PERCENT EXCEEDS	435	
90 PERCENT EXCEEDS	60	

e Estimated



06483500 ROCK RIVER NEAR ROCK VALLEY, IA

LOCATION.--Lat 43°12'52", long 96°17'39", in SW¼ SW¼ sec.16, T.97 N., R.46 W., Sioux County, Hydrologic Unit 10170204, on left bank 15 ft upstream from bridge on county highway K30, 0.3 mi north of Rock Valley, and at mile 19.1.

DRAINAGE AREA.--1,592 mi².

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

REVISED RECORDS.--WSP 1439: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,222.54 ft above sea level. Prior to Aug. 13, 1952, nonrecording gage with supplementary water-stage recorder operating above 6.2 ft gage height. June 4, 1949 to Aug. 12, 1952 and Aug. 13, 1952 to May 4, 1976, water-stage recorder, at site 3.2 mi downstream at datum 10.73 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1897 reached a stage of 17.0 ft, former site and datum, discharge not determined, from information by State Highway Commission.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	68	e82	e20	e17	e18	11700	2100	995	1700	853	158
2	33	75	e77	e20	e17	e19	11200	2270	951	1650	752	158
3	34	84	e70	e20	e16	e20	10300	2190	895	2470	1360	149
4	37	83	e64	e21	e16	e20	8600	1970	837	1670	835	143
5	36	81	e60	e22	e18	e20	6500	1980	844	1310	709	136
6	36	115	e61	e22	e19	e20	5480	3340	862	1130	618	133
7	35	145	e62	e23	e19	e21	4850	4530	844	1030	548	136
8	35	178	e60	e23	e19	e21	5490	3540	809	958	490	137
9	35	183	e57	e23	e19	e21	5220	2650	772	877	443	136
10	34	161	e56	e24	e18	e21	3140	2180	806	813	403	133
11	34	176	e48	e24	e18	e22	2940	1890	867	749	374	128
12	34	175	e47	e25	e19	e23	5060	1670	884	697	354	125
13	35	155	e45	e25	e20	e24	6610	1530	11000	640	323	126
14	35	132	e44	e24	e19	e28	4300	1560	18200	594	306	134
15	36	e116	e45	e21	e19	e48	2940	1420	13000	568	304	144
16	42	e90	e44	e22	e18	e98	2370	1280	6510	592	291	171
17	49	e84	e41	e22	e19	e200	1990	1180	4030	537	283	192
18	46	e94	e39	e21	e18	e380	1730	1090	3200	548	288	182
19	47	e85	e36	e20	e18	e700	1570	1030	2580	497	261	172
20	43	e62	e33	e19	e18	e1000	1450	1020	2150	444	246	161
21	41	e73	e33	e19	e18	e1400	1600	2140	1860	432	231	153
22	41	e82	e34	e19	e17	e1500	2250	4520	1640	457	226	148
23	47	e77	e29	e18	e18	e1400	7020	2450	1470	526	223	147
24	54	e76	e26	e18	e18	1410	17300	1900	1330	1920	230	143
25	59	e76	e24	e17	e17	1310	14800	1710	1190	6190	236	140
26	58	e77	e23	e17	e17	1080	6270	1550	1400	3220	209	139
27	55	e80	e23	e17	e16	1110	3960	1420	2080	2100	197	138
28	53	e82	e23	e17	e16	1500	3080	1310	2280	1620	188	138
29	54	e87	e22	e18	---	1740	2530	1200	1730	1360	182	135
30	63	e85	e21	e18	---	2610	2190	1110	1870	1140	179	135
31	65	---	e21	e17	---	7390	---	1040	---	993	169	---
TOTAL	1339	3137	1350	636	501	25174	164440	60770	87886	39432	12311	4370
MEAN	43.2	105	43.5	20.5	17.9	812	5481	1960	2930	1272	397	146
MAX	65	183	82	25	20	7390	17300	4530	18200	6190	1360	192
MIN	33	62	21	17	16	18	1450	1020	772	432	169	125
AC-FT	2660	6220	2680	1260	994	49930	326200	120500	174300	78210	24420	8670
CFSM	.03	.07	.03	.01	.01	.51	3.44	1.23	1.84	.80	.25	.09
IN.	.03	.07	.03	.01	.01	.59	3.84	1.42	2.05	.92	.29	.10

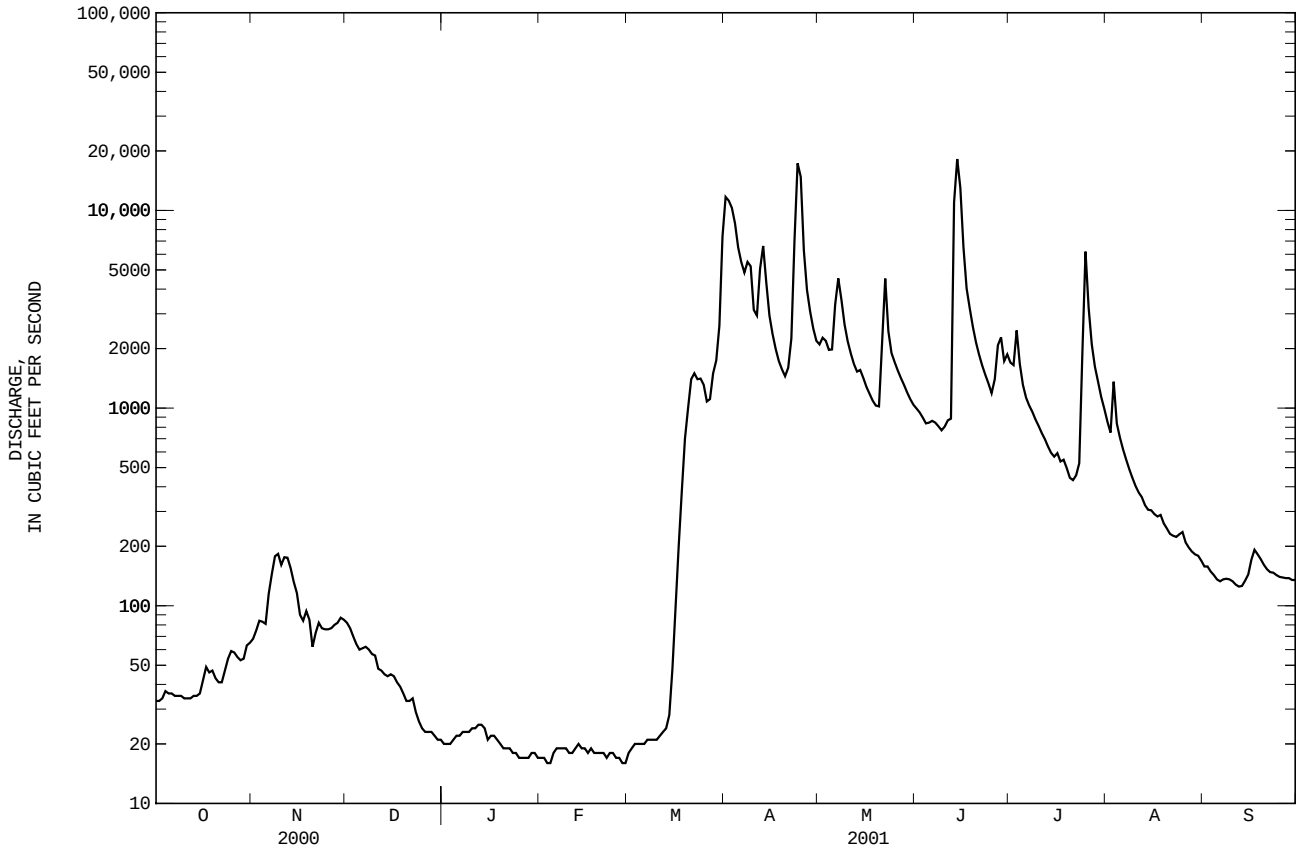
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2001, BY WATER YEAR (WY)

MEAN	234	261	143	80.3	221	1020	1353	717	979	615	271	234
MAX	1232	2039	676	434	1059	4646	6507	3728	6495	9088	2251	2135
(WY)	1993	1980	1983	1996	1966	1997	1969	1993	1993	1993	1993	1986
MIN	2.39	9.70	3.22	.037	.30	35.1	35.9	44.4	46.3	21.9	6.79	3.26
(WY)	1959	1959	1959	1977	1959	1959	1959	1968	1964	1976	1976	1955

06483500 ROCK RIVER NEAR ROCK VALLEY, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1949 - 2001	
ANNUAL TOTAL	55503		401346			
ANNUAL MEAN	152		1100		511	
HIGHEST ANNUAL MEAN					2656	1993
LOWEST ANNUAL MEAN					31.0	1968
HIGHEST DAILY MEAN	2670	May 20	18200	Jun 14	35400	Apr 7 1969
LOWEST DAILY MEAN	21	Dec 30	16	Feb 3a	.00	Feb 20 1959b
ANNUAL SEVEN-DAY MINIMUM	22	Dec 25	17	Jan 29	.00	Feb 27 1959
MAXIMUM PEAK FLOW			21600	Apr 24	40400	Apr 7 1969
MAXIMUM PEAK STAGE			17.74	Apr 24	17.32	Apr 7 1969c
ANNUAL RUNOFF (AC-FT)	110100		796100		370000	
ANNUAL RUNOFF (CFSM)	.095		.69		.32	
ANNUAL RUNOFF (INCHES)	1.30		9.38		4.36	
10 PERCENT EXCEEDS	323		2590		1160	
50 PERCENT EXCEEDS	90		149		134	
90 PERCENT EXCEEDS	34		19		16	

a Also Feb. 4, 27, 28.
b Many days during winter periods in 1959 and 1977.
c At location and datum then in use.
e Estimated.



06485500 BIG SIOUX RIVER AT AKRON, IA

LOCATION.--Lat 42°50'14", long 96°33'41", in SW¼ SE¼ SW¼ sec.30, T.93 N., R.48 W., Plymouth County, Hydrologic Unit 10170203, on left bank 15 ft downstream from Iowa Highway 403 bridge, 0.5 mi northwest of Akron, and 2.9 mi upstream from Union Creek.

DRAINAGE AREA.--8,424 mi^2, of which 1,487 mi^2 usually is noncontributing (213 mi^2 of the noncontributing area contributed runoff in the 1994-2001 water years).

PERIOD OF RECORD.--October 1928 to current year.

REVISED RECORDS.--WSP 1309: 1929(M), 1931-33(M), 1936(M), 1938(M), 1940(M). WSP 1389: Drainage area. WDR SD-84-1: Drainage area. WDR SD-94-1 only: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,118.90 ft above sea level. Prior to Dec. 3, 1934, nonrecording gage at bridge 0.5 mi downstream at same datum. From Dec. 3, 1934, to Oct. 31, 1985, water-stage recorder at site 0.6 mi downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite data-collection platform at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	179	295	e259	e155	e174	e168	7290	13800	3980	4510	3230	1010
2	180	323	e253	e156	e172	e167	10700	12300	3930	4250	2940	869
3	178	311	e250	e158	e173	e167	13900	11400	3790	4020	2800	753
4	183	338	e248	e158	e174	e168	15900	10600	3670	4570	3490	704
5	190	335	e232	e160	e174	e170	17000	9910	3580	3940	2750	688
6	201	362	e229	e165	e178	e170	17400	9710	3550	3570	2410	662
7	227	407	e247	e173	e182	e170	16100	10900	3490	3370	2220	652
8	219	542	e230	e173	e187	e171	14700	13100	3440	3250	2080	627
9	211	630	e245	e175	e189	e172	14100	13300	3350	3160	1960	632
10	213	589	e240	e176	e189	e173	14800	11800	3270	2990	1800	648
11	211	541	e218	e176	e191	e174	13500	10700	3390	2860	1700	644
12	211	530	e200	e175	e187	e176	12500	9410	3530	2750	1650	624
13	204	522	e190	e179	e182	e176	13200	8640	3820	2630	1570	600
14	202	e520	e182	e184	e185	e185	16400	8090	8830	2520	1430	625
15	201	e500	e185	e185	e184	e230	17100	7700	19500	2420	1420	647
16	207	e490	e180	e183	e183	e335	14600	7160	23500	2410	1400	723
17	242	e460	e170	e183	e180	e550	13100	6580	17800	2390	1330	881
18	240	e430	e162	e183	e179	e850	12100	6110	12900	2290	1260	938
19	224	e400	e156	e181	e178	e1400	11000	5750	10100	2260	1220	913
20	227	e380	e160	e179	e173	e2600	9860	5490	7910	2170	1170	810
21	225	e355	e156	e178	e174	e4800	9070	5390	6890	2080	1110	758
22	217	e330	e150	e173	e175	e5500	8430	6380	6240	2130	1070	743
23	220	e310	e154	e173	e172	5310	9340	8190	5830	2130	1000	768
24	226	e285	e150	e175	e172	4560	12900	6530	5500	2250	996	720
25	233	e275	e150	e174	e170	3950	30400	5680	5140	4880	982	680
26	239	e270	e150	e174	e168	3280	37800	5340	4800	9200	948	659
27	240	e265	e150	e172	e166	2970	28700	5060	5320	7740	930	637
28	245	e265	e150	e170	e167	3090	20700	4810	5270	5050	890	616
29	248	e260	e151	e175	---	3140	17200	4590	4970	4260	871	605
30	268	e260	e152	e180	---	3380	15300	4380	4440	3880	823	583
31	273	---	e153	e176	---	4690	---	4200	---	3570	801	---
TOTAL	6784	11780	5902	5377	4978	53042	465090	253000	201730	109500	50251	21419
MEAN	219	393	190	173	178	1711	15500	8161	6724	3532	1621	714
MAX	273	630	259	185	191	5500	37800	13800	23500	9200	3490	1010
MIN	178	260	150	155	166	167	7290	4200	3270	2080	801	583
AC-FT	13460	23370	11710	10670	9870	105200	922500	501800	400100	217200	99670	42480

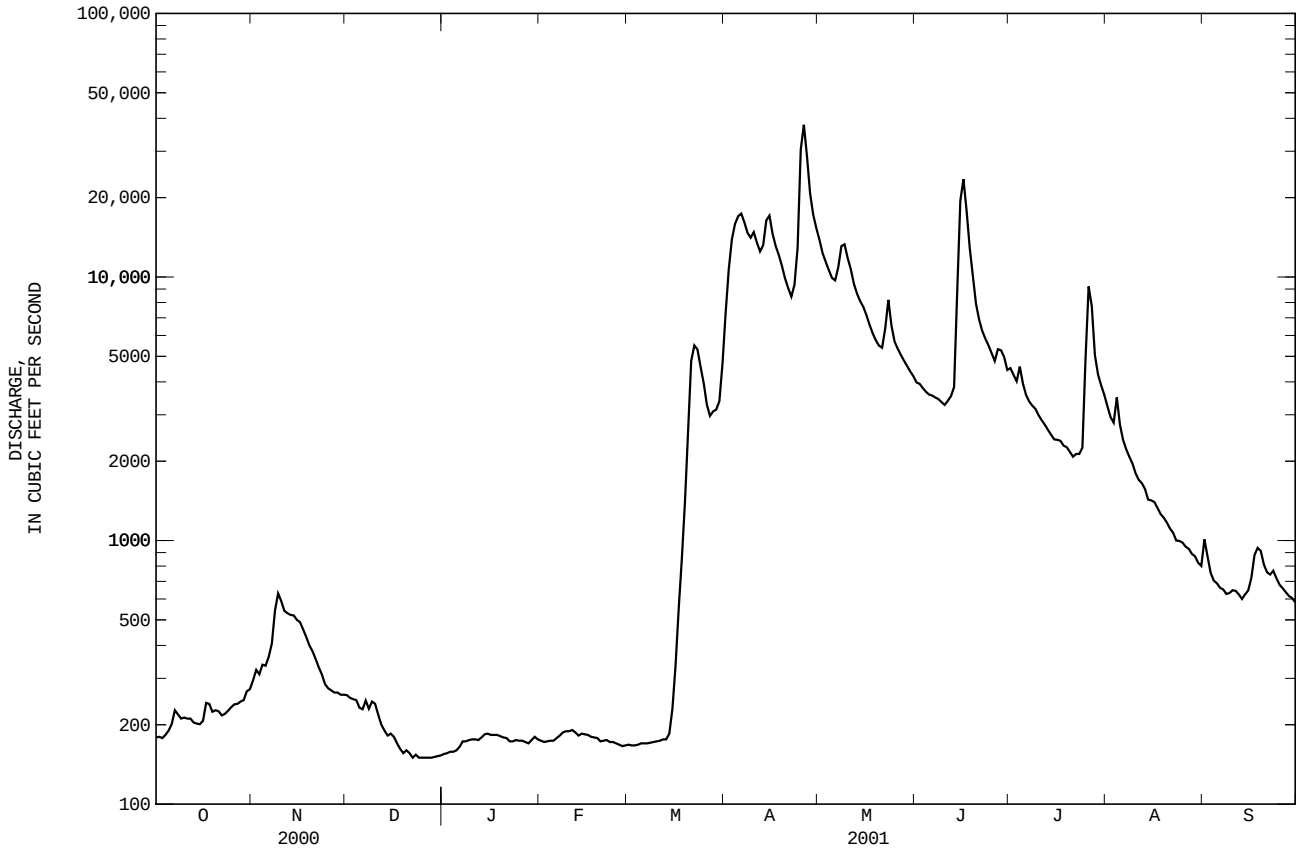
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2001, BY WATER YEAR (WY)

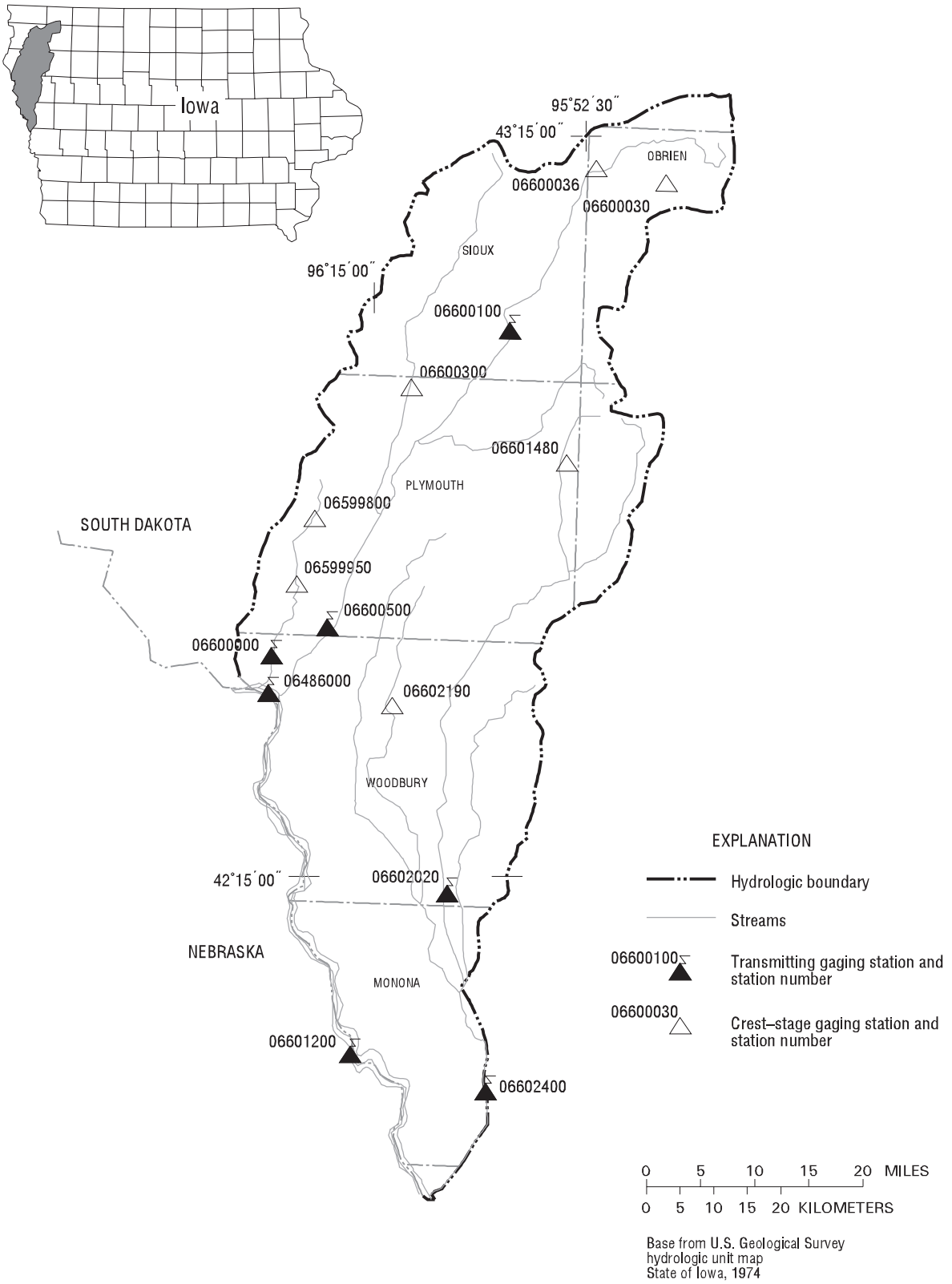
MEAN	531	525	351	210	512	2385	3423	1879	2210	1509	771	674
MAX	4039	3022	1987	920	2399	8866	20690	9499	15820	21740	6200	7313
(WY)	1987	1980	1999	1996	1966	1983	1969	1993	1984	1993	1993	1986
MIN	32.9	47.9	32.1	6.68	12.1	124	139	73.3	100	50.7	45.2	36.4
(WY)	1959	1959	1977	1977	1936	1931	1931	1934	1933	1931	1976	1976

06485500 BIG SIOUX RIVER AT AKRON, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1929 - 2001	
ANNUAL TOTAL	228342		1188853			
ANNUAL MEAN	624		3257		1249a	
HIGHEST ANNUAL MEAN					6271	1993
LOWEST ANNUAL MEAN					120	1931
HIGHEST DAILY MEAN	5110	May 21	37800	Apr 26	77500	Apr 9 1969
LOWEST DAILY MEAN	150	Dec 22	150	Dec 22	4.0	Jan 17 1977
ANNUAL SEVEN-DAY MINIMUM	150	Dec 24	150	Dec 24	4.4	Jan 15 1977
MAXIMUM PEAK FLOW			40400	Apr 26	80800	Apr 9 1969b
MAXIMUM PEAK STAGE			23.38	Apr 26	23.38	Apr 26 2001c
ANNUAL RUNOFF (AC-FT)	452900		2358000		904800	
10 PERCENT EXCEEDS	1380		10700		2970	
50 PERCENT EXCEEDS	431		662		397	
90 PERCENT EXCEEDS	190		172		70	

a Median of annual mean discharges, 820 ft^3/s.
b Gage height, 22.99 ft.
c Discharge, 40,400 ft^3/s.
e Estimated.




Iowa
95°52′30″
43°15′00″
OBRIEN
06600036
06600030
SIOUX
96°15′00″
06600100
06600300
06601480
PLYMOUTH
06599800
SOUTH DAKOTA
06599950
06600500
06600000
06486000
06602190
WOODBURY
42°15′00″
06602020
NEBRASKA
MONONA
06601200
06602400
EXPLANATION
Hydrologic boundary
Streams
06600100 Transmitting gaging station and station number
06600030 Crest–stage gaging station and station number
0 5 10 15 20 MILES
0 5 10 15 20 KILOMETERS
Base from U.S. Geological Survey
hydrologic unit map
State of Iowa, 1974

Gaging Stations

Crest Stage Gaging Stations

06486000 MISSOURI RIVER AT SIOUX CITY, IA

LOCATION.--Lat. 42°29'09", long 96°24'49", in NW$^1/_4$ SE$^1/_4$ sec.16, T.29 N., R.9 E., sixth prinicipal meridian, Dakota County, Nebraska, Hydrologic Unit 10230001, on right bank on upstream side of bridge on U.S. Highway 20 and 77 at South Sioux City, Nebraska, 1.9 mi downstream from Big Sioux River, and at mile 732.2.

DRAINAGE.--314,600 mi^2, approximately. The 3,959 mi^2 in Great Divide basin are not included.

PERIOD OF RECORD.--October 1897 to current year in reports of the U.S. Geological Survey. Prior to October 1928 and October 1931 to September 1938, monthly discharges only, published in WSP 1310. January 1879 to December 1890, monthly discharges only, in House Document 238, 73rd Congress, 2d session, Missouri River. Gage height records collected in this vicinity September 1878 to December 1899 are contained in reports of Missouri River Commission and since July 1889 are contained in reports of U.S. Weather Bureau.

REVISED RECORDS.--WSP 716: 1929-30. WSP 876: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,056.98 ft above sea level. Sept. 2, 1878 to Dec. 31, 1905, nonrecording gages at various locations within 1.7 mi of present site and at various datums. Jan. 1, 1906 to Feb. 14, 1935, nonrecording gage, and Feb. 15, 1935 to Sept. 30, 1969, water-stage recorder at site 227 ft downstream at datum 19.98 ft higher, and Oct. 1, 1969 to Sept. 30, 1970 at datum 20.00 ft higher. Oct. 1, 1970 to Jan. 30, 1981, water-stage recorder at site 227 ft downstream at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by upstream main-stem reservoirs. Fort Randall Dam was completed in July 1952, with storage beginning in December 1952. Gavins Point Dam was completed in July 1955, with storage beginning in December 1955. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 441,000 ft^3/s Apr. 14, 1952, gage height, 24.28 ft, datum then in use; minimum, 2,500 ft^3/s Dec. 29, 1941; minimum gage height, 7.02 ft Jan. 19, 1996.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35000	33400	17000	e17100	14500	14800	28500	50600	28300	28500	28700	28100
2	35200	32800	14900	e16800	14200	15200	29500	49300	27900	29200	29400	28600
3	35200	32600	14100	e17000	13800	15200	27800	46200	27600	29600	28400	28400
4	35500	32100	14200	e17300	16000	15200	26700	42600	27600	29400	28800	28100
5	35400	32500	13400	17000	16100	15400	28700	40300	28500	29400	28700	28500
6	35600	34000	13000	16700	15600	15200	31500	39100	29000	28300	27500	29500
7	35600	33500	14900	16500	15400	14300	34800	38600	28700	28600	27000	30100
8	35500	31600	14800	16300	14900	14200	37300	37700	28500	29200	27200	30500
9	35400	30700	14400	15900	14800	14100	33800	38300	28400	29400	27900	30400
10	35300	31100	14900	15300	12900	13600	32700	40300	29100	28900	28400	30100
11	35200	31200	11800	15500	14100	13900	34300	40800	28800	28300	28400	30000
12	35300	31600	e8300	15500	16200	13800	35700	39500	28600	27900	29000	30200
13	35300	31500	10600	15400	15900	13900	36400	37900	29100	27400	30200	30300
14	35300	31000	14500	15500	15700	14800	45100	36300	29900	27700	29800	31300
15	35100	32000	15600	15600	14500	18200	53500	34900	30400	27400	30400	31600
16	35100	33500	14700	15800	15100	20700	55900	33700	32100	27900	30100	31200
17	35500	33400	11400	15300	16600	20700	53400	32100	37800	28200	29300	30800
18	34700	33700	10500	14900	16900	22300	49200	30800	38100	27800	27900	28900
19	34500	34700	13100	14600	16500	24200	45700	29900	34800	27500	28100	28100
20	34600	33900	12800	12600	15200	27100	41400	29400	30900	27200	28000	28000
21	34700	33700	14600	13300	15100	35600	38600	30600	28500	27200	28200	27900
22	34800	34900	14600	14200	14600	36700	36500	30000	27200	27300	28800	28000
23	35000	34400	15500	14000	14500	30700	36900	30400	27900	28100	28700	27900
24	34600	34300	16700	14100	14500	27200	41700	31500	28300	28100	28700	27700
25	34000	32300	16800	13900	14500	24300	48600	30200	28200	28700	28800	27300
26	33900	29600	16900	13000	14000	24400	55100	28900	27800	31800	28700	27600
27	33700	25900	16900	13700	14900	24900	61500	28900	28500	33000	28600	28300
28	32900	21900	17100	13500	14800	25700	62000	28500	28600	33300	28600	28200
29	32800	18100	16800	15000	---	26500	57300	28800	28300	30600	28600	28100
30	33600	16900	16600	14600	---	26500	53000	29200	28100	29800	28800	28000
31	32900	---	e16800	13700	---	26300	---	29000	---	29600	28400	---
TOTAL	1077200	932800	448200	469600	421800	645600	1253100	1094300	885500	895300	888100	871700
MEAN	34750	31090	14460	15150	15060	20830	41770	35300	29520	28880	28650	29060
MAX	35600	34900	17100	17300	16900	36700	62000	50600	38100	33300	30400	31600
MIN	32800	16900	8300	12600	12900	13600	26700	28500	27200	27200	27000	27300
AC-FT	2137000	1850000	889000	931500	836600	1281000	2486000	2171000	1756000	1776000	1762000	1729000
CFSM	.11	.10	.05	.05	.05	.07	.13	.11	.09	.09	.09	.09
IN.	.13	.11	.05	.06	.05	.08	.15	.13	.10	.11	.11	.10

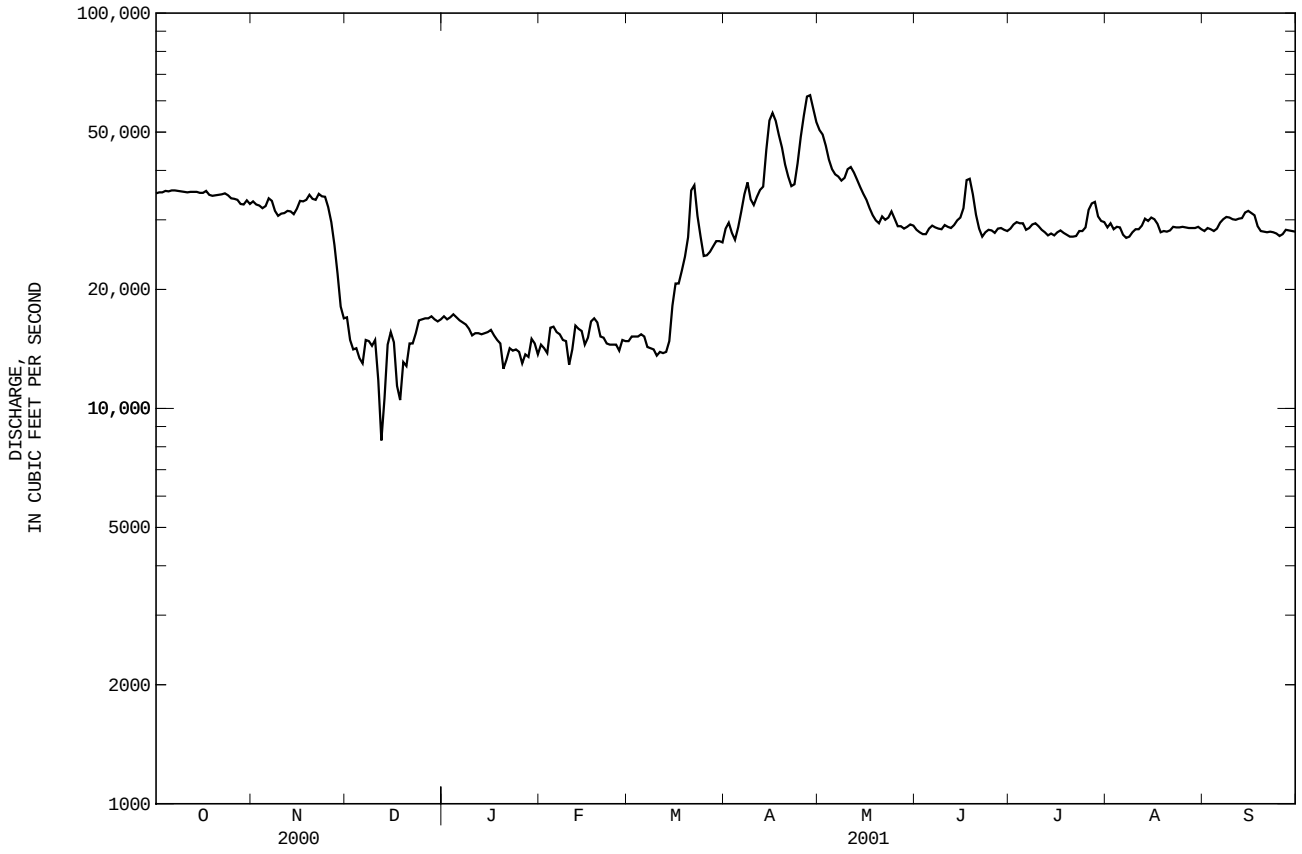
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2001, BY WATER YEAR (WY)

MEAN	36300	31390	18970	16160	17310	23370	33510	34070	35720	36290	36620	36830
MAX	69300	71600	39880	27720	31120	47020	88040	78720	66400	65550	65360	66400
(WY)	1998	1998	1998	1987	1997	1997	1997	1997	1997	1997	1997	1997
MIN	14350	6951	8271	7316	6293	9135	17450	23820	23270	26890	24270	25790
(WY)	1962	1962	1962	1964	1963	1957	1957	1962	1960	1958	1993	1962

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1953 - 2001a	
ANNUAL TOTAL	10614200		9883200			
ANNUAL MEAN	29000		27080		29750	
HIGHEST ANNUAL MEAN					55890	1997
LOWEST ANNUAL MEAN					19770	1957
HIGHEST DAILY MEAN	41000	May 18	62000	Apr 28	105000	Jun 25 1953
LOWEST DAILY MEAN	8300	Dec 12	8300	Dec 12	3000	Dec 11 1961
ANNUAL SEVEN-DAY MINIMUM	12200	Dec 12	12200	Dec 12	5430	Feb 22 1963
MAXIMUM PEAK FLOW			64100	Apr 27	101000	Apr 3 1960
MAXIMUM PEAK STAGE			22.36	Apr 28	30.65	Feb 19 1971
ANNUAL RUNOFF (AC-FT)	21050000		19600000		21560000	
ANNUAL RUNOFF (CFSM)	.092		.086		.095	
ANNUAL RUNOFF (INCHES)	1.26		1.17		1.29	
10 PERCENT EXCEEDS	36000		35900		46600	
50 PERCENT EXCEEDS	31800		28500		30200	
90 PERCENT EXCEEDS	17700		14500		11800	

a Post regulation.
e Estimated.



06600000 PERRY CREEK AT 38th STREET, SIOUX CITY, IA

LOCATION.--Lat 42°32'08", long 96°24'39", in $SE^1/_4$ $SE^1/_4$ sec.8, T.89 N., R.47 W., Woodbury County, Hydrologic Unit 10230001, on left bank at downstream side of bridge on 38th Street in Sioux City, 1.9 mi downstream from West Branch, and 4.2 mi. upstream from mouth.

DRAINAGE AREA.--65.1 mi^2.

PERIOD OF RECORD.--October 1945 to September 1969, June 1981 to current year.

REVISED RECORDS.--WSP 1440: Drainage area. WDR IA-95-1: River mile.

GAGE.--Water-stage recorder. Datum of gage is 1,112.04 ft above sea level (City of Sioux City benchmark). Prior to May 20, 1954, nonrecording gage with supplementary water-stage recorder in operation above 5.0 ft gage height and May 20, 1954 to Sept. 30, 1969, water-stage recorder at present site at datum 5.0 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 7, 1944 reached a stage of about 30.5 ft from floodmarks, present datum, discharge, 9,600 ft^3/s, on basis of contracted-opening measurement of peak flow by U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	e6.4	e9.4	e7.8	e9.2	e5.6	28	21	22	16	8.8	15
2	e8.2	e6.4	e8.5	e8.2	e8.9	e6.3	24	34	20	18	193	16
3	e9.8	e5.0	e8.9	e8.6	e9.5	e7.2	24	35	19	23	41	15
4	e8.7	e4.6	e9.4	e9.5	e9.7	e7.2	23	36	19	15	26	14
5	e7.6	e10	e6.3	e10	e9.6	e7.0	22	112	22	14	22	14
6	e7.6	e31	e9.1	e13	e9.2	e6.7	25	91	20	14	20	14
7	e7.8	e19	e11	e13	e8.5	e7.8	73	55	19	51	19	17
8	e7.5	e13	e9.8	e12	e8.5	e7.4	37	41	17	21	19	e16
9	e7.0	e8.0	e11	e11	e7.6	e7.4	28	35	16	17	18	e15
10	e7.4	e7.8	e7.5	e12	e7.4	e8.4	32	32	57	17	18	15
11	e6.5	e7.6	e6.8	e14	e7.4	e8.0	146	30	22	17	18	14
12	e6.2	e8.8	e8.4	e12	e7.7	e8.5	79	29	19	16	17	13
13	e4.8	e6.2	e9.4	e12	e8.0	e10	44	28	42	16	17	15
14	e4.5	e6.6	e11	e13	e6.8	e50	39	27	110	14	19	39
15	e4.2	e6.2	e12	e11	e6.4	148	32	25	25	13	49	32
16	e3.9	e6.4	e11	e10	e5.6	126	28	23	21	15	24	29
17	e4.0	e6.5	e7.8	e8.8	e5.6	135	26	22	19	16	20	22
18	e4.2	e6.8	e7.9	e10	e6.4	191	26	21	19	13	19	19
19	e4.3	e6.8	e8.6	e8.1	e6.7	246	25	24	17	12	18	18
20	e4.2	e4.6	e8.8	e8.0	e6.0	390	26	32	17	11	18	18
21	e4.0	e5.3	e8.4	e8.5	e5.4	324	31	33	17	11	17	17
22	e4.7	e5.7	e7.1	e8.2	e5.6	105	47	24	16	11	17	18
23	e5.3	e6.3	e7.5	e8.6	e6.2	74	69	22	16	17	17	18
24	e5.6	e6.8	e7.9	e8.9	e6.7	49	37	22	15	16	17	16
25	e5.5	e7.3	e7.4	e8.4	e6.8	34	30	21	14	16	18	16
26	e5.3	e7.7	e7.7	e8.6	e6.0	33	26	21	14	12	17	16
27	e4.8	e7.9	e8.0	e8.9	e5.2	30	24	20	16	12	e16	16
28	e4.7	e8.4	e8.6	e9.3	e5.2	31	22	19	14	12	e18	e15
29	e5.6	e9.6	e9.0	e9.7	---	26	21	19	14	11	21	e15
30	e8.0	e9.1	e8.6	e10	---	26	27	22	14	9.9	20	e14
31	e7.2	---	e8.1	e10	---	34	---	26	---	9.5	15	---
TOTAL	186.4	251.8	270.9	311.1	201.8	2149.5	1121	1002	692	486.4	796.8	531
MEAN	6.01	8.39	8.74	10.0	7.21	69.3	37.4	32.3	23.1	15.7	25.7	17.7
MAX	9.8	31	12	14	9.7	390	146	112	110	51	193	39
MIN	3.9	4.6	6.3	7.8	5.2	5.6	21	19	14	9.5	8.8	13
AC-FT	370	499	537	617	400	4260	2220	1990	1370	965	1580	1050
CFSM	.09	.13	.13	.15	.11	1.07	.57	.50	.35	.24	.39	.27
IN.	.11	.14	.15	.18	.12	1.23	.64	.57	.40	.28	.46	.30

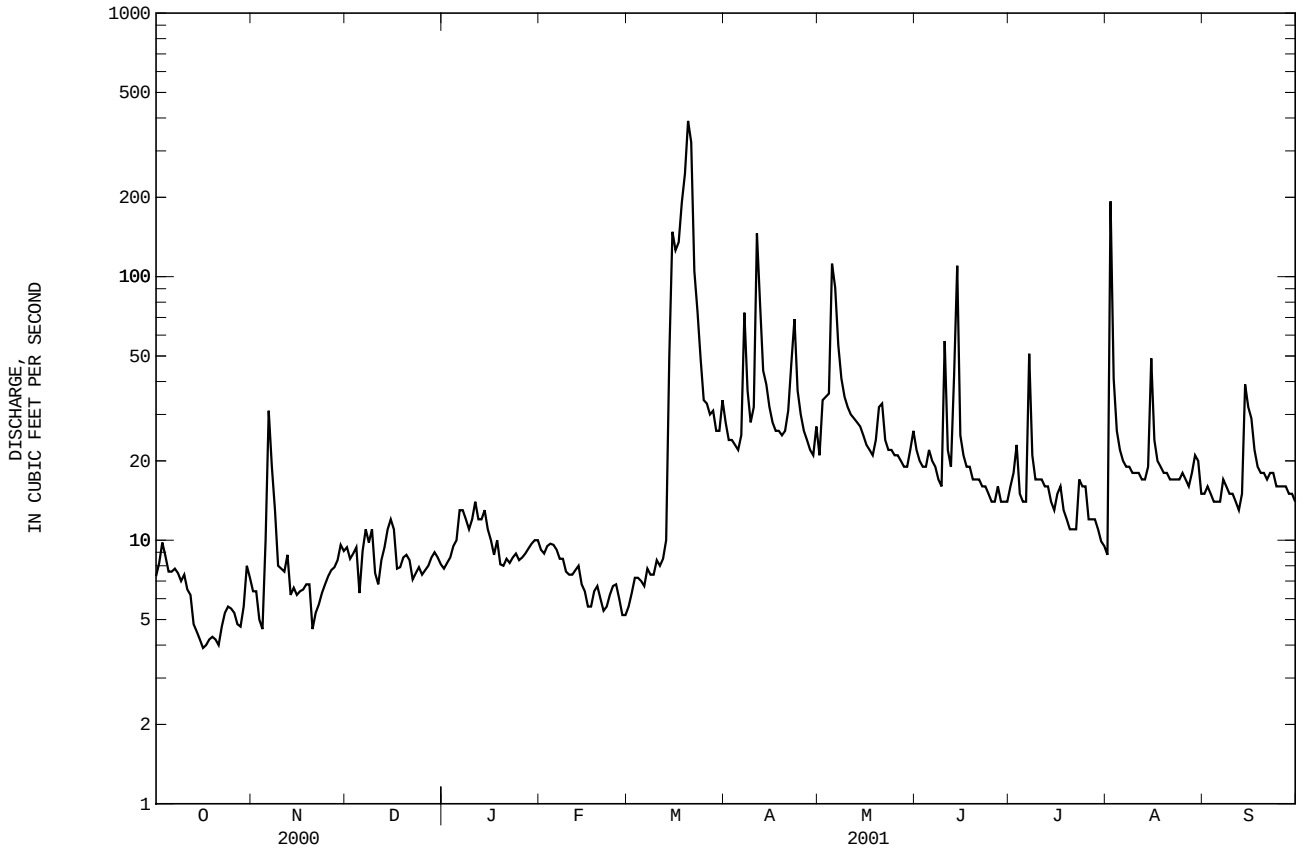
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2001, BY WATER YEAR (WY)

MEAN	8.55	8.62	7.04	7.39	20.0	45.0	26.2	24.5	31.5	22.4	13.7	12.9
MAX	29.5	31.9	22.6	47.5	78.4	188	123	140	125	99.6	85.5	147
(WY)	1993	1997	1999	1952	1948	1962	1985	1990	1984	1952	1951	1949
MIN	.38	.81	.48	.33	1.31	2.62	2.30	2.91	.94	.35	.30	.083
(WY)	1959	1982	1959	1982	1959	1964	1959	1968	1956	1946	1965	1958

06600000 PERRY CREEK AT 38th STREET, SIOUX CITY, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1946 - 2001	
ANNUAL TOTAL	5288.4		8000.7			
ANNUAL MEAN	14.4		21.9		19.0	
HIGHEST ANNUAL MEAN					38.6	1984
LOWEST ANNUAL MEAN					2.38	1968
HIGHEST DAILY MEAN	290	May 18	390	Mar 20	2260	May 19 1990
LOWEST DAILY MEAN	3.9	Oct 16	3.9	Oct 16	.00	Jul 14 1946a
ANNUAL SEVEN-DAY MINIMUM	4.1	Oct 15	4.1	Oct 15	.00	Sep 24 1958
MAXIMUM PEAK FLOW			1010	Aug 2	8670	May 19 1990b
MAXIMUM PEAK STAGE			11.79	Aug 2	28.54	May 19 1990
ANNUAL RUNOFF (AC-FT)	10490		15870		13790	
ANNUAL RUNOFF (CFSM)	.22		.34		.29	
ANNUAL RUNOFF (INCHES)	3.02		4.57		3.97	
10 PERCENT EXCEEDS	26		34		32	
50 PERCENT EXCEEDS	12		14		7.0	
90 PERCENT EXCEEDS	5.7		6.3		.90	

a Many days 1946, 1958-1960.
b From rating curve extended above 1,700 ft^3/s on basis of slope-area measurements of peak flow.
e Estimated.



06600100 FLOYD RIVER AT ALTON, IA

LOCATION.--Lat 42°58'55", long 96°00'03", in NE$^1/_4$ NE$^1/_4$ sec.11, T.94 N., R.44 W., Sioux County, Hydrologic Unit 10230002, on left bank 270 ft downstream from South County Road at east edge of Alton, 34.3 mi upstream from West Branch Floyd River, and at mile 58.1.

DRAINAGE AREA.--268 mi^2.

PERIOD OF RECORD.--October 1955 to current year. Prior to December 1955, monthly discharge only, published in WSP 1730.

REVISED RECORDS.--WDR IA-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,269.55 ft above sea level.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1953 reached a discharge of about 45,500 ft^3/s, from information by U. S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e3.4	e5.6	e7.6	e4.4	e3.0	e2.6	1430	358	207	97	106	8.2
2	e3.3	e4.6	e7.8	e4.0	e2.4	e3.2	716	390	200	159	85	8.2
3	e3.0	e4.5	e7.4	e4.7	e2.2	e3.2	418	414	190	120	150	7.9
4	e3.0	e4.3	e7.6	e5.4	e2.7	e3.4	352	437	183	178	107	7.0
5	e3.0	e4.3	e7.2	e5.4	e2.7	e3.2	307	577	185	142	80	7.0
6	e3.0	e5.5	e7.9	e5.9	e2.8	e3.0	276	1080	182	104	63	7.0
7	e2.9	e6.8	e8.4	e6.4	e2.8	e3.0	284	817	173	90	52	8.1
8	e2.9	e6.1	e7.4	e6.4	e3.0	e4.4	301	517	166	83	43	8.7
9	e2.9	e5.4	e8.2	e5.6	e2.6	e4.8	245	417	161	73	37	8.4
10	e3.0	e5.4	e6.0	e4.8	e1.9	e4.8	216	413	199	65	31	6.7
11	e3.0	e5.2	e5.9	e5.5	e1.9	e4.2	392	458	199	56	27	7.3
12	e3.1	e5.4	e5.6	e5.9	e2.0	e4.4	1300	385	193	52	24	e12
13	e3.1	e4.6	s6.3	e6.4	e2.4	e5.3	823	343	203	46	21	e13
14	e3.1	e4.3	e7.1	e6.0	e2.4	e8.0	466	316	453	42	19	e15
15	e3.0	e4.0	e7.1	e5.6	e2.3	e12	380	292	449	37	22	e16
16	e3.0	e12	e8.0	e4.6	e2.1	e30	321	270	307	e28	20	e16
17	e3.6	e7.8	e6.9	e3.6	e2.1	e80	282	255	257	e34	21	e15
18	e3.8	e8.2	e5.8	e4.0	e1.8	e200	259	242	236	e28	22	e14
19	e4.0	e8.4	e5.2	e3.5	e2.1	363	252	235	217	e26	18	e13
20	e3.7	e7.4	e5.2	e3.0	e2.2	803	240	233	199	21	15	e13
21	e3.6	e7.3	e5.8	e3.2	e1.9	1240	266	276	187	25	14	e13
22	e3.8	e7.2	e4.8	e3.1	e1.9	836	348	381	177	38	13	e13
23	e4.0	e7.2	e4.6	e3.4	e2.2	676	1220	316	165	35	13	e12
24	e4.0	e7.0	e4.4	e3.2	e2.4	601	1510	291	153	151	14	e11
25	e4.2	e7.3	e4.0	e2.8	e3.4	565	689	282	139	722	14	e11
26	e4.1	e7.4	e4.0	e2.6	e3.2	464	496	272	125	458	12	e11
27	e3.9	e7.4	e4.2	e2.7	e3.0	400	407	257	121	280	11	e11
28	e4.0	e7.4	e4.5	e2.8	e2.8	384	351	239	111	234	10	e10
29	e4.2	e7.7	e4.9	e3.2	---	406	313	225	104	201	9.7	e10
30	e4.7	e8.0	e4.4	e3.6	---	504	343	216	99	164	9.9	e10
31	e4.7	---	e4.2	e3.6	---	987	---	211	---	134	8.9	---
TOTAL	109.0	193.7	188.4	135.3	68.2	8608.5	15203	11415	5940	3923	1092.5	323.5
MEAN	3.52	6.46	6.08	4.36	2.44	278	507	368	198	127	35.2	10.8
MAX	4.7	12	8.4	6.4	3.4	1240	1510	1080	453	722	150	16
MIN	2.9	4.0	4.0	2.6	1.8	2.6	216	211	99	21	8.9	6.7
AC-FT	216	384	374	268	135	17070	30160	22640	11780	7780	2170	642
CFSM	.01	.02	.02	.02	.01	1.04	1.89	1.37	.74	.47	.13	.04
IN.	.02	.03	.03	.02	.01	1.19	2.11	1.58	.82	.54	.15	.04

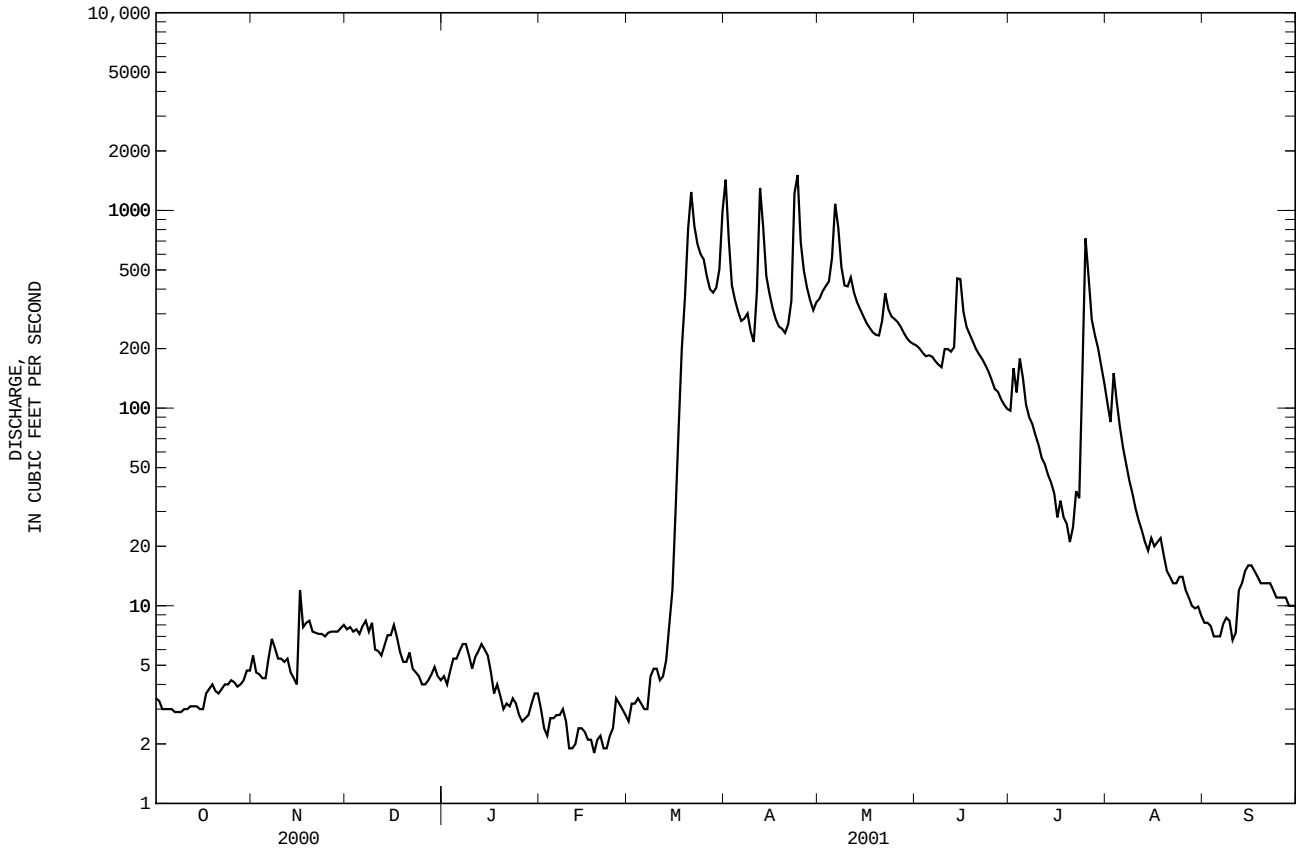
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2001, BY WATER YEAR (WY)

MEAN	42.0	41.7	27.3	18.1	44.5	171	186	122	183	91.0	44.6	30.1
MAX	234	287	128	109	252	605	906	454	973	878	369	175
(WY)	1993	1980	1983	1973	1971	1979	1969	1995	1984	1993	1995	1993
MIN	.058	.30	.074	.048	.15	1.77	3.67	2.92	2.36	3.29	.37	.080
(WY)	1957	1959	1959	1959	1977	1959	1959	1968	1968	1958	1968	1958

06600100 FLOYD RIVER AT ALTON, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1956 - 2001	
ANNUAL TOTAL	4209.0		47200.1			
ANNUAL MEAN	11.5		129		83.4	
HIGHEST ANNUAL MEAN					323	1993
LOWEST ANNUAL MEAN					2.66	1968
HIGHEST DAILY MEAN	192	Jun 15	1510	Apr 24	7160	Apr 4 1969
LOWEST DAILY MEAN	2.9	Oct 7	1.8	Feb 18	.00	Oct 14 1956a
ANNUAL SEVEN-DAY MINIMUM	3.0	Oct 3	2.0	Feb 16	.00	Oct 27 1956
MAXIMUM PEAK FLOW			1850	Apr 23	16300	Jun 20 1983b
MAXIMUM PEAK STAGE			12.84	Apr 23	18.54	Jun 20 1983c
ANNUAL RUNOFF (AC-FT)	8350		93620		60440	
ANNUAL RUNOFF (CFSM)	.043		.48		.31	
ANNUAL RUNOFF (INCHES)	.58		6.55		4.23	
10 PERCENT EXCEEDS	20		391		193	
50 PERCENT EXCEEDS	7.8		11		21	
90 PERCENT EXCEEDS	3.9		3.0		1.4	

a No flow at times in 1956, 1958-59, 1965, 1968, 1977.
b From rating curve extended above 8,500 ft^3/s.
c From floodmark.
e Estimated.



06600500 FLOYD RIVER AT JAMES, IA

LOCATION.--Lat 42°34'36", long 96°18'43", in $SE^1/_4$ $SE^1/_4$ sec.30, T.90 N., R.46 W., Plymouth County, Hydrologic Unit 10230002, on left bank at upstream side of bridge on county highway C70, 0.2 mi east of James, 14.3 mi downstream from West Branch Floyd River, and at mile 7.5.

DRAINAGE AREA.--886 mi^2.

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

REVISED RECORDS.--WSP 1240: 1935 (M), 1936, 1937-38 (M), 1942, 1945. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,092.59 ft above sea level. Prior to Sept. 11, 1938, June 9 to Nov. 5, 1953, and Oct. 1, 1955, to May 22, 1957, nonrecording gage and May 23, 1957, to Sept. 30, 1970, water-stage recorder at same site at datum 10.0 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage and discharge since 1892, that of June 8, 1953, from information by U. S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	60	e46	e24	e26	e28	1960	1000	483	325	349	118
2	29	51	e46	e28	e22	e32	1880	948	473	313	381	113
3	32	49	e44	e32	e26	e33	1100	1010	443	339	437	110
4	32	47	e44	e34	e26	e30	838	1030	421	329	1210	107
5	32	47	e46	e38	e27	e28	704	1180	415	335	686	103
6	32	62	e50	e40	e28	e32	622	1930	407	330	519	101
7	31	74	e46	e42	e26	e40	677	2160	393	308	443	107
8	31	65	e50	e38	e24	e46	709	1650	377	289	393	109
9	31	59	e44	e34	e20	e44	628	1290	367	274	351	103
10	33	59	e36	e32	e18	e40	522	1140	407	260	313	100
11	33	57	e34	e36	e20	e46	822	1430	461	247	282	97
12	34	58	e38	e40	e23	e56	1890	1170	426	234	261	94
13	34	51	e40	e44	e22	e70	2070	1030	424	220	242	94
14	34	46	e44	e42	e21	e100	1370	938	623	211	227	113
15	33	e30	e48	e40	e20	e300	1030	860	820	199	247	124
16	33	e65	e44	e38	e19	e500	842	786	779	204	230	125
17	39	e48	e38	e36	e18	683	699	723	651	265	204	128
18	41	e50	e32	e34	e20	1050	621	671	592	212	195	123
19	43	e46	e30	e28	e21	1550	568	641	544	211	216	114
20	40	e44	e34	e32	e18	2380	531	639	502	195	184	107
21	39	e44	e32	e30	e19	4590	706	650	469	184	171	100
22	40	e44	e30	e34	e22	3650	1040	680	445	176	165	100
23	44	e42	e28	e30	e25	2410	1720	745	422	229	158	99
24	44	e44	e26	e28	e30	1760	2720	675	403	218	152	91
25	45	e45	e24	e26	e36	1240	2200	640	382	412	152	90
26	44	e44	e26	e27	e34	1020	1440	621	361	1050	148	89
27	42	e46	e28	e28	e32	836	1170	601	365	764	141	88
28	43	e47	e30	e32	e30	894	995	570	369	596	134	87
29	45	e48	e28	e36	---	991	874	533	345	515	129	85
30	51	e46	e26	e34	---	974	790	510	336	451	128	84
31	51	---	e26	e30	---	1340	---	504	---	398	123	---
TOTAL	1161	1518	1138	1047	673	26793	33738	28955	13905	10293	8971	3103
MEAN	37.5	50.6	36.7	33.8	24.0	864	1125	934	464	332	289	103
MAX	51	74	50	44	36	4590	2720	2160	820	1050	1210	128
MIN	26	30	24	24	18	28	522	504	336	176	123	84
MED	34	48	36	34	22	500	858	786	423	274	227	102
AC-FT	2300	3010	2260	2080	1330	53140	66920	57430	27580	20420	17790	6150
CFSM	.04	.06	.04	.04	.03	.98	1.27	1.05	.52	.37	.33	.12
IN.	.05	.06	.05	.04	.03	1.12	1.42	1.22	.58	.43	.38	.13

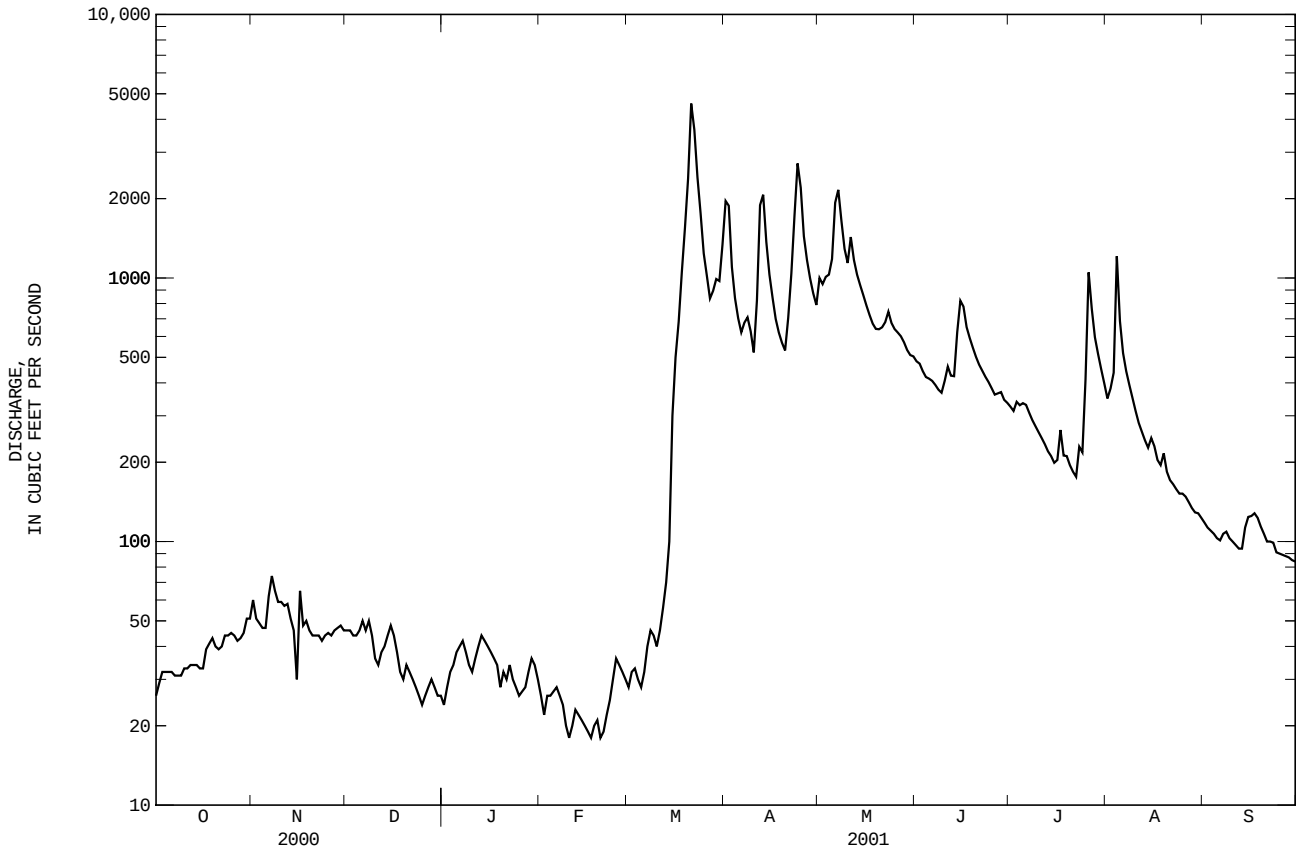
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 2001, BY WATER YEAR (WY)

MEAN	112	110	81.9	59.2	169	539	452	337	529	307	165	136
MAX	617	804	366	359	970	2080	2715	1393	2897	2196	1151	1353
(WY)	1993	1980	1980	1973	1952	1979	1969	1984	1984	1993	1951	1951
MIN	4.55	4.54	3.05	1.13	1.62	21.5	18.7	15.1	14.4	7.32	6.12	3.40
(WY)	1959	1959	1959	1977	1959	1964	1959	1968	1968	1936	1958	1958

06600500 FLOYD RIVER AT JAMES, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1936 - 2001	
ANNUAL TOTAL	28567		131295			
ANNUAL MEAN	78.1		360		250	
HIGHEST ANNUAL MEAN					958	1983
LOWEST ANNUAL MEAN					19.9	1956
HIGHEST DAILY MEAN	868	May 18	4590	Mar 21	32400	Jun 8 1953
LOWEST DAILY MEAN	24	Dec 25	18	Feb 10a	.90	Jan 10 1977b
ANNUAL SEVEN-DAY MINIMUM	27	Dec 24	19	Feb 15	.90	Jan 10 1977
MAXIMUM PEAK FLOW			4910	Mar 21	71500	Jun 8 1953c
MAXIMUM PEAK STAGE			17.64	Mar 21	35.30	Jun 8 1953d
ANNUAL RUNOFF (AC-FT)	56660		260400		180900	
ANNUAL RUNOFF (CFSM)	.088		.41		.28	
ANNUAL RUNOFF (INCHES)	1.20		5.51		3.83	
10 PERCENT EXCEEDS	121		1000		552	
50 PERCENT EXCEEDS	70		107		83	
90 PERCENT EXCEEDS	33		28		13	

a Also Feb. 17, 20.
b Also Jan. 11-22, 1977.
c From rating curve extended above 16,000 ft^3/s on basis of contracted opening and flow-over-embankment measurement of peak flow.
d From floodmarks, current datum.
e Estimated.



06601200 MISSOURI RIVER AT DECATUR, NE

LOCATION.--Lat 42°00'26", long 96°14'29", in NE$^1/_4$ SW$^1/_4$ sec.36, T.24 N., R.10 E., Burt County, Hydrologic Unit 10230001, on right bank 0.1 mi upstream from Iowa Highway 175 bridge at Decatur, and at mile 691.0.

DRAINAGE AREA.--316,200 mi^2, approximately. The 3,959 mi^2 in Great Divide basin are not included.

PERIOD OF RECORD.--October 1987 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,010.00 ft above sea level, supplementary adjustment of 1954.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by upstream main-stem reservoirs. Fort Randall Dam was completed in July 1952, with storage beginning in December 1952. Gavins Point Dam was completed in July 1955, with storage beginning in December 1955. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34600	33700	17800	17600	14200	15200	28500	51900	30200	28900	29300	28400
2	35500	33200	17100	17300	e14700	15300	30400	51300	29800	29500	29300	28500
3	35600	33000	15000	17500	e14100	15500	29800	49000	29800	30200	29200	28800
4	35900	32600	14400	17800	14900	15500	27700	45800	29800	30000	28600	28600
5	36100	32500	14100	17700	16500	15500	27900	43400	30000	30100	29000	28600
6	36100	33600	13400	17200	16400	15500	30300	42200	30500	29300	28200	29500
7	36400	34400	14000	17400	16100	15100	33000	41000	30200	28800	27700	30200
8	36100	32900	15400	17400	15800	14600	36900	40000	29800	29500	27400	30700
9	35900	31400	15200	17100	15300	14700	35900	39400	29500	29600	28000	30700
10	35600	31400	15200	16500	14400	14500	32900	40700	29400	29300	28400	30600
11	35500	31700	15200	16400	13300	14300	34100	42400	29700	28800	28900	30500
12	35600	31900	11500	16600	15000	14300	36600	41400	29400	28500	29000	30500
13	35600	32400	10800	16400	16300	14400	36400	39600	29700	28100	30100	30500
14	35600	31900	13200	16300	15900	15500	40700	38200	30800	28100	30400	30800
15	35600	32300	15800	16200	15300	18200	51400	37000	31200	28000	30700	32100
16	35300	33700	16100	16000	14500	20000	56600	35800	31400	27800	30600	31300
17	35600	34500	14800	15900	15800	21200	55800	34500	36300	28500	30100	31200
18	35600	34300	12600	15300	16600	21900	51500	33100	39400	28400	28900	29700
19	34500	35000	13200	15100	17100	23500	46900	31900	36900	28100	28300	28400
20	34900	35300	14800	14300	16200	25800	42400	31500	33200	27700	28400	28200
21	34900	34200	15400	13200	15500	32100	39900	31500	30400	27600	28300	28100
22	35100	34900	16700	14400	15300	38600	37900	32000	28500	27500	28600	28100
23	35200	34800	16100	15100	15100	35900	36800	31300	28100	28100	28800	27900
24	35100	34300	17100	15200	15400	30100	39900	32100	28600	28500	28800	27700
25	34500	33000	17300	15000	15100	27400	46800	32000	28900	28300	28900	27600
26	34200	30600	17200	14300	15000	26000	52900	30400	28300	30100	28700	27400
27	34300	28100	17400	14200	14700	26600	58600	29700	28800	32600	28400	28100
28	33600	24700	17500	13900	15300	27000	62200	29900	29000	33600	28300	28400
29	33100	21500	17600	15000	---	27600	58800	29500	29200	31900	28200	28300
30	33900	18600	17200	15500	---	28200	54600	30100	29100	30100	28900	28200
31	33500	---	17300	14400	---	27600	---	30500	---	29600	28600	---
TOTAL	1089000	956400	476400	492200	429800	667600	1254100	1149100	915900	905100	895000	877600
MEAN	35130	31880	15370	15880	15350	21540	41800	37070	30530	29200	28870	29250
MAX	36400	35300	17800	17800	17100	38600	62200	51900	39400	33600	30700	32100
MIN	33100	18600	10800	13200	13300	14300	27700	29500	28100	27500	27400	27400
AC-FT	2160000	1897000	944900	976300	852500	1324000	2488000	2279000	1817000	1795000	1775000	1741000
CFSM	.11	.10	.05	.05	.05	.07	.13	.12	.10	.09	.09	.09
IN.	.13	.11	.06	.06	.05	.08	.15	.14	.11	.11	.11	.10

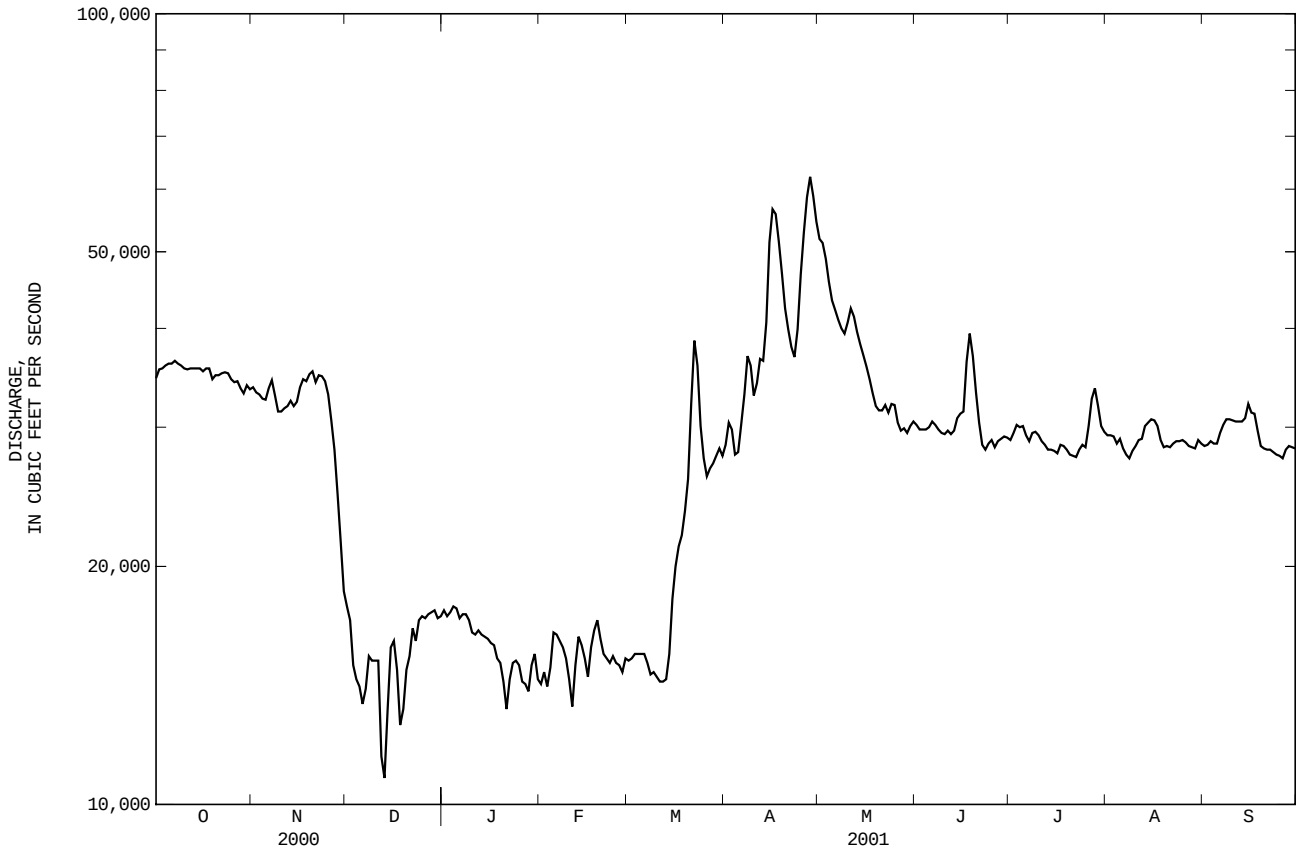
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2001, BY WATER YEAR (WY)

MEAN	38570	33440	22330	19240	20570	25780	37200	38550	39200	39350	37250	38740
MAX	70150	72350	41350	26850	32380	49450	90050	80690	67970	66520	66170	67290
(WY)	1998	1998	1998	1998	1997	1997	1997	1997	1997	1997	1997	1997
MIN	24250	10470	12070	12360	12210	11580	24410	26130	28240	27680	25700	26750
(WY)	1993	1991	1991	1990	1991	1991	1991	1991	1991	1991	1993	1993

06601200 MISSOURI RIVER AT DECATUR, NE--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1988 - 2001	
ANNUAL TOTAL	10875600		10108200			
ANNUAL MEAN	29710		27690		32560	
HIGHEST ANNUAL MEAN					57440	1997
LOWEST ANNUAL MEAN					21450	1991
HIGHEST DAILY MEAN	45900	Jun 26	62200	Apr 28	99900	Apr 15 1997
LOWEST DAILY MEAN	10800	Dec 13	10800	Dec 13	7130	Dec 22 1990
ANNUAL SEVEN-DAY MINIMUM	13500	Dec 12	13500	Dec 12	9660	Dec 12 1990
MAXIMUM PEAK FLOW			62800	Apr 28	100000	Apr 15 1997
MAXIMUM PEAK STAGE			28.89	Apr 28	32.31	Jul 18 1996
ANNUAL RUNOFF (AC-FT)	21570000		20050000		23590000	
ANNUAL RUNOFF (CFSM)	.094		.088		.10	
ANNUAL RUNOFF (INCHES)	1.28		1.19		1.40	
10 PERCENT EXCEEDS	36900		36700		54800	
50 PERCENT EXCEEDS	32500		28900		31000	
90 PERCENT EXCEEDS	18600		15000		14400	

e Estimated



06602020 WEST FORK DITCH AT HORNICK, IA

LOCATION.--Lat 42°13'37", long 96°04'40", in SW¼ SW¼ sec.27, T.86 N., R.45 W., Woodbury County, Hydrologic Unit 10230004, on left bank at upstream side of State Highway 141 bridge, 1.0 mi east of Hornick, 9.2 mi upstream from Wolf Creek, and 13.5 mi north of Onawa.

DRAINAGE AREA.--403 mi^2.

PERIOD OF RECORD.-- April 1939 to September 1969 (published as "Holly Springs"), July 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,045.82 ft above sea level.

REMARKS.--Records good except those for estimated daily discharges, which are poor. West Fork ditch is a dredged channel which diverts flow of West Fork Little Sioux River at Hornick 5.5 mi south, then southeast 6.5 mi to a point 1.2 mi west of Kennebec, where Wolf Creek enters from left. From this point, ditch roughly parallels the Little Sioux River and is known as Monona-Harrison ditch. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	33	e31	e16	e13	e17	207	177	153	131	105	65
2	22	34	e27	e18	e12	e27	192	235	148	131	103	65
3	22	29	e23	e24	e13	e32	184	317	140	130	199	64
4	23	28	e21	e25	e19	e35	171	342	134	123	161	65
5	23	29	e17	e33	e26	e31	160	638	143	115	200	60
6	22	37	e20	e40	e26	e26	157	712	149	110	144	58
7	22	41	e37	e33	e31	e35	199	597	136	113	122	61
8	22	39	e32	e25	e29	e27	212	443	129	134	108	66
9	23	34	e38	e23	e25	e29	166	378	126	113	99	62
10	23	32	e32	e24	e14	e34	141	336	160	108	92	59
11	24	33	e25	e29	e25	e40	308	304	148	104	86	58
12	24	33	e19	e37	e41	e43	809	273	134	103	83	55
13	23	32	e32	e41	e50	e53	492	258	129	97	80	55
14	22	30	e27	e45	e45	e126	311	250	1410	93	77	62
15	22	37	e42	e39	e40	441	249	230	744	90	106	78
16	22	39	e34	e32	e30	240	207	217	391	87	129	78
17	23	47	e25	e21	e24	225	177	202	304	95	106	79
18	23	69	e19	e16	e26	388	163	190	269	108	97	83
19	23	35	e16	e13	e36	786	156	183	239	110	197	76
20	22	e11	e23	e12	e25	1110	151	196	215	103	135	71
21	22	e17	e17	e15	e17	3150	149	218	203	97	107	68
22	22	e20	e12	e19	e21	2040	209	241	192	99	97	68
23	25	e25	e14	e27	e25	1060	378	220	182	103	91	65
24	26	e21	e22	e22	e32	657	529	202	175	124	86	63
25	26	e25	e14	e16	e37	e500	328	193	165	182	85	63
26	26	e20	e18	e16	e29	e400	265	182	154	305	83	62
27	25	e15	e19	e16	e17	e300	229	175	149	208	79	62
28	25	e23	e25	e23	e14	e210	201	168	144	164	74	60
29	25	e31	e27	e29	---	205	182	156	139	143	71	60
30	29	e31	e21	e28	---	185	167	151	135	127	69	59
31	30	---	e17	e25	---	188	---	154	---	116	67	---
TOTAL	733	930	746	782	742	12640	7449	8538	7039	3866	3338	1950
MEAN	23.6	31.0	24.1	25.2	26.5	408	248	275	235	125	108	65.0
MAX	30	69	42	45	50	3150	809	712	1410	305	200	83
MIN	22	11	12	12	12	17	141	151	126	87	67	55
AC-FT	1450	1840	1480	1550	1470	25070	14780	16940	13960	7670	6620	3870
CFSM	.06	.08	.06	.06	.07	1.01	.62	.68	.58	.31	.27	.16
IN.	.07	.09	.07	.07	.07	1.17	.69	.79	.65	.36	.31	.18

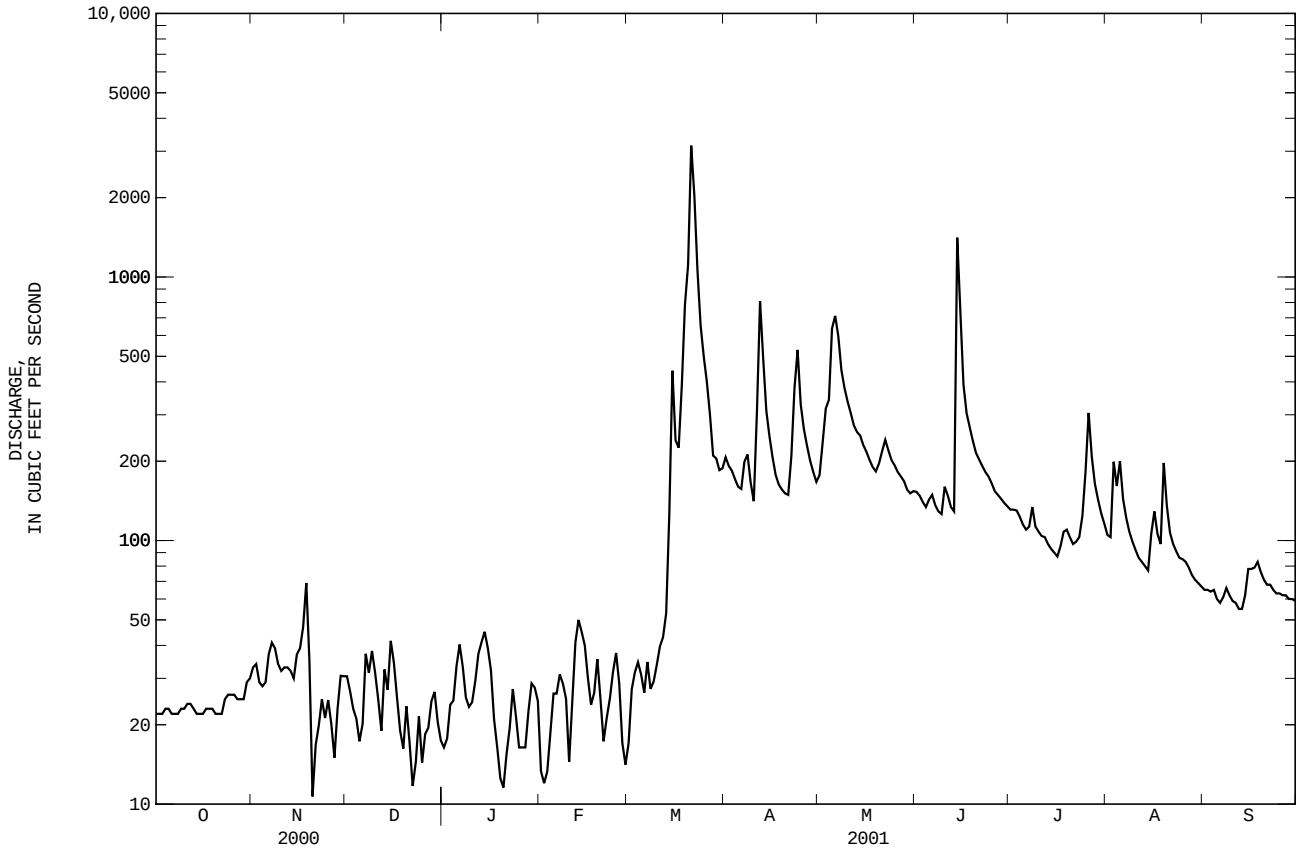
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2001, BY WATER YEAR (WY)

MEAN	61.2	55.3	45.0	36.4	107	226	179	157	278	150	104	70.3
MAX	369	281	199	127	522	813	837	585	2131	561	605	422
(WY)	1993	1980	1985	1952	1994	1962	1969	1983	1984	1993	1951	1951
MIN	2.08	4.06	2.60	2.26	2.41	8.41	9.80	11.5	7.71	11.5	2.92	2.23
(WY)	1957	1959	1959	1959	1940	1957	1957	1943	1956	1956	1956	1956

06602020 WEST FORK DITCH AT HORNICK, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1940 - 2001	
ANNUAL TOTAL	16534		48753			
ANNUAL MEAN	45.2		134		123	
HIGHEST ANNUAL MEAN					367	1984
LOWEST ANNUAL MEAN					9.28	1956
HIGHEST DAILY MEAN	859	Jun 14	3150	Mar 21	9000	Mar 28 1962
LOWEST DAILY MEAN	11	Nov 20	11	Nov 20	.20	Jul 30 1956a
ANNUAL SEVEN-DAY MINIMUM	17	Dec 21	17	Dec 21	.53	Aug 23 1956
MAXIMUM PEAK FLOW			4070	Mar 21	12400	Mar 28 1962
MAXIMUM PEAK STAGE			18.76	Mar 14	25.87	Jun 22 1996
ANNUAL RUNOFF (AC-FT)	32800		96700		88820	
ANNUAL RUNOFF (CFSM)	.11		.33		.30	
ANNUAL RUNOFF (INCHES)	1.53		4.50		4.13	
10 PERCENT EXCEEDS	59		253		248	
50 PERCENT EXCEEDS	42		65		47	
90 PERCENT EXCEEDS	23		21		10	

a Also Aug. 17, 1956.
e Estimated.



06602400 MONONA-HARRISON DITCH NEAR TURIN, IA

LOCATION.--Lat 41°57'52", long 95°59'30", in NW$^1/_4$ NE$^1/_4$ sec.32, T.83 N., R.44 W., Monona County, Hydrologic Unit 10230004, on left bank at upstream side of bridge on county highway E54, 1.0 mi west of gaging station on Little Sioux River near Turin, 4 mi southwest of Turin, 5.2 mi northeast of Blencoe, and 12.5 mi upstream from mouth.

DRAINAGE AREA.--900 mi^2.

PERIOD OF RECORD.--May 1942 to current year. Records for May 1942 to January 1958 not equivalent owing to diversion from Little Sioux River through equalizer ditch 1.5 mi upstream. Records prior to 1950 not equivalent owing to diversion to Little Sioux River through diversion ditch 10.2 mi upstream.

REVISED RECORDS: WSP 1440: Drainage area. WSP 1560: Drainage area. WDR IA-95-1: Period of record.

GAGE.--Water-stage recorder. Datum of gage is 1,015.00 ft above sea level (U.S. Army Corps of Engineers bench mark). May 7, 1942 to Oct. 13, 1953, nonrecording gage and Oct. 14, 1953 to Sept. 30, 1975, recording gage at same site at datum 5.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Monona-Harrison ditch is a dug channel and is a continuation of West Fork ditch, paralleling the Little Sioux River, and discharging into the Missouri River 1.5 mi upstream from the mouth of the Little Sioux River. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	100	76	e60	e54	e61	492	562	337	248	191	126
2	57	102	72	e62	e47	e65	412	1940	315	254	180	127
3	57	90	71	e61	e59	e69	367	2590	301	261	273	126
4	59	82	74	e66	70	e69	352	2260	290	266	314	128
5	62	82	e59	e75	71	e71	331	3410	306	235	295	126
6	60	102	e63	80	69	e68	329	3200	326	222	246	125
7	58	133	76	e71	69	72	426	1760	300	212	203	133
8	59	119	79	e64	70	72	463	896	279	277	186	136
9	59	97	78	e61	e62	73	366	645	267	266	173	128
10	61	85	e73	e63	e54	74	311	843	304	235	164	122
11	64	89	e71	e66	e62	72	793	535	393	223	160	119
12	65	89	e60	e70	e71	77	1810	465	324	224	156	116
13	67	85	e71	79	71	81	1070	447	312	218	154	113
14	67	76	e73	79	e70	132	609	433	1590	207	151	120
15	66	73	e82	e74	e67	947	460	402	2110	195	198	173
16	72	74	e74	e75	e58	1030	405	372	958	192	346	211
17	69	79	e71	e73	e58	880	367	351	677	196	275	186
18	71	85	e69	e69	e62	1170	343	335	521	209	180	167
19	73	89	e62	e56	70	1720	324	323	440	215	241	155
20	75	e52	e72	e47	70	2010	311	344	399	198	233	145
21	71	e70	e69	e51	e59	4100	299	453	378	193	187	137
22	74	e66	e65	e56	e61	4140	352	447	359	189	169	136
23	76	e68	e63	e62	e65	1960	496	398	343	195	161	140
24	81	e68	e65	e55	e69	1050	695	372	331	203	153	134
25	82	e71	e60	e52	e78	670	523	360	319	254	155	127
26	81	e68	e57	e52	e69	546	445	349	300	353	158	123
27	81	e69	e57	e52	e58	516	423	343	291	329	149	119
28	78	76	e68	e63	e58	510	454	329	285	276	142	117
29	78	76	e66	70	---	485	445	311	269	244	136	116
30	88	77	e64	e68	---	433	376	306	257	224	139	114
31	100	---	e60	67	---	425	---	325	---	207	134	---
TOTAL	2170	2492	2120	1999	1801	23648	14849	26106	13881	7220	6002	4045
MEAN	70.0	83.1	68.4	64.5	64.3	763	495	842	463	233	194	135
MAX	100	133	82	80	78	4140	1810	3410	2110	353	346	211
MIN	57	52	57	47	47	61	299	306	257	189	134	113
AC-FT	4300	4940	4210	3970	3570	46910	29450	51780	27530	14320	11900	8020
CFSM	.08	.09	.08	.07	.07	.85	.55	.94	.51	.26	.22	.15
IN.	.09	.10	.09	.08	.07	.98	.61	1.08	.57	.30	.25	.17

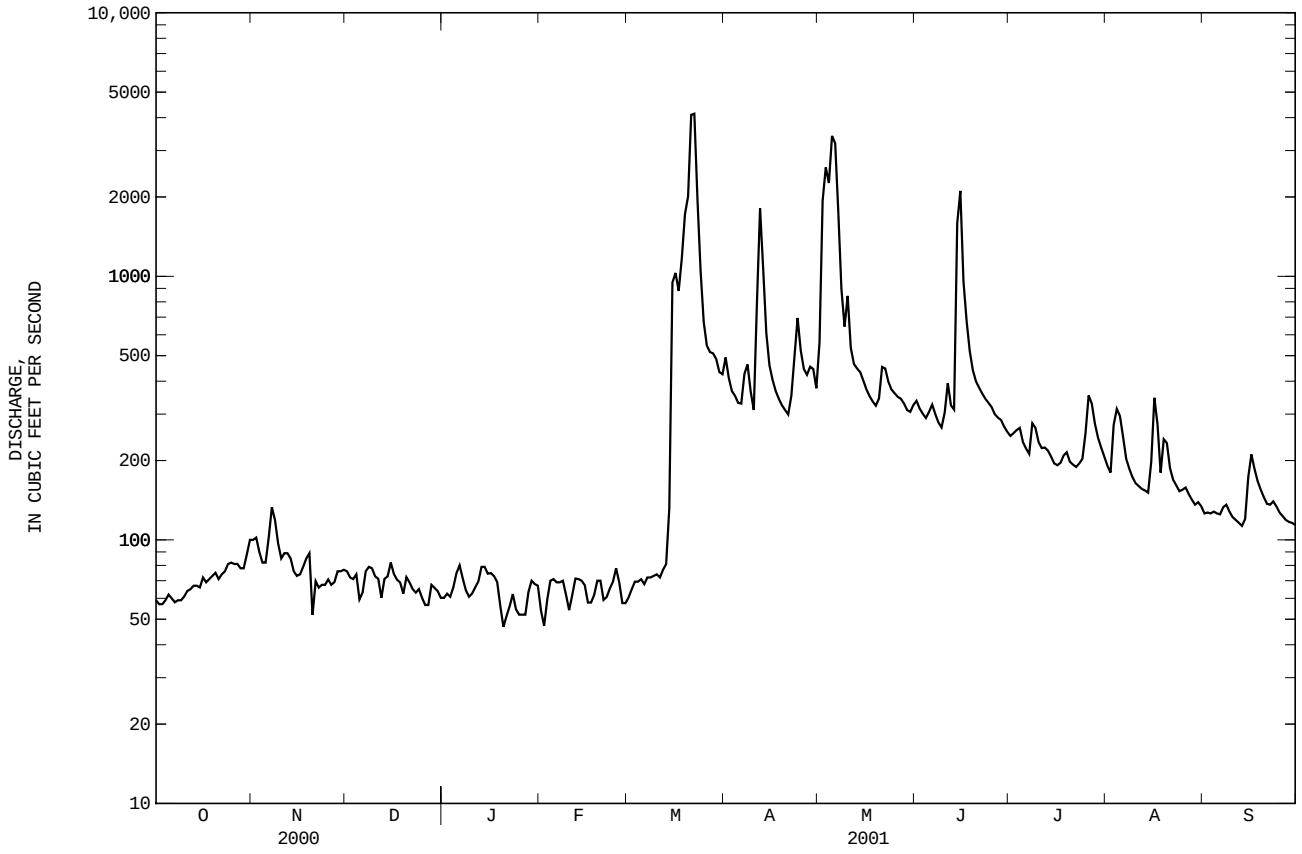
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2001, BY WATER YEAR (WY)

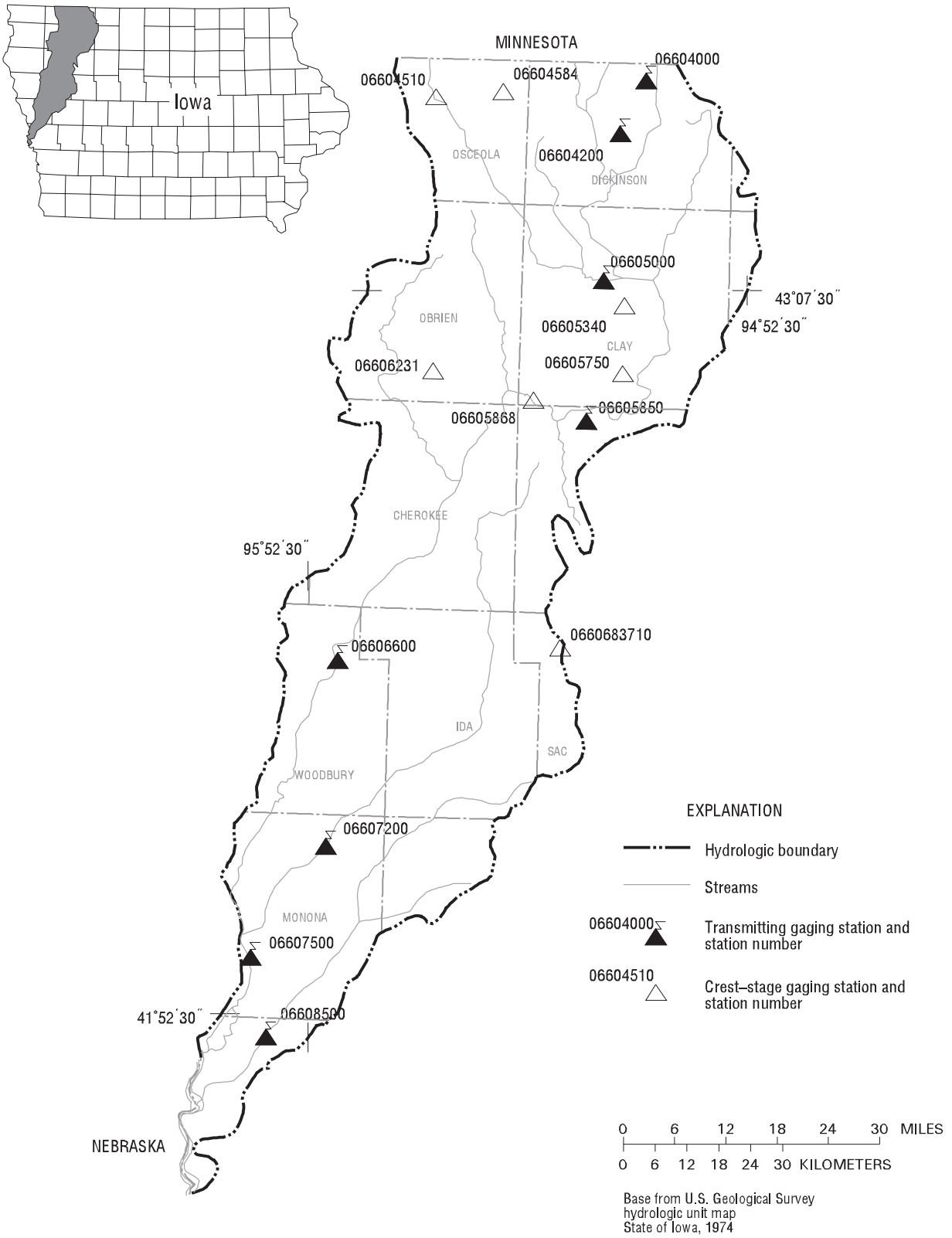
MEAN	152	137	114	95.1	225	488	445	394	593	351	191	145
MAX	831	415	421	398	1963	1707	1588	1157	3833	2107	883	576
(WY)	1993	1980	1985	1973	1971	1962	1965	1995	1984	1993	1996	1993
MIN	16.0	18.0	11.4	10.5	13.9	46.9	41.1	43.7	71.8	46.1	30.6	30.8
(WY)	1959	1959	1959	1959	1959	1968	1968	1968	1989	1976	1976	1981

06602400 MONONA-HARRISON DITCH NEAR TURIN, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1959 - 2001a	
ANNUAL TOTAL	44328		106333			
ANNUAL MEAN	121		291		277	
HIGHEST ANNUAL MEAN					798	1993
LOWEST ANNUAL MEAN					55.5	1968
HIGHEST DAILY MEAN	1750	Jun 26	4140	Mar 22	18000	Feb 19 1971
LOWEST DAILY MEAN	52	Nov 20	47	Jan 20	8.5	Jan 3 1959b
ANNUAL SEVEN-DAY MINIMUM	59	Oct 1	54	Jan 20	8.5	Jan 3 1959
MAXIMUM PEAK FLOW			5070	Mar 21	19900	Feb 19 1971
MAXIMUM PEAK STAGE			16.39	Mar 21	28.03	Feb 19 1971
INSTANTANEOUS LOW FLOW			30	Dec 5		
ANNUAL RUNOFF (AC-FT)	87920		210900		200900	
ANNUAL RUNOFF (CFSM)	.13		.32		.31	
ANNUAL RUNOFF (INCHES)	1.83		4.40		4.19	
10 PERCENT EXCEEDS	159		502		515	
50 PERCENT EXCEEDS	110		133		129	
90 PERCENT EXCEEDS	69		61		39	

a Post closure of diversion from Little Sioux River.
b Also Jan. 4-11, 1959.
e Estimated.




Iowa
MINNESOTA
06604000
06604584
06604510
OSCEOLA
06604200
DICKINSON
06605000
43°07′30″
94°52′30″
OBRIEN
06605340
CLAY
06606231
06605750
06605868
06605850
CHEROKEE
95°52′30″
06606600
0660683710
IDA
SAC
WOODBURY
06607200
MONONA
06607500
41°52′30″
06608500
NEBRASKA
EXPLANATION
Hydrologic boundary
Streams
06604000 Transmitting gaging station and station number
06604510 Crest–stage gaging station and station number
0 6 12 18 24 30 MILES
0 6 12 18 24 30 KILOMETERS
Base from U.S. Geological Survey
hydrologic unit map
State of Iowa, 1974

Gaging Stations

Crest Stage Gaging Stations

06604000 SPIRIT LAKE NEAR ORLEANS, IA

LOCATION.--Lat 43°28'11", long 95°07'25", in NE$^1/_4$ NW$^1/_4$ sec.20, T.100N., R.36W., Dickinson County, Hydrologic Unit 10230003, 2.3 mi upstream from lake outlet, and 2.3 mi northwest of Orleans.

DRAINAGE AREA.--75.6 mi^2.

PERIOD OF RECORD.--May 1933 to September 1975 (fragmentary prior to 1951), April 1990 to current year. Prior to October 1949, published as "at Orleans".

GAGE.--Water-stage recorder. Datum of gage is 1,387.25 ft above sea level, 90.0 ft above Iowa Lake Survey datum, and 14.2 ft below crest of spillway. Prior to July 6, 1950, non-recording gage or water-stage recorder at various sites near outlet, all at present datum.

REMARKS.--A reliable record of stage was obtained for the year, except Dec. 21 to Jan. 2, Jan. 29, Feb. 10-24, and Sept. 27. Lake formed by concrete dam with ungated spillway at elevation 1,401.4 ft. above sea level. Dam constructed in 1969. A previous outlet works had been constructed in 1944. Lake is used for conservation and recreation. U.S. Geological Survey satellite data collection platform at station.

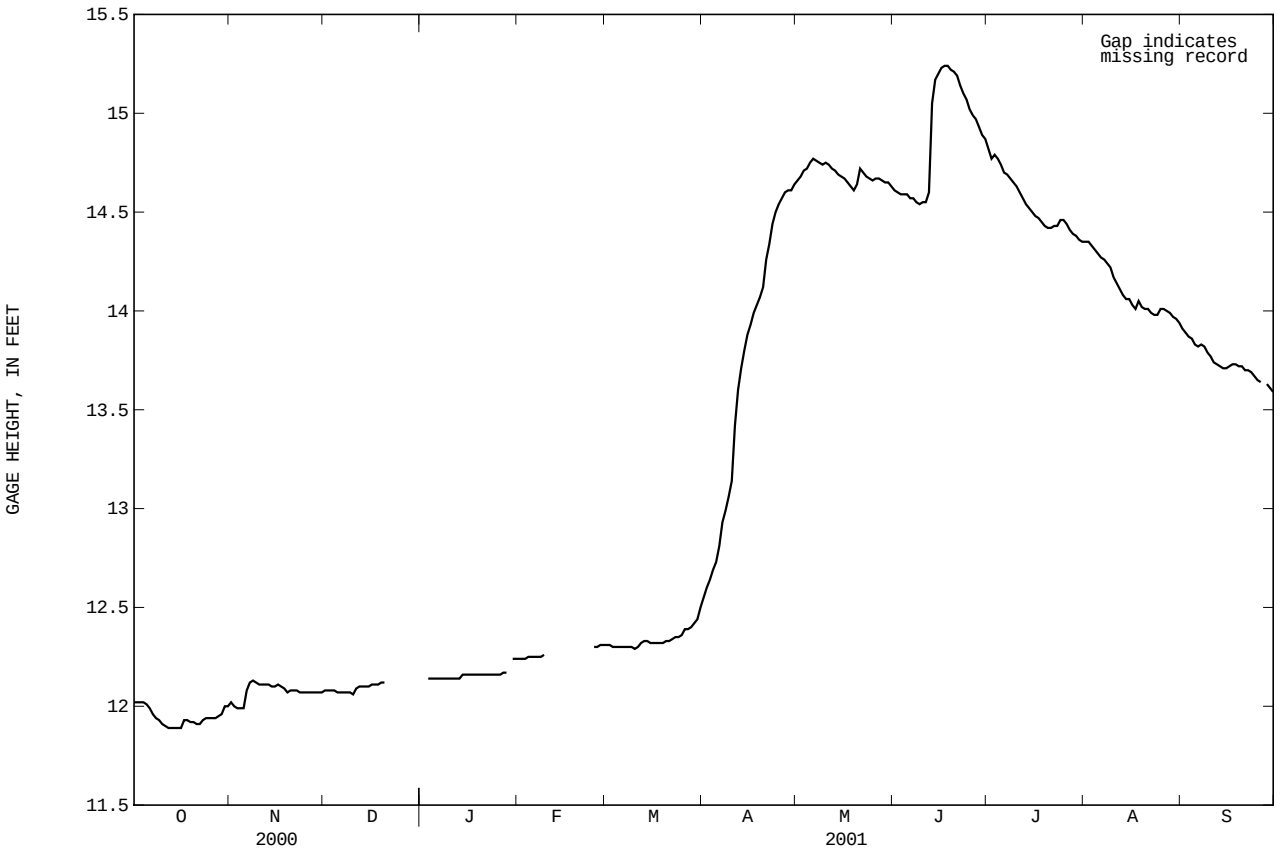
EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 18.79 ft. July 17-20, 1993; minimum observed, 6.75 ft. Oct. 20, 1935.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 15.25 ft. June 17, 18; minimum, 11.87 ft. Oct. 16.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.02	12.02	12.08	---	12.24	12.31	12.55	14.66	14.61	14.82	14.35	13.91
2	12.02	12.00	12.08	---	12.24	12.31	12.60	14.68	14.60	14.77	14.35	13.89
3	12.02	11.99	12.08	12.14	12.24	12.30	12.64	14.71	14.59	14.79	14.33	13.87
4	12.02	11.99	12.08	12.14	12.25	12.30	12.69	14.72	14.59	14.77	14.31	13.86
5	12.01	11.99	12.07	12.14	12.25	12.30	12.73	14.75	14.59	14.74	14.29	13.83
6	11.99	12.08	12.07	12.14	12.25	12.30	12.81	14.77	14.57	14.70	14.27	13.82
7	11.96	12.12	12.07	12.14	12.25	12.30	12.93	14.76	14.57	14.69	14.26	13.83
8	11.94	12.13	12.07	12.14	12.25	12.30	12.99	14.75	14.55	14.67	14.24	13.82
9	11.93	12.12	12.07	12.14	12.26	12.30	13.06	14.74	14.54	14.65	14.22	13.79
10	11.91	12.11	12.06	12.14	---	12.29	13.14	14.75	14.55	14.63	14.17	13.77
11	11.90	12.11	12.09	12.14	---	12.30	13.42	14.74	14.55	14.60	14.14	13.74
12	11.89	12.11	12.10	12.14	---	12.32	13.60	14.72	14.60	14.57	14.11	13.73
13	11.89	12.11	12.10	12.14	---	12.33	13.71	14.71	15.05	14.54	14.08	13.72
14	11.89	12.10	12.10	12.16	---	12.33	13.80	14.69	15.17	14.52	14.06	13.71
15	11.89	12.10	12.10	12.16	---	12.32	13.88	14.68	15.20	14.50	14.06	13.71
16	11.89	12.11	12.11	12.16	---	12.32	13.93	14.67	15.23	14.48	14.03	13.72
17	11.93	12.10	12.11	12.16	---	12.32	13.99	14.65	15.24	14.47	14.01	13.73
18	11.93	12.09	12.11	12.16	---	12.32	14.03	14.63	15.24	14.45	14.05	13.73
19	11.92	12.07	12.12	12.16	---	12.32	14.07	14.61	15.22	14.43	14.02	13.72
20	11.92	12.08	12.12	12.16	---	12.33	14.12	14.64	15.21	14.42	14.01	13.72
21	11.91	12.08	---	12.16	---	12.33	14.26	14.72	15.19	14.42	14.01	13.70
22	11.91	12.08	---	12.16	---	12.34	14.34	14.70	15.14	14.43	13.99	13.70
23	11.93	12.07	---	12.16	---	12.35	14.44	14.68	15.10	14.43	13.98	13.69
24	11.94	12.07	---	12.16	---	12.35	14.50	14.67	15.07	14.46	13.98	13.67
25	11.94	12.07	---	12.16	12.30	12.36	14.54	14.66	15.02	14.46	14.01	13.65
26	11.94	12.07	---	12.16	12.30	12.39	14.57	14.67	14.99	14.44	14.01	13.64
27	11.94	12.07	---	12.17	12.31	12.39	14.60	14.67	14.97	14.41	14.00	---
28	11.95	12.07	---	12.17	12.31	12.40	14.61	14.66	14.93	14.39	13.99	13.63
29	11.96	12.07	---	---	---	12.42	14.61	14.65	14.89	14.38	13.97	13.61
30	12.00	12.07	---	12.24	---	12.44	14.64	14.65	14.87	14.36	13.96	13.59
31	12.00	---	---	12.24	---	12.50	---	14.63	---	14.35	13.94	---
MEAN	11.94	12.07	12.09	12.16	12.27	12.34	13.73	14.69	14.89	14.54	14.10	13.74
MAX	12.02	12.13	12.12	12.24	12.31	12.50	14.64	14.77	15.24	14.82	14.35	13.91
MIN	11.89	11.99	12.06	12.14	12.24	12.29	12.55	14.61	14.54	14.35	13.94	13.59

06604000 SPIRIT LAKE NEAR ORLEANS, IA--Continued



06604200 WEST OKOBOJI LAKE AT LAKESIDE LABORATORY NEAR MILFORD, IA

LOCATION.--Lat 43°22'43", long 95°10'52", in NE$^1/_4$ SW$^1/_4$ sec.23, T.99 N., R.37 W., Dickinson County, Hydrologic Unit 10230003, at pumping station of Lakeside Laboratory on west shore, 2.3 mi upstream from lake outlet, and 3.8 mi northwest of Milford.

DRAINAGE AREA.--125 mi^2.

PERIOD OF RECORD.--May 1933 to current year. Published as "Okoboji Lake at Arnold's Park" 1933-37 and as "Okoboji Lake at Lakeside Laboratory near Milford" 1937-66.

GAGE.--Water-stage recorder. Datum of gage is 1,391.76 ft above sea level, 94.51 ft above Iowa Lake Survey datum. Prior to June 17, 1938, nonrecording gage at State Pier at Arnolds Park at same datum.

REMARKS.--A reliable record of stage was obtained for the year. Lake formed by concrete dam with ungated spillway at elevation 1,395.8 ft above sea level. Lake is used for conservation and recreation. Area of lake is approximately 3,900 acres. U.S. Geological Survey satellite data collection platform at station.

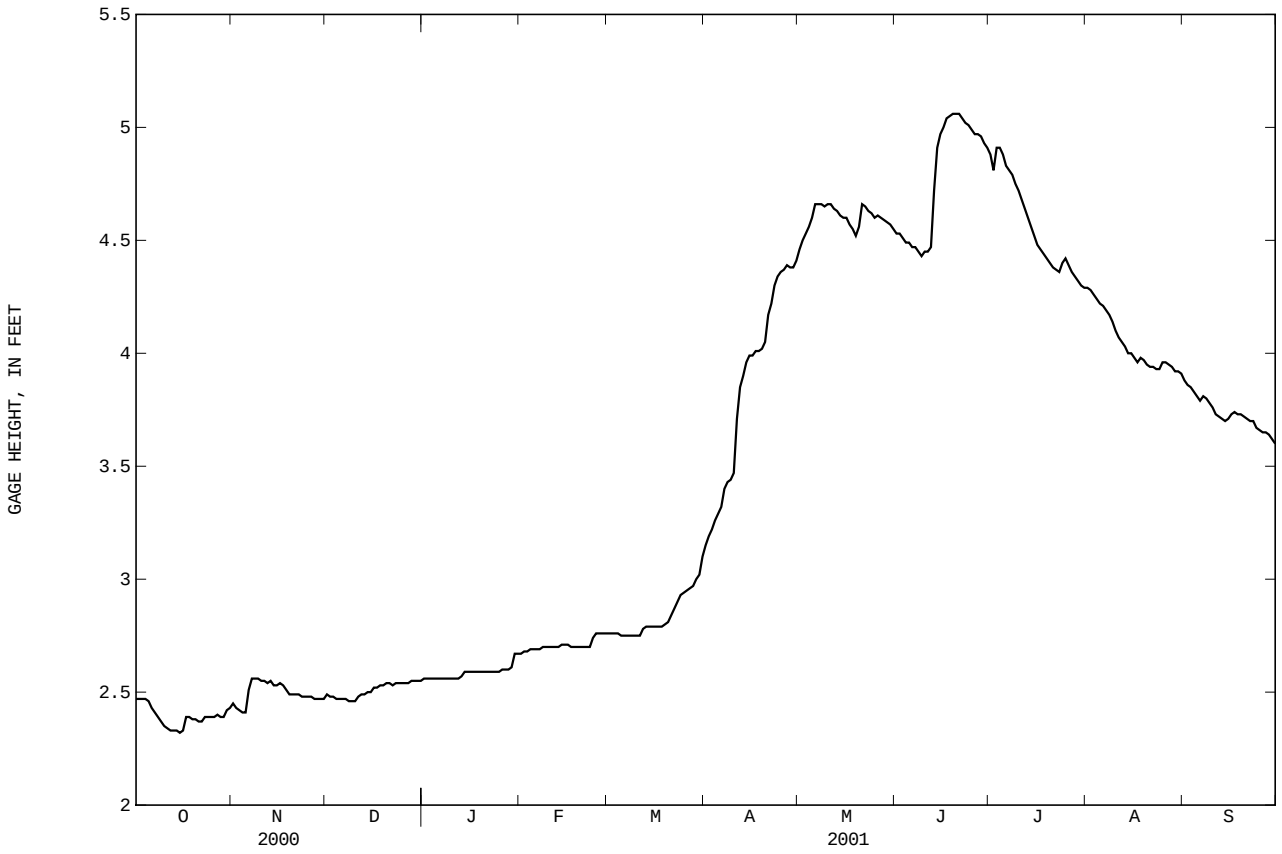
EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 8.70 ft July 17, 1993; minimum observed, 0.20 ft Sept. 20, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 5.07 ft June 18, 19, 21; minimum, 2.30 ft Oct. 16.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.47	2.45	2.49	2.56	2.67	2.76	3.15	4.46	4.53	4.88	4.29	3.88
2	2.47	2.43	2.48	2.56	2.68	2.76	3.19	4.50	4.53	4.81	4.28	3.86
3	2.47	2.42	2.48	2.56	2.68	2.76	3.22	4.53	4.51	4.91	4.26	3.85
4	2.47	2.41	2.47	2.56	2.69	2.76	3.26	4.56	4.49	4.91	4.24	3.83
5	2.46	2.41	2.47	2.56	2.69	2.75	3.29	4.60	4.49	4.88	4.22	3.81
6	2.43	2.51	2.47	2.56	2.69	2.75	3.32	4.66	4.47	4.83	4.21	3.79
7	2.41	2.56	2.47	2.56	2.69	2.75	3.40	4.66	4.47	4.81	4.19	3.81
8	2.39	2.56	2.46	2.56	2.70	2.75	3.43	4.66	4.45	4.79	4.17	3.80
9	2.37	2.56	2.46	2.56	2.70	2.75	3.44	4.65	4.43	4.75	4.14	3.78
10	2.35	2.55	2.46	2.56	2.70	2.75	3.47	4.66	4.45	4.72	4.10	3.76
11	2.34	2.55	2.48	2.56	2.70	2.75	3.71	4.66	4.45	4.68	4.07	3.73
12	2.33	2.54	2.49	2.56	2.70	2.78	3.85	4.64	4.47	4.64	4.05	3.72
13	2.33	2.55	2.49	2.57	2.70	2.79	3.90	4.63	4.72	4.60	4.03	3.71
14	2.33	2.53	2.50	2.59	2.71	2.79	3.96	4.61	4.91	4.56	4.00	3.70
15	2.32	2.53	2.50	2.59	2.71	2.79	3.99	4.60	4.97	4.52	4.00	3.71
16	2.33	2.54	2.52	2.59	2.71	2.79	3.99	4.60	5.00	4.48	3.98	3.73
17	2.39	2.53	2.52	2.59	2.70	2.79	4.01	4.57	5.04	4.46	3.96	3.74
18	2.39	2.51	2.53	2.59	2.70	2.79	4.01	4.55	5.05	4.44	3.98	3.73
19	2.38	2.49	2.53	2.59	2.70	2.80	4.02	4.52	5.06	4.42	3.97	3.73
20	2.38	2.49	2.54	2.59	2.70	2.81	4.05	4.56	5.06	4.40	3.95	3.72
21	2.37	2.49	2.54	2.59	2.70	2.84	4.17	4.66	5.06	4.38	3.94	3.71
22	2.37	2.49	2.53	2.59	2.70	2.87	4.22	4.65	5.04	4.37	3.94	3.70
23	2.39	2.48	2.54	2.59	2.70	2.90	4.30	4.63	5.02	4.36	3.93	3.70
24	2.39	2.48	2.54	2.59	2.74	2.93	4.34	4.62	5.01	4.40	3.93	3.67
25	2.39	2.48	2.54	2.59	2.76	2.94	4.36	4.60	4.99	4.42	3.96	3.66
26	2.39	2.48	2.54	2.60	2.76	2.95	4.37	4.61	4.97	4.39	3.96	3.65
27	2.40	2.47	2.54	2.60	2.76	2.96	4.39	4.60	4.97	4.36	3.95	3.65
28	2.39	2.47	2.55	2.60	2.76	2.97	4.38	4.59	4.96	4.34	3.94	3.64
29	2.39	2.47	2.55	2.61	---	3.00	4.38	4.58	4.93	4.32	3.92	3.62
30	2.42	2.47	2.55	2.67	---	3.02	4.41	4.57	4.91	4.30	3.92	3.60
31	2.43	---	2.55	2.67	---	3.10	---	4.55	---	4.29	3.91	---
MEAN	2.39	2.50	2.51	2.58	2.71	2.84	3.87	4.60	4.78	4.56	4.04	3.73
MAX	2.47	2.56	2.55	2.67	2.76	3.10	4.41	4.66	5.06	4.91	4.29	3.88
MIN	2.32	2.41	2.46	2.56	2.67	2.75	3.15	4.46	4.43	4.29	3.91	3.60

06604200 WEST OKOBOJI LAKE AT LAKESIDE LABORATORY NEAR MILFORD, IA--Continued



06605000 OCHEYEDAN RIVER NEAR SPENCER, IA

LOCATION.--Lat 43°07'44", long 95°12'37", in SW¼ SW¼ sec.15, T.96N., R.37W., Clay County, Hydrologic Unit 10230003, on left bank 3 ft upstream from bridge on county highway M38, 3.4 mi west by southwest of Spencer, and at mile 4.1.

DRAINAGE AREA.--426 mi^2.

PERIOD OF RECORD.--October 1977 to current year. Occasional low-flow measurements, water years 1957-61, 1964, 1966-68, 1970, 1971, 1974-77.

GAGE.--Water-stage recorder. Datum of gage is 1,311.66 ft above sea level.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 8, 1953 reached a stage of 12.89 ft, discharge, 26,000 ft^3/s on basis of contracted-opening measurement of peak flow.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e8.2	e13	e7.6	e3.0	e5.6	e6.0	1610	996	473	296	99	27
2	e7.6	e14	e7.4	e3.3	e5.4	e6.3	1620	1020	453	285	90	28
3	e7.0	e14	e7.3	e3.6	e5.5	e6.6	1300	1090	406	287	83	27
4	e7.0	e13	e7.2	e4.0	e5.6	e6.8	1080	1150	372	298	77	26
5	e7.0	e13	e7.2	e4.4	e5.7	e6.8	866	1190	368	273	71	24
6	e6.5	e16	e7.0	e4.4	e6.0	e6.8	766	1700	362	256	65	24
7	e6.1	e24	e7.3	e4.5	e6.1	e6.7	830	1790	350	246	60	24
8	e5.8	37	e7.2	e4.7	e6.1	e6.7	816	1250	333	229	57	22
9	e5.4	32	e6.8	e4.9	e6.0	e6.9	647	977	328	209	55	21
10	e5.4	38	e6.7	e5.0	e5.9	e6.9	601	832	324	192	51	21
11	e5.8	27	e5.6	e5.0	e6.0	e7.0	1160	756	332	175	50	20
12	e6.2	26	e5.5	e5.1	e6.2	e7.1	2680	648	336	161	48	20
13	e6.4	26	e5.3	e5.4	e6.5	e7.1	2420	832	848	146	46	19
14	e6.3	e21	e5.2	e5.2	e6.5	e7.3	1600	1070	2840	135	46	22
15	e6.2	e12	e5.1	e5.0	e6.3	e9.5	1220	728	5000	123	50	23
16	e7.5	e9.7	e5.2	e5.2	e5.8	e12	983	588	2890	114	45	25
17	e9.0	e9.6	e4.8	e5.4	e6.2	e16	839	499	1480	106	42	26
18	e11	e9.2	e4.5	e5.3	e6.0	e36	751	452	1130	99	38	24
19	e11	e11	e4.4	e5.0	e6.0	e80	681	423	923	88	35	23
20	e9.7	e8.0	e3.8	e5.2	e6.0	e200	621	491	777	87	34	23
21	e8.4	e8.4	e4.0	e5.4	e5.8	e420	929	1560	684	89	34	22
22	e8.4	e9.8	e3.6	e5.8	e5.8	e580	1040	1510	598	93	34	21
23	e9.0	e8.9	e3.4	e5.6	e5.9	e700	1550	980	558	95	33	21
24	e9.8	e8.0	e3.2	e5.4	e6.0	e790	2160	876	507	133	34	20
25	e10	e7.8	e3.2	e5.3	e5.8	e830	2320	766	457	271	34	19
26	e9.8	e7.9	e3.1	e5.4	e5.7	e820	1530	710	397	200	31	19
27	e9.7	e8.0	e3.2	e5.5	e5.5	e780	1250	670	361	147	31	19
28	e9.7	e8.1	e3.4	e5.6	e5.8	e740	1110	587	339	132	30	e18
29	e9.7	e8.0	e3.3	e5.9	---	e700	982	527	311	116	30	e17
30	e10	e7.9	e3.1	e5.8	---	e900	873	496	305	115	29	e16
31	e12	---	e3.0	e5.7	---	e1200	---	465	---	110	27	---
TOTAL	251.6	456.3	157.6	155.0	165.7	8908.5	36835	27629	24842	5306	1489	661
MEAN	8.12	15.2	5.08	5.00	5.92	287	1228	891	828	171	48.0	22.0
MAX	12	38	7.6	5.9	6.5	1200	2680	1790	5000	298	99	28
MIN	5.4	7.8	3.0	3.0	5.4	6.0	601	423	305	87	27	16
AC-FT	499	905	313	307	329	17670	73060	54800	49270	10520	2950	1310
CFSM	.02	.04	.01	.01	.01	.67	2.88	2.09	1.94	.40	.11	.05
IN.	.02	.04	.01	.01	.01	.78	3.22	2.41	2.17	.46	.13	.06

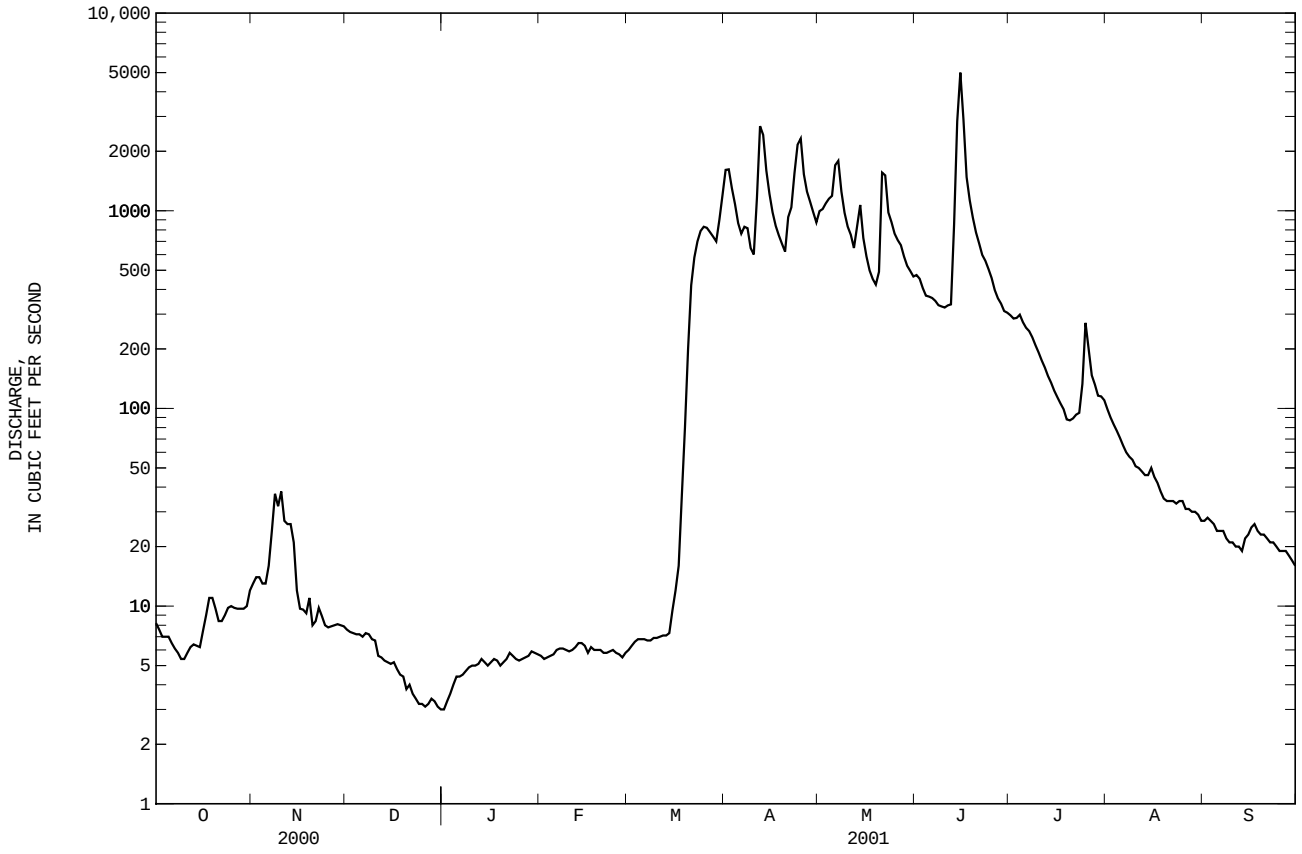
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2001, BY WATER YEAR (WY)

MEAN	121	137	76.4	42.6	81.0	337	503	389	497	316	138	126
MAX	492	796	305	180	402	1019	1462	912	1973	2243	706	597
(WY)	1983	1980	1983	1983	1983	1983	1983	1993	1993	1993	1993	1979
MIN	8.12	8.11	1.91	.51	.000	14.0	19.7	54.9	33.8	33.4	15.3	9.85
(WY)	2001	1990	1990	1979	1979	1990	2000	1981	1989	1989	1989	2000

06605000 OCHEYEDAN RIVER NEAR SPENCER, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1978 - 2001	
ANNUAL TOTAL	13116.9		106856.7			
ANNUAL MEAN	35.8		293		231	
HIGHEST ANNUAL MEAN					763	1993
LOWEST ANNUAL MEAN					33.4	1989
HIGHEST DAILY MEAN	600	Jun 15	5000	Jun 15	5620	Jul 1 1993
LOWEST DAILY MEAN	3.0	Dec 31	3.0	Dec 31a	.00	Jan 24 1979b
ANNUAL SEVEN-DAY MINIMUM	3.2	Dec 25	3.2	Dec 26	.00	Jan 24 1979
MAXIMUM PEAK FLOW			6040	Jun 15	6450	Jun 21 1983
MAXIMUM PEAK STAGE			11.23	Jun 15	11.28	Jul 1 1993
ANNUAL RUNOFF (AC-FT)	26020		212000		167000	
ANNUAL RUNOFF (CFSM)	.084		.69		.54	
ANNUAL RUNOFF (INCHES)	1.15		9.33		7.35	
10 PERCENT EXCEEDS	94		978		558	
50 PERCENT EXCEEDS	16		24		90	
90 PERCENT EXCEEDS	5.3		5.3		12	

a Also Jan. 1.
b Also Jan. 25 to Mar. 9, 1979, Dec. 22, 1989 to Jan. 5, 1990.
e Estimated.



06605850 LITTLE SIOUX RIVER AT LINN GROVE, IA

LOCATION.--Lat 42°53'45", long 95°14'35", in $SW^1/_4$ $SE^1/_4$ $SW^1/_4$ sec.5, T.93 N., R.37 W., Buena Vista County, Hydrologic Unit 10230003, on right bank 500 ft upstream of concrete dam, 1300 ft upstream of bridge on County Highway M36, in Linn Grove, and at mile 122.5.

DRAINAGE AREA.--1,548 mi^2.

PERIOD OF RECORD.--October 1972 to current year.

REVISED RECORDS.--WDR IA-80-1: 1978-79.

GAGE.--Water-stage recorder. Datum of gage is 1,223.60 ft above sea level. Oct. 1, 1972 to Nov. 17, 1999, water-stage recorder, 0.25 mi downstream at current datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 10, 1953, gage height 20.96 ft; discharge, 22,500 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	83	111	e42	e47	e50	2660	3220	1930	1310	518	112
2	29	86	108	e44	e46	e52	2930	3100	1820	1220	470	114
3	31	88	106	e47	e46	55	3150	3160	1710	1140	459	121
4	35	83	105	e50	e47	56	3480	3740	1610	1120	441	114
5	37	83	105	53	e48	56	3630	4450	1540	1270	382	103
6	38	97	102	53	e51	56	3490	4880	1490	1180	335	101
7	36	153	106	54	e52	57	3440	5000	1440	1060	299	106
8	35	264	104	55	e52	57	3680	4860	1370	987	274	121
9	34	258	98	56	e51	57	3910	4690	1300	936	257	120
10	34	229	97	57	e50	58	3830	4210	1250	877	234	108
11	36	198	82	57	e50	59	3830	3570	1250	821	219	99
12	39	188	80	59	e52	59	4110	3140	1520	766	210	92
13	40	182	e77	61	e55	59	4750	2860	1920	709	190	91
14	40	176	e75	59	e54	61	5760	2600	2140	660	179	92
15	40	133	75	59	e53	77	6400	2450	2800	617	207	98
16	48	e120	76	60	e49	101	5570	2450	3520	577	222	118
17	58	118	e70	61	e52	123	4700	2200	5270	543	197	128
18	68	117	e66	e58	e50	165	4110	1910	6360	507	182	128
19	67	146	62	e56	e50	232	3630	1760	5500	477	175	116
20	60	100	55	e52	e50	424	3200	1710	4560	447	165	110
21	53	105	57	e53	e49	1050	2880	2080	3990	437	158	102
22	52	126	e52	e54	e48	1560	3170	2870	3590	439	153	99
23	57	111	49	e51	e49	1920	4160	3520	3260	433	154	96
24	63	105	47	e49	e50	2180	4950	4020	2910	570	159	87
25	64	107	47	e47	e49	2360	4880	3880	2540	1530	179	82
26	62	109	46	e46	e48	2350	4910	3320	2140	1710	162	83
27	61	110	47	e46	e46	2250	5040	2930	1790	1350	150	84
28	61	111	50	e47	e48	2110	4520	2680	1580	1010	141	79
29	62	113	47	e50	---	2060	3860	2490	1440	837	133	77
30	66	114	e44	e49	---	2240	3500	2280	1360	701	125	77
31	73	---	e42	e48	---	2370	---	2080	---	596	117	---
TOTAL	1510	4013	2288	1633	1392	24364	122130	98110	74900	26837	7246	3058
MEAN	48.7	134	73.8	52.7	49.7	786	4071	3165	2497	866	234	102
MAX	73	264	111	61	55	2370	6400	5000	6360	1710	518	128
MIN	29	83	42	42	46	50	2660	1710	1250	433	117	77
AC-FT	3000	7960	4540	3240	2760	48330	242200	194600	148600	53230	14370	6070
CFSM	.03	.09	.05	.03	.03	.51	2.63	2.04	1.61	.56	.15	.07
IN.	.04	.10	.05	.04	.03	.59	2.93	2.36	1.80	.64	.17	.07

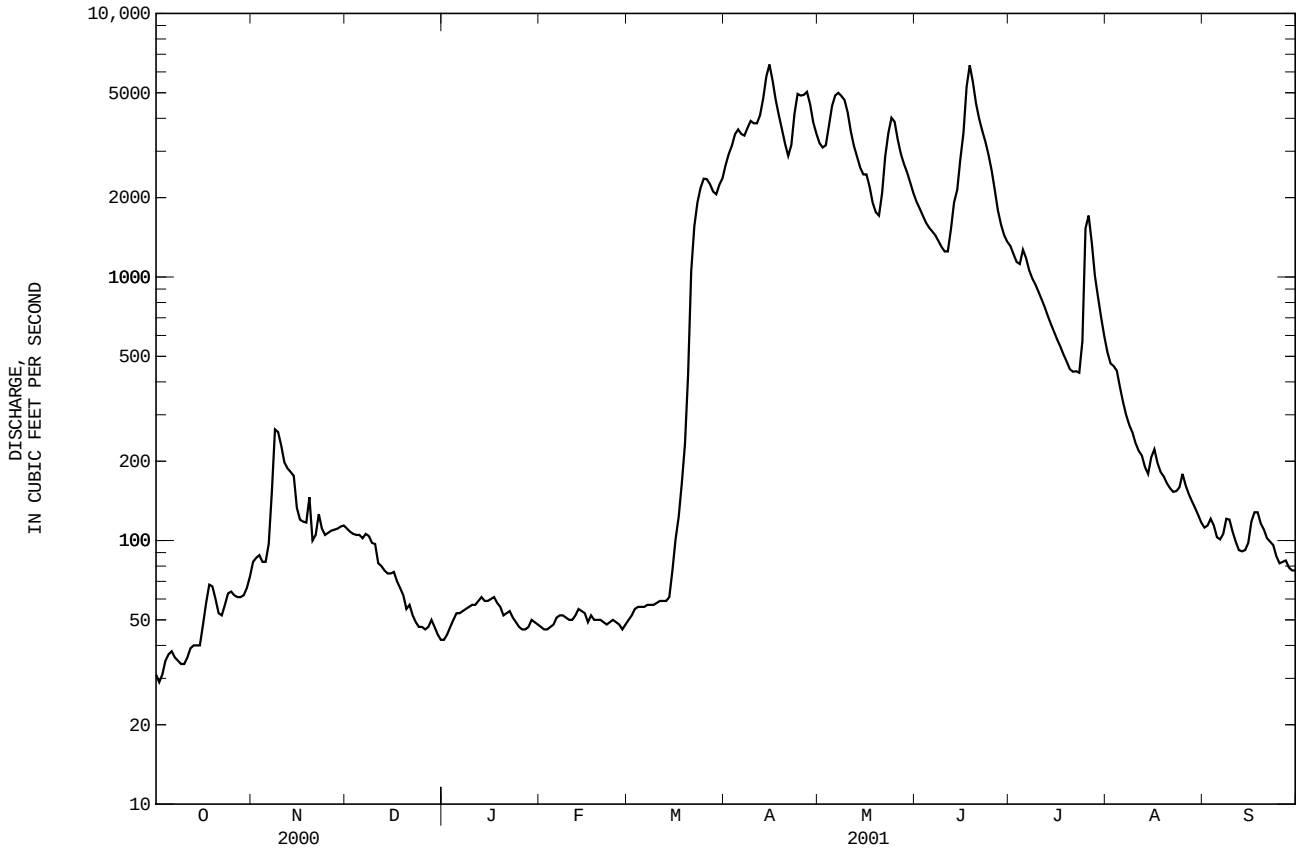
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 2001, BY WATER YEAR (WY)

MEAN	401	439	270	176	287	1093	1689	1330	1551	1059	474	393
MAX	2070	2050	1122	859	1161	3894	4952	3233	6898	7905	2906	2171
(WY)	1983	1980	1983	1983	1983	1983	1983	1993	1993	1993	1993	1993
MIN	21.3	22.0	6.08	3.12	5.92	75.9	74.9	69.4	60.3	36.3	26.4	22.7
(WY)	1977	1977	1990	1977	1977	1990	2000	1977	1977	1977	1976	1976

06605850 LITTLE SIOUX RIVER AT LINN GROVE, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1973 - 2001	
ANNUAL TOTAL	52109		367481			
ANNUAL MEAN	142		1007		764	
HIGHEST ANNUAL MEAN					2763	1993
LOWEST ANNUAL MEAN					56.3	1977
HIGHEST DAILY MEAN	1300	Jun 16	6400	Apr 15	15000	Jul 2 1993
LOWEST DAILY MEAN	24	Jan 28	29	Oct 2	.70	Feb 4 1977
ANNUAL SEVEN-DAY MINIMUM	25	Jan 27	34	Oct 1	1.1	Jan 31 1977
MAXIMUM PEAK FLOW			6690	Jun 18	16100	Jul 2 1993
MAXIMUM PEAK STAGE			19.88	Jun 18	20.63	Jul 2 1993
INSTANTANEOUS LOW FLOW			27	Oct 2		
ANNUAL RUNOFF (AC-FT)	103400		728900		553700	
ANNUAL RUNOFF (CFSM)	.092		.65		.49	
ANNUAL RUNOFF (INCHES)	1.25		8.83		6.71	
10 PERCENT EXCEEDS	359		3540		2010	
50 PERCENT EXCEEDS	81		120		315	
90 PERCENT EXCEEDS	35		48		42	

e Estimated



06606600 LITTLE SIOUX RIVER AT CORRECTIONVILLE, IA

LOCATION.--Lat 42°28'20", long 95°47'49", in NE$^1/_4$ NW$^1/_4$ sec.1, T.88 N., R.43 W., Woodbury County, Hydrologic Unit 10230003 on right bank 50 ft upstream from bridge on State Highway 31, 0.3 mi upstream from Bacon Creek, 0.5 mi west of Correctionville, 0.8 mi downstream from Pierson Creek, and at mile 56.0.

DRAINAGE AREA.--2,500 mi^2.

PERIOD OF RECORD.--May 1918 to July 1925, October 1928 to July 1932, June 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 856: 1919. WSP 1240: 1924-25, 1931, 1932 (M), 1937, 1945 (M), 1947 (M), 1949 (M). WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,096.49 ft above sea level. May 28, 1918, to July 1, 1925 and Oct. 29, 1928 to July 15, 1929, nonrecording gage 0.2 mi downstream at datum 1.25 ft lower. July 16, 1929, to July 2, 1932, and June 15, 1936, to Nov. 7, 1938, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 23 or 24, 1891, reached a stage of 29.34 ft, present datum, from levels to floodmark by U.S. Soil Conservation Service (discharge not determined).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	104	149	e66	e89	e91	4370	5190	3150	1870	1060	270
2	54	102	146	e69	e87	e95	4460	4960	2910	1770	1030	285
3	54	100	147	e71	e87	e100	4090	4910	2690	1690	1060	323
4	55	105	144	e76	e90	e100	4170	5320	2510	1590	952	278
5	55	112	132	e80	e95	e100	4320	5870	2420	1510	892	252
6	52	156	130	e85	e99	e102	4580	6400	2290	1510	810	242
7	52	178	138	89	e100	e103	5140	7170	2170	1540	726	235
8	52	170	139	88	e99	e105	5000	7190	2070	1430	655	234
9	54	175	133	91	e96	e108	4810	6870	1970	1340	596	224
10	56	249	126	96	e95	113	4830	6590	1930	1260	545	213
11	56	296	114	97	e96	115	5880	6460	1880	1190	507	215
12	56	293	118	97	e100	113	6770	6140	1810	1130	474	205
13	57	282	114	97	e105	110	7300	5370	1920	1060	446	196
14	57	246	110	94	e104	e130	6650	4720	3210	1000	423	211
15	57	177	109	91	e101	e210	6410	4250	3490	938	494	243
16	57	153	107	90	e94	e360	6680	3890	3650	901	638	266
17	60	146	102	91	e98	654	7010	3710	4110	952	568	285
18	64	165	99	95	e96	1080	6760	3480	4750	907	588	284
19	67	e145	97	96	e96	1940	6110	3100	5750	845	472	275
20	70	e109	94	97	e95	2870	5510	2890	6420	763	422	267
21	77	e130	87	e95	e95	4560	5250	3510	6440	720	393	246
22	88	e142	81	e95	e93	4650	5580	4780	5780	728	374	226
23	93	e133	80	e94	e95	3880	4900	4450	4970	747	357	211
24	94	e131	73	e90	e96	3900	5910	4780	4410	786	367	198
25	92	e130	69	e89	e95	3290	6310	5160	3920	1410	425	192
26	91	e132	69	e89	e91	3260	6390	5390	3440	2080	406	188
27	89	e137	71	e90	e87	3200	6320	5100	2990	2230	386	184
28	87	e141	71	e92	e92	3580	6230	4460	2570	1940	347	179
29	88	e149	70	e95	---	3280	6210	3990	2240	1590	321	187
30	101	151	e68	e95	---	3130	5860	3670	2020	1370	306	185
31	104	---	e66	e93	---	3540	---	3410	---	1200	288	---
TOTAL	2144	4839	3253	2773	2666	48869	169810	153180	99880	39997	17328	6999
MEAN	69.2	161	105	89.5	95.2	1576	5660	4941	3329	1290	559	233
MAX	104	296	149	97	105	4650	7300	7190	6440	2230	1060	323
MIN	52	100	66	66	87	91	4090	2890	1810	720	288	179
AC-FT	4250	9600	6450	5500	5290	96930	336800	303800	198100	79330	34370	13880
CFSM	.03	.06	.04	.04	.04	.63	2.26	1.98	1.33	.52	.22	.09
IN.	.03	.07	.05	.04	.04	.73	2.53	2.28	1.49	.60	.26	.10

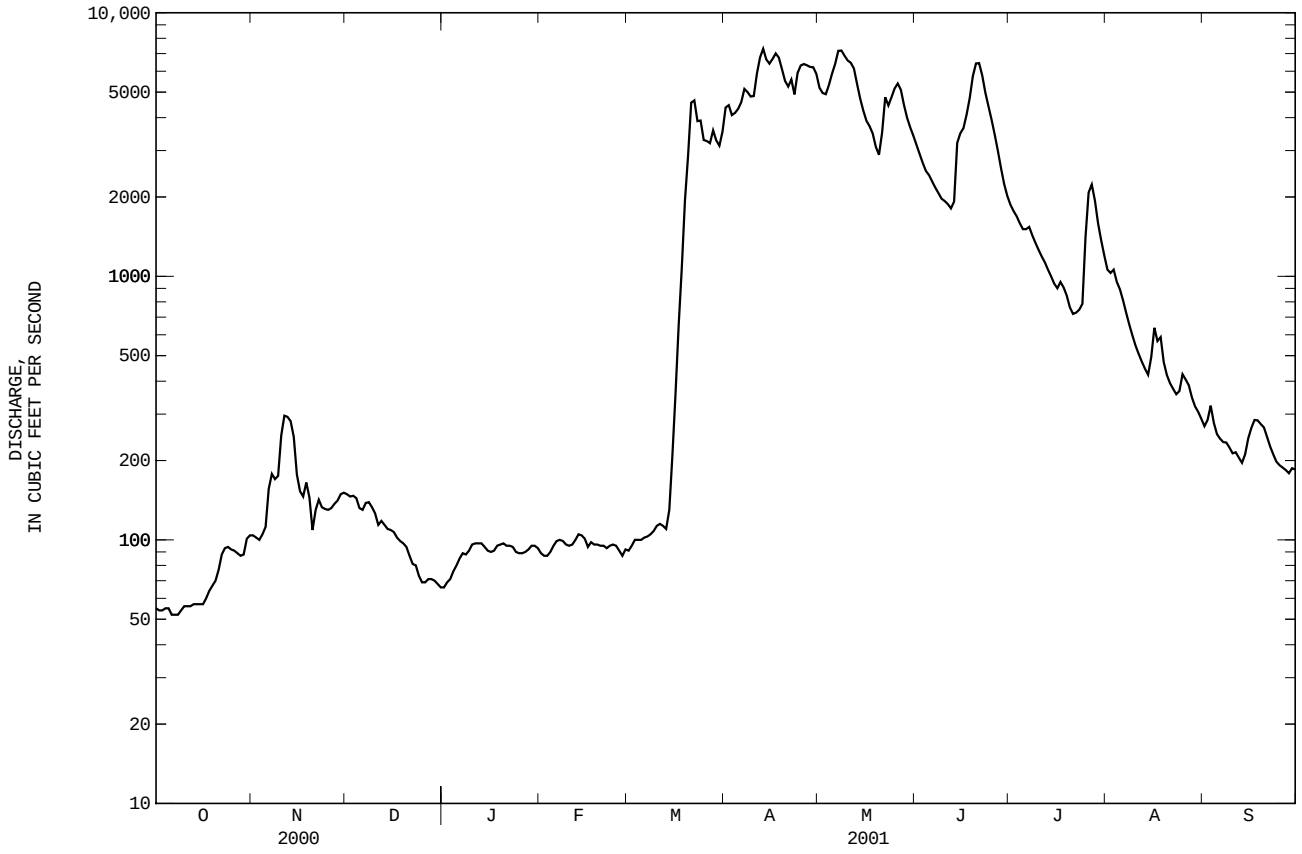
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2001, BY WATER YEAR (WY)

MEAN	430	430	296	215	461	1464	1931	1433	1810	1231	603	501
MAX	2994	3079	1698	1323	2708	7328	8677	5002	10110	11600	4469	3671
(WY)	1983	1980	1983	1983	1971	1983	1983	1993	1993	1993	1993	1938
MIN	8.33	25.3	15.1	8.31	7.08	53.5	61.9	57.3	58.1	43.4	15.0	14.4
(WY)	1957	1959	1959	1959	1959	1931	1931	1931	1956	1956	1931	1958

06606600 LITTLE SIOUX RIVER AT CORRECTIONVILLE, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1919 - 2001	
ANNUAL TOTAL	73538		551738			
ANNUAL MEAN	201		1512		913	
HIGHEST ANNUAL MEAN					4304	1993
LOWEST ANNUAL MEAN					53.7	1931
HIGHEST DAILY MEAN	1210	Jun 18	7300	Apr 13	27900	Apr 7 1965
LOWEST DAILY MEAN	38	Sep 18	52	Oct 6a	2.6	Jul 17 1936b
ANNUAL SEVEN-DAY MINIMUM	51	Sep 14	53	Oct 2	4.6	Oct 4 1956
MAXIMUM PEAK FLOW			7370	Apr 13	29800	Apr 7 1965
MAXIMUM PEAK STAGE			14.29	Apr 13	25.86	Apr 7 1965
INSTANTANEOUS LOW FLOW			49	Oct 3		
ANNUAL RUNOFF (AC-FT)	145900		1094000		661200	
ANNUAL RUNOFF (CFSM)	.080		.60		.37	
ANNUAL RUNOFF (INCHES)	1.09		8.21		4.96	
10 PERCENT EXCEEDS	453		5150		2240	
50 PERCENT EXCEEDS	141		249		370	
90 PERCENT EXCEEDS	71		83		55	

a Also Oct. 7, 8.
b Also July 25, 1956, caused by construction of dam upstream.
e Estimated.



06607200 MAPLE RIVER AT MAPLETON, IA

LOCATION.--Lat 42°09'25", long 95°48'35", in SE$^1/_4$ SE$^1/_4$ sec.23, T.85 N., R.43 W., Monona County, Hydrologic Unit 10230005, on right bank at downstream side of bridge on State Highway 175, 1.0 mi downstream from Simmons Creek, 1.1 mi southwest of intersection of State Highways 175 and 141 in Mapleton, 2.1 mi upstream from McCleery Creek, and 16.0 mi upstream from mouth.

DRAINAGE AREA.--669 mi^2.

PERIOD OF RECORD.--October 1941 to current year.

REVISED RECORDS.--WSP 1310: 1942 (M), 1946 (M), 1948 (M). WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,080.86 ft above sea level. See WSP 1730 for history of changes prior to Sept. 20, 1956; Prior to Apr. 27, 2000, at datum 5.0 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	42	e40	e28	e33	e33	744	259	323	249	158	95
2	19	41	e38	e30	e28	e40	654	494	309	269	150	104
3	22	38	e37	e31	e34	e48	524	993	294	243	151	150
4	26	36	e40	e34	e45	e48	480	1120	281	241	188	124
5	30	37	e33	e39	e45	55	448	1050	353	221	170	112
6	30	75	e37	e46	53	52	428	1010	340	210	157	104
7	28	77	50	e45	52	45	408	976	304	208	141	110
8	28	72	44	e41	e47	50	434	782	277	297	129	117
9	28	67	47	e37	e36	46	414	662	262	337	120	112
10	28	57	41	e39	e27	49	341	616	392	252	111	102
11	29	51	e39	e41	e35	52	461	553	332	229	105	98
12	30	51	e35	e43	e50	51	784	490	303	222	104	94
13	32	50	e38	e49	e55	64	780	462	287	204	96	95
14	34	44	e33	e46	e44	202	554	440	834	189	99	102
15	34	36	e39	e46	e43	449	463	413	854	181	175	117
16	32	34	e32	e46	e33	479	402	387	616	177	226	132
17	32	e33	e30	e39	e35	515	354	362	532	185	190	142
18	32	e34	e28	e37	e39	687	321	338	477	178	248	138
19	31	e41	e26	e34	e44	1010	305	324	462	241	185	143
20	30	e30	e30	e31	e34	1670	295	345	417	207	146	136
21	30	e31	e28	e34	e28	2840	280	397	390	230	132	121
22	31	e32	e26	e38	e32	2290	277	432	366	190	122	114
23	33	e34	e28	e46	e38	1910	381	444	346	179	119	107
24	34	e34	e32	e41	e45	1340	372	422	328	182	115	100
25	37	e36	e28	e40	e46	846	330	403	309	192	115	96
26	36	e35	e30	e41	e38	623	296	383	292	224	130	96
27	35	e35	e32	e39	e27	519	270	368	310	320	158	95
28	35	e38	e36	e43	e28	521	247	349	287	254	139	94
29	37	e41	e35	e48	---	546	231	326	269	212	120	92
30	43	e40	e31	e48	---	538	222	324	256	191	109	91
31	42	---	e29	e42	---	596	---	328	---	173	102	---
TOTAL	967	1302	1072	1242	1094	18214	12500	16252	11402	6887	4410	3333
MEAN	31.2	43.4	34.6	40.1	39.1	588	417	524	380	222	142	111
MAX	43	77	50	49	55	2840	784	1120	854	337	248	150
MIN	19	30	26	28	27	33	222	259	256	173	96	91
AC-FT	1920	2580	2130	2460	2170	36130	24790	32240	22620	13660	8750	6610
CFSM	.05	.06	.05	.06	.06	.88	.62	.78	.57	.33	.21	.17
IN.	.05	.07	.06	.07	.06	1.01	.70	.90	.63	.38	.25	.19

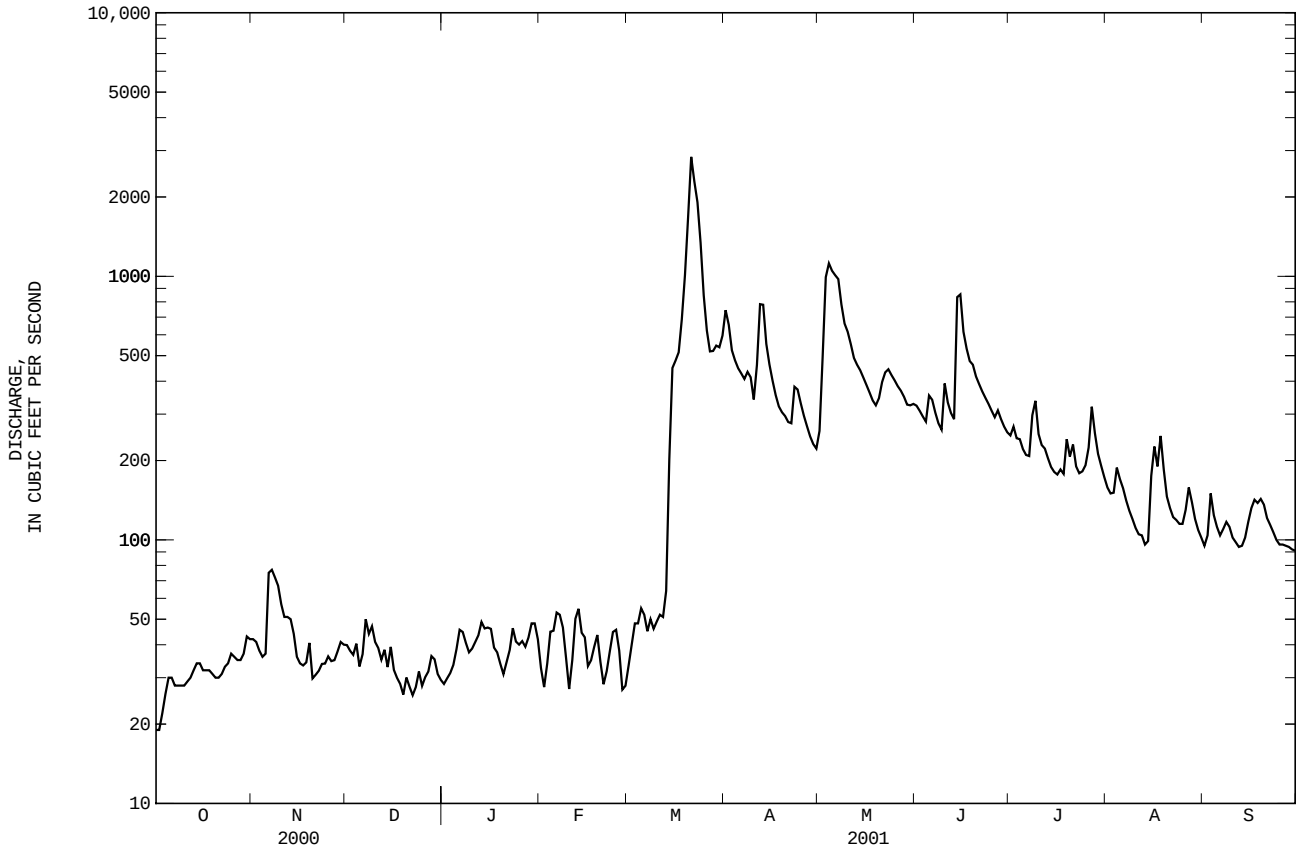
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 2001, BY WATER YEAR (WY)

MEAN	158	145	116	96.5	225	488	413	399	636	366	254	179
MAX	634	506	548	330	1016	1588	1889	1345	2856	1588	1230	1034
(WY)	1983	1993	1985	1983	1971	1983	1983	1984	1984	1993	1951	1951
MIN	9.36	14.6	5.74	3.25	3.64	25.6	19.9	35.9	48.5	33.3	12.6	5.48
(WY)	1957	1959	1959	1959	1959	1957	1957	1968	1955	1956	1956	1956

06607200 MAPLE RIVER AT MAPLETON, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1942 - 2001	
ANNUAL TOTAL	23117		78675			
ANNUAL MEAN	63.2		216		290	
HIGHEST ANNUAL MEAN					983	1983
LOWEST ANNUAL MEAN					24.5	1956
HIGHEST DAILY MEAN	282	Feb 25	2840	Mar 21	14400	Jun 21 1983
LOWEST DAILY MEAN	19	Oct 1	19	Oct 1a	.00	Sep 21 1945b
ANNUAL SEVEN-DAY MINIMUM	23	Sep 28	25	Oct 1	2.6	Feb 14 1959
MAXIMUM PEAK FLOW			3160	Mar 21	20800	Sep 12 1978
MAXIMUM PEAK STAGE			11.33	Mar 21	22.10	Jun 12 1950
INSTANTANEOUS LOW FLOW			18	Oct 3		
ANNUAL RUNOFF (AC-FT)	45850		156100		209800	
ANNUAL RUNOFF (CFSM)	.094		.32		.43	
ANNUAL RUNOFF (INCHES)	1.29		4.37		5.88	
10 PERCENT EXCEEDS	95		484		614	
50 PERCENT EXCEEDS	58		104		140	
90 PERCENT EXCEEDS	30		31		30	

a Also Oct. 2.
b Also Sept. 22, 1945, caused by temporary dam upstream.
e Estimated.



06607500 LITTLE SIOUX RIVER NEAR TURIN, IA

LOCATION.--Lat 41°57'52", long 95°58'21", in NW$^1/_4$ NE$^1/_4$ sec.33, T.83 N., R.44 W., Monona County, Hydrologic Unit 10230003, on left bank on downstream side of bridge on county highway E54, 1.0 mi east of gaging station on Monona-Harrison Ditch near Turin, 2.5 mi downstream from Maple River, 3.8 mi south of Turin, 6.2 mi northeast of Blencoe, and at mile 13.5.

DRAINAGE AREA.--3,526 mi^2.

PERIOD OF RECORD.--May 1942 to September 1957, January 1958 to current year. June 1942 to January 1958 at site 1,200 ft east on old river channel; records not equivalent owing to diversion into Monona-Harrison Ditch through equalizer ditch 1.5 mi upstream 1923 to 1958, and diversion with Monona-Harrison Ditch through diversion ditch 8.3 miles upstream since 1958.

REVISED RECORDS: WSP 1440: Drainage area. WSP 1560: Drainage area. WDR IA-95-1: Period of record.

GAGE.--Water-stage recorder. Datum of gage is 1,019.85 ft above sea level (U.S. Army Corps of Engineers bench mark). Prior to July 15, 1958, nonrecording gages near present site at different datums. July 15 to Sept. 3, 1958, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	108	176	e260	e120	e155	e160	4590	5610	3730	2450	1720	475
2	102	157	e260	e121	e154	e159	5250	5650	3470	2330	1630	482
3	101	153	e255	e129	e157	e170	4790	6020	3230	2280	e1500	510
4	103	148	e245	e140	e160	e180	4590	6430	3010	2160	e1350	550
5	108	154	e234	e149	e167	e180	4670	6800	2950	2030	e1200	499
6	100	220	e230	e155	e171	e180	4840	7090	2900	1940	e1100	474
7	95	263	e240	e155	e174	e190	5070	7820	2750	1970	e1000	480
8	97	246	e239	e160	e173	e190	5240	8200	2630	2030	909	467
9	99	218	e231	e166	e170	e200	5160	7760	2520	1990	823	447
10	105	210	e219	e170	e170	e200	4960	7420	2530	1830	757	431
11	111	234	e200	e170	e175	e210	5580	7010	2560	1660	713	410
12	116	289	e200	e170	e180	e220	7120	6740	2460	1560	685	410
13	120	284	e198	e165	e185	e200	8040	6050	2370	1440	652	384
14	121	310	e195	e161	e185	e320	8010	5300	3570	1330	613	400
15	116	280	e190	e160	e180	e550	6910	4800	4520	1230	715	463
16	115	251	e183	e161	e176	e1000	6840	4400	4370	1170	888	510
17	118	233	e178	e166	e170	e1800	7240	4100	4450	1180	905	525
18	118	254	e171	e169	e170	e3000	7450	3940	4760	1220	867	506
19	122	e192	e167	e170	e170	e3700	6800	3640	5330	1170	886	510
20	120	e172	e161	e170	e169	4710	5990	3370	6120	1130	719	502
21	119	e220	e151	e170	e165	6160	5330	3360	6570	1040	656	481
22	123	e240	e140	e169	e168	7060	5610	4540	6200	1010	613	457
23	139	e220	e136	e165	e170	6190	5410	4910	5440	981	567	417
24	144	e220	e130	e161	e170	5600	5320	4830	4920	1010	539	386
25	152	e220	e124	e160	e170	4550	6410	5170	4490	1080	559	355
26	151	e220	e124	e160	e167	4030	6560	5450	4090	1990	621	349
27	138	e230	e124	e160	e163	3930	6550	5470	3690	2680	628	352
28	135	e250	e125	e165	e161	3910	6350	5040	3330	2770	614	346
29	147	e264	e125	e170	---	4220	6210	4550	2930	2420	576	335
30	173	e262	e122	e170	---	3900	6100	4220	2670	2110	554	336
31	174	---	e121	e165	---	3880	---	3970	---	1910	499	---
TOTAL	3790	6790	5678	4942	4745	70949	178990	169660	114560	53101	26058	13249
MEAN	122	226	183	159	169	2289	5966	5473	3819	1713	841	442
MAX	174	310	260	170	185	7060	8040	8200	6570	2770	1720	550
MIN	95	148	121	120	154	159	4590	3360	2370	981	499	335
AC-FT	7520	13470	11260	9800	9410	140700	355000	336500	227200	105300	51690	26280
CFSM	.03	.06	.05	.05	.05	.65	1.69	1.55	1.08	.49	.24	.13
IN.	.04	.07	.06	.05	.05	.75	1.89	1.79	1.21	.56	.27	.14

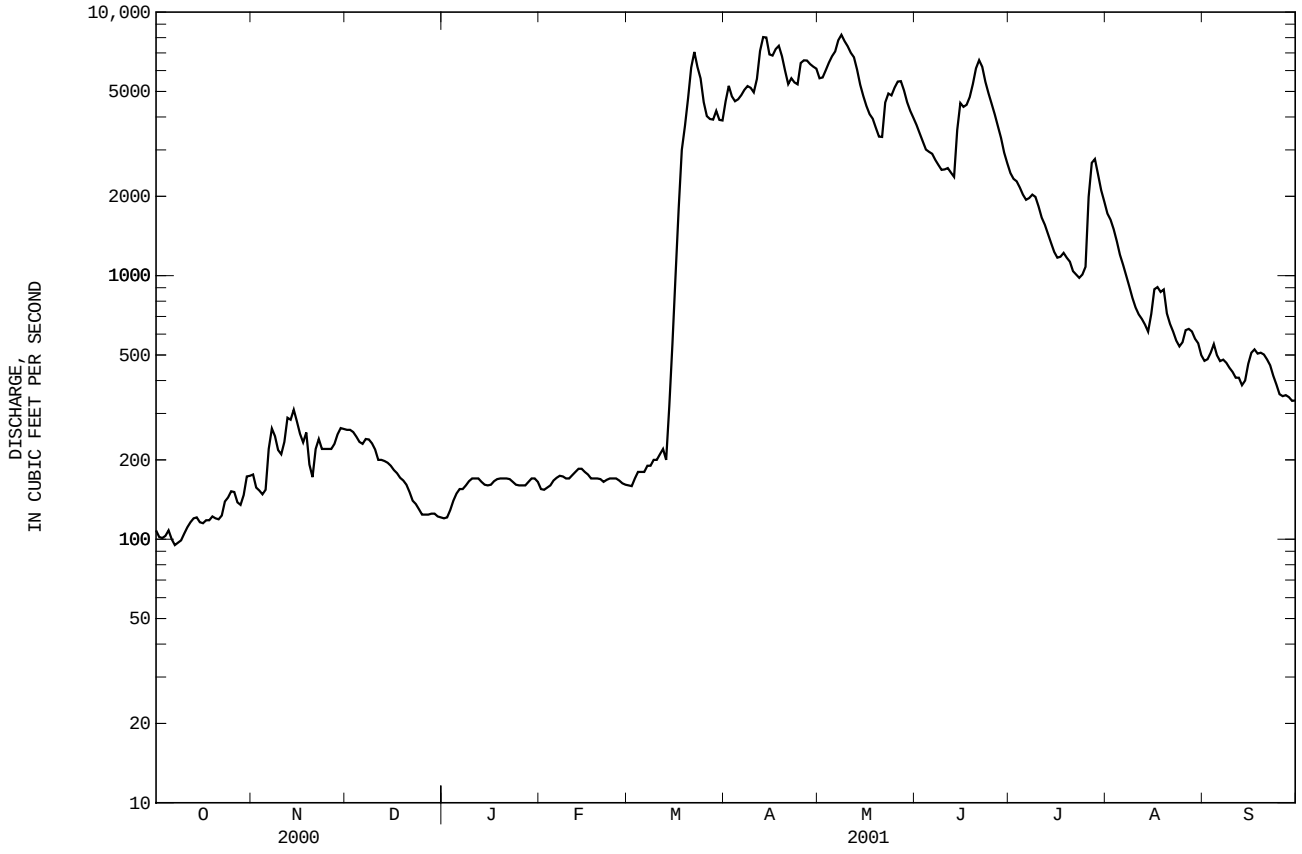
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2001, BY WATER YEAR (WY)

MEAN	805	817	649	476	837	2358	3205	2441	2987	2055	1050	845
MAX	3625	3612	2424	2250	3353	9054	10790	7938	15080	13110	5181	3980
(WY)	1983	1980	1983	1992	1971	1983	1965	1986	1984	1993	1993	1993
MIN	37.5	48.0	31.2	18.5	25.1	171	157	118	315	181	140	90.2
(WY)	1959	1959	1959	1977	1959	1964	1968	1968	1968	1968	1976	1976

06607500 LITTLE SIOUX RIVER NEAR TURIN, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1959 - 2001a	
ANNUAL TOTAL	115792		652512			
ANNUAL MEAN	316		1788		1544	
HIGHEST ANNUAL MEAN					5261	1993
LOWEST ANNUAL MEAN					167	1968
HIGHEST DAILY MEAN	1760	Jun 28	8200	May 8	28700	Jun 22 1996
LOWEST DAILY MEAN	95	Oct 7	95	Oct 7	17	Jan 18 1977b
ANNUAL SEVEN-DAY MINIMUM	100	Oct 3	100	Oct 3	17	Jan 27 1977
MAXIMUM PEAK FLOW			8310	Apr 13	32000	Jun 22 1996
MAXIMUM PEAK STAGE			16.62	May 8	27.44	Feb 19 1971c
INSTANTANEOUS LOW FLOW			89	Oct 7d		
ANNUAL RUNOFF (AC-FT)	229700		1294000		1119000	
ANNUAL RUNOFF (CFSM)	.090		.51		.44	
ANNUAL RUNOFF (INCHES)	1.22		6.88		5.95	
10 PERCENT EXCEEDS	592		5590		3740	
50 PERCENT EXCEEDS	262		474		775	
90 PERCENT EXCEEDS	122		139		150	

a Post closure of diversion to Monona-Harrison Ditch.
b Also Jan. 19, 20, Jan. 28 to Feb. 1, 1977.
c Ice affected.
d Also Oct. 8.
e Estimated.



06608500 SOLDIER RIVER AT PISGAH, IA

LOCATION.--Lat 41°49'50", long 95°55'52", in NW$^1/_4$ NE$^1/_4$ sec.14, T.81 N., R.44 W., Harrison County, Hydrologic Unit 10230001, on right bank at upstream side of bridge on county highway F20, at west edge of Pisgah, 0.4 mi downstream from Cobb Creek, 0.5 mi upstream from Mogger Ditch, and 13.1 mi upstream from mouth.

DRAINAGE AREA.--407 mi^2.

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

REVISED RECORDS.--WSP 956: 1940 (M). WSP 1240: 1940, 1941 (M), 1947. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,036.53 ft above sea level. Prior to Oct. 11, 1954, nonrecording gage at same site and datum with supplementary water-stage recorder operating above 8.2 ft gage height Mar. 2, 1946 to Sept. 24, 1953. Prior to Feb. 1954, on left bank at downstream side of bridge. Prior to June 21, 1989, at site 100 ft downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	64	e47	e34	e44	e50	291	182	222	181	103	74
2	29	64	e44	e36	e36	e55	243	1740	207	184	102	87
3	28	55	e42	e38	e46	e65	243	1750	187	282	105	93
4	32	53	e44	e41	e55	e65	234	852	185	195	109	79
5	43	56	e36	e48	e55	e63	226	786	342	177	98	77
6	50	174	e40	e55	e59	e60	269	651	254	175	93	77
7	40	199	e65	e55	e60	e70	273	481	211	171	86	94
8	38	117	e60	e50	e57	e65	243	403	189	169	83	116
9	37	82	e65	e48	e48	e65	213	367	175	242	78	90
10	39	75	e55	e54	e40	e75	200	386	365	185	73	71
11	38	66	e48	e60	e50	e70	282	313	302	181	74	66
12	40	66	e46	e65	e65	e75	368	281	340	197	76	61
13	39	e65	e54	e80	e70	e90	252	285	395	184	79	59
14	43	67	e50	e80	e60	e340	222	271	5800	167	80	74
15	43	64	e60	e75	e58	1200	207	244	797	155	157	119
16	39	e60	e50	e75	e50	964	190	227	493	154	209	117
17	40	e60	e40	e72	e50	727	176	212	393	160	127	119
18	41	61	e38	e70	e55	879	175	201	351	154	160	97
19	42	66	e33	e50	e60	992	174	197	374	144	142	84
20	42	e34	e40	e42	e55	1020	172	219	307	145	108	72
21	41	e34	e34	e46	e48	1350	166	326	307	165	100	65
22	46	e36	e30	e48	e50	734	170	242	293	149	96	64
23	53	e38	e32	e55	e55	597	267	203	273	139	93	63
24	56	e38	e36	e47	e60	450	181	206	258	137	88	61
25	55	e42	e32	e46	e60	337	159	207	240	146	86	62
26	53	e40	e34	e48	e55	272	153	205	219	135	83	66
27	48	e40	e35	e46	e46	262	146	202	217	130	78	70
28	47	e44	e41	e50	e46	267	143	195	206	134	74	61
29	52	e48	e40	e55	---	270	138	184	194	125	72	61
30	79	e47	e36	e55	---	262	131	207	188	118	87	59
31	71	---	e34	e52	---	296	---	263	---	112	81	---
TOTAL	1373	1955	1341	1676	1493	12087	6307	12488	14284	5092	3080	2358
MEAN	44.3	65.2	43.3	54.1	53.3	390	210	403	476	164	99.4	78.6
MAX	79	199	65	80	70	1350	368	1750	5800	282	209	119
MIN	28	34	30	34	36	50	131	182	175	112	72	59
AC-FT	2720	3880	2660	3320	2960	23970	12510	24770	28330	10100	6110	4680
CFSM	.11	.16	.11	.13	.13	.96	.52	.99	1.17	.40	.24	.19
IN.	.13	.18	.12	.15	.14	1.10	.58	1.14	1.31	.47	.28	.22

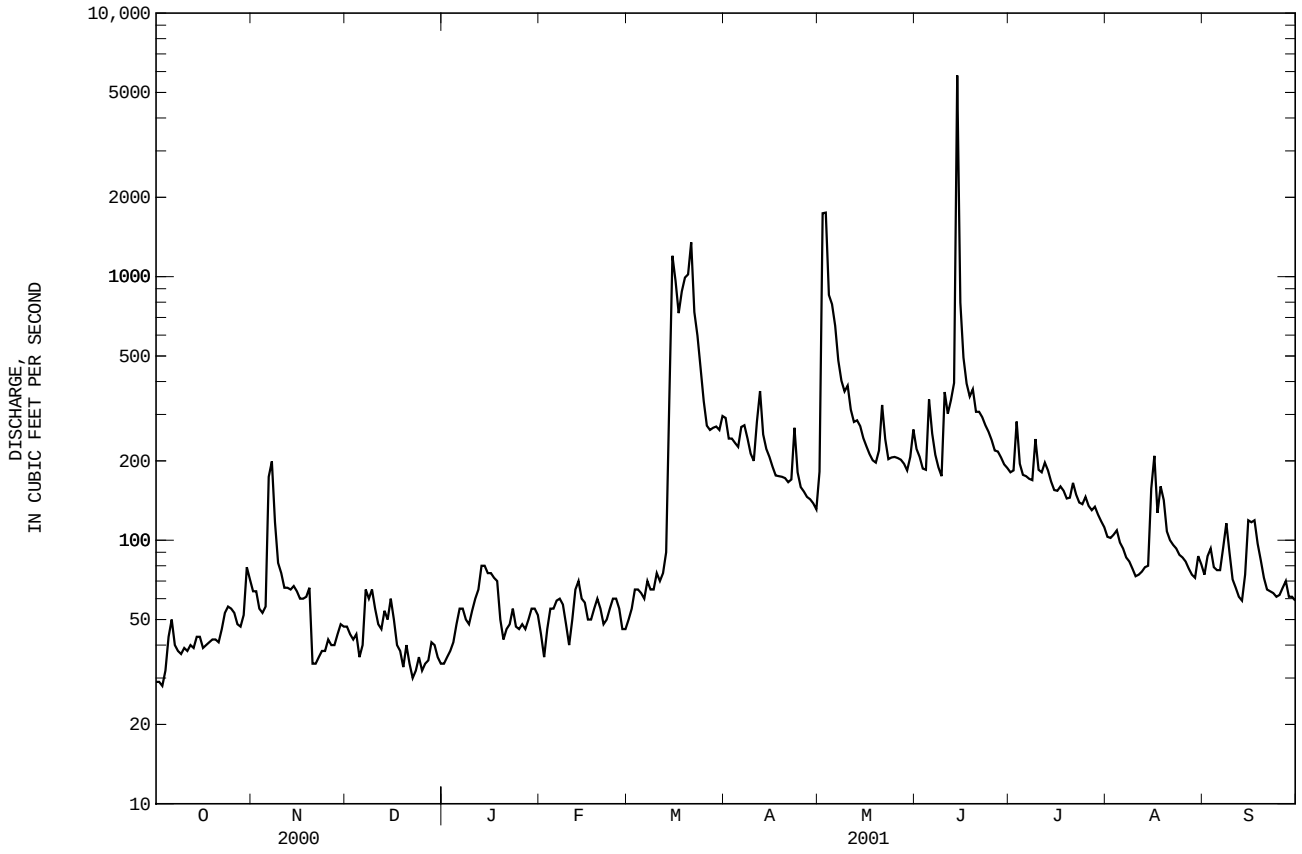
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2001, BY WATER YEAR (WY)

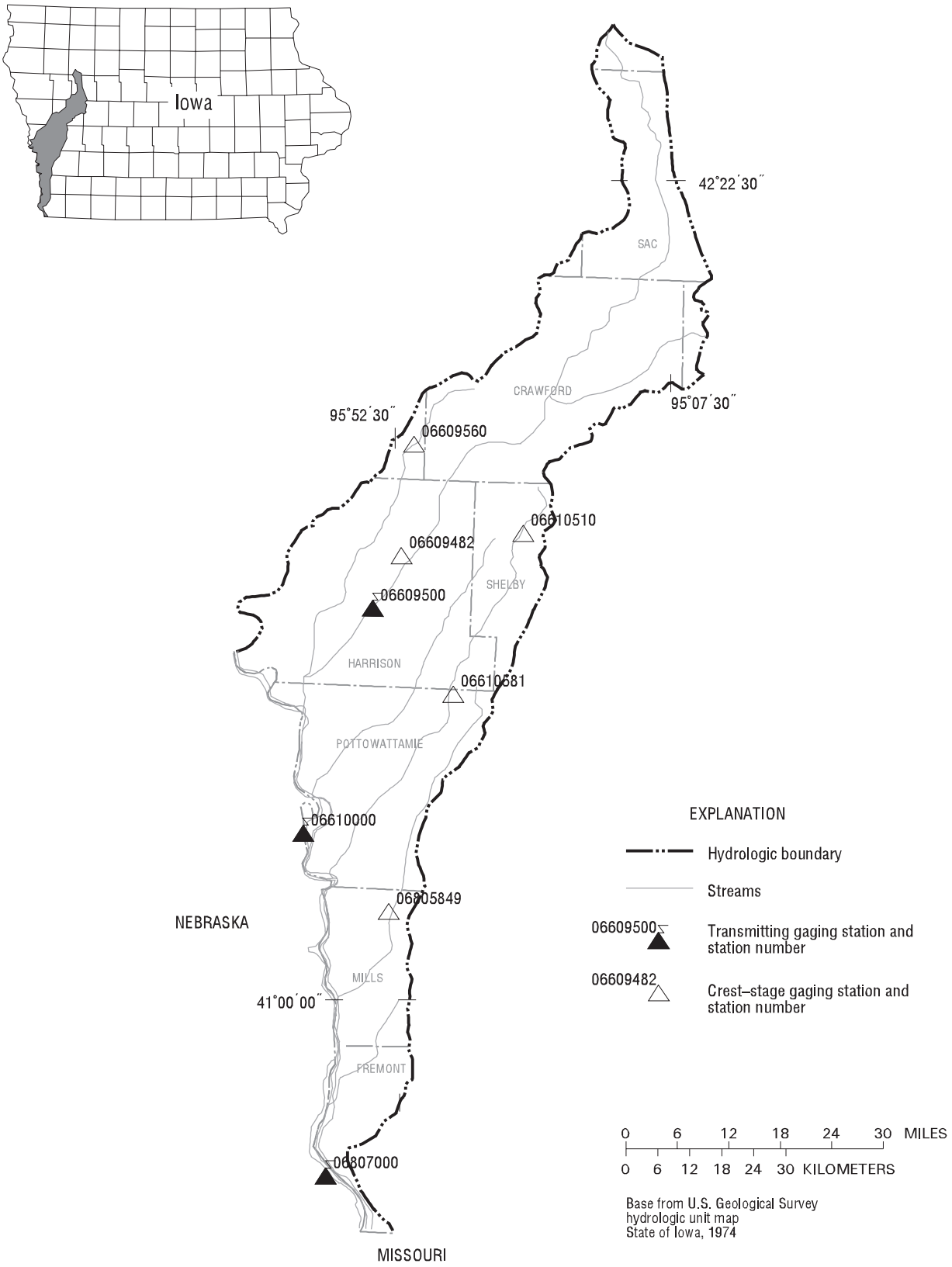
MEAN	81.6	75.9	67.3	66.8	155	267	169	201	313	202	144	111
MAX	330	274	281	431	653	897	623	555	1233	1607	632	482
(WY)	1994	1994	1985	1952	1971	1993	1983	1984	1991	1993	1993	1978
MIN	9.61	12.8	6.05	3.29	9.43	27.8	12.5	13.6	22.1	22.8	14.4	6.70
(WY)	1957	1959	1959	1959	1956	1957	1957	1957	1956	1970	1971	1956

06608500 SOLDIER RIVER AT PISGAH, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1941 - 2001	
ANNUAL TOTAL	29229		63534			
ANNUAL MEAN	79.9		174		154	
HIGHEST ANNUAL MEAN					487	1993
LOWEST ANNUAL MEAN					27.3	1956
HIGHEST DAILY MEAN	392	Jun 26	5800	Jun 14	20700	Jul 17 1996
LOWEST DAILY MEAN	24	Sep 15	28	Oct 3	2.0	Jan 2 1945a
ANNUAL SEVEN-DAY MINIMUM	26	Sep 12	33	Dec 21	2.0	Jan 2 1945
MAXIMUM PEAK FLOW			13000	Jun 14	34700	Jul 17 1996
MAXIMUM PEAK STAGE			19.34	Jun 14	28.87	Jul 17 1996
INSTANTANEOUS LOW FLOW			25	Oct 3		
ANNUAL RUNOFF (AC-FT)	57980		126000		111800	
ANNUAL RUNOFF (CFSM)	.20		.43		.38	
ANNUAL RUNOFF (INCHES)	2.67		5.81		5.15	
10 PERCENT EXCEEDS	130		304		287	
50 PERCENT EXCEEDS	69		79		74	
90 PERCENT EXCEEDS	36		40		16	

a Also Jan. 3-10, 1945.
e Estimated.




Iowa
42°22′30″
SAC
CRAWFORD
95°52′30″
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06609560
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06609482
SHELBY
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HARRISON
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POTTOWATTAMIE
06610000
06805849
NEBRASKA
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41°00′00″
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MISSOURI
EXPLANATION
Hydrologic boundary
Streams
06609500 Transmitting gaging station and station number
06609482 Crest–stage gaging station and station number
0 6 12 18 24 30 MILES
0 6 12 18 24 30 KILOMETERS
Base from U.S. Geological Survey
hydrologic unit map
State of Iowa, 1974

Gaging Stations

Crest Stage Gaging Stations

06609500 BOYER RIVER AT LOGAN, IA

LOCATION.--Lat 41°38'30", long 95°46'57", in SE$^1/_4$ NW$^1/_4$ sec.19, T.79 N., R.42 W., Harrison County, Hydrologic Unit 10230007, on left bank downstream side of county bridge on Eight Street in Logan, 0.5 mi downstream from Elk Grove Creek, 10.4 mi upstream from Willow Creek, and 15.7 mi upstream from mouth.

DRAINAGE AREA.--871 mi^2.

PERIOD OF RECORD.--May 1918 to November 1924, February 1925 to July 1925, November 1937 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 956: 1938-39. WSP 1240: 1918-19, 1920 (M), 1921, 1922 (M), 1924-25, 1938 (M), 1945. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,009.38 ft above sea level (Chicago and Northwestern Railway Company bench mark). See WSP 1918 for history of changes prior to Oct. 18, 1960.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	81	e60	e27	e55	e60	690	284	632	459	217	155
2	27	74	e55	e27	e46	e65	639	5430	598	492	207	155
3	25	71	e50	e29	e55	e75	545	5660	530	581	210	162
4	28	73	e55	e32	e70	e80	510	3350	529	467	226	155
5	39	66	e46	e36	e75	e80	480	2910	639	424	239	135
6	42	124	e49	e40	e77	e75	522	2200	629	395	218	127
7	45	175	e75	e42	e75	e90	570	1650	491	385	200	145
8	39	156	e70	e42	e75	e85	497	1290	443	379	187	219
9	30	123	e70	e40	e65	e85	447	1150	418	522	178	218
10	39	103	e60	e38	e55	e100	405	1070	485	443	170	164
11	37	95	e55	e42	e60	e95	485	990	521	e390	162	139
12	37	91	e55	e46	e75	e130	737	902	395	e370	162	128
13	39	91	e60	e60	e85	e210	721	872	775	e355	161	118
14	48	80	e60	e70	e80	e400	590	837	4920	340	156	124
15	56	74	e65	e70	e75	e2100	502	778	2150	326	220	151
16	45	72	e55	e65	e70	2260	441	721	1330	315	312	185
17	47	e75	e44	e65	e65	1620	395	674	1090	311	264	225
18	44	73	e36	e65	e65	1590	371	626	983	310	285	193
19	41	72	e30	e60	e75	2090	372	599	1100	373	282	163
20	40	60	e36	e46	e70	2700	379	650	878	332	223	151
21	39	e42	e30	e48	e65	3320	368	989	792	352	203	139
22	41	e44	e26	e50	e65	2330	358	856	721	317	179	128
23	48	e46	e27	e60	e70	2020	368	774	661	293	168	124
24	57	e47	e28	e55	e75	1360	342	731	631	282	166	118
25	59	e50	e27	e55	e80	935	313	703	591	280	181	111
26	59	e48	e27	e60	e75	690	302	666	555	280	206	112
27	54	e48	e28	e55	e65	601	e300	644	544	264	194	110
28	48	e50	e32	e60	e60	577	e290	613	512	259	168	107
29	52	e55	e32	e65	---	611	e275	574	487	251	162	105
30	66	e60	e29	e70	---	605	e261	593	474	238	186	102
31	74	---	e27	e65	---	632	---	687	---	231	181	---
TOTAL	1371	2319	1399	1585	1923	27671	13475	40473	25504	11016	6273	4368
MEAN	44.2	77.3	45.1	51.1	68.7	893	449	1306	850	355	202	146
MAX	74	175	75	70	85	3320	737	5660	4920	581	312	225
MIN	25	42	26	27	46	60	261	284	395	231	156	102
AC-FT	2720	4600	2770	3140	3810	54890	26730	80280	50590	21850	12440	8660
CFSM	.05	.09	.05	.06	.08	1.02	.52	1.50	.98	.41	.23	.17
IN.	.06	.10	.06	.07	.08	1.18	.58	1.73	1.09	.47	.27	.19

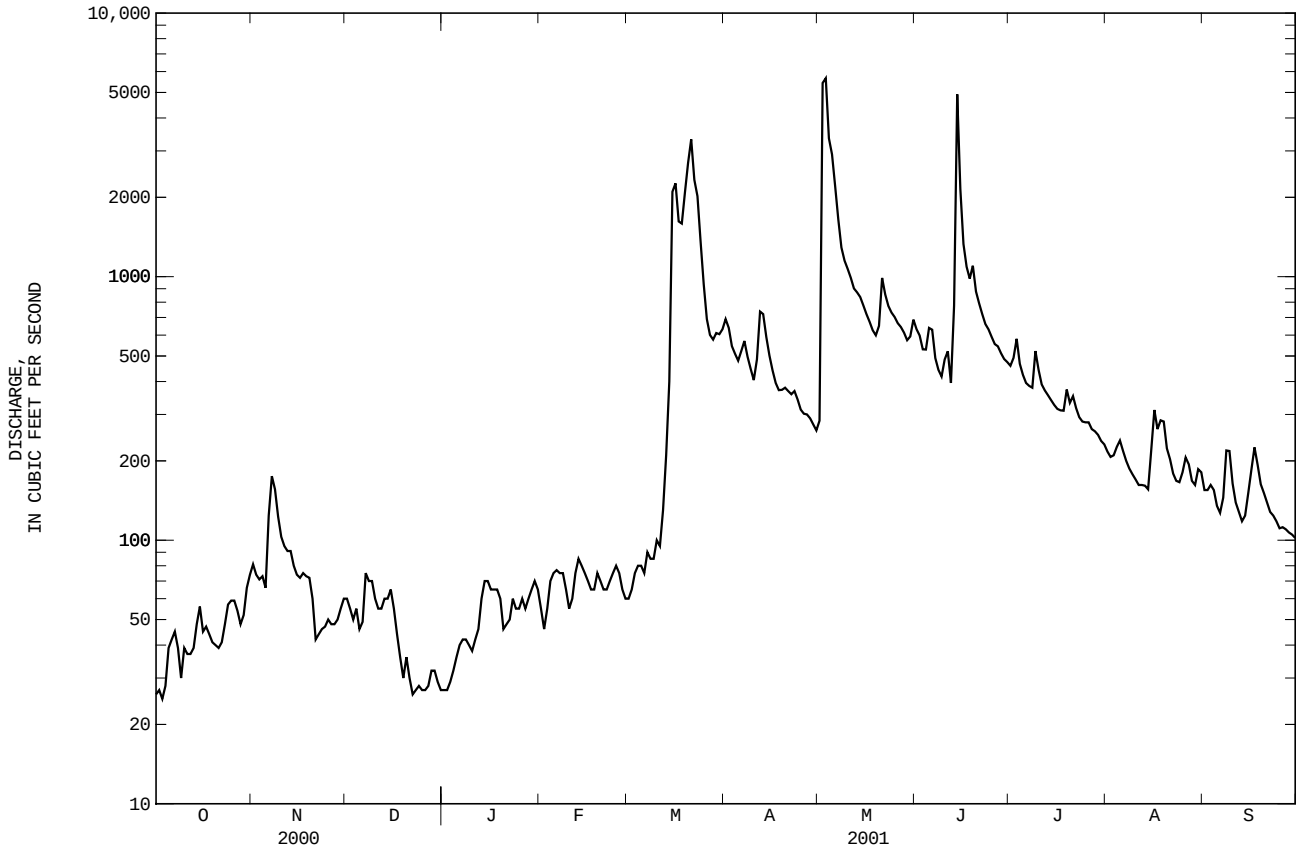
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2001, BY WATER YEAR (WY)

MEAN	185	169	137	128	315	599	449	515	762	467	307	255
MAX	796	558	565	692	1209	2619	1988	1698	2541	3022	1636	1288
(WY)	1974	1974	1973	1973	1971	1979	1983	1984	1990	1993	1951	1978
MIN	11.1	8.33	6.68	3.06	3.55	40.4	23.3	39.9	33.3	51.0	34.5	11.6
(WY)	1957	1940	1938	1940	1940	1981	1957	1968	1956	1977	1976	1939

06609500 BOYER RIVER AT LOGAN, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1919 - 2001	
ANNUAL TOTAL	36262		137377			
ANNUAL MEAN	99.1		376		361	
HIGHEST ANNUAL MEAN					1018	1993
LOWEST ANNUAL MEAN					58.7	1956
HIGHEST DAILY MEAN	500	Jun 26	5660	May 3	24600	Jul 9 1993
LOWEST DAILY MEAN	19	Sep 15	25	Oct 3	1.5	Jul 16 1938
ANNUAL SEVEN-DAY MINIMUM	22	Sep 12	28	Dec 21	2.0	Jan 13 1940
MAXIMUM PEAK FLOW			13100	May 2	30800	Jun 17 1990
MAXIMUM PEAK STAGE			16.26	May 2	25.22	Mar 1 1965a
INSTANTANEOUS LOW FLOW			22	Oct 3		
ANNUAL RUNOFF (AC-FT)	71930		272500		261400	
ANNUAL RUNOFF (CFSM)	.11		.43		.41	
ANNUAL RUNOFF (INCHES)	1.55		5.87		5.63	
10 PERCENT EXCEEDS	169		774		757	
50 PERCENT EXCEEDS	85		155		164	
90 PERCENT EXCEEDS	37		41		33	

a Ice affected.
e Estimated.



06610000 MISSOURI RIVER AT OMAHA, NE
(National stream-quality accounting network station)

LOCATION.--Lat 41°15'32", long 95°55'20", in SE$^1/_4$ NW$^1/_4$ sec.23, T.15 N., R.13 E., Douglas County, Hydrologic Unit 10230006, on right bank on left side of concrete floodwall, at foot of Douglas Street, 275 ft downstream from Interstate 480 Highway bridge in Omaha, and at mile 615.9.

DRAINAGE AREA.--322,800 mi^2, approximately. The 3,959 mi^2 in Great Divide basin are not included.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1928 to current year. April 1872 to December 1899 (gage heights only) in reports of the Missouri River Commission and since January 1875, (gage heights only) in reports of the U.S. Weather Bureau.

REVISED RECORDS.--WSP 761: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 948.24 ft above sea level. See WSP 1730 for history of changes prior to Sept. 30, 1936. Oct. 1, 1936 to Sept. 30, 1982 at datum 10.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by upstream main-stem reservoirs. Fort Randall Dam was completed in July 1952, with storage beginning in December 1952. Gavins Point Dam was completed in July 1955, with storage beginning in December 1955. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 396,000 ft^3/s Apr. 18, 1952, gage height, 40.20 ft, present datum; minimum, about 2,200 ft^3/s Jan. 6, 1937; minimum gage height, 6.85 ft, present datum, Feb. 5, 1989, result of freezeup.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35100	35500	20300	e18300	15300	15900	34800	60400	38000	32500	32300	30100
2	35900	35100	19400	18800	14800	15800	36700	61600	35900	32500	31700	29900
3	36400	34600	18900	18600	15100	16000	38800	66000	34400	33900	31600	30100
4	36500	34100	17200	18400	14500	16200	37200	63800	33800	34300	31700	30400
5	37100	33900	16600	18800	15000	16300	34700	61000	34200	33400	31100	29800
6	37400	34700	16400	18600	16600	16300	35500	62900	34500	33300	31100	29800
7	37300	35300	15900	18100	16700	16300	38700	57400	35000	32500	30200	30700
8	37500	35500	16100	18200	16400	16000	41700	53300	34500	32100	29400	31300
9	37200	33800	17400	18200	16100	15500	44500	50200	34400	33000	28800	31400
10	36700	32500	17300	17900	15700	15500	42500	50000	34800	33200	28900	31300
11	36200	32600	17100	17400	15200	15400	40900	50900	35000	32300	29100	31200
12	36000	32900	16800	17300	14200	15300	44900	50600	34900	31700	29200	30700
13	36000	32900	13900	17700	15200	15500	48800	48900	35000	31100	29000	30700
14	36000	33100	12500	17600	16600	16800	48300	46500	46300	30400	29600	30800
15	35900	32700	14100	17500	16400	20400	51800	44600	48200	30200	30700	31300
16	36000	33200	16800	17300	16000	25200	58500	43000	40500	30000	31200	32600
17	36000	34300	17500	17100	15200	26100	61300	41500	39200	29900	31500	32200
18	36100	35000	16600	16900	15900	26400	59900	39900	43800	30800	30600	31400
19	35900	35200	14500	16400	16900	27800	55500	38300	46100	30500	29700	29900
20	35100	35800	14300	15900	17200	31200	50600	38000	43500	30200	29400	29000
21	35500	35600	15900	15100	16800	37700	47100	38300	39900	30000	29600	29000
22	35700	35000	16600	14100	16100	44100	45500	38000	37700	29800	29400	29000
23	35900	35000	17400	14700	15900	42400	45100	38800	35500	29700	29800	29000
24	36200	34600	17400	15600	16100	38300	44700	38500	34500	30200	30000	28800
25	35900	34000	18200	15700	16000	34700	49000	38800	34200	30900	30000	28600
26	35300	31700	18700	15600	15900	33000	56000	38700	33800	30700	30200	28800
27	35300	29800	18600	15100	15700	33100	61500	37200	32900	33700	30200	28900
28	35400	27800	18500	14800	15400	33800	66900	36100	33000	36900	29900	29800
29	35300	25600	18600	14800	---	34300	68700	36000	33000	37200	29900	30300
30	35300	22900	18600	15300	---	35100	65100	36400	32700	34600	30100	30400
31	35900	---	e18300	16000	---	35100	---	38100	---	32900	30600	---
TOTAL	1118000	994700	526400	521800	442900	781500	1455200	1443700	1109200	994400	936500	907200
MEAN	36060	33160	16980	16830	15820	25210	48510	46570	36970	32080	30210	30240
MAX	37500	35800	20300	18800	17200	44100	68700	66000	48200	37200	32300	32600
MIN	35100	22900	12500	14100	14200	15300	34700	36000	32700	29700	28800	28600
AC-FT	2218000	1973000	1044000	1035000	878500	1550000	2886000	2864000	2200000	1972000	1858000	1799000
CFSM	.11	.10	.05	.05	.05	.08	.15	.14	.11	.10	.09	.09
IN.	.13	.11	.06	.06	.05	.09	.17	.17	.13	.11	.11	.10

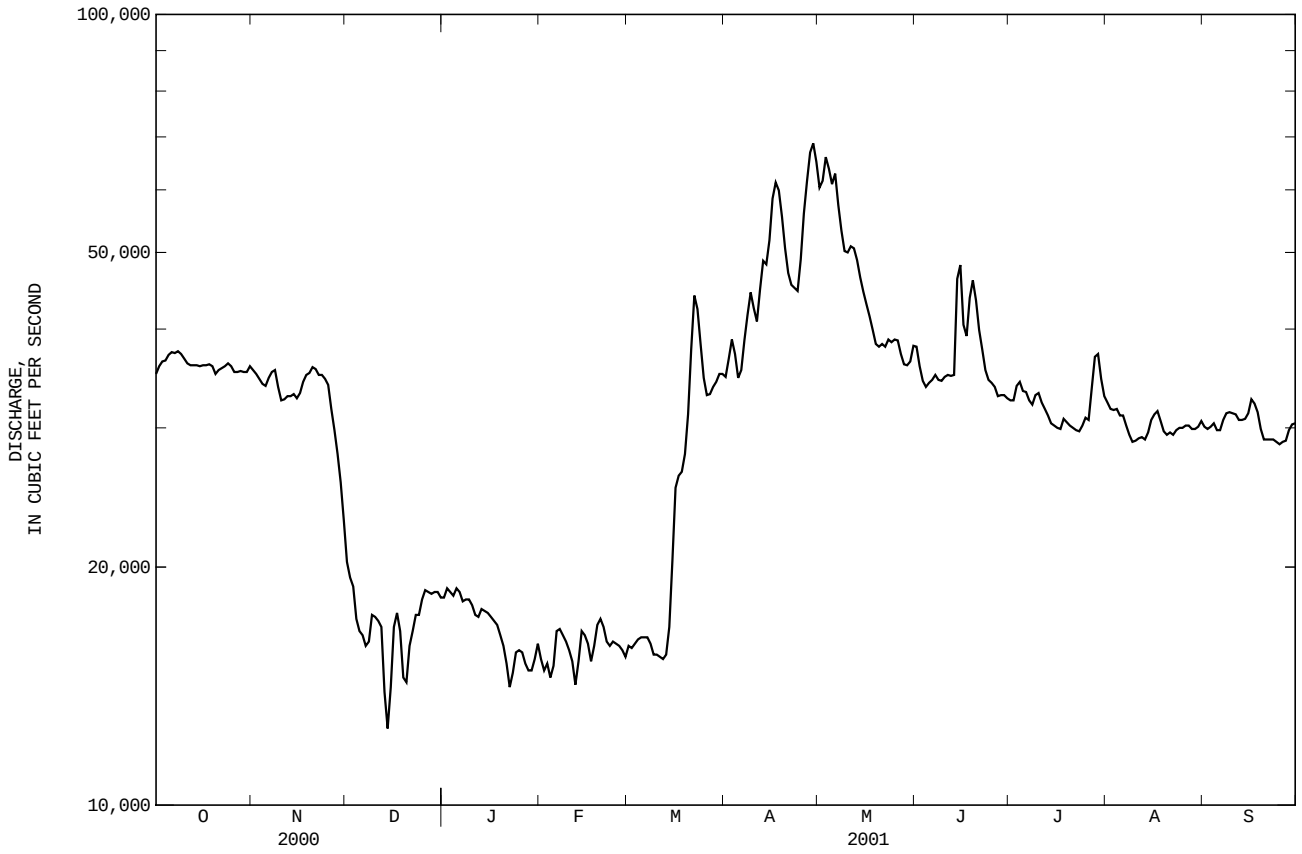
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2001, BY WATER YEAR (WY)

MEAN	38670	34280	21140	17790	19910	28160	39060	38840	42090	40670	39150	39110
MAX	74070	75040	44260	33250	40410	54660	93840	87620	76120	78560	68890	69770
(WY)	1998	1998	1998	1987	1997	1997	1997	1997	1997	1993	1997	1997
MIN	16920	8324	8296	8425	8162	10170	16480	26450	26890	27150	27280	28290
(WY)	1962	1962	1962	1964	1963	1957	1957	1961	1961	1958	1958	1958

06610000 MISSOURI RIVER AT OMAHA, NE--Continued
(National stream-quality accounting network station)

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1953 - 2001a	
ANNUAL TOTAL	11700000		11231500			
ANNUAL MEAN	31970		30770		33280	
HIGHEST ANNUAL MEAN					62150	1997
LOWEST ANNUAL MEAN					20490	1957
HIGHEST DAILY MEAN	52300	Jun 27	68700	Apr 29	116000	Apr 4 1960
LOWEST DAILY MEAN	12500	Dec 14	12500	Dec 14	2440	Dec 14 1961
ANNUAL SEVEN-DAY MINIMUM	15100	Dec 13	15100	Jan 22	4300	Nov 28 1955
MAXIMUM PEAK FLOW			69600	Apr 29	120000	Apr 1 1960
MAXIMUM PEAK STAGE			23.52	May 3b	30.26	Jul 10 1993
ANNUAL RUNOFF (AC-FT)	23210000		22280000		24110000	
ANNUAL RUNOFF (CFSM)	.099		.095		.10	
ANNUAL RUNOFF (INCHES)	1.35		1.29		1.40	
10 PERCENT EXCEEDS	39900		44600		52800	
50 PERCENT EXCEEDS	34600		31500		32700	
90 PERCENT EXCEEDS	20900		15900		13700	

a Post regulation.
b Also May 4.
e Estimated.



06610000 MISSOURI RIVER AT OMAHA, NE--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Water quality samples were collected from Interstate 80 highway bridge 2.0 mi downstream from gaging station.

PERIOD OF RECORD.--July 1969 to 1976, 1978 to current year. Daily sediment loads for April 1939 to September 1971 are in reports of U.S. Army Corps of Engineers.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1972 to September 1976, January 1978 to September 1981, October 1991 to current year.
WATER TEMPERATURES: October 1971 to September 1976, January 1978 to September 1981, October 1991 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976, October 1991 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 950 microsiemens Dec. 4, 5, 1980; minimum daily, 335 microsiemens Mar. 22, 1978.
WATER TEMPERATURES: Maximum daily, 32.0°C July 24, 1972; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,180 mg/L May 19, 1974; minimum daily mean, 71 mg/L Jan. 3, 1993.
SEDIMENT LOADS: Maximum daily, 1,470,000 tons Aug. 6, 1996; minimum daily, 2,560 tons Jan. 3, 1993.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 855 microsiemens May 25; minimum daily, 537 microsiemens Apr. 10.
WATER TEMPERATURES: Maximum daily, 30.0°C Aug. 7; minimum daily, 0.5°C Jan. 6 and Mar. 1.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,800 mg/L June 15; minimum daily mean, 98 mg/L Mar. 7.
SEDIMENT LOADS: Maximum daily, 498,000 tons June 15; minimum daily, 4,270 tons Mar. 9.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	TEMPER-ATURE AIR (DEG C) (00020)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
OCT													
03...	1030	36100	815	8.5	17.5	14.5	22	9.1	99	735	250	59.2	25.3
NOV													
28...	1030	27500	863	8.4	1.5	3.5	8.5	13.5	100	735	280	67.0	26.2
JAN													
06...	1200	18700	899	8.4	.5	1.0	6.6	13.7	100	730	290	69.9	27.2
MAR													
01...	1130	16000	847	8.2	.5	-0.5	5.1	12.4	90	728	260	65.9	23.5
16...	1030	25600	672	8.2	2.5	1.0	200	10.4	79	739	220	56.4	19.4
APR													
10...	1100	42700	539	8.1	8.5	12.5	180	10.5	94	730	210	54.1	18.3
24...	1030	44500	642	8.2	11.0	9.0	130	8.8	82	743	260	63.8	23.9
MAY													
07...	1100	57700	677	8.2	15.5	16.0	92	7.7	80	740	270	67.4	25.3
22...	1100	37900	829	8.4	18.0	13.0	45	8.2	91	730	320	77.0	31.5
JUN													
05...	1100	34200	857	8.3	17.0	15.5	--	8.7	94	733	320	78.3	30.8
15...	1030	48400	663	8.0	21.5	26.0	--	5.8	68	734	240	60.0	21.1
JUL													
10...	1030	33300	837	8.3	27.0	24.0	--	6.5	85	735	300	72.8	28.9
AUG													
07...	1100	30300	856	8.5	30.0	27.5	--	6.8	93	741	300	73.5	28.4
21...	1030	29600	866	8.6	24.0	23.5	--	8.0	100	730	260	63.9	24.7
SEP													
05...	1030	28800	859	8.6	25.0	23.5	--	8.1	102	739	270	65.2	25.8

06610000 MISSOURI RIVER AT OMAHA, NE--Continued
(National stream-quality accounting network station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	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 WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	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, DIS-SOLVED (TONS PER AC-FT) (70303)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
OCT													
03...	79.1	2	5.54	140	2	167	229	11.8	.5	6.4	531	.72	.084
NOV													
28...	76.7	2	5.05	150	.0	183	233	14.8	.4	6.8	561	.76	.381
JAN													
06...	81.3	2	5.89	198	.0	242	233	15.8	.5	9.9	592	.81	.453
MAR													
01...	63.2	2	5.66	196	.0	239	211	17.4	.5	10.6	570	.78	.684
16...	44.1	1	7.39	167	.0	204	141	13.3	.4	9.8	440	.60	1.07
APR													
10...	21.2	.6	7.48	131	.0	160	107	10.8	.3	12.0	357	.49	2.56
24...	29.7	.8	8.75	137	.0	168	145	14.0	.3	14.4	437	.59	2.70
MAY													
07...	26.7	.7	8.51	156	.0	191	152	14.9	.3	13.7	455	.62	2.96
22...	44.4	1	8.64	188	0	228	202	18.7	.4	13.5	573	.78	2.23
JUN													
05...	55.4	1	7.01	188	.0	229	214	18.3	.4	10.7	573	.78	2.19
15...	40.0	1	7.11	143	.0	175	153	12.7	.4	8.6	433	.59	1.78
JUL													
10...	59.2	1	6.95	177	.0	215	211	14.2	.4	12.4	564	.77	1.70
AUG													
07...	66.4	2	7.05	178	3	211	233	15.1	.4	12.2	594	.81	1.46
21...	70.9	2	7.01	166	6	191	250	15.2	.4	8.7	585	.80	.370
SEP													
05...	77.9	2	6.74	159	4	187	250	14.7	.4	9.1	579	.79	E.206

DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	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)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)
OCT													
03...	<.010	<.020	.55	.007	.007	.155	247	24100	19	2.5	3	43.0	<.06
NOV													
28...	E.005	.078	.50	.014	.017	.139	218	16200	14	E1.2	--	--	--
JAN													
06...	.010	.195	.60	.027	.030	.094	143	7220	18	2.0	--	--	--
MAR													
01...	.009	.245	.73	.037	.043	.093	96	4150	33	2.0	--	--	--
16...	.027	.836	3.7	.074	.103	1.46	1260	87100	94	2.3	--	--	--
APR													
10...	.050	.446	2.7	.123	.145	.928	896	103000	70	2.5	--	--	--
24...	.042	.073	2.0	.183	.204	.769	675	81100	64	3.3	--	--	--
MAY													
07...	.041	.084	1.8	.151	.175	.643	598	93200	70	3.3	--	--	--
22...	.021	.044	1.2	.120	.137	.389	328	33600	74	4.1	--	--	--
JUN													
05...	.017	E.034	.90	.088	.103	.294	275	25400	55	3.1	--	--	--
15...	.059	.105	7.7	.100	.112	3.44	3850	503000	96	3.2	--	--	--
JUL													
10...	.019	.049	1.1	.108	.116	.347	581	52200	36	3.6	--	--	--
AUG													
07...	.013	E.024	.93	.084	.091	.263	221	18100	61	4.0	--	--	--
21...	.012	<.040	.97	.032	.039	.194	203	16200	41	3.4	--	--	--
SEP													
05...	E.009	<.040	.74	E.021	E.030	.161	169	13100	38	2.9	--	--	--

06610000 MISSOURI RIVER AT OMAHA, NE--Continued
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WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	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)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
OCT													
03...	E.04	<.8	.19	2.0	<10	<.08	57.0	<1.0	3.7	2.12	3.0	<1.0	585
NOV													
28...	--	--	--	--	<10	--	54.9	--	--	--	E1.4	--	600
JAN													
06...	--	--	--	--	<10	--	52.2	--	--	--	2.3	--	616
MAR													
01...	--	--	--	--	<10	--	53.4	--	--	--	2.6	--	616
16...	--	--	--	--	M	--	36.8	--	--	--	2.6	--	432
APR													
10...	--	--	--	--	M	--	20.7	--	--	--	3.5	--	307
24...	--	--	--	--	M	--	24.2	--	--	--	3.0	--	332
MAY													
07...	--	--	--	--	M	--	25.1	--	--	--	3.6	--	357
22...	--	--	--	--	<10	--	39.9	--	--	--	3.3	--	439
JUN													
05...	--	--	--	--	<10	--	35.4	--	--	--	2.9	--	509
15...	--	--	--	--	<10	--	31.2	--	--	--	3.3	--	355
JUL													
10...	--	--	--	--	<10	--	50.6	--	--	--	3.6	--	519
AUG													
07...	--	--	--	--	<10	--	47.1	--	--	--	4.6	--	556
21...	--	--	--	--	<10	--	52.2	--	--	--	4.8	--	579
SEP													
05...	--	--	--	--	<10	--	53.2	--	--	--	4.2	--	571

DATE	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS-SOLVED (UG/L AS U) (22703)	DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	PH WATER WHOLE LAB (STAND-ARD UNITS) (00403)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC PARTIC-ULATE TOTAL (MG/L AS C) (00689)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL-ATE, WATER, DISS, REC (UG/L) (04028)	SI-MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO-METON, WATER, DISS, REC (UG/L) (04037)
OCT													
03...	<10.0	<1	3.96	E.007	8.3	.20	3.1	1.6	.43	<.010	<.002	<.011	E.003
NOV													
28...	<8.0	--	--	E.007	8.0	.32	3.3	1.7	--	<.010	<.002	<.011	E.004
JAN													
06...	3.0	--	--	E.005	8.1	.45	3.6	1.0	--	<.010	<.002	<.011	E.002
MAR													
01...	3.5	--	--	E.007	8.1	.53	3.4	.4	--	<.010	<.002	<.011	E.004
16...	3.4	--	--	E.012	7.6	1.4	8.3	23	--	<.010	<.002	<.011	<.015
APR													
10...	3.0	--	--	E.025	7.7	1.3	6.0	17	--	<.010	<.002	E.003	<.015
24...	3.3	--	--	E.024	7.7	.78	6.2	14	--	<.010	<.002	<.011	E.002
MAY													
07...	3.6	--	--	E.039	8.0	.70	6.3	E10	--	<.010	<.002	<.011	E.008
22...	5.9	--	--	E.026	8.1	.58	--	--	--	<.010	<.002	E.004	E.008
JUN													
05...	3.2	--	--	E.025	8.2	.38	--	--	--	<.010	<.002	E.003	E.006
15...	4.3	--	--	E.059	7.9	.56	--	--	--	<.010	<.002	.014	E.006
JUL													
10...	4.0	--	--	<.006	8.2	.40	4.4	6.0	--	<.010	<.002	E.003	E.005
AUG													
07...	4.7	--	--	E.021	8.3	.38	4.1	5.0	--	<.010	<.002	<.011	E.004
21...	4.0	--	--	E.011	8.5	.30	4.4	4.5	--	<.010	<.002	<.011	E.005
SEP													
05...	3.5	--	--	E.015	8.4	E.29	<.30	3.5	--	<.010	<.002	<.011	E.005

06610000 MISSOURI RIVER AT OMAHA, NE--Continued
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WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	CYANAZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER DISS REC (UG/L) (04095)	ALKALINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	ALPHA BHC DISSOLVED (UG/L) (34253)	P,P' DDE DISSOLV (UG/L) (34653)	CHLORPYRIFOS DISSOLVED (UG/L) (38933)	LINDANE DISSOLVED (UG/L) (39341)	DIELDRIN DISSOLVED (UG/L) (39381)	METOLACHLOR WATER DISSOLV (UG/L) (39415)	MALATHION, DISSOLVED (UG/L) (39532)	PARATHION, DISSOLVED (UG/L) (39542)	DIAZINON, DISSOLVED (UG/L) (39572)	ATRAZINE, WATER, DISS, REC (UG/L) (39632)
OCT													
03...	<.018	<.003	167	<.005	<.003	<.005	<.004	<.005	E.006	<.027	<.007	<.005	.022
NOV													
28...	<.018	<.003	184	<.005	<.003	<.005	<.004	<.005	E.002	<.027	<.007	<.005	.014
JAN													
06...	<.018	<.003	209	<.005	<.003	<.005	<.004	<.005	E.003	<.027	<.007	<.005	.015
MAR													
01...	E.005	<.003	210	<.005	<.003	<.005	<.004	<.005	E.005	<.027	<.007	<.005	.016
16...	<.018	<.003	177	<.005	<.003	<.005	<.004	<.005	.052	<.027	<.007	<.005	.033
APR													
10...	E.013	<.003	141	<.005	<.003	<.005	<.004	<.005	.470	<.027	<.007	<.005	.059
24...	E.009	<.003	150	<.005	<.022	<.005	<.004	<.005	.351	<.027	<.007	<.005	.118
MAY													
07...	E.011	<.003	166	<.005	<.003	<.005	<.004	<.005	.597	<.027	<.007	<.005	1.44
22...	E.008	<.003	202	<.005	<.003	<.005	<.004	<.005	.160	<.027	<.007	<.005	.344
JUN													
05...	E.007	<.003	204	<.005	<.003	<.005	<.004	<.005	.100	<.027	<.007	E.001	.258
15...	E.014	<.003	153	<.005	<.003	.007	<.004	<.005	.976	<.027	<.007	<.005	4.38
JUL													
10...	E.009	<.003	189	<.005	<.003	<.005	<.004	<.005	.054	<.027	<.007	E.001	.395
AUG													
07...	<.018	<.003	183	<.005	<.003	<.005	<.004	<.005	.027	<.027	<.007	<.005	.125
21...	<.018	<.003	174	<.005	<.003	<.005	<.004	<.005	.021	<.027	<.007	<.005	.076
SEP													
05...	<.018	<.003	168	<.005	<.003	<.005	<.004	<.005	.016	<.027	<.007	<.005	.092

DATE	ALACHLOR, WATER, DISS, REC, (UG/L) (46342)	ACETOCHLOR, WATER FLTRD REC (UG/L) (49260)	METRIBUZIN SENCOR WATER DISSOLV (UG/L) (82630)	2,6-DIETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	TRIFLURALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	ETHALFLURALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TERBACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LINURON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARATHION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEBULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	TEBUTHIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)
OCT													
03...	<.002	.005	<.006	<.002	<.009	<.009	<.011	<.034	<.035	<.006	E.003	<.002	<.016
NOV													
28...	<.002	<.004	<.006	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	<.016
JAN													
06...	<.002	.011	<.006	<.002	<.009	<.009	<.011	<.034	<.035	<.006	E.002	<.002	<.016
MAR													
01...	<.002	.008	<.006	<.002	<.009	<.009	<.011	<.034	<.035	<.006	E.004	<.002	E.001
16...	<.002	<.004	<.006	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	<.016
APR													
10...	<.002	.050	<.006	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	<.016
24...	.007	.565	<.006	<.002	E.002	<.009	<.011	<.034	<.035	<.006	E.002	<.002	<.016
MAY													
07...	.030	1.23	.012	<.002	E.005	<.009	<.011	<.034	<.035	<.006	.010	<.002	<.016
22...	E.007	E.176	.007	<.002	<.009	<.009	<.011	<.034	<.035	<.006	.009	<.002	<.016
JUN													
05...	.005	.244	<.006	<.002	E.003	<.009	<.011	<.034	<.035	<.006	.003	<.002	E.006
15...	.014	.420	.021	<.002	.018	<.009	<.011	<.034	<.035	<.006	.003	<.002	<.016
JUL													
10...	<.002	.050	<.006	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	<.016
AUG													
07...	<.002	.010	<.006	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	<.016
21...	<.002	.008	<.006	<.002	<.009	<.009	<.011	<.034	<.035	<.006	.008	<.002	<.016
SEP													
05...	<.002	.014	<.006	<.002	<.009	<.009	<.011	<.034	<.035	<.006	.005	<.002	<.016

06610000 MISSOURI RIVER AT OMAHA, NE--Continued
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WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	MOLINATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHOPROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BENFLURALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	CARBOFURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TERBUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRONAMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISULFOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIALLATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PROPANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CARBARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIOBENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDIMETHALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)
OCT													
03...	<.002	<.005	<.010	<.020	<.017	<.004	<.021	<.002	<.011	<.041	<.005	<.003	<.010
NOV													
28...	<.002	<.005	<.010	<.020	<.017	<.004	<.021	<.002	<.011	<.041	<.005	<.003	<.010
JAN													
06...	<.002	<.005	<.010	<.020	<.017	<.004	<.021	<.002	<.011	<.041	<.005	<.003	<.010
MAR													
01...	<.002	<.005	<.010	<.020	<.017	<.004	<.021	<.002	<.011	<.041	<.005	<.003	<.010
16...	<.002	<.005	<.010	<.020	<.017	<.004	<.021	<.002	<.011	<.041	<.005	<.003	<.010
APR													
10...	<.002	<.005	<.010	<.020	<.017	<.004	<.021	<.002	E.010	<.041	<.005	<.003	<.010
24...	<.002	<.005	<.010	<.020	<.017	<.004	<.021	<.002	<.011	<.041	E.003	<.003	E.011
MAY													
07...	<.002	<.005	<.010	<.020	<.017	<.004	<.021	<.002	<.011	<.041	<.005	<.003	<.010
22...	<.002	<.005	<.010	<.020	<.017	<.004	<.021	<.002	<.011	<.041	<.005	<.003	<.010
JUN													
05...	<.002	<.005	<.010	<.020	<.017	<.004	<.021	<.002	<.011	<.041	<.005	<.003	<.010
15...	<.002	<.005	<.010	E.024	<.017	<.004	<.021	<.002	<.011	<.041	<.005	<.003	.051
JUL													
10...	<.002	<.005	<.010	<.020	<.017	<.004	<.021	<.002	<.011	<.041	<.005	<.003	<.010
AUG													
07...	<.002	<.005	<.010	<.020	<.017	<.004	<.021	<.002	<.011	<.041	<.005	<.003	<.010
21...	<.002	<.005	<.010	<.020	<.017	<.004	<.021	<.002	<.011	E.015	<.005	<.003	<.010
SEP													
05...	<.002	<.005	<.010	<.020	<.017	E.003	<.021	<.002	<.011	<.041	<.005	<.003	<.010

DATE	NAPROPAMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PROPARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYLAZINPHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	PERMETHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	SPECIFIC CONDUCTANCE LAB (US/CM) (90095)	DIAZINON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	BORON, DISSOLVED (UG/L AS B) (01020)
OCT								
03...	<.007	<.023	<.050	<.006	806	112	106	125
NOV								
28...	<.007	<.023	<.050	<.006	852	122	90	127
JAN								
06...	<.007	<.023	<.050	<.006	886	91	78	134
MAR								
01...	<.007	<.023	<.050	<.006	857	120	111	121
16...	<.007	<.023	<.050	<.006	656	122	97	96
APR								
10...	<.007	<.023	<.050	<.006	538	100	82	58
24...	<.007	<.023	<.050	<.006	649	99	97	63
MAY								
07...	<.007	<.023	<.050	<.006	669	111	89	67
22...	<.007	<.023	<.050	<.006	831	89	73	105
JUN								
05...	<.007	<.023	<.050	<.006	862	111	86	98
15...	<.007	<.023	<.050	<.006	654	115	94	86
JUL								
10...	<.007	<.023	<.050	<.006	870	89	88	109
AUG								
07...	<.007	<.023	<.050	<.006	828	104	94	122
21...	<.007	<.023	<.050	<.006	844	110	88	124
SEP								
05...	<.007	<.023	<.050	<.006	851	101	92	123

06610000 MISSOURI RIVER AT OMAHA, NE--Continued
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WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	TIME	NUMBER OF SAM-PLING POINTS (COUNT) (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)
OCT										
03...	1030	3	--	.0	25	95	99	100	--	--
NOV										
07...	1420	3	--	.0	25	94	98	99	99	100
28...	1030	3	--	.0	16	82	97	99	99	100
JAN										
06...	1200	3	--	.0	28	96	99	100	--	--
MAR										
01...	1140	3	--	.0	23	90	99	99	100	--
APR										
10...	1100	3	.0	1	35	92	99	100	--	--
MAY										
04...	1030	3	.0	1	26	90	99	100	--	--
JUN										
01...	1105	3	--	.0	19	79	91	96	99	100
JUL										
10...	1030	3	.0	1	33	96	99	100	--	--
AUG										
07...	1100	3	.0	1	31	85	98	99	100	--
SEP										
07...	1015	3	.0	1	33	97	100	--	--	--

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	810	---	655	838	---	771	---
2	---	808	---	---	---	---	---	---	---	816	---	---
3	806	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	622	---	---	---	789
5	---	---	846	---	---	---	---	---	848	821	---	799
6	801	---	---	850	---	---	---	---	---	---	---	---
7	---	797	---	---	---	822	---	678	---	---	804	798
8	---	---	---	---	---	---	---	---	848	---	---	---
9	---	799	---	---	---	---	---	---	---	---	---	---
10	816	---	---	814	---	---	537	---	---	823	---	799
11	---	---	---	---	---	---	---	762	---	---	---	---
12	809	---	---	---	---	---	---	---	838	---	---	---
13	---	---	---	---	---	---	565	---	---	834	---	---
14	---	814	---	---	---	771	---	---	---	---	---	---
15	---	---	---	---	---	---	---	810	644	---	803	---
16	---	807	---	---	---	667	---	---	---	793	---	---
17	804	---	---	---	---	---	607	---	---	---	779	---
18	---	---	---	816	---	---	---	836	681	---	---	788
19	---	---	---	---	---	---	---	---	---	---	---	---
20	809	---	---	---	677	---	618	---	---	783	---	794
21	---	825	---	---	---	621	---	---	---	---	810	---
22	---	---	---	826	---	---	---	835	752	---	---	---
23	---	---	---	---	---	---	---	---	---	790	772	---
24	810	---	---	---	---	---	638	---	---	---	---	---
25	---	---	---	---	---	---	---	855	798	---	---	778
26	---	---	---	---	---	568	---	---	---	770	---	---
27	800	---	---	---	---	---	651	---	---	---	798	---
28	---	821	---	---	---	---	---	---	---	---	---	778
29	---	---	---	---	---	---	---	846	802	708	---	---
30	---	---	---	---	---	---	---	---	---	---	805	---
31	819	---	---	---	---	---	---	---	---	---	---	---
MAX	819	825	846	850	677	822	651	855	848	834	810	799
MIN	800	797	846	814	677	568	537	622	644	708	771	778

06610000 MISSOURI RIVER AT OMAHA, NE--Continued
(National stream-quality accounting network station)

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	.5	---	17.5	17.0	---	28.5	---
2	---	15.0	---	---	---	---	---	---	---	26.0	---	---
3	17.5	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	25.0
5	---	---	2.0	---	---	---	---	---	17.0	26.0	---	25.0
6	16.0	---	---	.5	---	---	---	---	---	---	---	---
7	---	10.0	---	---	---	2.0	---	15.5	---	---	30.0	25.0
8	---	---	---	---	---	---	---	---	19.3	---	---	---
9	---	7.0	---	---	---	---	---	---	---	---	---	---
10	12.0	---	---	1.5	---	---	8.5	---	---	27.0	---	25.0
11	---	---	---	---	---	---	---	18.0	---	---	---	---
12	12.5	---	---	---	---	---	---	---	24.0	---	---	---
13	---	---	---	---	---	---	11.0	---	---	26.0	---	---
14	---	4.0	---	---	---	5.0	---	---	---	---	---	---
15	---	---	---	---	---	---	---	22.2	21.5	---	24.4	---
16	---	2.0	---	---	---	2.5	---	---	---	26.0	---	---
17	14.0	---	---	---	---	---	10.0	---	---	---	23.5	---
18	---	---	---	1.0	---	---	---	22.0	22.5	---	---	18.5
19	---	---	---	---	---	---	---	---	---	---	---	---
20	15.5	---	---	---	2.0	---	11.0	---	---	28.0	---	20.0
21	---	1.0	---	---	---	2.5	---	---	---	---	24.0	---
22	---	---	---	1.0	---	---	---	18.0	23.0	---	---	---
23	---	---	---	---	---	---	---	---	---	29.0	27.0	---
24	15.5	---	---	---	---	---	11.0	---	---	---	---	---
25	---	---	---	---	---	---	---	15.0	25.0	---	---	17.5
26	---	---	---	---	---	2.0	---	---	---	27.0	---	---
27	17.0	---	---	---	---	---	13.0	---	---	---	26.5	---
28	---	1.5	---	---	---	---	---	---	---	---	---	18.0
29	---	---	---	---	---	---	---	17.0	25.0	26.5	---	---
30	---	---	---	---	---	---	---	---	---	---	26.5	---
31	14.5	---	---	---	---	---	---	---	---	---	---	---
MAX	17.5	15.0	2.0	1.5	2.0	5.0	13.0	22.2	25.0	29.0	30.0	25.0
MIN	12.0	1.0	2.0	.5	2.0	.5	8.5	15.0	17.0	26.0	23.5	17.5

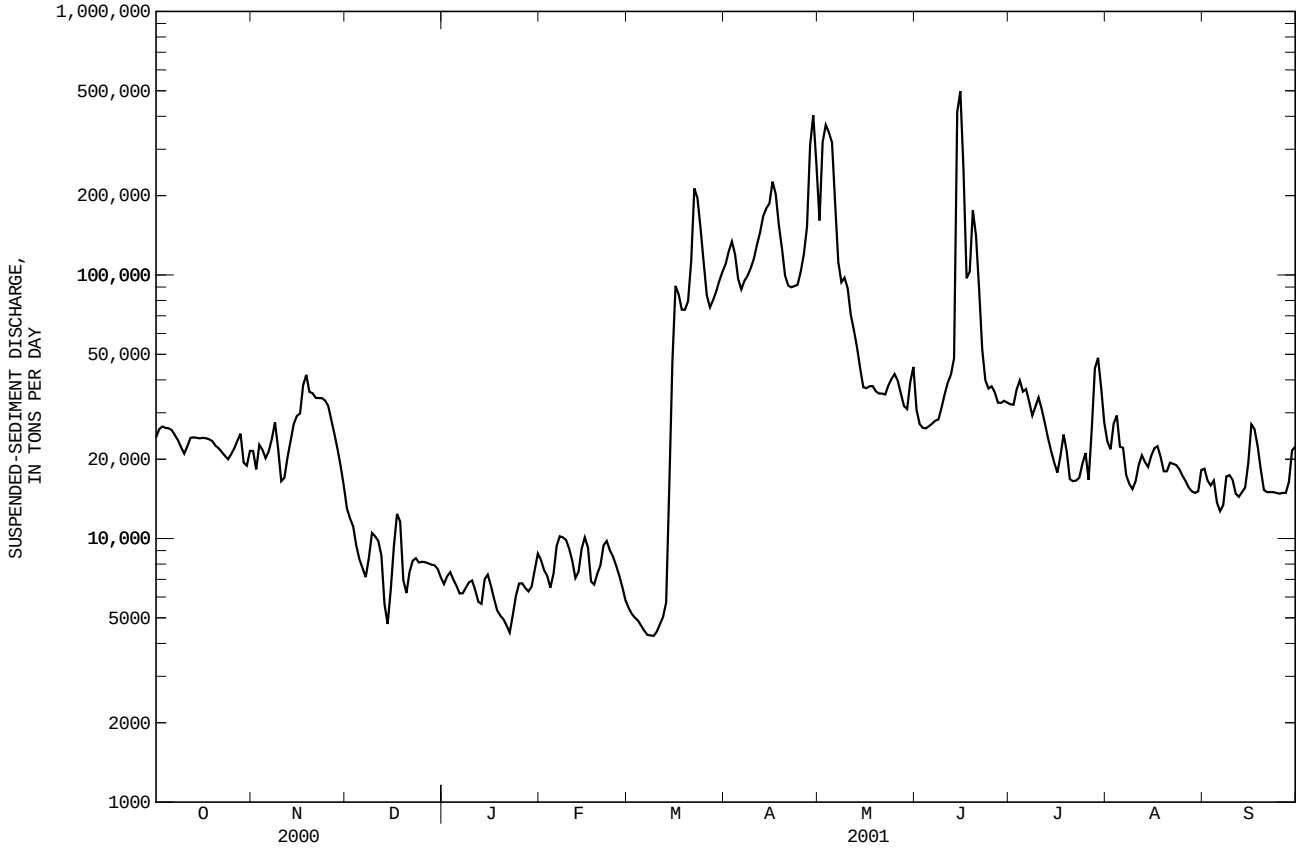
SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	255	24200	224	21500	238	13000	136	6720	201	8290	127	5460
2	269	26000	193	18300	228	11900	142	7190	189	7580	121	5180
3	270	26600	242	22700	218	11100	148	7450	177	7210	116	5010
4	266	26300	235	21700	202	9380	141	6990	166	6510	111	4880
5	262	26200	221	20200	186	8330	131	6610	181	7350	106	4670
6	256	25800	228	21400	175	7710	123	6190	209	9370	102	4470
7	245	24700	251	23900	166	7140	127	6200	227	10200	98	4310
8	233	23600	289	27600	194	8450	133	6510	227	10100	100	4290
9	221	22200	240	22000	223	10500	138	6820	227	9880	102	4270
10	212	21000	188	16500	219	10200	143	6930	216	9160	106	4430
11	229	22400	194	17000	213	9790	135	6360	200	8220	114	4730
12	247	24100	229	20300	190	8640	123	5750	185	7080	122	5040
13	249	24200	264	23500	150	5640	118	5650	182	7480	136	5720
14	248	24100	305	27200	141	4740	147	7010	204	9160	349	15900
15	248	24000	330	29200	167	6400	155	7300	227	10100	840	47200
16	247	24100	332	29800	206	9350	141	6610	215	9260	1330	90900
17	247	24000	412	38200	263	12400	128	5910	168	6870	1200	84300
18	244	23800	442	41800	258	11600	117	5340	155	6690	1040	73800
19	241	23400	380	36000	177	6960	115	5100	162	7360	982	73800
20	237	22500	368	35600	161	6210	115	4940	170	7920	944	79600
21	230	22000	356	34200	174	7470	115	4680	208	9430	1090	113000
22	221	21300	361	34100	184	8230	116	4400	225	9790	1790	213000
23	212	20600	362	34100	179	8420	129	5130	211	9030	1710	196000
24	205	20000	357	33400	172	8110	144	6070	197	8550	1450	150000
25	215	20900	347	31900	166	8160	159	6750	183	7900	1190	111000
26	231	22000	329	28200	162	8130	161	6760	168	7240	937	83500
27	247	23500	310	24900	160	8050	159	6490	154	6540	844	75400
28	262	25000	291	21800	159	7960	158	6300	140	5830	880	80400
29	204	19400	273	18800	158	7910	164	6560	---	---	936	86700
30	198	18900	255	15800	153	7670	184	7600	---	---	1000	95200
31	221	21500	---	---	144	7120	202	8770	---	---	1090	103000
TOTAL	---	718300	---	791600	---	266670	---	197090	---	230100	---	1835160

06610000 MISSOURI RIVER AT OMAHA, NE--Continued
(National stream-quality accounting network station)

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DAY	MEAN CONC TRAT (MG/	LOAD (TONS/ DAY)	MEAN CONCEN TRATIO (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN TRATIO (MG/L)	LOAD (TONS/ DAY)	MEAN CONCE TRATI (MG/L	LOAD (TONS/ DAY)	MEAN CONCE TRATI (MG/L	LOAD (TONS/ DAY)	MEAN CONCE TRATI (MG/L	LOAD (TONS/ DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	1170	110000	987	161000	300	30800	367	32300	267	23300	227	18400
2	1240	123000	1900	319000	281	27200	367	32200	255	21800	206	16600
3	1280	134000	2080	371000	284	26300	402	36800	320	27300	196	15900
4	1200	120000	2020	347000	286	26200	431	39800	342	29300	202	16600
5	1030	96600	1940	318000	289	26700	401	36100	265	22300	170	13700
6	920	88200	1090	186000	292	27300	410	36900	262	22100	158	12700
7	909	95000	720	112000	296	28000	376	33000	213	17400	161	13400
8	883	99300	653	93800	304	28300	338	29300	203	16100	204	17200
9	883	106000	721	97700	338	31400	355	31700	198	15400	205	17400
10	1010	115000	660	89000	376	35300	383	34300	212	16500	198	16700
11	1170	130000	513	70500	413	39100	354	31000	242	19000	176	14800
12	1190	145000	451	61600	444	41900	320	27400	263	20700	173	14400
13	1270	167000	401	53000	511	48300	287	24100	250	19500	181	15000
14	1370	179000	352	44100	3080	415000	262	21500	233	18700	188	15600
15	1330	187000	311	37500	3800	498000	239	19400	249	20600	228	19300
16	1430	226000	320	37200	2300	253000	220	17800	261	22000	308	27100
17	1230	203000	337	37800	921	97200	255	20600	264	22400	299	26000
18	960	155000	352	37900	867	103000	298	24800	247	20400	264	22400
19	838	126000	350	36200	1410	176000	260	21400	224	18000	227	18300
20	727	99400	346	35500	1200	141000	206	16800	227	18000	195	15300
21	717	91200	342	35500	817	88200	203	16500	243	19400	191	15000
22	732	89800	343	35200	510	52100	206	16600	242	19200	191	15000
23	746	90800	364	38100	415	39800	212	17000	237	19000	192	15000
24	761	91800	387	40300	399	37100	235	19200	226	18300	192	14900
25	776	103000	402	42100	410	37800	253	21100	214	17300	192	14800
26	791	120000	380	39700	394	35900	201	16700	202	16500	192	14900
27	914	152000	353	35500	370	32800	284	26100	191	15600	191	14900
28	1720	311000	326	31800	366	32700	443	44200	187	15100	204	16400
29	2180	404000	319	31000	374	33300	483	48500	185	14900	264	21600
30	1500	265000	398	39200	371	32800	398	37300	185	15100	272	22300
31	---	---	435	44800	---	---	310	27500	220	18200	---	---
TOTAL	---	4423100	---	2959000	---	2522500	---	857900	---	599400	---	511600
YEAR		15912420										



06807000 MISSOURI RIVER AT NEBRASKA CITY, NE

LOCATION.--Lat 40°40'55", long 95°50'48", in NW$^1/_4$ NE$^1/_4$ sec.9, T.8 N., R.14 E., Otoe County, Hydrologic Unit 10240001, on right bank 1.0 mi upstream from Highway 2 Bridge at Nebraska City, and at mile 562.6.

DRAINAGE AREA.--410,000 mi^2, approximately. The 3,959 mi^2 in Great Divide basin are not included.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1929 to current year. Gage-height records collected in this vicinity from August 1878 to December 1899 are contained in reports of Missouri River Commission.

REVISED RECORDS.--WSP 761: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 905.36 ft above sea level, supplementary adjustment of 1954. See WSP 1918 or 1919 for history of changes prior to Apr. 1, 1963.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by upstream main-stem reservoirs. Fort Randall Dam was completed in July 1952, with storage beginning in December 1952. Gavins Point Dam was completed in July 1955, with storage beginning in December 1955. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 414,000 ft^3/s Apr. 19, 1952; maximum gage height, 27.66 ft Apr. 18, 1952; minimum discharge, 1,600 ft^3/s Dec. 31, 1946 (discharge measurement); minimum gage height observed, -0.28 ft Dec. 24, 1960, result of freezeup.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37400	41200	28400	20700	21500	21900	43400	72800	50900	37600	36700	33400
2	37700	41000	26800	20600	20000	22300	43500	70100	47300	37400	36100	32600
3	38800	41400	26500	21000	19300	22400	45800	76800	45400	39600	35400	32200
4	39000	40700	25100	21200	19700	23900	46200	79100	44300	43600	35700	32600
5	39700	40600	22800	21700	18800	25800	44900	85500	44300	42300	34500	32500
6	40000	42600	22800	22200	20800	26300	45100	95500	44500	39600	34300	32100
7	40300	43600	21800	22300	22800	26000	47300	87700	44300	38500	34000	32400
8	40300	43200	19800	22000	22600	26200	49600	81000	43500	37700	32800	35400
9	40300	41800	21900	22600	22300	26600	52600	74000	42200	37300	31900	34700
10	40400	40300	24000	23100	21700	27200	54100	71500	42200	37500	31700	34200
11	39800	38900	21500	23100	21400	27800	55200	72100	43100	37000	31700	33800
12	39800	38600	17400	23100	20700	30300	57800	67100	42900	37000	31800	33800
13	39400	38100	e16000	23500	20000	33800	66000	64300	41400	35800	32000	33600
14	39600	37700	e14000	24400	21600	36100	66400	61200	45700	35800	31800	33700
15	39000	38000	e13300	24200	22100	43200	67500	57800	64700	35400	33600	34400
16	39300	37200	13500	23700	21200	58100	71600	55000	55200	35200	35000	36000
17	39300	37300	16900	23600	20100	50700	75300	52800	49700	34900	34600	38100
18	39300	37800	17800	23300	19600	50000	75900	51300	49500	36600	35200	40100
19	39600	38200	16200	23000	21600	47100	73200	50100	52000	36500	35000	38900
20	39200	39100	e15000	21900	23100	47700	68500	50100	51400	36200	34800	36900
21	39400	39400	14700	21300	23000	49400	63500	56100	48700	36200	34600	35900
22	39400	38500	17200	20600	21900	57400	60300	53900	46400	35500	34200	35500
23	39800	38700	18300	20000	21000	59800	58600	50700	43900	34500	34200	35400
24	40400	39100	19700	21100	22100	56000	58500	49100	41800	34500	34200	35500
25	40700	38800	19600	21600	27900	50700	64900	48600	41000	34900	34100	33900
26	40100	38200	20900	21600	27800	46200	69100	47600	40400	35000	34200	33100
27	40000	36500	21500	21100	24500	43400	73200	46400	39500	35400	33600	32900
28	40100	34800	21200	20300	22100	43000	77200	45000	38700	38900	33700	32800
29	39800	33200	21100	20400	---	43200	78100	43900	39000	40500	33000	33500
30	40000	31200	21300	20500	---	43500	75800	44200	38900	40200	33000	33400
31	40900	---	21200	21500	---	44000	---	49600	---	37600	33500	---
TOTAL	1228800	1165700	618200	681200	611200	1210000	1829100	1910900	1362800	1154700	1050900	1033300
MEAN	39640	38860	19940	21970	21830	39030	60970	61640	45430	37250	33900	34440
MAX	40900	43600	28400	24400	27900	59800	78100	95500	64700	43600	36700	40100
MIN	37400	31200	13300	20000	18800	21900	43400	43900	38700	34500	31700	32100
AC-FT	2437000	2312000	1226000	1351000	1212000	2400000	3628000	3790000	2703000	2290000	2084000	2050000
CFSM	.10	.09	.05	.05	.05	.10	.15	.15	.11	.09	.08	.08
IN.	.11	.11	.06	.06	.06	.11	.17	.17	.12	.10	.10	.09

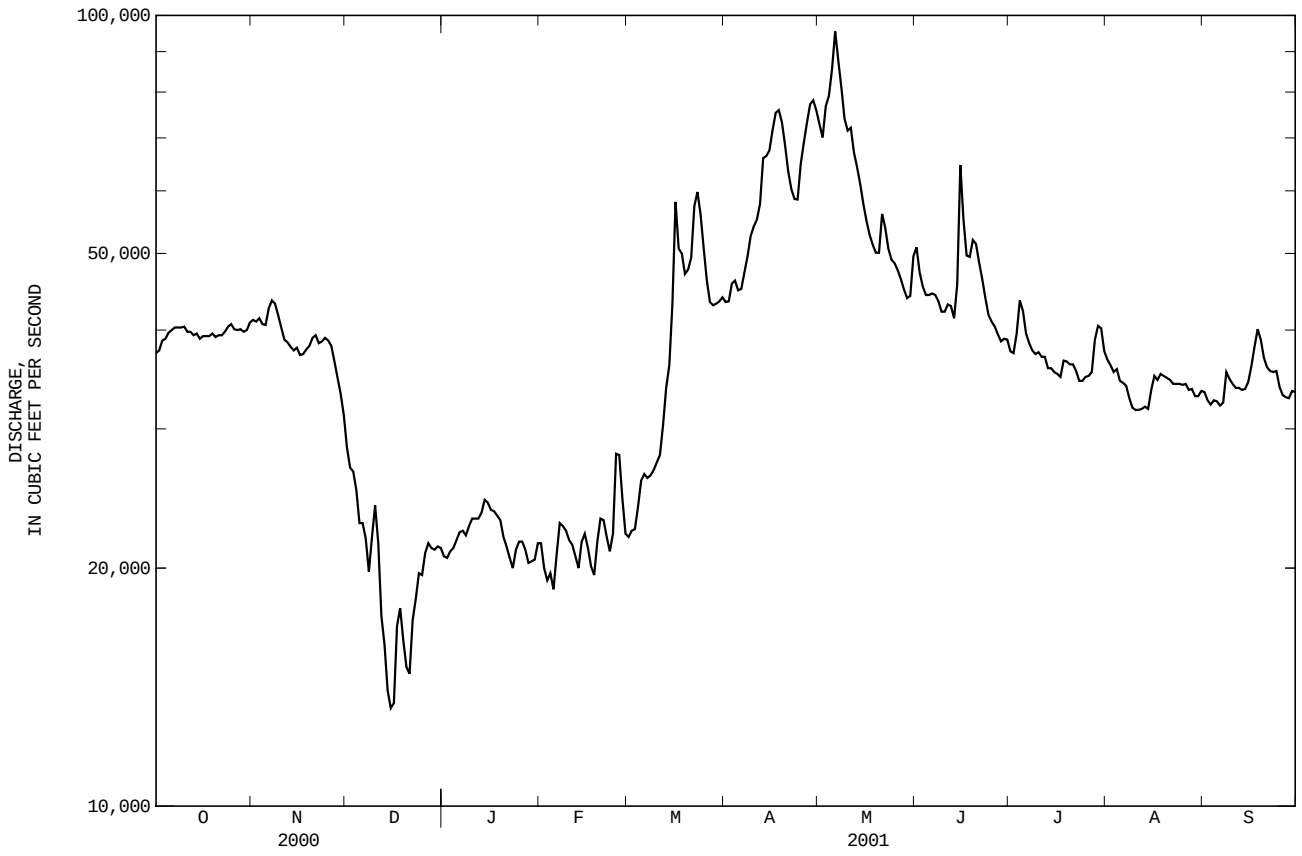
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2001, BY WATER YEAR (WY)

MEAN	42980	39090	25640	21520	26640	38130	48110	47950	52530	46600	42840	42710
MAX	76760	79410	52410	39970	48630	66730	98960	90280	117500	116700	71540	73410
(WY)	1998	1998	1987	1987	1983	1983	1997	1997	1984	1993	1996	1997
MIN	22420	14380	10510	10160	12780	15310	21850	32470	33530	32760	29870	32560
(WY)	1962	1962	1956	1957	1957	1957	1957	1955	1958	1961	1955	1958

06807000 MISSOURI RIVER AT NEBRASKA CITY, NE--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1953 - 2001a	
ANNUAL TOTAL	13133900		13856800			
ANNUAL MEAN	35880		37960		39590	
HIGHEST ANNUAL MEAN					66450	1997
LOWEST ANNUAL MEAN					25370	1957
HIGHEST DAILY MEAN	65600	Jun 27	95500	May 6	188000	Jul 25 1993
LOWEST DAILY MEAN	13300	Dec 15	13300	Dec 15	4320	Jan 11 1957
ANNUAL SEVEN-DAY MINIMUM	15200	Dec 14	15200	Dec 14	5590	Nov 29 1955
MAXIMUM PEAK FLOW			99400	May 6	196000	Jul 23 1993
MAXIMUM PEAK STAGE			19.61	May 6	27.19	Jul 23 1993
ANNUAL RUNOFF (AC-FT)	26050000		27480000		28680000	
ANNUAL RUNOFF (CFSM)	.088		.093		.097	
ANNUAL RUNOFF (INCHES)	1.19		1.26		1.31	
10 PERCENT EXCEEDS	43200		57800		62000	
50 PERCENT EXCEEDS	37400		37000		37400	
90 PERCENT EXCEEDS	26800		21100		17800	

a Post regulation.
e Estimated.



06807000 MISSOURI RIVER AT NEBRASKA CITY, NE.--Continued

WATER-QUALITY RECORDS

LOCATION.--Water quality samples were collected from Highway 2 bridge, 2.0 miles downstream of gage.

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

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: May 1951 to December 1977, October 1991 to current year.
WATER TEMPERATURES: May 1951 to December 1977, October 1991 to current year.
SUSPENDED SEDIMENT DISCHARGE: October 1971 to September 1976, October 1991 to current year.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 994 microsiemens Dec. 17, 1962; minimum daily, 273 microsiemens June 17, 1964.
WATER TEMPERATURES: Maximum daily, 31.0°C July 26, 1977, and July 25, 1997; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,420 mg/L Aug. 7, 1996; minimum daily mean, 115 mg/L Jan. 3, 1993.
SEDIMENT LOADS: Maximum daily, 3,120,000 tons June 24, 1996; minimum daily, 4,050 tons Jan. 17, 1972.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 858 microsiemens Jan. 10; minimum daily, 570 microsiemens Apr. 13.
WATER TEMPERATURES: Maximum daily, 30.0°C July 23; minimum daily, 1.0°C Dec. 7.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,190 mg/L Apr. 18 and May 6; minimum daily, 124 mg/L Feb. 17.
SEDIMENT LOADS: Maximum daily, 566,000 tons May 6; minimum daily, 6,320 tons Dec. 15.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	TIME	NUMBER OF SAMPLING POINTS (COUNT) (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
OCT											
02...	1135	3	.0	1	30	62	84	95	99	100	--
NOV											
07...	1100	3	--	.0	14	39	66	90	98	100	--
DEC											
07...	1430	3	--	.0	13	47	76	91	97	99	100
JAN											
16...	1510	3	--	.0	17	62	77	89	96	100	--
MAR											
06...	1535	3	--	.0	12	37	64	81	96	100	--
APR											
13...	0945	3	--	.0	24	67	82	93	99	100	--
MAY											
04...	0900	3	.0	1	17	64	73	89	98	100	--
JUN											
01...	0935	3	--	.0	17	52	68	81	95	100	--
JUL											
13...	0955	3	--	.0	17	52	64	86	98	100	--
AUG											
08...	1505	3	--	.0	12	58	72	81	94	99	100
SEP											
05...	1500	3	--	.0	18	57	82	93	98	100	--

06807000 MISSOURI RIVER AT NEBRASKA CITY, NE.--Continued

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	625	745	---	---	---
2	821	773	---	---	---	---	632	---	---	---	769	---
3	---	---	---	---	---	---	---	---	---	811	---	---
4	---	---	---	---	---	---	---	639	---	---	---	---
5	---	---	---	---	---	---	---	---	---	771	---	788
6	819	---	---	---	835	713	---	574	811	---	---	---
7	---	761	833	---	---	---	---	---	---	---	---	798
8	---	---	---	---	---	---	---	---	816	---	797	---
9	---	774	---	---	---	---	---	---	---	---	---	---
10	813	---	---	858	---	---	---	---	---	844	---	789
11	---	---	---	---	---	---	---	674	---	---	---	---
12	822	---	---	---	---	---	---	---	797	---	---	---
13	---	---	---	---	---	672	570	---	---	835	---	---
14	---	820	---	---	---	---	---	---	---	---	802	---
15	---	---	---	---	---	---	---	767	---	---	---	---
16	---	814	---	810	---	---	---	---	---	---	---	---
17	817	---	---	---	---	---	619	---	---	---	788	---
18	---	---	---	---	---	---	---	801	693	778	---	717
19	---	---	---	---	---	---	---	---	---	---	---	---
20	812	---	---	---	---	578	620	---	---	770	---	711
21	---	---	---	---	803	---	---	---	---	---	722	---
22	---	---	---	---	---	---	---	---	742	---	---	---
23	---	---	---	827	---	---	---	778	---	784	---	---
24	816	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	631	807	---	---	735	---
26	---	---	---	---	717	572	---	---	795	776	---	744
27	807	---	---	---	---	---	639	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	774
29	---	823	---	---	---	---	---	812	800	747	762	---
30	---	---	---	---	---	---	---	---	---	---	804	---
31	822	---	---	---	---	---	---	---	---	---	---	---

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	17.5	17.0	---	---	---
2	17.5	15.0	---	---	---	---	6.5	---	---	---	29.0	---
3	---	---	---	---	---	---	---	---	---	26.0	---	---
4	---	---	---	---	---	---	---	17.0	---	---	---	---
5	---	---	---	---	---	---	---	---	---	26.5	---	---
6	16.0	---	---	---	3.0	2.5	---	17.5	18.0	---	---	---
7	---	10.0	1.0	---	---	---	---	---	---	---	---	25.0
8	---	---	---	---	---	---	---	---	20.0	---	27.5	---
9	---	7.0	---	---	---	---	---	---	---	---	---	---
10	12.0	---	---	1.5	---	---	---	---	---	28.0	---	23.0
11	---	---	---	---	---	---	---	19.0	---	---	---	---
12	13.0	---	---	---	---	---	---	---	25.5	---	---	---
13	---	---	---	---	---	2.5	12.0	---	---	26.5	---	---
14	---	4.0	---	---	---	---	---	---	---	---	26.2	---
15	---	---	---	---	---	---	---	24.9	---	---	---	---
16	---	2.5	---	2.0	---	---	---	---	---	---	---	---
17	14.0	---	---	---	---	---	10.0	---	---	---	---	---
18	---	---	---	---	---	---	---	23.0	23.0	27.0	---	18.5
19	---	---	---	---	---	---	---	---	---	---	---	---
20	15.5	---	---	---	---	3.5	12.0	---	---	27.0	---	20.0
21	---	---	---	---	2.0	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	22.5	---	---	---
23	---	---	---	1.5	---	---	---	18.0	---	30.0	---	---
24	16.0	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	12.0	15.0	---	---	---	---
26	---	---	---	---	1.5	2.5	---	---	25.0	27.0	---	18.5
27	17.0	---	---	---	---	---	13.0	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	18.0
29	---	2.0	---	---	---	---	---	18.0	26.0	27.5	26.0	---
30	---	---	---	---	---	---	---	---	---	---	26.5	---
31	14.5	---	---	---	---	---	---	---	---	---	---	---

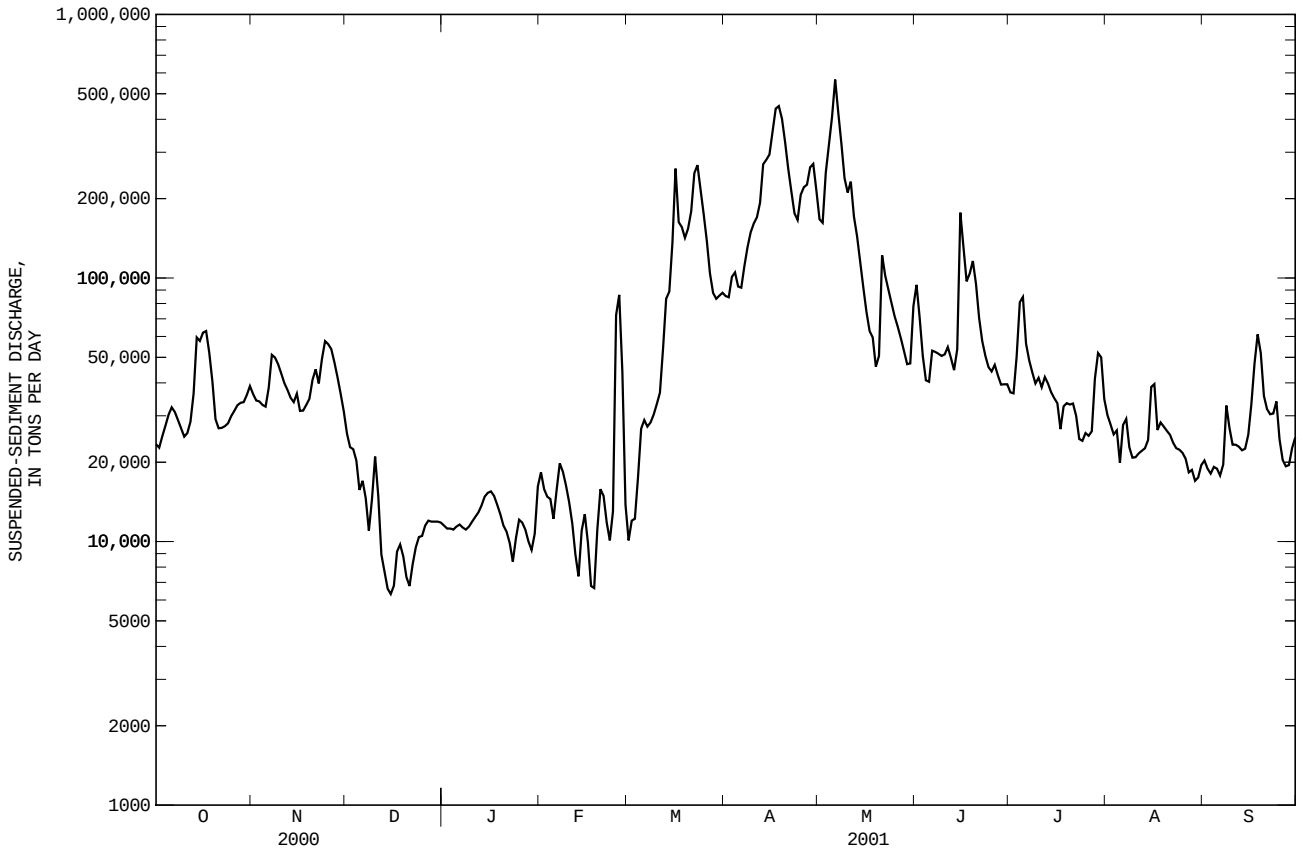
06807000 MISSOURI RIVER AT NEBRASKA CITY, NE.--Continued

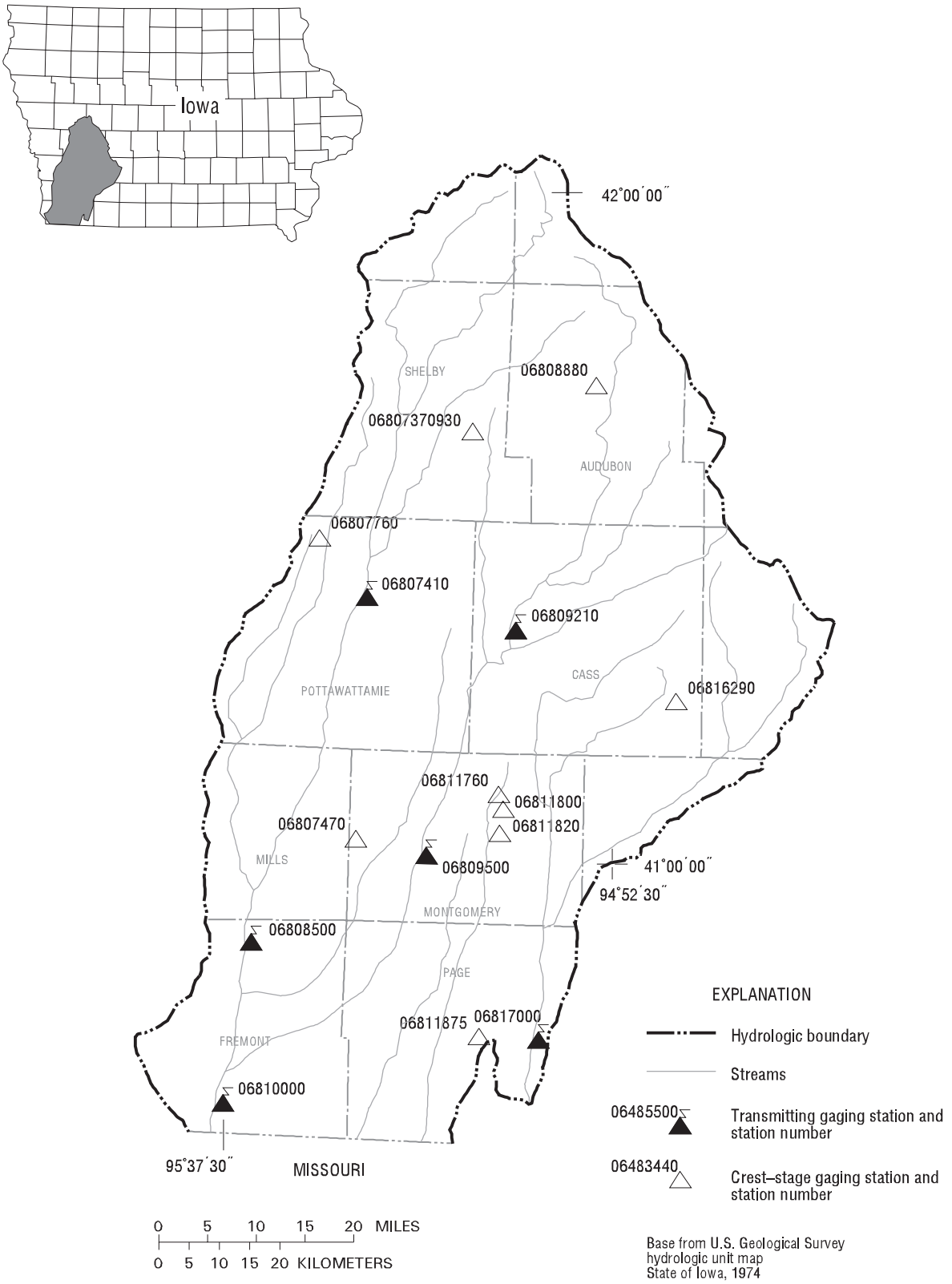
SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	232	23400	326	36300	334	25700	205	11500	316	18300	171	10100
2	223	22700	309	34300	316	22800	201	11200	292	15800	199	12000
3	239	25100	304	34000	313	22400	197	11200	283	14800	201	12200
4	261	27500	300	33000	298	20300	194	11100	272	14500	270	17500
5	283	30300	297	32500	254	15700	194	11400	240	12200	385	26800
6	299	32300	332	38300	276	17000	193	11600	279	15700	408	28900
7	285	31000	434	51100	247	14600	187	11300	322	19800	390	27300
8	266	28900	428	49900	205	11000	186	11100	301	18400	400	28300
9	247	26900	417	47100	244	14500	187	11400	271	16300	421	30300
10	230	25000	399	43400	323	21000	190	11900	241	14100	452	33200
11	240	25800	380	39900	254	14900	198	12400	203	11700	489	36700
12	265	28500	360	37600	190	8920	207	12900	160	8920	656	53900
13	343	36500	341	35100	178	7690	217	13700	136	7380	910	83400
14	556	59500	332	33800	175	6620	226	14800	188	11000	911	88800
15	549	57700	355	36400	176	6320	235	15300	212	12700	1130	136000
16	584	62000	312	31300	186	6800	242	15500	172	9880	1650	260000
17	592	62900	312	31400	200	9160	233	14900	124	6780	1190	163000
18	492	52100	323	33000	203	9750	219	13800	126	6660	1160	156000
19	379	40500	338	34800	200	8770	205	12700	190	11100	1120	142000
20	274	29100	389	41100	181	7330	193	11500	253	15800	1200	154000
21	253	26900	423	45000	171	6780	189	10900	240	14900	1340	179000
22	254	27000	383	39800	177	8210	178	9880	198	11800	1610	250000
23	255	27400	470	49200	192	9510	156	8390	177	10100	1660	268000
24	258	28100	546	57600	196	10400	180	10300	214	13000	1430	216000
25	272	29900	535	56100	198	10500	207	12100	955	72300	1270	174000
26	289	31300	521	53700	204	11500	202	11800	1150	86300	1110	138000
27	305	32900	486	47800	207	12000	195	11100	660	44000	887	104000
28	311	33600	445	41900	209	11900	183	10000	230	13800	756	87700
29	314	33800	405	36300	208	11900	169	9290	---	---	715	83400
30	333	36000	369	31100	207	11900	194	10700	---	---	730	85700
31	353	38900	---	---	207	11800	279	16200	---	---	740	87900
TOTAL	---	1073500	---	1212800	---	387660	---	371860	---	528020	---	3174100

DAY	MEAN CONC TRAT (MG/	LOAD (TONS/ DAY)	MEAN CONCEN TRATIO (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN TRATIO (MG/L)	LOAD (TONS/ DAY)	MEAN CONCE TRATI (MG/L	LOAD (TONS/ DAY)	MEAN CONCE TRATI (MG/L	LOAD (TONS/ DAY)	MEAN CONCE TRATI (MG/L	LOAD (TONS/ DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	728	85400	848	167000	686	94200	363	36800	304	30200	225	20300
2	719	84500	857	162000	552	70700	361	36500	285	27800	215	18900
3	817	101000	1210	251000	412	50600	468	50500	266	25500	208	18100
4	840	105000	1500	320000	342	40900	686	80900	274	26400	219	19200
5	766	92800	1750	408000	337	40400	740	84700	214	19900	216	18900
6	754	91900	2190	566000	441	53000	527	56300	300	27700	205	17800
7	871	111000	1780	423000	438	52400	468	48700	318	29200	224	19600
8	976	131000	1470	323000	440	51600	430	43800	258	22800	343	32800
9	1050	149000	1200	239000	443	50600	395	39800	242	20800	288	27000
10	1110	161000	1090	211000	450	51300	412	41800	243	20900	252	23300
11	1140	170000	1190	232000	470	54700	385	38500	252	21600	255	23300
12	1230	193000	946	171000	429	49700	422	42100	257	22100	251	22900
13	1510	270000	830	144000	398	44700	411	39800	261	22600	245	22200
14	1570	281000	698	115000	427	53600	382	36900	283	24300	248	22500
15	1610	294000	589	92000	1000	177000	367	35000	422	38600	273	25400
16	1850	359000	501	74400	873	131000	353	33500	417	39600	342	33300
17	2160	439000	441	62900	723	97100	283	26700	284	26500	459	47300
18	2190	449000	430	59500	775	104000	330	32600	297	28300	564	61100
19	2030	402000	341	46100	824	116000	339	33500	289	27300	494	51900
20	1770	328000	371	50600	683	94900	338	33100	280	26300	358	35700
21	1510	260000	803	122000	535	70500	341	33400	272	25400	328	31800
22	1310	213000	703	102000	460	57600	313	30000	256	23700	317	30400
23	1120	176000	660	90400	427	50600	263	24500	245	22600	320	30600
24	1050	166000	606	80400	407	45900	258	24100	242	22300	354	34000
25	1180	207000	546	71600	400	44200	274	25800	236	21700	266	24400
26	1180	221000	507	65300	429	46800	267	25200	223	20600	228	20400
27	1140	226000	471	59000	400	42700	273	26200	202	18300	217	19300
28	1260	263000	434	52800	377	39400	394	41500	205	18700	221	19500
29	1280	271000	397	47100	376	39500	474	51900	191	17000	250	22600
30	1050	215000	397	47400	376	39500	461	50000	197	17500	275	24800
31	---	---	582	78200	---	---	342	34700	215	19500	---	---
TOTAL	---	6515600	---	4933700	---	1955100	---	1238800	---	755700	---	819300
YEAR		22966140										

06807000 MISSOURI RIVER AT NEBRASKA CITY, NE.--Continued




Iowa
42°00′00″
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AUDUBON
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06809210
CASS
POTTAWATTAMIE
06816290
06811760
06811800
06811820
06807470
MILLS
06809500
41°00′00″
94°52′30″
MONTGOMERY
06808500
PAGE
06811875
06817000
FREMONT
06810000
95°37′30″
MISSOURI
0 5 10 15 20 MILES
0 5 10 15 20 KILOMETERS
EXPLANATION
Hydrologic boundary
Streams
06485500 Transmitting gaging station and station number
06483440 Crest–stage gaging station and station number
Base from U.S. Geological Survey hydrologic unit map State of Iowa, 1974

Gaging Stations

Crest Stage Gaging Stations

06807410 WEST NISHNABOTNA RIVER AT HANCOCK, IA

LOCATION.--Lat 41°23'24",long 95°22'17",in NW$^{1}/_{4}$ NE$^{1}/_{4}$ sec.18, T.76 N., R.39 W., Pottawattamie County, Hydrologic Unit 10240002, on right bank at upstream side of bridge on county highway G30, 0.6 mi west of Hancock school, 3.0 mi downstream from Jim Creek, 59.6 mi upstream from confluence with East Nishnabotna River, and at mile 75.1 mi upstream from mouth of Nishnabotna River.

DRAINAGE AREA.--609 mi^{2}.

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

GAGE.--Water-stage recorder. Datum of gage is 1,085.83 ft above sea level. Prior to Sept. 15, 1980, on downstream end of right pier at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	43	e24	e17	e23	e62	403	191	716	394	176	87
2	22	43	e23	e19	e19	e55	349	212	677	381	170	84
3	22	38	e22	e20	e24	e48	342	583	591	411	164	86
4	22	36	e23	e21	e28	e86	331	1040	553	384	163	84
5	26	36	e19	e24	e32	e94	317	708	1060	353	156	80
6	30	53	e21	e28	e34	e79	332	747	892	337	148	79
7	29	69	e34	e29	e34	e69	454	629	697	328	141	94
8	30	62	e32	e26	e32	e50	358	517	626	319	136	157
9	30	53	e34	e25	e25	e48	310	466	584	315	130	138
10	30	45	e28	e28	e21	e66	286	582	743	308	124	102
11	31	47	e25	e32	e26	e89	319	461	669	304	121	88
12	31	45	e24	e34	e34	e180	479	402	547	300	118	82
13	31	44	e28	e42	e36	e360	426	435	660	297	116	77
14	32	41	e26	e40	e32	e900	360	397	2090	280	112	77
15	30	43	e32	e38	e30	4880	328	364	2020	272	137	83
16	28	43	e26	e38	e26	1800	294	340	1000	266	167	100
17	28	46	e21	e36	e26	1100	268	325	847	272	151	127
18	29	43	e17	e34	e29	1360	259	305	763	267	162	111
19	28	e30	e15	e26	e32	1510	255	292	783	262	151	97
20	28	e19	e16	e22	e28	1560	253	328	687	283	119	89
21	28	e18	e15	e24	e25	1570	252	3040	626	286	113	83
22	29	e19	e14	e25	e26	875	258	1190	586	262	110	80
23	32	e20	e16	e29	e40	773	271	876	552	245	110	82
24	33	e20	e18	e24	e63	646	242	770	527	236	107	77
25	36	e22	e17	e24	e100	502	225	691	504	231	102	75
26	36	e21	e18	e25	e160	414	219	637	478	225	110	74
27	36	e21	e18	e24	e110	388	212	594	465	216	105	73
28	34	e23	e22	e26	e75	379	203	611	448	212	97	72
29	35	e25	e20	e29	---	383	194	512	425	207	93	70
30	39	e26	e19	e28	---	386	189	523	412	196	90	68
31	40	---	e18	e27	---	399	---	767	---	186	89	---
TOTAL	937	1094	685	864	1170	21111	8988	19535	22228	8835	3988	2676
MEAN	30.2	36.5	22.1	27.9	41.8	681	300	630	741	285	129	89.2
MAX	40	69	34	42	160	4880	479	3040	2090	411	176	157
MIN	22	18	14	17	19	48	189	191	412	186	89	68
AC-FT	1860	2170	1360	1710	2320	41870	17830	38750	44090	17520	7910	5310
CFSM	.05	.06	.04	.05	.07	1.12	.49	1.03	1.22	.47	.21	.15
IN.	.06	.07	.04	.05	.07	1.29	.55	1.19	1.36	.54	.24	.16

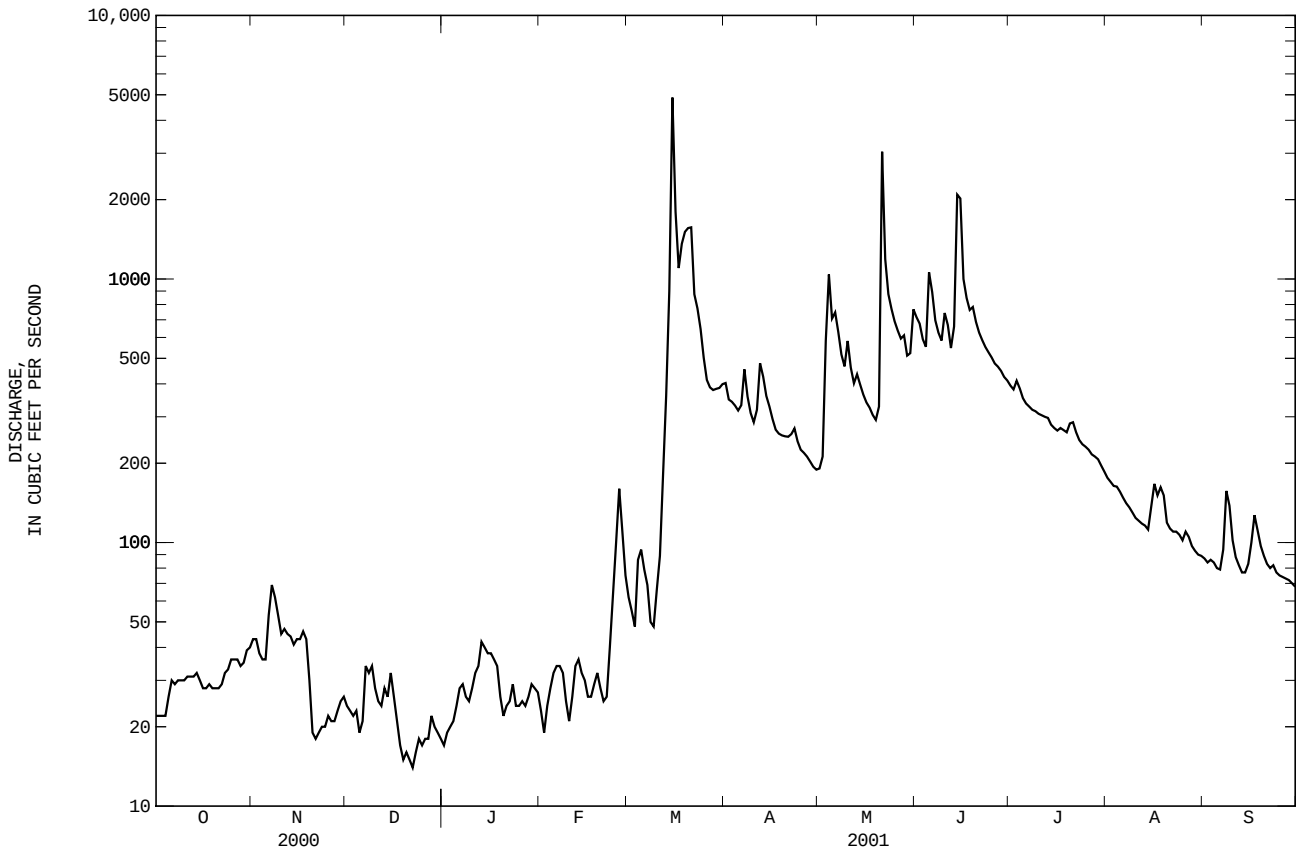
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2001, BY WATER YEAR (WY)

MEAN	193	182	156	123	276	526	432	508	607	425	245	293
MAX	998	910	628	625	993	1946	1295	1586	2228	2925	1073	2412
(WY)	1987	1973	1973	1973	1983	1979	1983	1973	1998	1993	1996	1972
MIN	30.2	32.1	17.9	4.58	27.2	40.3	45.6	30.1	26.7	38.4	26.4	14.7
(WY)	2001	1971	1971	1971	1967	1968	1968	1967	1977	1970	1968	1971

06807410 WEST NISHNABOTNA RIVER AT HANCOCK, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1960 - 2001	
ANNUAL TOTAL	24810		92111			
ANNUAL MEAN	67.8		252		330	
HIGHEST ANNUAL MEAN					966	1993
LOWEST ANNUAL MEAN					42.4	1968
HIGHEST DAILY MEAN	256	Jun 26	4880	Mar 15	23300	Sep 12 1972
LOWEST DAILY MEAN	14	Dec 22	14	Dec 22	2.2	Feb 8 1971a
ANNUAL SEVEN-DAY MINIMUM	16	Dec 18	16	Dec 18	2.5	Feb 4 1971
MAXIMUM PEAK FLOW			8230	Mar 15	30100	Jul 10 1993
MAXIMUM PEAK STAGE			11.34	Mar 15	23.52	Jul 10 1993
ANNUAL RUNOFF (AC-FT)	49210		182700		239300	
ANNUAL RUNOFF (CFSM)	.11		.41		.54	
ANNUAL RUNOFF (INCHES)	1.52		5.63		7.37	
10 PERCENT EXCEEDS	120		632		733	
50 PERCENT EXCEEDS	60		93		162	
90 PERCENT EXCEEDS	22		22		35	

a Also Feb. 9, 1971.
e Estimated.



06808500 WEST NISHNABOTNA RIVER AT RANDOLPH, IA

LOCATION.--Lat 40°52'23", long 95°34'48", in NE$^1/_4$ NE$^1/_4$ sec.17, T.70 N., R.41 W., Fremont County, Hydrologic Unit 10240002, on right bank at upstream side of bridge on State Highway 184, 0.3 mi downstream from Deer Creek, 0.5 mi west of Randolph, and 16.0 mi upstream from confluence with East Nishnabotna River, and at mile 31.5 upstream from mouth of Nishnabotna River.

DRAINAGE AREA.--1,326 mi^2.

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

REVISED RECORDS.--WSP 1440: Drainage area. WDR IA-74-1: 1973 (M). WDR IA-76-1: 1975 (P).

GAGE.--Water-stage recorder. Datum of gage is 932.99 ft above sea level, unadjusted. Prior to Aug. 26, 1955, nonrecording gage with supplementary water-stage recorder operating above 8.4 ft. June 30, 1949 to Aug. 25, 1955 at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite data collection platform and rain gage at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of about 24 ft, discharge not determined, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	106	178	e100	e85	e110	e290	865	574	2180	883	375	210
2	102	180	e98	e87	e92	e260	848	567	2050	858	357	207
3	103	160	e94	e93	e110	e230	803	762	1790	911	341	201
4	98	149	e99	e100	e135	e410	794	1350	1640	934	341	195
5	118	147	e81	e120	e160	e440	856	1800	1610	849	352	192
6	127	205	e95	e140	e165	e380	990	1540	2260	795	356	191
7	119	323	e160	e140	e160	e330	871	1460	1860	760	343	216
8	118	266	e150	e130	e150	e240	939	1270	1600	747	333	329
9	120	222	e160	e120	e120	e230	852	1130	1480	735	328	338
10	123	202	e140	e135	e100	e320	783	1110	2190	712	318	295
11	123	190	e120	e150	e125	e440	1190	1230	1930	704	302	246
12	124	189	e115	e160	e160	e950	1480	1040	1590	704	293	218
13	126	186	e130	e200	e170	e1700	1290	1010	1380	663	289	201
14	154	178	e120	e190	e155	4950	1150	1160	1680	640	285	194
15	138	176	e145	e180	e145	6680	1020	984	3480	609	311	194
16	128	e180	e120	e180	e125	3720	914	905	2230	605	380	230
17	125	159	e98	e170	e125	2550	827	854	1760	595	371	251
18	124	160	e93	e165	e140	2110	786	800	1580	759	359	271
19	123	171	e82	e130	e155	2290	772	763	1490	699	342	276
20	122	e80	e105	e110	e135	2360	763	878	1520	628	349	241
21	122	e78	e86	e115	e120	2380	760	3110	1380	609	311	228
22	125	e80	e74	e120	e125	2250	727	3270	1260	602	286	213
23	136	e85	e80	e140	e200	1560	729	2080	1180	568	277	289
24	145	e86	e88	e110	e310	1440	694	1770	1130	538	273	208
25	158	e94	e78	e115	e500	1230	657	1610	1100	529	273	199
26	154	e89	e84	e120	e760	1050	627	1470	1040	521	270	188
27	149	e90	e86	e115	e520	941	613	1380	1010	512	263	184
28	144	e99	e100	e130	e340	898	594	1310	977	489	257	181
29	144	e105	e97	e140	---	877	568	1290	939	438	240	176
30	156	e110	e87	e135	---	859	561	1300	917	418	227	173
31	159	---	e83	e130	---	868	---	2110	---	399	216	---
TOTAL	4013	4617	3248	4155	5612	45233	25323	41887	48233	20413	9618	6735
MEAN	129	154	105	134	200	1459	844	1351	1608	658	310	224
MAX	159	323	160	200	760	6680	1480	3270	3480	934	380	338
MIN	98	78	74	85	92	230	561	567	917	399	216	173
AC-FT	7960	9160	6440	8240	11130	89720	50230	83080	95670	40490	19080	13360
CFSM	.10	.12	.08	.10	.15	1.10	.64	1.02	1.21	.50	.23	.17
IN.	.11	.13	.09	.12	.16	1.27	.71	1.18	1.35	.57	.27	.19

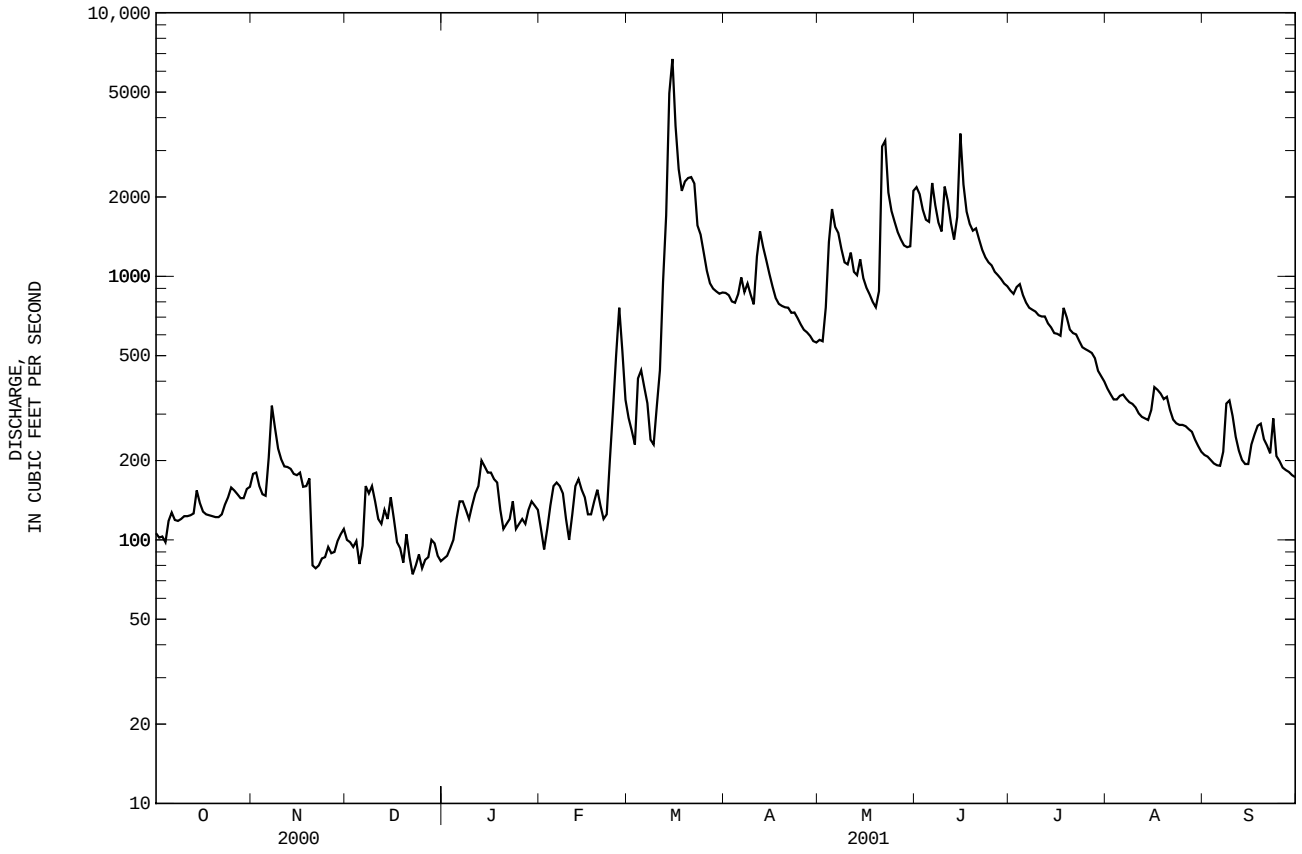
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2001, BY WATER YEAR (WY)

MEAN	383	354	304	270	544	964	816	1058	1269	892	597	530
MAX	2002	1277	1140	1201	1777	3877	2867	3227	5031	6357	2610	2531
(WY)	1987	1973	1973	1973	1973	1979	1973	1973	1998	1993	1993	1972
MIN	27.1	33.6	20.6	17.4	19.4	67.8	42.7	97.3	65.6	71.2	30.1	41.0
(WY)	1956	1956	1956	1956	1956	1956	1956	1967	1956	1954	1955	1955

06808500 WEST NISHNABOTNA RIVER AT RANDOLPH, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1949 - 2001	
ANNUAL TOTAL	98714		219087			
ANNUAL MEAN	270		600		665	
HIGHEST ANNUAL MEAN					1985	1993
LOWEST ANNUAL MEAN					111	1968
HIGHEST DAILY MEAN	3120	Jun 14	6680	Mar 15	25800	Jun 15 1998
LOWEST DAILY MEAN	74	Dec 22	74	Dec 22	10	Dec 17 1955a
ANNUAL SEVEN-DAY MINIMUM	82	Dec 21	82	Dec 21	11	Dec 16 1955
MAXIMUM PEAK FLOW			7430	Mar 15	40800	May 26 1987
MAXIMUM PEAK STAGE			16.81	Mar 15	24.80	Mar 5 1949b
INSTANTANEOUS LOW FLOW			68	Nov 20		
ANNUAL RUNOFF (AC-FT)	195800		434600		481900	
ANNUAL RUNOFF (CFSM)	.20		.45		.50	
ANNUAL RUNOFF (INCHES)	2.77		6.15		6.82	
10 PERCENT EXCEEDS	400		1500		1440	
50 PERCENT EXCEEDS	252		276		349	
90 PERCENT EXCEEDS	110		101		91	

a Also Dec. 18-21, 1955.
b From graph based on gage readings, backwater from ice.
e Estimated.



06809210 EAST NISHNABOTNA RIVER NEAR ATLANTIC, IA

LOCATION.--Lat 41°20'46", long 95°04'36", in $NW^1/_4$ $NW^1/_4$ sec.35, T.76 N., R.37 W., Cass County, Hydrologic Unit 10240003, on left bank at downstream side of bridge on county highway, 1.6 mi upstream from Turkey Creek, 5.2 mi southwest of junction of U.S. Highway 6 and State Highway 83 in Atlantic, 69.1 mi upstream from confluence with West Nishnabotna River, and at mile 84.6 upstream from mouth of Nishnabotna River.

DRAINAGE AREA.--436 mi^2.

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,105.83 ft above sea level. Prior to Oct. 1, 1970, at site 2.2 mi upstream at datum 5.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 2, 1958 reached a stage of 22.49 ft, from floodmark, discharge, 34,200 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	35	e19	e13	e22	e60	410	155	750	191	73	38
2	18	31	e18	e14	e18	e52	312	157	653	179	68	42
3	17	29	e16	e15	e24	e46	293	273	556	184	64	39
4	16	26	e17	e16	e28	e83	274	543	512	176	65	35
5	19	26	e14	e18	e28	e90	265	483	1300	161	63	34
6	19	48	e16	e24	e30	e77	260	578	999	151	60	38
7	20	52	e24	e24	e31	e68	407	483	719	145	57	54
8	19	46	e22	e22	e29	e48	286	382	614	142	54	92
9	20	e39	e24	e21	e25	e46	249	340	553	142	51	76
10	20	e35	e21	e28	e20	e64	257	552	542	142	48	47
11	19	34	e18	e30	e26	e87	545	435	511	138	47	38
12	20	34	e17	e32	e33	e160	994	339	462	139	45	35
13	20	33	e20	e40	e36	e1400	588	408	470	133	45	33
14	25	32	e19	e40	e30	2880	464	353	541	123	45	33
15	22	30	e23	e38	e34	2960	389	305	724	121	71	38
16	21	32	e19	e38	e25	1050	320	272	453	118	79	52
17	20	31	e15	e36	e25	687	277	264	400	116	59	67
18	20	32	e14	e35	e28	941	257	249	373	124	61	53
19	20	33	e12	e25	e30	1100	246	224	351	117	47	46
20	20	e16	e15	e21	e27	1400	231	295	345	146	45	41
21	20	e16	e13	e23	e24	1580	218	1110	318	135	45	37
22	20	e17	e11	e24	e25	797	229	782	296	118	43	35
23	22	e18	e12	e28	e39	846	240	582	277	108	44	33
24	22	e17	e14	e24	e58	677	206	518	267	102	44	33
25	24	e19	e12	e23	e88	497	189	478	252	100	51	33
26	24	e17	e13	e24	e160	381	182	472	235	98	60	33
27	23	e17	e13	e23	e100	350	173	451	229	93	45	32
28	24	e19	e15	e26	e70	341	162	417	220	93	41	31
29	28	e21	e15	e28	---	338	151	373	211	89	40	30
30	32	e20	e14	e28	---	386	152	417	200	84	38	30
31	29	---	e13	e27	---	430	---	804	---	79	38	---
TOTAL	660	855	508	808	1113	19922	9226	13494	14333	3987	1636	1258
MEAN	21.3	28.5	16.4	26.1	39.8	643	308	435	478	129	52.8	41.9
MAX	32	52	24	40	160	2960	994	1110	1300	191	79	92
MIN	16	16	11	13	18	46	151	155	200	79	38	30
AC-FT	1310	1700	1010	1600	2210	39520	18300	26770	28430	7910	3250	2500
CFSM	.05	.07	.04	.06	.09	1.47	.71	1.00	1.10	.29	.12	.10
IN.	.06	.07	.04	.07	.09	1.70	.79	1.15	1.22	.34	.14	.11

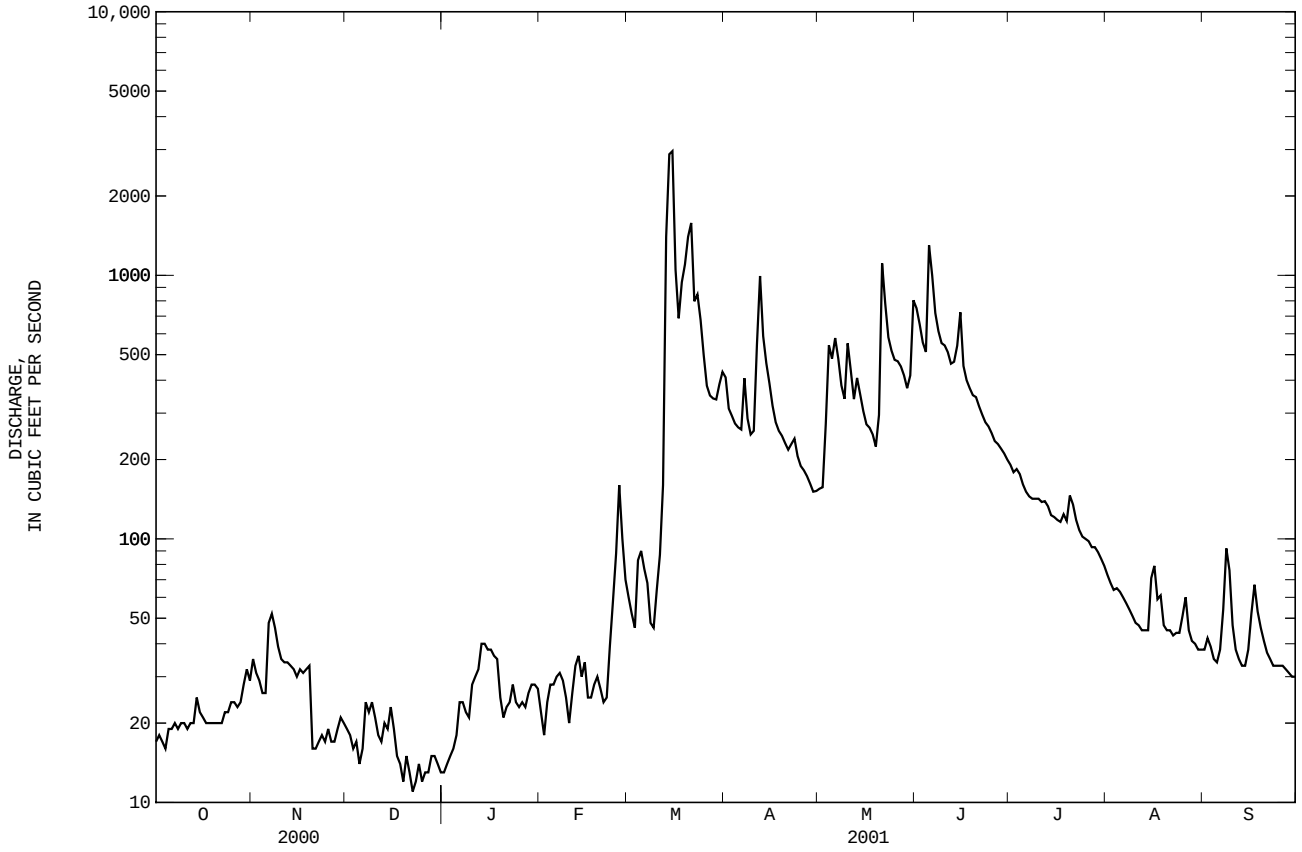
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2001, BY WATER YEAR (WY)

MEAN	141	135	110	90.9	203	411	375	422	518	351	177	210
MAX	1069	757	529	529	812	1378	1138	1208	3125	2747	1394	1855
(WY)	1987	1973	1993	1973	1971	1965	1973	1986	1998	1993	1993	1972
MIN	21.0	20.3	10.6	7.68	18.7	28.4	27.9	15.0	23.5	15.6	13.4	14.8
(WY)	1967	1969	1964	1971	1968	1968	1981	1967	1977	1968	1968	1971

06809210 EAST NISHNABOTNA RIVER NEAR ATLANTIC, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1961 - 2001	
ANNUAL TOTAL	17662		67800			
ANNUAL MEAN	48.3		186		262	
HIGHEST ANNUAL MEAN					842	1993
LOWEST ANNUAL MEAN					23.7	1968
HIGHEST DAILY MEAN	839	Jun 26	2960	Mar 15	32300	Jun 15 1998
LOWEST DAILY MEAN	11	Dec 22	11	Dec 22	2.5	Jul 10 1977
ANNUAL SEVEN-DAY MINIMUM	13	Dec 21	13	Dec 21	7.0	Dec 17 1963
MAXIMUM PEAK FLOW			5420	Mar 14	41400	Jun 15 1998
MAXIMUM PEAK STAGE			9.83	Mar 14	22.81	Sep 12 1972
ANNUAL RUNOFF (AC-FT)	35030		134500		189700	
ANNUAL RUNOFF (CFSM)	.11		.43		.60	
ANNUAL RUNOFF (INCHES)	1.51		5.78		8.16	
10 PERCENT EXCEEDS	74		503		578	
50 PERCENT EXCEEDS	44		47		108	
90 PERCENT EXCEEDS	18		18		24	

e Estimated



06809500 EAST NISHNABOTNA RIVER AT RED OAK, IA

LOCATION.--Lat 41°00'31", long 95°14'29", in NW$^1/_4$ SE$^1/_4$ sec.29, T.72 N., R.38 W., Montgomery County, Hydrologic Unit 10240003, on upstream side of Coolbaugh Street and 200 ft left of left end of Coolbaugh Street bridge in Red Oak, 0.2 mi upstream from Red Oak Creek, 38.0 mi upstream from confluence with West Nishnabotna River, and at mile 53.6 upstream from mouth of Nishnabotna River.

DRAINAGE AREA.--894 mi^2.

PERIOD OF RECORD.--May 1918 to November 1924, February 1925 to July 1925, May 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1921, 1922-23 (M), 1924, 1942 (M), 1944 (M), 1946. WSP 1440: Drainage area. WSP 1710: 1957.

GAGE.--Water-stage recorder. Datum of gage is 1,005.45 ft above sea level. Prior to July 5, 1925, nonrecording gage at present site at datum 4.60 ft higher. May 29, 1936 to Nov. 13, 1952, nonrecording gage with supplementary water-stage recorder in operation above 3.2 ft gage height. July 30, 1939 to Nov. 13, 1952, and Nov. 14, 1952 to June 13, 1966, water-stage recorder, all at site 0.5 mi upstream at datum 5.00 ft higher. June 14, 1966 to Sept. 30, 1969, at present site at datum 5.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	92	e54	e42	e52	e150	789	355	2350	465	183	87
2	60	92	e52	e45	e43	e130	711	370	2030	447	172	86
3	62	88	e46	e48	e56	e110	618	558	1630	474	167	86
4	60	85	e52	e52	e66	e200	605	1010	1440	474	165	84
5	65	84	e40	e58	e66	e220	580	1230	1800	429	159	82
6	66	103	e45	e76	e72	e190	637	1340	3090	390	153	86
7	65	129	e70	e78	e74	e170	657	1330	1940	370	148	97
8	65	129	e62	e70	e68	e115	685	1040	1640	356	144	e150
9	67	117	e72	e64	e58	e110	544	909	1440	343	140	e200
10	67	105	e64	e88	e47	e150	570	2320	1480	333	134	141
11	67	99	e56	e92	e60	e200	1780	1580	1360	320	129	114
12	67	97	e50	e99	e77	e400	2720	1190	1190	317	126	99
13	67	94	e60	e120	e84	e600	1850	1480	1080	306	127	94
14	77	93	e58	e120	e71	5020	1340	1900	1130	287	126	92
15	76	91	e66	e118	e78	7460	1110	1160	1520	264	132	90
16	72	89	e56	e117	e58	3240	899	959	1190	253	171	104
17	71	88	e48	e110	e60	1920	744	861	991	249	171	113
18	69	85	e45	e107	e66	1960	667	813	911	353	146	126
19	67	e80	e38	e82	e72	2220	631	727	865	286	146	116
20	66	e46	e46	e66	e66	2550	604	805	854	273	127	108
21	65	e46	e41	e74	e58	3050	585	2230	823	321	e118	100
22	67	e47	e35	e80	e60	2110	545	2540	756	291	e113	93
23	70	e52	e38	e96	e84	1710	553	1660	703	244	e108	98
24	70	e48	e45	e80	e120	1710	521	1410	653	230	106	85
25	e76	e54	e38	e64	e200	1240	453	1300	606	226	109	83
26	e75	e49	e42	e66	e400	940	427	1200	560	227	110	82
27	73	e52	e43	e64	e240	782	406	1170	535	223	113	81
28	72	e54	e48	e68	e170	737	377	1100	521	226	101	80
29	77	e60	e48	e72	---	736	349	992	504	212	95	79
30	87	e56	e45	e72	---	711	344	1000	487	205	92	78
31	89	---	e40	e68	---	749	---	2080	---	195	90	---
TOTAL	2156	2404	1543	2456	2626	41590	23301	38619	36079	9589	4121	3014
MEAN	69.5	80.1	49.8	79.2	93.8	1342	777	1246	1203	309	133	100
MAX	89	129	72	120	400	7460	2720	2540	3090	474	183	200
MIN	59	46	35	42	43	110	344	355	487	195	90	78
AC-FT	4280	4770	3060	4870	5210	82490	46220	76600	71560	19020	8170	5980
CFSM	.08	.09	.06	.09	.10	1.50	.87	1.39	1.35	.35	.15	.11
IN.	.09	.10	.06	.10	.11	1.73	.97	1.61	1.50	.40	.17	.13

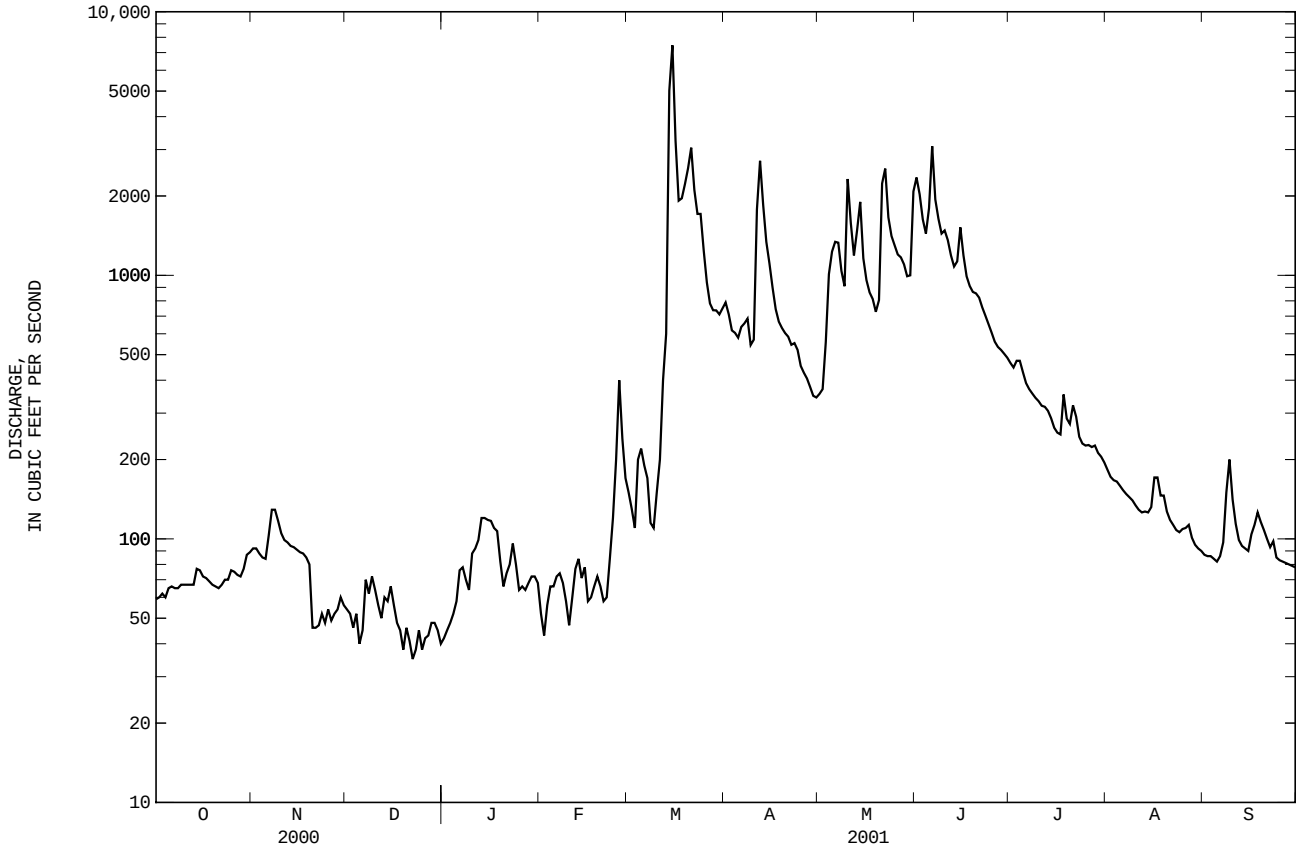
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2001, BY WATER YEAR (WY)

MEAN	227	215	170	158	366	685	587	727	919	572	359	358
MAX	1816	1335	1038	1078	1438	2596	2194	2538	5330	6971	2821	3074
(WY)	1987	1973	1993	1973	1973	1965	1973	1999	1998	1993	1993	1972
MIN	16.5	19.9	14.6	12.3	17.2	32.3	30.4	35.2	40.5	24.5	17.0	14.9
(WY)	1938	1940	1938	1940	1940	1938	1956	1939	1968	1936	1936	1937

06809500 EAST NISHNABOTNA RIVER AT RED OAK, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1919 - 2001	
ANNUAL TOTAL	44467		167498			
ANNUAL MEAN	121		459		449	
HIGHEST ANNUAL MEAN					1842	1993
LOWEST ANNUAL MEAN					54.9	1968
HIGHEST DAILY MEAN	1200	Jun 26	7460	Mar 15	45100	Jun 15 1998
LOWEST DAILY MEAN	35	Dec 22	35	Dec 22	6.0	Aug 18 1936
ANNUAL SEVEN-DAY MINIMUM	40	Dec 19	40	Dec 19	8.1	Dec 15 1937
MAXIMUM PEAK FLOW			10600	Mar 15	60500	Jun 15 1998
MAXIMUM PEAK STAGE			15.92	Mar 15	29.39	Jun 15 1998
ANNUAL RUNOFF (AC-FT)	88200		332200		325500	
ANNUAL RUNOFF (CFSM)	.14		.51		.50	
ANNUAL RUNOFF (INCHES)	1.85		6.97		6.83	
10 PERCENT EXCEEDS	177		1340		979	
50 PERCENT EXCEEDS	114		120		183	
90 PERCENT EXCEEDS	59		54		42	

e Estimated



06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA

LOCATION.--Lat 40°37'57", long 95°37'32", in SW$^1/_4$ SE$^1/_4$ sec.11, T.67 N., R.42 W., Fremont County, Hydrologic Unit 10240004, on left bank 1.7 mi downstream from confluence of East Nishnabotna and West Nishnabotna Rivers, 2 mi northeast of Hamburg, and at mile 13.8.

DRAINAGE AREA.--2,806 mi^2.

PERIOD OF RECORD.--March 1922 to September 1923, October 1928 to current year. Monthly discharge only for some periods published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1923, 1929-37, 1938-40 (M), 1943 (M). WSP 1440: Drainage area. WDR IA-74-1: 1973.

GAGE.--Water-stage recorder. Datum of gage is 894.17 ft above sea level. See WSP 1730 for history of changes prior to Nov. 16, 1950.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	164	331	e220	e225	e215	e580	2070	1300	5150	1900	926	310
2	162	348	e215	e230	e180	e500	2040	1270	4870	1820	878	312
3	168	312	e200	e245	e220	e440	1950	1430	4180	1870	841	294
4	192	291	e220	e265	e270	e800	1870	2220	3720	1940	813	311
5	216	284	e180	e300	e300	e880	1830	3240	4170	1830	785	291
6	250	371	e200	e375	e310	e790	2130	3230	5170	1680	748	320
7	237	638	e325	e380	e305	e700	2010	3190	5190	1610	709	395
8	224	589	e300	e360	e280	e470	2010	2950	4000	1550	671	1410
9	217	529	e330	e340	e230	e440	2000	2590	3540	1510	637	852
10	209	443	e295	e390	e200	e590	1830	2580	4350	1470	588	651
11	193	403	e255	e425	e250	e1000	2600	4010	4500	1450	558	567
12	199	388	e240	e460	e320	e1700	4640	2900	3620	1440	543	464
13	203	366	e280	e560	e340	e2800	4280	2480	3110	1390	534	407
14	250	363	e260	e550	e300	e8000	3350	3160	3910	1340	516	372
15	264	345	e320	e530	e290	12500	2890	2930	4970	1300	495	365
16	260	349	e280	e520	e240	9050	2490	2370	4860	1250	575	392
17	246	302	e240	e500	e245	6160	2200	2230	3510	1230	599	459
18	239	317	e200	e490	e270	4670	2020	2050	3180	1340	591	458
19	238	339	e240	e360	e300	4720	1930	1950	2960	1630	538	493
20	235	e180	e260	e240	e270	4970	1890	2140	3000	1430	515	430
21	235	e180	e220	e250	e240	5300	1850	4050	3310	1280	466	405
22	245	e185	e195	e260	e250	5560	1760	6780	2790	1280	414	403
23	259	e200	e200	e320	e390	4050	1720	4750	2580	1220	388	509
24	248	e195	e235	e250	e600	3570	1640	3740	2440	1150	369	473
25	253	e215	e205	e240	e940	3270	1550	3350	2330	1150	377	383
26	280	e200	e220	e245	e1600	2670	1470	3090	2210	1090	386	374
27	271	e205	e225	e240	e1000	2330	1420	2880	2130	1050	377	371
28	263	e220	e260	e260	e660	2140	1370	2770	2060	2000	392	360
29	268	e235	e250	e280	---	2070	1300	2700	2000	1320	357	350
30	282	e240	e235	e270	---	2040	1270	2810	1950	1070	329	342
31	302	---	e220	e260	---	2050	---	4000	---	997	327	---
TOTAL	7272	9563	7525	10620	11015	96810	63380	91140	105760	44587	17242	13523
MEAN	235	319	243	343	393	3123	2113	2940	3525	1438	556	451
MAX	302	638	330	560	1600	12500	4640	6780	5190	2000	926	1410
MIN	162	180	180	225	180	440	1270	1270	1950	997	327	291
MED	239	314	235	300	285	2140	1940	2880	3520	1390	538	394
AC-FT	14420	18970	14930	21060	21850	192000	125700	180800	209800	88440	34200	26820
CFSM	.08	.11	.09	.12	.14	1.11	.75	1.05	1.26	.51	.20	.16
IN.	.10	.13	.10	.14	.15	1.28	.84	1.21	1.40	.59	.23	.18

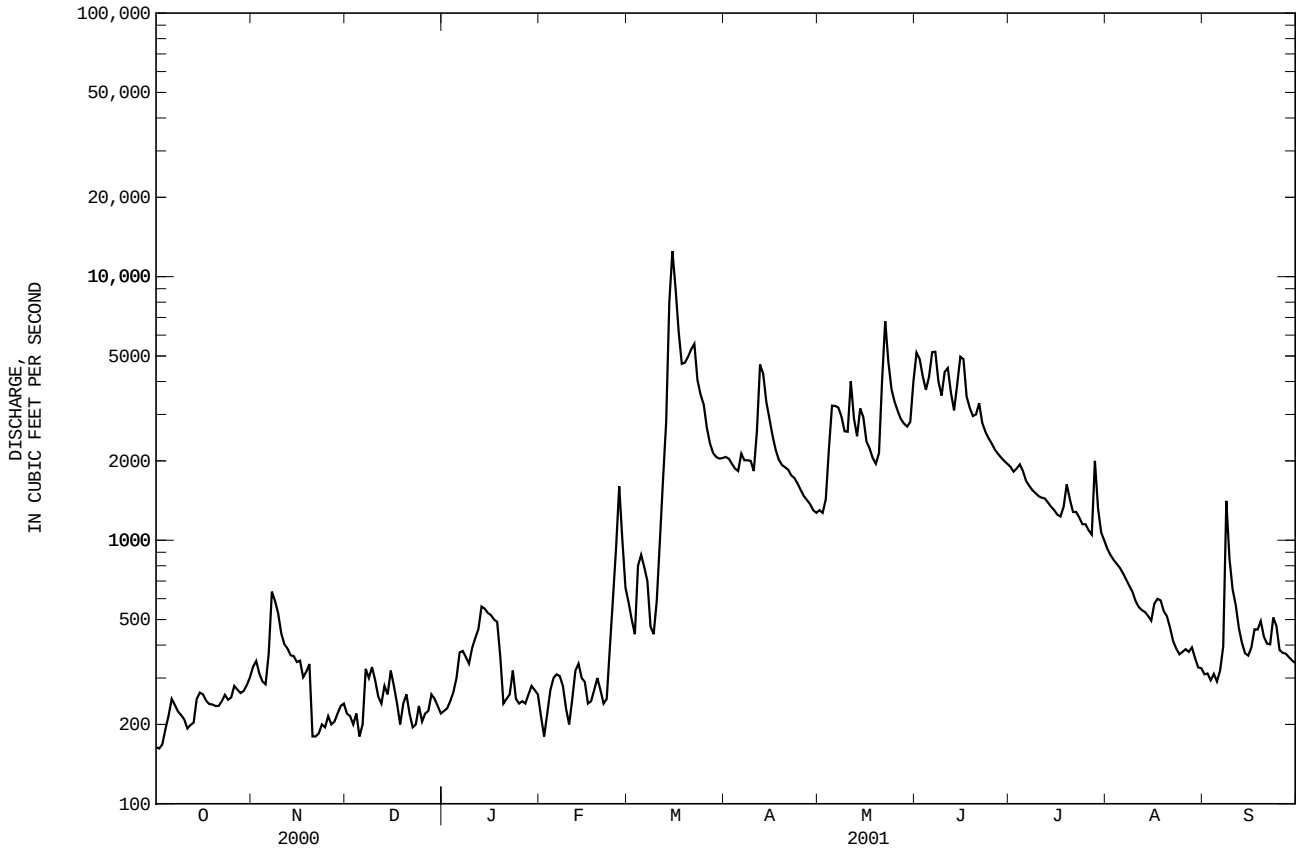
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1922 - 2001, BY WATER YEAR (WY)

MEAN	674	674	562	562	1041	1840	1528	1919	2599	1701	1105	1002
MAX	5004	3083	2557	3585	4720	7229	5866	6621	16430	17780	6266	7385
(WY)	1987	1973	1973	1973	1973	1979	1973	1995	1947	1993	1993	1993
MIN	39.5	42.9	27.1	21.3	30.3	115	89.7	68.2	151	52.8	16.8	44.1
(WY)	1938	1938	1938	1940	1940	1931	1956	1934	1956	1936	1934	1937

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1922 - 2001	
ANNUAL TOTAL	181531		478437			
ANNUAL MEAN	496		1311		1270	
HIGHEST ANNUAL MEAN					5062	1993
LOWEST ANNUAL MEAN					170	1934
HIGHEST DAILY MEAN	3180	Jun 14	12500	Mar 15	53700	Jun 17 1998
LOWEST DAILY MEAN	162	Oct 2	162	Oct 2	4.5	Aug 30 1934
ANNUAL SEVEN-DAY MINIMUM	177	Sep 27	194	Nov 20	9.9	Aug 24 1934
MAXIMUM PEAK FLOW			14300	Mar 15	65100	Jun 17 1998
MAXIMUM PEAK STAGE			24.48	Mar 15	33.18	Jun 17 1998
INSTANTANEOUS LOW FLOW			159	Oct 1a		
ANNUAL RUNOFF (AC-FT)	360100		949000		920200	
ANNUAL RUNOFF (CFSM)	.18		.47		.45	
ANNUAL RUNOFF (INCHES)	2.41		6.34		6.15	
10 PERCENT EXCEEDS	803		3350		2920	
50 PERCENT EXCEEDS	441		516		600	
90 PERCENT EXCEEDS	205		222		121	

a Also Oct. 2, 3.
e Estimated.



06813500 MISSOURI RIVER AT RULO, NE

LOCATION.--Lat 40°03'13", long 95°25'19", in NW¼ NW¼ sec.17, T.1 N., R.18 E., Richardson County, Hydrologic Unit 10240005, on right bank at downstream side of bridge on U.S. Highway 159 at Rulo, 3.2 mi upstream from Big Nemaha River, and at mile 498.0.

DRAINAGE AREA.--414,900 mi^2, approximately. The 3,959 mi^2 in Great Divide basin are not included.

PERIOD OF RECORD.--October 1949 to current year in reports of U.S. Geological Survey. Gage- height record collected at site 80 ft upstream January 1886 to December 1899 published in reports of Missouri River Commission; September 1929 to September 1950 in files of Kansas City office of U.S. Army Corps of Engineers.

GAGE.--Water-stage recorder. Datum of gage is 837.23 ft above sea level. Oct. 1949 to Sept. 12, 1950, nonrecording gage at site 80 ft upstream and Sept. 13, 1950 to Apr. 19, 1983, recording gage on downstream end of middle pier, all at same datum.

REMARKS.--Records good, except those for estimated daily discharges, which are poor. Flow regulated by upstream main-stem reservoirs. Fort Randall Dam was completed in July 1952, with storage beginning in December 1952. Gavins Point Dam was completed in July 1955, with storage beginning in December 1955. U.S. Army Corps of Engineers satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 358,000 ft^3/s Apr. 22, 1952, gage height, 25.60 ft; minimum daily discharge, 4,420 ft^3/s Jan. 13, 1957; minimum gage height, -0.19 ft Dec. 25, 1990, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1881 reached a stage of 22.9 ft, from floodmark, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38400	42200	e30000	22700	22700	26200	46000	75800	64900	40900	38600	33500
2	38400	42100	28200	22400	22600	25800	45500	71800	59500	39900	38000	33300
3	38800	42100	27000	22300	21500	25500	46300	72300	54200	39800	37300	32800
4	39300	42200	26800	22500	21100	25600	48500	76400	65000	42800	36600	32900
5	39300	41900	25200	22600	21300	28200	47200	88300	62000	44800	36600	33300
6	39900	43000	23300	22800	20700	30700	46900	103000	58000	42400	35300	33200
7	40200	45300	23200	23000	22500	30700	47000	93100	56600	40500	35100	33100
8	40400	45400	22300	22800	24200	29600	49200	83900	52700	40000	34500	36100
9	40500	44300	21300	22600	24400	30300	51700	77800	49300	39200	33300	37700
10	40300	42600	23100	22800	23600	31900	55000	72900	47400	39400	32700	35700
11	40300	41100	24300	23100	22900	32900	57600	76600	49100	39700	32400	35000
12	39800	40100	21600	23000	22500	46900	64500	73100	48200	42300	32200	34600
13	39800	39600	18600	23200	21800	48000	67900	69500	46500	41400	32300	34400
14	40100	38800	e17200	23800	21400	51900	69900	67300	61800	38500	32300	34500
15	40000	39200	e16500	24300	22500	52400	68500	65100	77200	37500	32500	35800
16	40000	38600	e15000	24200	22900	70300	71000	61500	74800	37000	34600	37800
17	40200	38500	16000	24100	22000	63300	74500	58600	60500	36500	35000	45100
18	40100	38900	18700	24000	20900	57800	76300	56000	55400	36600	34800	43500
19	40000	39100	19300	23800	20600	56300	75700	53800	57200	47900	35300	41300
20	39900	39500	e18400	23500	22100	53500	72300	52800	61400	46500	35000	39200
21	39800	40400	e16500	22500	23300	54400	66600	68900	68900	39900	34800	37200
22	40000	40500	17000	22100	23200	61000	62000	66700	57100	38300	34700	36600
23	39900	40000	18600	21400	22200	69900	59400	60800	51200	37100	34300	36800
24	40500	40300	19800	21100	31200	66300	59100	55400	47000	35900	34400	37200
25	41000	39900	20800	22000	48700	59700	61300	53400	45100	36800	34300	36000
26	40800	39500	20900	22600	41300	53000	70600	52300	44000	37600	34200	34300
27	40400	37800	21900	22500	35300	48500	73100	51000	43300	36800	34000	33600
28	40600	36300	22300	22000	28600	46100	76100	49500	42100	46800	33600	33800
29	40900	34700	22400	21600	---	45500	78600	48100	41500	46100	33300	34100
30	40700	e32500	22400	21600	---	45500	77700	51400	41600	43000	32800	34900
31	41700	---	22600	21900	---	45800	---	64600	---	40700	33000	---
TOTAL	1242000	1206400	661200	704800	698000	1413500	1866000	2071700	1643500	1252600	1067800	1077300
MEAN	40060	40210	21330	22740	24930	45600	62200	66830	54780	40410	34450	35910
MAX	41700	45400	30000	24300	48700	70300	78600	103000	77200	47900	38600	45100
MIN	38400	32500	15000	21100	20600	25500	45500	48100	41500	35900	32200	32800
AC-FT	2464000	2393000	1311000	1398000	1384000	2804000	3701000	4109000	3260000	2485000	2118000	2137000
CFSM	.10	.10	.05	.05	.06	.11	.15	.16	.13	.10	.08	.09
IN.	.11	.11	.06	.06	.06	.13	.17	.19	.15	.11	.10	.10

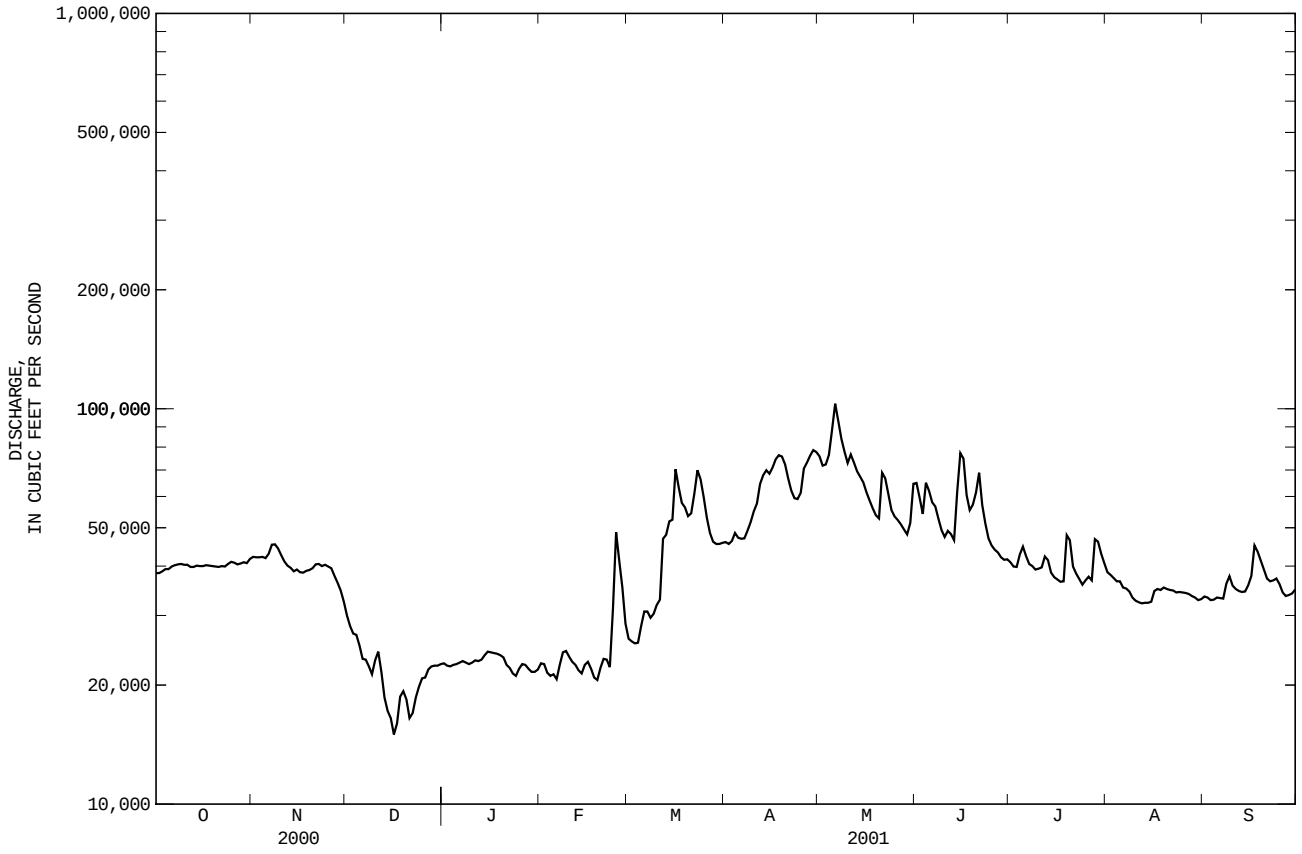
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2001, BY WATER YEAR (WY)

MEAN	44970	41190	27380	22850	28680	41470	51710	52220	57140	51160	45120	45290
MAX	80050	83880	57380	42280	53140	79590	106100	97280	130600	164800	78730	76410
(WY)	1998	1998	1998	1973	1997	1979	1997	1997	1984	1993	1996	1997
MIN	25580	17000	9953	10800	13220	15380	21820	33790	33710	33860	29820	34140
(WY)	1962	1962	1956	1957	1957	1957	1957	1956	1956	1963	1955	1991

06813500 MISSOURI RIVER AT RULO, NE--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1953 - 2001a	
ANNUAL TOTAL	13764800		14904800			
ANNUAL MEAN	37610		40840		42470	
HIGHEST ANNUAL MEAN					71880	1997
LOWEST ANNUAL MEAN					26340	1957
HIGHEST DAILY MEAN	70000	Jun 26	103000	May 6	289000	Jul 24 1993
LOWEST DAILY MEAN	15000	Dec 16	15000	Dec 16	4420	Jan 13 1957
ANNUAL SEVEN-DAY MINIMUM	17200	Dec 15	17200	Dec 15	5560	Nov 30 1955
MAXIMUM PEAK FLOW			108000	May 6	307000	Jul 24 1993
MAXIMUM PEAK STAGE			21.44	May 6	25.37	Jul 24 1993
ANNUAL RUNOFF (AC-FT)	27300000		29560000		30760000	
ANNUAL RUNOFF (CFSM)	.091		.098		.10	
ANNUAL RUNOFF (INCHES)	1.23		1.34		1.39	
10 PERCENT EXCEEDS	45200		65600		67000	
50 PERCENT EXCEEDS	39100		39300		39000	
90 PERCENT EXCEEDS	28600		22300		18800	

a Post regulation.
e Estimated.



06817000 NODAWAY RIVER AT CLARINDA, IA

LOCATION.--Lat 40°44'19", long 95°00'47", in SW$^1/_4$ NE$^1/_4$ sec.32, T.69 N., R.36 W., Page County, Hydrologic Unit 10240009, near left abutment on downstream side of bridge on State Highway 2 (city route), 0.5 mi downstream from North Branch, 1.2 mi east of city square of Clarinda, and 7.5 mi upstream from East Nodaway River.

DRAINAGE AREA.--762 mi^2.

PERIOD OF RECORD.--May 1918 to July 1925, May 1936 to current year. Monthly discharge only for some periods, published in WSP 1310. No winter records 1918-1925.

REVISED RECORDS.--WSP 1240: 1918-20 (M), 1921, 1922-25 (M), 1936-38, 1942, 1943-45 (M), 1948. WSP 1440: Drainage area. WSP 1710: 1958, 1959 (P).

GAGE.--Water-stage recorder. Datum of gage is 955.36 ft above sea level. Prior to July 5, 1925, and May 28, 1936 to Mar. 26, 1957, nonrecording gage at same site, and prior to Oct. 1, 1987, at datum 5.00 ft. higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Clarinda municipal water supply is taken from Nodaway River, 500 ft upstream from station. Average daily pumpage was 1.47 ft^3/s. U.S. Geological Survey and satellite data collection platform at station.

COOPERATION.--Average pumpage provided by City of Clarinda water works.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1903 reached a stage of 25.4 ft, from floodmarks, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	60	48	e28	e90	e700	791	414	2450	378	98	31
2	22	71	46	e30	e70	e600	734	316	2440	358	92	30
3	20	59	27	e32	e80	521	655	568	1400	401	81	31
4	22	55	36	e35	e106	950	711	1540	1150	401	78	29
5	31	54	e20	e39	e94	1060	654	1980	2960	352	77	30
6	31	92	27	e50	e88	889	831	1940	3380	325	71	50
7	25	130	53	e52	e84	755	792	1240	1670	314	64	78
8	25	89	59	e46	e100	562	668	843	1290	297	63	524
9	21	80	46	e42	e120	534	604	708	1070	284	62	473
10	22	65	47	e58	e110	757	613	3730	1010	273	56	164
11	27	58	35	e68	e100	1010	3960	2500	1030	260	51	85
12	33	55	29	e74	e92	4400	3900	1460	859	250	48	66
13	35	44	e36	e80	e90	3920	1600	2300	769	235	50	58
14	41	45	e30	e82	e86	4970	1100	3810	1250	219	47	49
15	44	43	e38	e73	e84	5190	987	2000	990	194	51	48
16	35	44	e34	e67	e72	2920	744	1460	783	180	64	63
17	33	29	e30	e62	e65	1740	620	1280	692	172	65	67
18	37	41	e32	e58	e76	1640	558	1120	680	391	76	63
19	35	43	e30	e56	e94	1790	546	967	867	221	60	70
20	29	e26	e32	e52	e110	2820	531	901	1330	210	50	63
21	28	e30	e29	e66	e100	3710	500	2020	1250	189	48	76
22	34	e38	e24	e80	e94	2180	493	1320	724	180	47	54
23	38	49	e26	e86	e90	2180	436	979	610	150	46	77
24	41	52	e31	e76	e200	1820	402	868	560	137	47	79
25	43	47	e26	e66	e2400	1180	372	854	515	131	52	50
26	43	38	e29	e68	e1800	931	356	825	476	132	51	46
27	41	e42	e30	e64	1550	819	341	795	452	130	42	47
28	35	48	e32	e70	841	787	315	758	428	146	37	44
29	43	55	e32	e90	---	789	295	695	410	131	38	41
30	63	45	e30	e120	---	765	279	739	398	119	36	40
31	57	---	e26	e110	---	784	---	2770	---	106	34	---
TOTAL	1059	1627	1050	1980	8886	53673	25388	43700	33893	7266	1782	2626
MEAN	34.2	54.2	33.9	63.9	317	1731	846	1410	1130	234	57.5	87.5
MAX	63	130	59	120	2400	5190	3960	3810	3380	401	98	524
MIN	20	26	20	28	65	521	279	316	398	106	34	29
AC-FT	2100	3230	2080	3930	17630	106500	50360	86680	67230	14410	3530	5210
CFSM	.04	.07	.04	.08	.42	2.27	1.11	1.85	1.48	.31	.08	.11
IN.	.05	.08	.05	.10	.43	2.62	1.24	2.13	1.65	.35	.09	.13

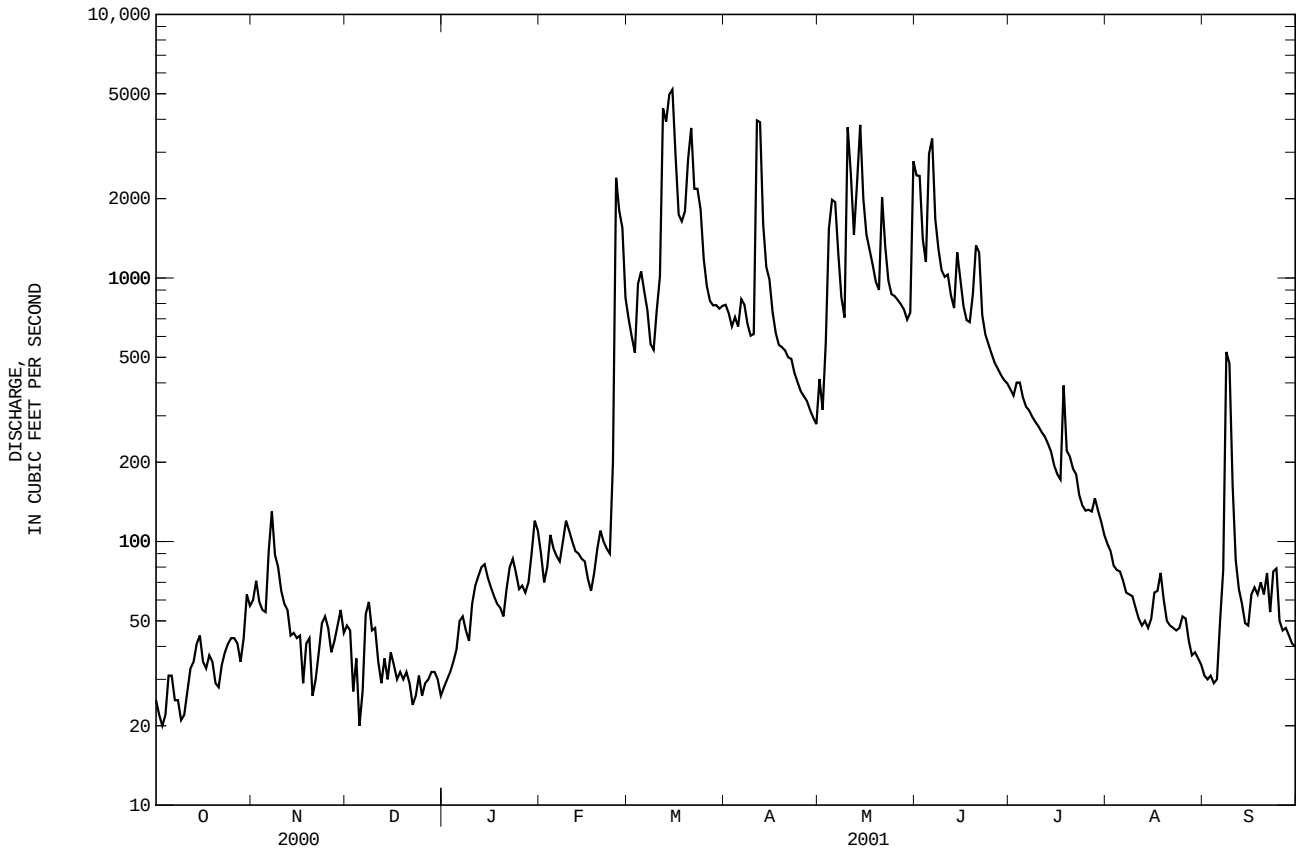
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2001, BY WATER YEAR (WY)

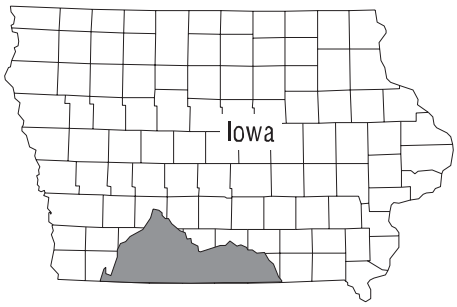
MEAN	173	173	137	130	315	579	571	706	773	439	233	315
MAX	1658	1602	1090	853	1857	2456	2450	2489	4779	6778	1953	3019
(WY)	1974	1973	1993	1974	1973	1979	1973	1996	1947	1993	1987	1972
MIN	7.52	8.27	2.10	6.00	11.3	14.0	14.4	10.3	20.0	17.3	9.81	6.83
(WY)	1938	1938	1924	1924	1940	1938	1956	1939	1968	1954	1936	1937

06817000 NODAWAY RIVER AT CLARINDA, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1919 - 2001	
ANNUAL TOTAL	34836		182930			
ANNUAL MEAN	95.2		501		385	
HIGHEST ANNUAL MEAN					1577	1993
LOWEST ANNUAL MEAN					36.8	1968
HIGHEST DAILY MEAN	2080	Jun 26	5190	Mar 15	25500	Sep 13 1972
LOWEST DAILY MEAN	20	Oct 3	20	Oct 3	1.0	Dec 9 1923a
ANNUAL SEVEN-DAY MINIMUM	25	Oct 3	25	Oct 3	1.3	Dec 25 1923
MAXIMUM PEAK FLOW			9120	May 10	31100	Jun 13 1947b
MAXIMUM PEAK STAGE			14.16	May 10	25.30	Jun 13 1947c
INSTANTANEOUS LOW FLOW			6.4	Dec 11		
ANNUAL RUNOFF (AC-FT)	69100		362800		278600	
ANNUAL RUNOFF (CFSM)	.12		.66		.50	
ANNUAL RUNOFF (INCHES)	1.70		8.93		6.86	
10 PERCENT EXCEEDS	159		1420		848	
50 PERCENT EXCEEDS	52		89		103	
90 PERCENT EXCEEDS	29		31		20	

a Also Dec. 27-31, 1923.
b From rating curve extended above 15,000 ft^3/s on basis of an overflow profile and extended channel rating.
c From floodmark.
e Estimated.





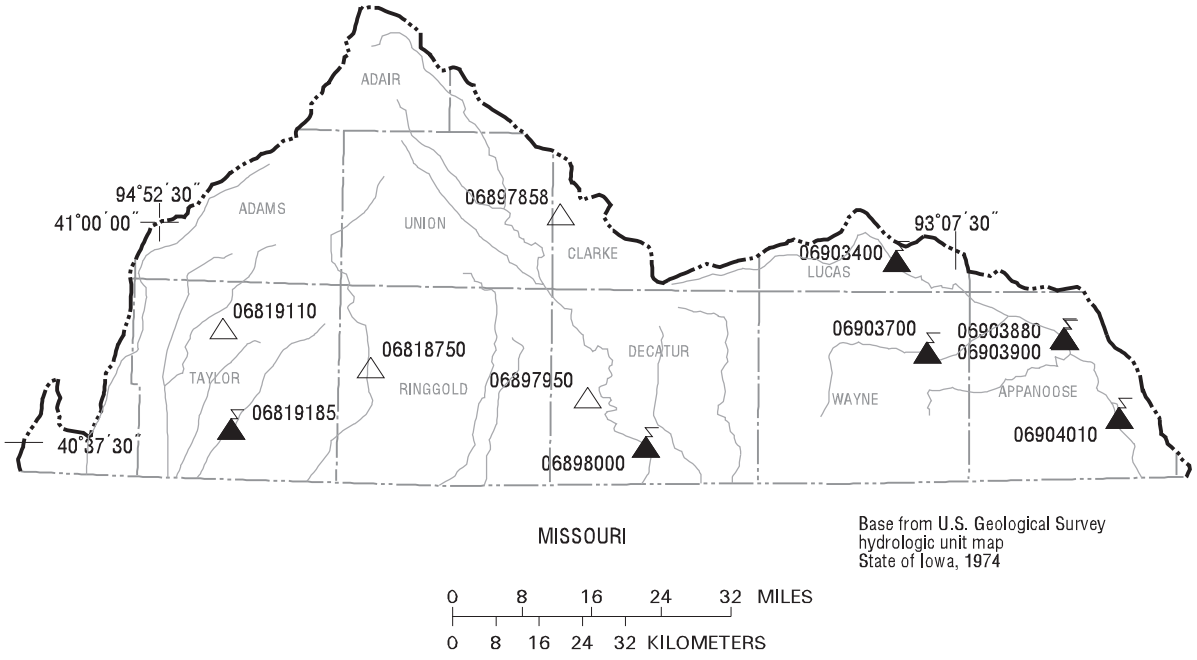
EXPLANATION

Hydrologic boundary

Streams

05449600 Transmitting gaging station and station number

05448600 Crest–stage gaging station and station number



Base from U.S. Geological Survey hydrologic unit map State of Iowa, 1974

0 8 16 24 32 MILES

0 8 16 24 32 KILOMETERS

Gaging Stations

Crest Stage Gaging Stations

06819185 EAST FORK ONE HUNDRED AND TWO RIVER AT BEDFORD, IA

LOCATION.--Lat 40°39'38", long 94°42'59", in NE$^{1}/_{4}$ sec.35, T.68 N., R.34 W., Taylor County, Hydrologic Unit 10240013, on left bank at downstream side of bridge of county highway N44, 0.1 mi south of Bedford, 0.4 mi upstream from concrete stablization dam, and 3.0 mi upstream from Daugherty creek.

DRAINAGE AREA.--85.4 mi^{2}.

PERIOD OF RECORD.--October 1983 to current year. September 1959 to September 1983, at site 2 mi downstream published as "near Bedford" (station 06819190) not equivalent because of difference in drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,069.16 ft above sea level.

REMARKS.--Records are fair, except those for estimated daily discharges, which are poor. Slight regulation at low flow by low dam used for water supply in Bedford. U.S. Geolocial Survey satellite data collection platform and a U.S. National Weather Service Limited Automatic Remote Collector (LARC) at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.55	6.0	.93	e.76	e5.4	55	57	39	58	17	.55	.63
2	.55	2.5	.91	.82	e2.4	44	47	36	127	15	.53	.67
3	.72	1.8	.83	.82	e2.8	42	44	406	47	22	.53	.73
4	1.0	1.7	.85	.86	3.4	71	42	1040	56	14	.71	.78
5	7.7	2.0	e.60	.93	3.2	69	68	325	875	9.3	.74	.70
6	1.3	20	.83	1.0	3.8	55	82	239	156	6.6	.71	.81
7	.73	6.5	.89	1.1	3.4	49	56	220	77	6.7	.61	4.6
8	.84	1.0	.90	1.8	15	42	42	103	51	6.3	.60	29
9	1.0	.82	.86	1.2	36	52	218	82	42	6.2	.62	3.4
10	1.1	.78	.85	1.5	38	108	87	1110	40	5.8	.58	.76
11	.81	.91	e.80	4.0	34	185	795	165	36	5.4	.64	.65
12	.82	.96	e.74	4.1	29	866	222	81	30	3.8	.60	.63
13	1.4	.98	.86	5.6	25	916	93	1030	23	3.7	.47	.64
14	1.5	.94	.87	8.1	25	994	74	202	1410	1.1	.41	.69
15	1.1	.92	.93	6.3	e20	700	381	85	488	1.0	.62	.84
16	1.3	.91	.95	5.6	e10	217	101	56	97	1.0	.71	.92
17	1.3	.84	.86	4.4	e8.0	125	62	79	74	2.4	.67	.77
18	1.4	.81	.90	1.7	e9.0	123	51	53	129	19	.79	.76
19	1.3	.89	e.70	e1.0	11	234	47	42	61	10	.62	.70
20	1.3	.83	.89	e.78	11	377	43	39	105	11	.65	.69
21	1.5	.71	.89	e.80	e9.0	309	42	40	536	4.5	.63	.77
22	1.8	.62	e.70	.83	10	261	36	33	104	1.1	.60	.81
23	1.6	.56	.84	.92	9.8	199	39	29	76	1.9	.58	8.4
24	1.5	.56	.86	.94	528	125	31	26	61	4.9	.63	.78
25	1.5	.58	e.76	.87	1630	75	29	25	50	36	.66	.67
26	1.6	.60	.85	.89	300	56	26	26	42	9.3	.61	.65
27	1.5	.62	.88	.89	132	52	23	21	37	2.6	.64	.66
28	1.8	.70	.85	.93	85	53	18	26	31	20	.69	.63
29	3.1	.78	.87	4.2	---	51	15	13	27	4.5	.68	.64
30	2.9	.82	.86	6.3	---	51	16	38	21	1.1	.68	.67
31	2.4	---	e.78	10	---	67	---	113	---	.82	.64	---
TOTAL	48.92	58.64	26.09	79.94	2999.2	6623	2887	5822	4967	254.02	19.40	64.05
MEAN	1.58	1.95	.84	2.58	107	214	96.2	188	166	8.19	.63	2.13
MAX	7.7	20	.95	10	1630	994	795	1110	1410	36	.79	29
MIN	.55	.56	.60	.76	2.4	42	15	13	21	.82	.41	.63
AC-FT	97	116	52	159	5950	13140	5730	11550	9850	504	38	127
CFSM	.02	.02	.01	.03	1.25	2.50	1.13	2.20	1.94	.10	.01	.03
IN.	.02	.03	.01	.03	1.31	2.88	1.26	2.54	2.16	.11	.01	.03

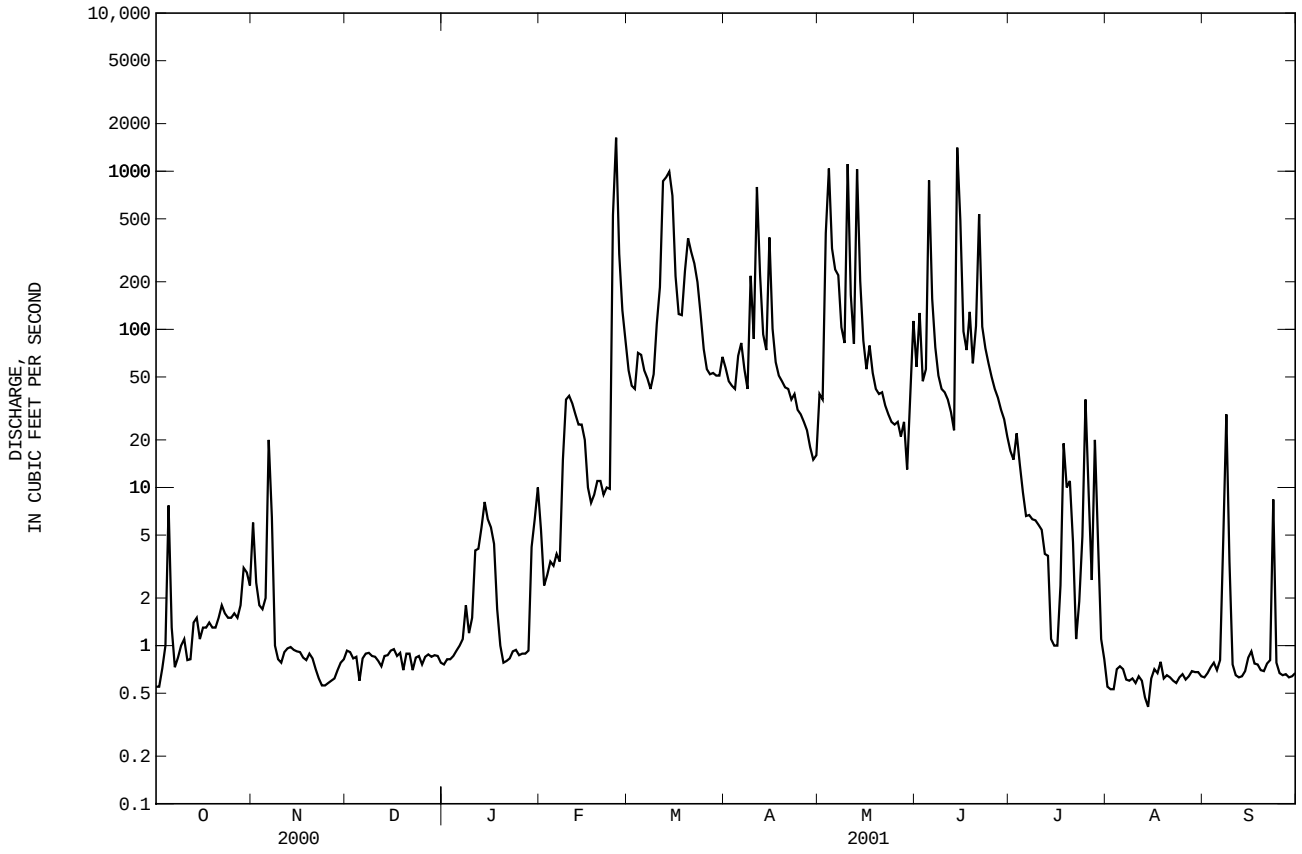
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2001, BY WATER YEAR (WY)

MEAN	23.4	29.3	26.5	11.1	44.6	81.0	101	150	112	114	22.2	49.2
MAX	159	202	181	50.2	149	276	289	488	255	889	173	260
(WY)	1987	1993	1993	1998	1997	1998	1984	1995	1995	1993	1987	1993
MIN	.26	.78	.47	.50	.17	2.13	.82	.67	1.90	1.97	.63	.31
(WY)	1992	1991	1989	1991	1989	1989	1989	1989	1988	1988	2001	1991

06819185 EAST FORK ONE HUNDRED AND TWO RIVER AT BEDFORD, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1984 - 2001	
ANNUAL TOTAL	3626.85		23849.26			
ANNUAL MEAN	9.91		65.3		63.8	
HIGHEST ANNUAL MEAN					200	1993
LOWEST ANNUAL MEAN					9.92	2000
HIGHEST DAILY MEAN	765	Jun 26	1630	Feb 25	7600	Jul 5 1993
LOWEST DAILY MEAN	.19	Sep 13	.41	Aug 14	.00	Jul 6 1989a
ANNUAL SEVEN-DAY MINIMUM	.27	Sep 11	.56	Aug 8	.00	Aug 3 1989
MAXIMUM PEAK FLOW			4390	May 10	9570	Jul 14 1986
MAXIMUM PEAK STAGE			20.23	May 10	23.85	Jul 5 1993
INSTANTANEOUS LOW FLOW			.38	Aug 14		
ANNUAL RUNOFF (AC-FT)	7190		47310		46210	
ANNUAL RUNOFF (CFSM)	.12		.77		.75	
ANNUAL RUNOFF (INCHES)	1.58		10.39		10.15	
10 PERCENT EXCEEDS	14		125		104	
50 PERCENT EXCEEDS	1.8		3.8		8.0	
90 PERCENT EXCEEDS	.70		.65		.70	

a Many days July to December 1989.
e Estimated.



06898000 THOMPSON RIVER AT DAVIS CITY, IA

LOCATION.--Lat 40°38'25", long 93°48'29", in $SE^1/_4$ $SE^1/_4$ sec.35, T.68 N., R.26 W., Decatur County, Hydrologic Unit 10280102, on right bank 15 ft downstream from bridge on U.S. Highway 69 at Davis City, 3.1 mi. upstream from Dickersons Branch, and 5.8 mi. upstream from Iowa-Missouri State line.

DRAINAGE AREA.--701 mi^2.

PERIOD OF RECORD.--May 1918 to July 1925, July 1941 to current year. Monthly discharge only for some periods, published in WSP 1310. No winter records 1921-25. Prior to October 1918, published as "Grand River".

REVISED RECORDS.--WSP 1240: 1918, 1920-21 (M), 1922-24, 1925 (M), 1946-47 (M). WSP 1440: Drainage area. WSP 1710: 1957.

GAGE.--Water-stage recorder. Datum of gage is 874.04 ft above sea level. May 14, 1918 to July 2, 1925, July 14, 1941 to Feb. 24, 1942, nonrecording gage, and Feb. 25, 1942 to Feb. 8, 1967, water-stage recorder at same site at datum 2.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite data collection platform and U.S. National Weather Service Limited Automatic Remote Collector (LARC) at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 8, 1885, reached a stage of 22.8 ft, datum in use prior to Feb. 9, 1967, from floodmark, discharge, 30,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	7.3	12	e4.0	e120	621	717	207	3890	129	43	14
2	3.5	30	12	e3.8	e24	434	661	214	2080	117	39	12
3	3.2	55	9.2	e4.2	e30	390	533	204	1070	436	38	12
4	3.7	24	10	e5.6	e48	636	453	1940	1100	1510	57	11
5	4.4	17	e5.0	e9.0	e42	703	472	1530	1660	288	69	11
6	4.5	23	e7.0	e10	e34	644	815	1590	2540	161	70	14
7	4.1	39	10	e9.0	e28	558	619	1410	1170	122	44	17
8	5.4	45	10	e8.0	e60	436	457	1210	783	102	34	141
9	5.1	33	10	e7.0	698	372	3940	720	598	92	31	214
10	4.2	25	e7.5	e9.0	503	420	e1680	2870	487	85	28	86
11	3.8	21	e5.0	e10	408	964	e2580	1780	417	79	25	126
12	4.2	26	e3.0	e11	363	2020	3930	985	365	75	23	58
13	4.3	22	e3.4	14	305	2980	2140	1380	319	71	23	37
14	4.2	19	e3.0	30	276	3040	e1170	e3780	1120	68	22	26
15	4.1	15	e3.8	45	e240	3950	e1440	e3070	3330	64	22	22
16	4.0	14	e3.4	57	e180	3540	e1370	1140	777	62	23	21
17	3.4	13	e3.0	53	e120	2040	e736	813	791	59	24	21
18	2.9	11	e3.2	38	e140	1270	e570	1710	566	69	25	24
19	4.3	11	e3.0	e24	168	1150	e476	677	1150	93	24	27
20	4.6	e8.0	e3.2	e16	233	1820	399	497	833	172	24	28
21	3.6	9.5	e3.0	e18	e200	2850	390	415	2740	549	25	30
22	3.9	9.7	e2.8	e20	e180	3260	359	362	806	226	21	25
23	4.5	9.9	e3.2	21	162	3050	335	326	487	102	19	34
24	4.4	9.8	e2.8	21	1210	2460	293	286	363	78	19	49
25	6.9	10	e2.8	e18	e3200	1480	261	269	296	70	19	46
26	6.9	11	e3.2	e18	2580	893	235	270	244	61	18	36
27	5.4	11	e3.2	e16	1600	657	211	260	207	55	16	29
28	5.8	9.9	e4.0	e22	970	568	195	246	179	60	16	24
29	8.7	11	e4.0	35	---	575	178	222	159	64	16	21
30	7.0	11	e3.6	154	---	599	163	255	144	58	17	18
31	5.5	---	e3.8	278	---	651	---	3300	---	50	16	---
TOTAL	144.8	561.1	163.1	988.6	14122	45031	27778	33938	30671	5227	890	1234
MEAN	4.67	18.7	5.26	31.9	504	1453	926	1095	1022	169	28.7	41.1
MAX	8.7	55	12	278	3200	3950	3940	3780	3890	1510	70	214
MIN	2.9	7.3	2.8	3.8	24	372	163	204	144	50	16	11
AC-FT	287	1110	324	1960	28010	89320	55100	67320	60840	10370	1770	2450
CFSM	.01	.03	.01	.05	.72	2.07	1.32	1.56	1.46	.24	.04	.06
IN.	.01	.03	.01	.05	.75	2.39	1.47	1.80	1.63	.28	.05	.07

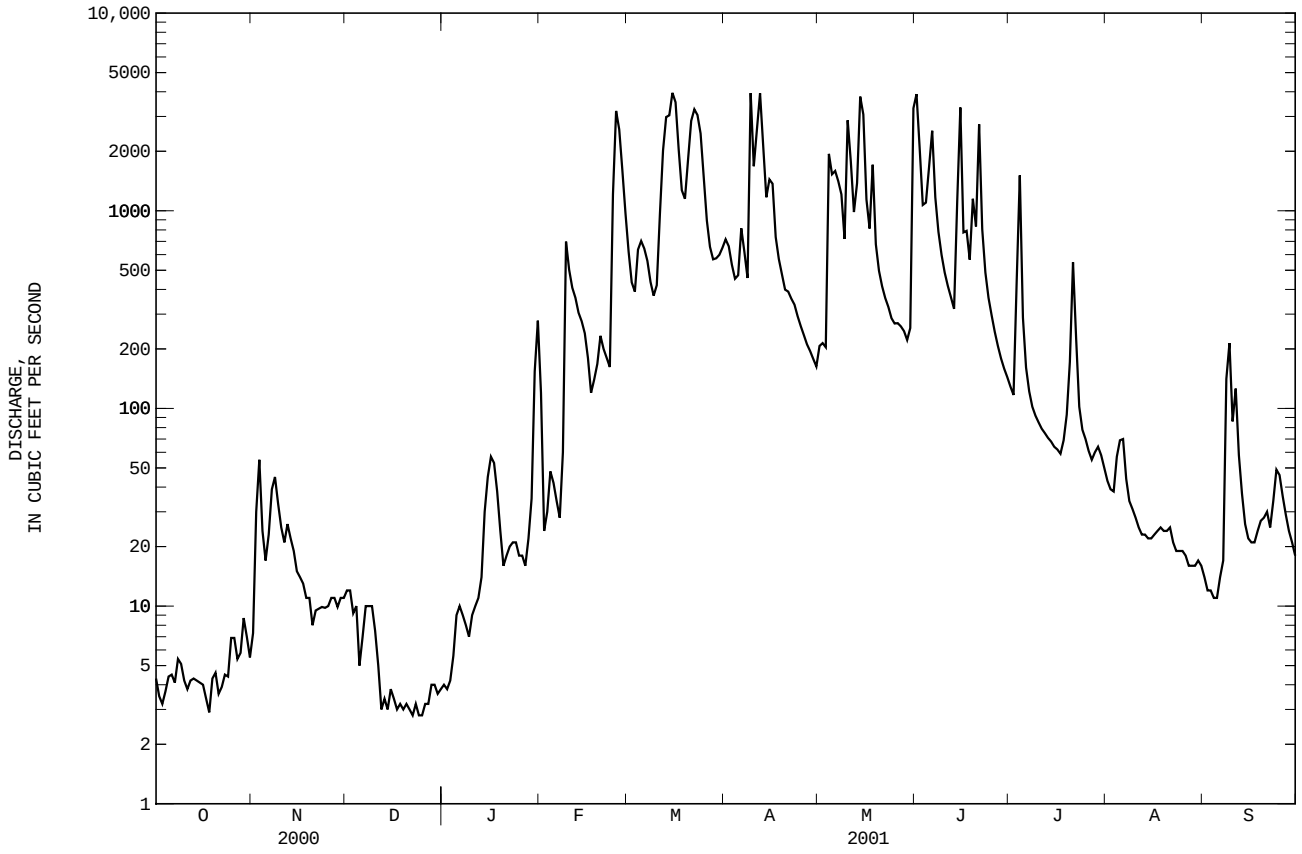
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2001, BY WATER YEAR (WY)

MEAN	186	215	149	154	338	657	702	706	662	425	184	333
MAX	2138	1462	1299	1292	1849	2375	2586	3364	4750	7239	2255	5178
(WY)	1974	1962	1983	1960	1973	1979	1973	1996	1947	1993	1987	1992
MIN	1.41	2.07	.94	.62	1.14	10.7	2.55	1.19	3.08	1.98	9.35	4.13
(WY)	1957	1956	1956	1956	1956	1954	1956	1956	1956	1977	1955	1953

06898000 THOMPSON RIVER AT DAVIS CITY, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1919 - 2001	
ANNUAL TOTAL	9904.0		160748.6			
ANNUAL MEAN	27.1		440		395	
HIGHEST ANNUAL MEAN					1469	1993
LOWEST ANNUAL MEAN					28.6	2000
HIGHEST DAILY MEAN	850	Jun 26	3950	Mar 15	52900	Sep 16 1992
LOWEST DAILY MEAN	2.5	Sep 18	2.8	Dec 22a	.10	Jun 25 1956
ANNUAL SEVEN-DAY MINIMUM	2.7	Sep 13	3.0	Dec 19	.36	Jun 19 1956
MAXIMUM PEAK FLOW			7250	Apr 9	57000	Sep 16 1992
MAXIMUM PEAK STAGE			8.25	Apr 9	24.29	Sep 16 1992
INSTANTANEOUS LOW FLOW			2.8	Oct 18		
ANNUAL RUNOFF (AC-FT)	19640		318800		286300	
ANNUAL RUNOFF (CFSM)	.039		.63		.56	
ANNUAL RUNOFF (INCHES)	.53		8.53		7.66	
10 PERCENT EXCEEDS	45		1460		852	
50 PERCENT EXCEEDS	14		57		81	
90 PERCENT EXCEEDS	3.9		4.2		9.6	

a Also Dec. 24, 25.
e Estimated.



06903400 CHARITON RIVER NEAR CHARITON, IA

LOCATION.--Lat 40°57'12", long 93°15'37", in SW$^1/_4$ NE$^1/_4$ sec.15, T.71 N., R.21 W., Lucas County, Hydrologic Unit 10280201, on right bank 15 ft downstream from bridge on County Highway S43, 0.1 mi downstream from Wolf Creek, and 5.0 mi southeast of Chariton.

DRAINAGE AREA.--182 mi^2.

PERIOD OF RECORD.--October 1965 to current year. Occasional low-flow measurements, water years 1958-60, 1962, 1964.

GAGE.--Water stage recorder. Datum of gage is 917.90 ft above sea level (U.S. Army Corps of Engineers bench mark).

REMARKS.--Records poor. Beaver activity in October and November. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1960 reached a stage of about 23 ft, discharge, about 15,000 ft^3/s and flood of June 5, 1947 reached a stage of 21.65 ft, from floodmark, discharge, 11,000 ft^3/s. A discharge of 0.08 ft^3/s was measured on Oct. 30, 1963.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.48	e1.8	e.94	e1.2	e7.6	e140	166	34	2280	17	e2.0	.46
2	e.46	e3.2	e.90	e1.5	e6.4	e130	129	32	1700	14	1.8	.39
3	e.46	e6.8	e.84	e2.0	e7.2	e220	85	52	1600	14	8.1	.43
4	e1.8	e3.0	e.74	e2.4	e8.6	e500	70	309	656	129	18	.37
5	e4.4	e2.7	e1.0	e2.7	e8.0	e380	62	96	1210	308	6.2	.33
6	e2.1	e3.3	e1.1	e3.2	e7.4	e160	61	93	1800	78	2.9	.36
7	e1.1	e8.4	e1.2	e2.9	e6.6	e150	61	69	1090	28	2.9	.42
8	e.84	e6.4	e1.3	e2.6	e28	e120	55	57	348	17	3.0	2.8
9	e.72	e5.8	e1.2	e2.4	e92	e160	301	49	119	13	1.9	19
10	e.68	e7.2	e1.3	e3.2	e84	e180	630	88	78	10	1.2	118
11	e.64	e3.0	e1.1	e4.6	e86	e250	670	625	54	8.6	.90	21
12	e.60	e2.2	e1.0	e6.6	e42	e320	983	241	41	7.6	.68	6.6
13	e.63	e1.5	e.88	e7.4	e40	e280	521	551	31	6.9	.56	3.0
14	e.63	e1.3	e.96	e9.0	e36	e520	148	2650	346	6.2	.48	1.8
15	e.64	e1.4	e1.1	e14	e34	e1400	336	1290	1120	5.5	.47	1.1
16	e.60	e1.1	e1.2	e12	e32	e1300	302	405	499	5.1	.52	1.1
17	e.56	e1.2	e1.3	e9.8	e29	e1000	137	140	148	4.9	.47	.93
18	e.70	e1.3	e1.2	e8.2	e34	e710	78	179	84	5.2	.46	.79
19	e.64	e1.0	e1.0	e7.0	e38	e320	62	189	113	5.7	.44	.89
20	e.67	e.94	e1.1	e5.8	e40	575	55	83	284	5.4	.42	1.3
21	e.58	e.89	e.98	e6.8	e44	1050	101	52	1970	4.9	.42	14
22	e.64	e1.1	e.84	e7.6	e44	1160	79	40	1180	5.4	.41	5.6
23	e.81	e1.2	e1.0	e8.6	e41	970	72	34	841	19	.42	4.2
24	e1.1	e1.2	e.80	e8.0	e220	714	55	30	219	9.8	.42	3.7
25	e2.1	e1.2	e.88	e6.6	e820	e420	48	29	82	7.4	.64	2.1
26	e3.0	e1.0	e1.1	e7.6	e460	e230	42	40	51	7.5	.70	1.4
27	e2.3	e1.1	e1.0	e6.8	e210	e120	36	49	89	5.8	e1.2	.96
28	e1.5	e1.2	e1.1	e8.2	e160	e90	32	56	100	4.3	e.92	.80
29	e1.1	e1.1	e1.2	e11	---	82	27	37	40	3.4	e.76	.61
30	e1.0	e1.0	e1.4	e15	---	86	25	340	24	2.9	e.58	.60
31	e.84	---	e1.3	e12	---	127	---	2490	---	2.3	.47	---
TOTAL	34.32	74.53	32.96	206.7	2665.8	13864	5429	10429	18197	761.8	60.34	215.04
MEAN	1.11	2.48	1.06	6.67	95.2	447	181	336	607	24.6	1.95	7.17
MAX	4.4	8.4	1.4	15	820	1400	983	2650	2280	308	18	118
MIN	.46	.89	.74	1.2	6.4	82	25	29	24	2.3	.41	.33
CFSM	.01	.01	.01	.04	.52	2.46	.99	1.85	3.33	.14	.01	.04
IN.	.01	.02	.01	.04	.54	2.83	1.11	2.13	3.72	.16	.01	.04

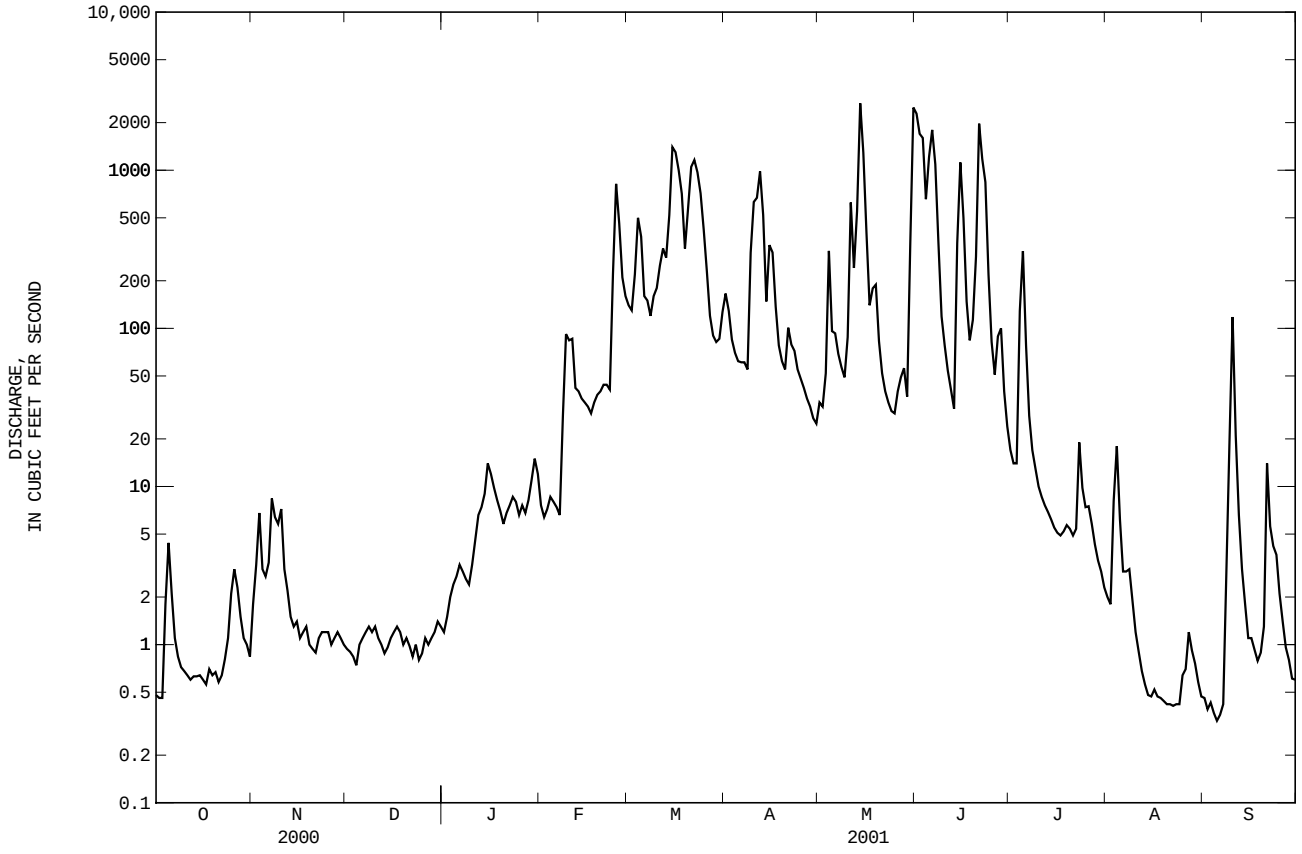
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2001, BY WATER YEAR (WY)

MEAN	78.8	58.2	59.9	35.6	87.1	186	246	236	170	160	68.5	123
MAX	568	294	408	340	403	761	1093	1097	856	1711	618	1704
(WY)	1974	1993	1983	1974	1997	1979	1991	1995	1967	1993	1987	1992
MIN	.005	.003	.000	.23	.22	1.22	.068	2.12	.38	.000	.10	.086
(WY)	1990	1990	1990	1977	1989	2000	1989	2000	1988	1988	1989	1991

06903400 CHARITON RIVER NEAR CHARITON, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1966 - 2001	
ANNUAL TOTAL	5868.77		51970.49			
ANNUAL MEAN	16.0		142		126	
HIGHEST ANNUAL MEAN					345	1993
LOWEST ANNUAL MEAN					9.71	1989
HIGHEST DAILY MEAN	1270	Jun 26	2650	May 14	24600	Sep 15 1992
LOWEST DAILY MEAN	.34	Jan 31	.33	Sep 5	.00	Aug 1 1977
ANNUAL SEVEN-DAY MINIMUM	.38	Jan 27	.39	Sep 1	.00	Jun 21 1988
MAXIMUM PEAK FLOW			3030	May 14	37700	Sep 15 1992
MAXIMUM PEAK STAGE			17.70	May 14	29.32	Sep 15 1992
ANNUAL RUNOFF (CFSM)	.088		.78		.69	
ANNUAL RUNOFF (INCHES)	1.20		10.62		9.39	
10 PERCENT EXCEEDS	14		390		281	
50 PERCENT EXCEEDS	1.3		7.4		13	
90 PERCENT EXCEEDS	.60		.64		.61	

e Estimated



06903700 SOUTH FORK CHARITON RIVER NEAR PROMISE CITY, IA

LOCATION.--Lat 40°48'02", long 93°11'32", in SW$^1/_4$ SW$^1/_4$ sec.5, T.69 N., R.20 W., Wayne County, Hydrologic Unit 10280201, on right bank 20 ft downstream from bridge on County Highway S50, 1.3 mi downstream from Jordan Creek, and 4.3 mi northwest of Promise City.

DRAINAGE AREA.--168 mi^2.

PERIOD OF RECORD.--October 1967 to current year. Occasional low-flow measurements, water years 1958-66, published as "near Bethlehem". Monthly discharge measurements for March 1965 to September 1967 available in files of Iowa City District Office.

GAGE.--Water-stage recorder. Datum of gage is 913.70 ft above sea level (U.S. Army Corps of Engineers bench mark).

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 21, 1965, reached a stage of 25.5 ft, from floodmarks, discharge, about 18,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.25	e2.8	1.3	e.87	e70	538	161	30	1550	19	2.7	.99
2	e.24	e15	1.2	e.82	e40	398	95	31	1180	14	2.4	.94
3	e.24	e11	1.1	e.92	e18	466	74	287	219	17	30	.93
4	e1.0	e1.5	1.2	e1.1	e14	1030	62	937	1390	140	27	.88
5	e2.1	e1.2	1.0	e1.3	e17	646	65	173	2370	42	8.6	.76
6	e1.2	16	.90	e1.5	e14	414	216	128	2040	20	4.2	.98
7	e.60	50	1.3	e1.4	e46	335	145	139	341	14	3.1	2.2
8	e.44	34	1.3	e1.2	e125	250	83	85	148	11	2.6	11
9	e.38	14	1.2	e.98	e840	203	1040	52	89	9.7	2.3	8.3
10	e.36	7.6	e1.1	e1.2	e340	340	344	435	64	8.1	1.9	3.7
11	e.32	4.5	e.90	e1.4	e160	874	741	1640	49	6.9	1.8	2.5
12	e.30	3.3	e.60	e1.6	e140	935	592	287	40	6.2	1.6	1.8
13	e.31	2.5	e.52	e2.0	e135	592	155	1800	35	5.7	1.5	1.4
14	e.31	2.2	e.70	e9.0	e130	406	102	5370	589	5.0	1.5	1.2
15	e.32	1.8	e.76	e64	e110	2210	409	386	1500	4.4	2.0	.76
16	e.30	1.7	e.90	e76	e80	1220	180	149	155	4.2	2.2	.82
17	e.28	1.6	e.74	e40	e62	393	100	92	193	3.9	2.1	.91
18	e.34	1.4	e.72	e27	e68	304	74	81	73	17	1.8	1.0
19	e.30	1.3	e.60	e16	e72	382	59	53	127	44	1.5	1.4
20	e.32	1.0	e.74	e5.8	e64	813	49	39	204	12	1.3	2.1
21	e.28	.88	e.66	e3.1	e56	1120	49	78	4310	23	1.4	2.2
22	e.32	.86	e.58	e3.6	e64	872	190	44	715	8.8	1.4	1.7
23	e.38	.87	e.70	e4.2	e100	427	181	31	166	5.6	1.6	8.7
24	e.46	.85	e.65	e3.8	1580	216	88	29	84	4.5	1.6	21
25	e.80	.96	e.61	e2.8	6910	130	67	33	54	4.0	2.5	5.6
26	e1.8	1.3	e.70	e3.3	1810	92	45	69	453	3.6	1.9	2.8
27	e.98	1.3	e.80	e3.0	1140	78	36	49	473	3.8	1.8	2.0
28	e.74	1.2	e.86	e4.8	750	74	31	30	65	3.9	1.6	1.4
29	e.56	1.3	e.88	e13	---	86	26	24	35	4.3	1.3	.98
30	e.50	1.2	e.96	e125	---	86	23	489	25	3.9	1.1	.90
31	e.48	---	e.90	e140	---	124	---	3640	---	3.1	1.1	---
TOTAL	17.21	185.12	27.08	560.69	14955	16054	5482	16710	18736	472.6	119.4	91.85
MEAN	.56	6.17	.87	18.1	534	518	183	539	625	15.2	3.85	3.06
MAX	2.1	50	1.3	140	6910	2210	1040	5370	4310	140	30	21
MIN	.24	.85	.52	.82	14	74	23	24	25	3.1	1.1	.76
AC-FT	34	367	54	1110	29660	31840	10870	33140	37160	937	237	182
CFSM	.00	.04	.01	.11	3.18	3.08	1.09	3.21	3.72	.09	.02	.02
IN.	.00	.04	.01	.12	3.31	3.55	1.21	3.70	4.15	.10	.03	.02

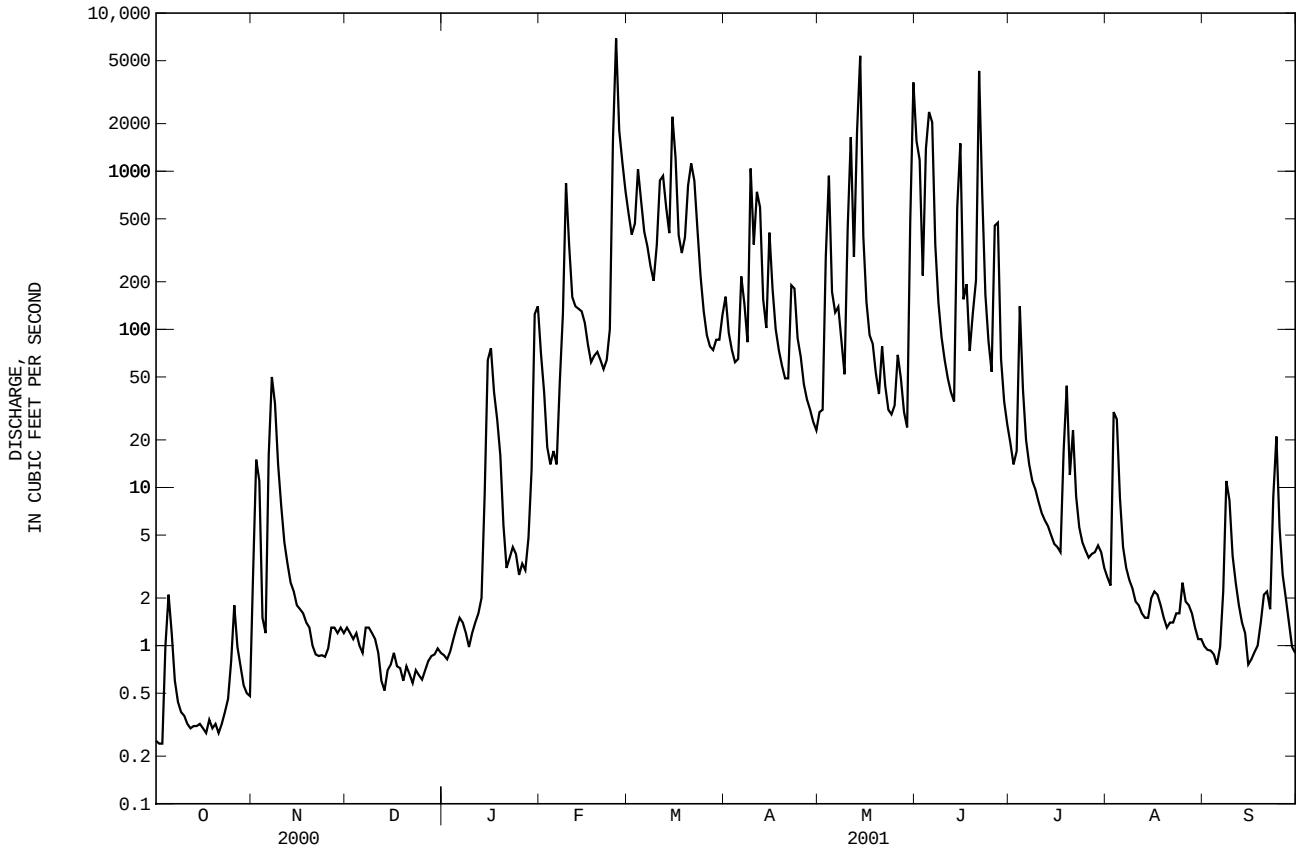
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2001, BY WATER YEAR (WY)

MEAN	97.1	58.2	62.0	36.6	103	189	240	237	168	182	47.0	138
MAX	498	357	440	335	534	853	730	1043	625	2351	300	2227
(WY)	1978	1993	1983	1974	2001	1979	1991	1995	2001	1993	1993	1992
MIN	.15	.39	.40	.19	.88	2.74	1.21	1.89	1.18	.24	.76	.45
(WY)	1989	1990	1977	1977	1989	2000	1989	2000	1988	1977	1984	2000

06903700 SOUTH FORK CHARITON RIVER NEAR PROMISE CITY, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1968 - 2001	
ANNUAL TOTAL	4667.75		73410.95			
ANNUAL MEAN	12.8		201		130	
HIGHEST ANNUAL MEAN					446	1993
LOWEST ANNUAL MEAN					10.7	1989
HIGHEST DAILY MEAN	1900	Jun 26	6910	Feb 25	34700	Sep 15 1992
LOWEST DAILY MEAN	.18	Sep 13	.24	Oct 2a	.00	Jul 6 1977b
ANNUAL SEVEN-DAY MINIMUM	.19	Sep 13	.31	Oct 11	.00	Aug 16 1989
MAXIMUM PEAK FLOW			7980	May 14	70600	Sep 15 1992
MAXIMUM PEAK STAGE			20.63	May 14	34.84	Sep 15 1992
ANNUAL RUNOFF (AC-FT)	9260		145600		94050	
ANNUAL RUNOFF (CFSM)	.076		1.20		.77	
ANNUAL RUNOFF (INCHES)	1.03		16.26		10.50	
10 PERCENT EXCEEDS	10		469		207	
50 PERCENT EXCEEDS	1.5		8.8		14	
90 PERCENT EXCEEDS	.38		.74		.91	

a Also Oct. 3.
b Also July 7, 21-24, 28 to Aug. 1, 1977, July 9, 10, and Aug. 14, 18-22, 1989.
e Estimated.



06903880 RATHBUN LAKE NEAR RATHBUN, IA

LOCATION.--Lat 40°49'30", long 92°53'33", in NW$^1/_4$ NE$^1/_4$ sec.35, T.70 N., R.18 W., Appanoose County, Hydrologic Unit 10280201, at control tower of Rathbun Dam, 1.8 mi north of Rathbun, 3.9 mi upstream from Walnut Creek, and at mile 142.3.

DRAINAGE AREA.--549 mi^2.

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is sea level.

REMARKS.--Reservoir is formed by earthfill dam completed in 1969. Storage began in November 1969. Release is controlled by two hydraulically controlled slide gages, 6 ft wide and 12 ft high, into forechamber of an 11-ft diameter horseshoe conduit through the dam. No dead storage. Maximum design discharge through gates is 5,000 ft^3/s. Uncontrolled notch spillway is concrete overflow section 500 ft in length, located about 3,000 ft west of the right abutment of the dam and provides emergency discharge into the adjacent drainage area of Little Walnut Creek. Uncontrolled notch spillway is at elevation 926 ft, contents 545,621 acre-ft, surface area, 20,974 acres. Conservation pool level is at elevation 904.0 ft, contents 199,830 acre-ft, surface area, 10,989 acres. Reservoir is used for flood control, low-flow augumentation, conservation and recreation. Prior to October 1, 2000 published as mean daily contents in acre feet, and as mean daily elevation in feet NGVD thereafter.

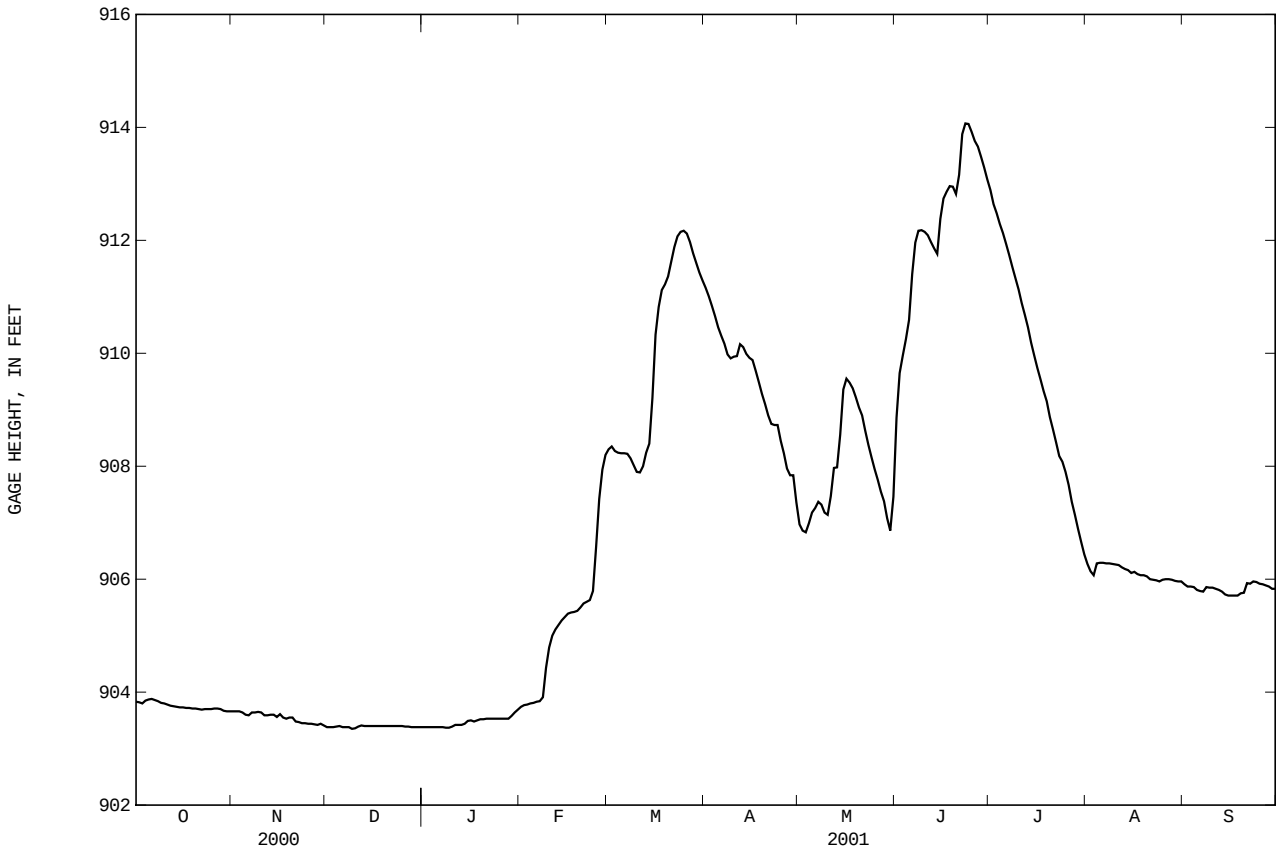
COOPERATION.--Records provided by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 927.16 ft July 28, 1993; minimum elevation, 855.40 ft Oct. 6-10, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum elevation 914.07 ft June 23; minimum elevation, 903.35 ft Dec. 9.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	903.83	903.66	903.38	903.38	903.74	908.30	911.16	906.97	908.86	912.89	906.27	905.91
2	903.82	903.66	903.38	903.38	903.77	908.35	911.01	906.86	909.65	912.64	906.14	905.87
3	903.80	903.66	903.38	903.38	903.78	908.27	910.84	906.83	909.96	912.48	906.07	905.87
4	903.85	903.64	903.39	903.38	903.80	908.24	910.66	906.99	910.25	912.29	906.28	905.86
5	903.87	903.60	903.40	903.38	903.81	908.23	910.46	907.18	910.59	912.13	906.29	905.81
6	903.88	903.59	903.38	903.38	903.83	908.23	910.31	907.26	911.40	911.94	906.29	905.79
7	903.86	903.64	903.38	903.38	903.84	908.22	910.17	907.37	911.96	911.74	906.28	905.78
8	903.84	903.64	903.38	903.37	903.91	908.14	909.98	907.32	912.17	911.53	906.28	905.86
9	903.81	903.65	903.35	903.37	904.43	908.02	909.91	907.18	912.18	911.33	906.27	905.85
10	903.80	903.64	903.36	903.39	904.79	907.90	909.94	907.14	912.15	911.13	906.26	905.85
11	903.78	903.59	903.39	903.42	905.00	907.89	909.95	907.47	912.09	910.89	906.25	905.83
12	903.76	903.59	903.41	903.42	905.11	908.00	910.16	907.97	911.97	910.68	906.21	905.81
13	903.75	903.60	903.40	903.42	905.19	908.24	910.11	907.98	911.86	910.46	906.18	905.78
14	903.74	903.60	903.40	903.44	905.27	908.40	909.99	908.56	911.76	910.19	906.16	905.73
15	903.73	903.56	903.40	903.49	905.33	909.21	909.92	909.36	912.38	909.96	906.11	905.71
16	903.73	903.61	903.40	903.50	905.39	910.33	909.88	909.55	912.74	909.74	906.13	905.71
17	903.72	903.55	903.40	903.48	905.41	910.82	909.69	909.48	912.86	909.54	906.09	905.71
18	903.72	903.53	903.40	903.50	905.42	911.12	909.49	909.38	912.96	909.33	906.07	905.71
19	903.71	903.55	903.40	903.52	905.44	911.22	909.28	909.22	912.95	909.15	906.07	905.75
20	903.71	903.55	903.40	903.52	905.50	911.36	909.10	909.04	912.82	908.87	906.05	905.76
21	903.70	903.48	903.40	903.53	905.57	911.62	908.90	908.90	913.16	908.65	906.00	905.93
22	903.69	903.47	903.40	903.53	905.60	911.88	908.75	908.63	913.88	908.42	905.99	905.92
23	903.70	903.45	903.40	903.53	905.63	912.07	908.73	908.38	914.07	908.18	905.98	905.96
24	903.70	903.45	903.40	903.53	905.79	912.15	908.73	908.16	914.06	908.08	905.96	905.95
25	903.70	903.44	903.40	903.53	906.57	912.17	908.45	907.95	913.92	907.90	905.99	905.92
26	903.71	903.44	903.39	903.53	907.42	912.12	908.23	907.76	913.76	907.67	906.00	905.91
27	903.71	903.43	903.39	903.53	907.94	911.97	907.96	907.55	913.66	907.37	906.00	905.89
28	903.70	903.42	903.38	903.53	908.20	911.77	907.84	907.38	913.48	907.14	905.99	905.87
29	903.67	903.44	903.38	903.58	---	911.60	907.84	907.08	913.29	906.89	905.97	905.83
30	903.66	903.41	903.38	903.64	---	911.43	907.36	906.86	913.08	906.66	905.96	905.83
31	903.66	---	903.38	903.69	---	911.29	---	907.46	---	906.44	905.96	---
MEAN	903.75	903.55	903.39	903.47	905.20	909.95	909.49	907.91	912.33	909.75	906.11	905.83
MAX	903.88	903.66	903.41	903.69	908.20	912.17	911.16	909.55	914.07	912.89	906.29	905.96
MIN	903.66	903.41	903.35	903.37	903.74	907.89	907.36	906.83	908.86	906.44	905.96	905.71


GAGE HEIGHT, IN FEET
916
914
912
910
908
906
904
902
O
N
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J
F
M
A
M
J
J
A
S
2000
2001

06903900 CHARITON RIVER NEAR RATHBUN, IA

LOCATION.--Lat 40°49'22", long 92°53'22", in SE$^1/_4$ NE$^1/_4$ sec.35, T.70 N., R.18 W., Appanoose County, Hydrologic Unit 10280201, on left bank 600 ft downstream from outlet of Rathbun Dam, 1.8 mi north of Rathbun, 3.7 mi upstream from Walnut Creek, and at mile 142.1.

DRAINAGE AREA.--549 mi^2.

PERIOD OF RECORD.--October 1956 to current year. Monthly discharge only for some periods, published in WSP 1730.

REVISED RECORDS.--WSP 1560: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 847.92 ft above sea level. Prior to Nov. 16, 1960, nonrecording gage and Nov. 17, 1960 to Sept. 30, 1969, recording gage, at site 3.1 mi downstream at datum 4.65 ft lower.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,800 ft^3/s Mar. 31, 1960, gage height, 25.3 ft from floodmark, site and datum then in use.

REMARKS.--Records good except for those periods of estimated daily discharge, which are poor. U.S. Army Corps of Engineers data collection platform with telephone modem at station. Flow regulated by Rathbun Lake (station 06903880) since Nov. 21, 1969. Records of discharge include diversion of:

			Diversions		
Oct. 1-3	13 ft^3/s	Oct. 23-30	11 ft^3/s	Aug. 10 to Sept. 30	10 ft^3/s
Oct. 4-22	7 ft^3/s	Oct. 31 to Aug. 9	7 ft^3/s		

The diversion goes from the reservoir through fish ponds on left bank downstream from dam. Diverted flow returns to stream 0.1 mi downstream from gage. Rathbun Regional Water Association permit No. 0400900 allows withdrawal from Rathbun Dam discharge immediately downstream from gage for maximum rate of 4,200 gpm (9.36 ft^3/s). In the 1999 water year 1.66 billion gallons were withdrawn from the river.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	e18	12	13	21	812	1500	785	565	1460	754	19
2	26	e18	12	13	21	1040	1500	714	600	1460	386	19
3	26	e18	12	13	21	1290	1490	343	783	1460	15	20
4	21	12	12	13	20	1290	1490	15	624	1450	14	22
5	20	12	12	13	20	1030	1490	13	577	1450	14	22
6	20	12	12	12	20	834	1520	13	495	1440	16	22
7	20	12	12	12	e18	815	1490	354	14	1440	17	22
8	20	12	12	12	21	1250	1480	781	417	1430	17	22
9	20	12	12	12	303	1250	1490	776	768	1420	17	22
10	21	12	12	16	45	1250	1500	795	765	1410	20	22
11	20	12	16	21	20	1270	1520	525	763	1410	20	23
12	e18	12	17	21	20	1280	1540	414	758	1400	20	23
13	e18	12	19	22	21	1280	1480	681	756	1400	20	22
14	e18	12	20	23	21	1220	1470	459	664	1400	20	22
15	e18	12	19	24	20	e100	1490	1340	130	1390	20	22
16	e18	12	19	25	20	e14	1480	1510	14	1390	19	22
17	e18	12	19	24	20	14	1470	1510	14	1400	19	22
18	e18	12	e18	21	20	405	1460	1500	333	1410	19	23
19	e18	12	13	21	20	959	1450	1490	1030	1440	19	22
20	e18	12	13	22	20	1080	1440	1480	1490	1480	19	23
21	e18	12	13	21	20	1090	1430	1480	1060	1470	19	22
22	e18	12	14	21	20	1080	e1510	1480	442	1470	19	22
23	e11	12	14	21	20	1060	1490	1470	1140	1010	20	22
24	e11	12	14	21	e18	1040	1510	1470	1490	e407	20	22
25	e11	12	14	21	e18	1040	1510	1470	1480	1440	20	22
26	e11	12	14	21	39	1290	1500	e1510	1470	1440	19	22
27	e11	12	14	21	119	1520	1490	e1510	1470	1430	19	23
28	e22	12	14	20	546	1510	1490	e1510	1470	1430	19	23
29	e22	12	14	21	---	1510	1480	1300	1470	1420	19	24
30	e22	12	13	21	---	1510	1240	e1010	1460	1420	19	24
31	e18	---	13	21	---	1500	---	e800	---	1210	19	---
TOTAL	576	378	444	583	1512	32633	44400	30508	24512	42687	1677	662
MEAN	18.6	12.6	14.3	18.8	54.0	1053	1480	984	817	1377	54.1	22.1
MAX	26	18	20	25	546	1520	1540	1510	1490	1480	754	24
MIN	11	12	12	12	18	14	1240	13	14	407	14	19
AC-FT	1140	750	881	1160	3000	64730	88070	60510	48620	84670	3330	1310

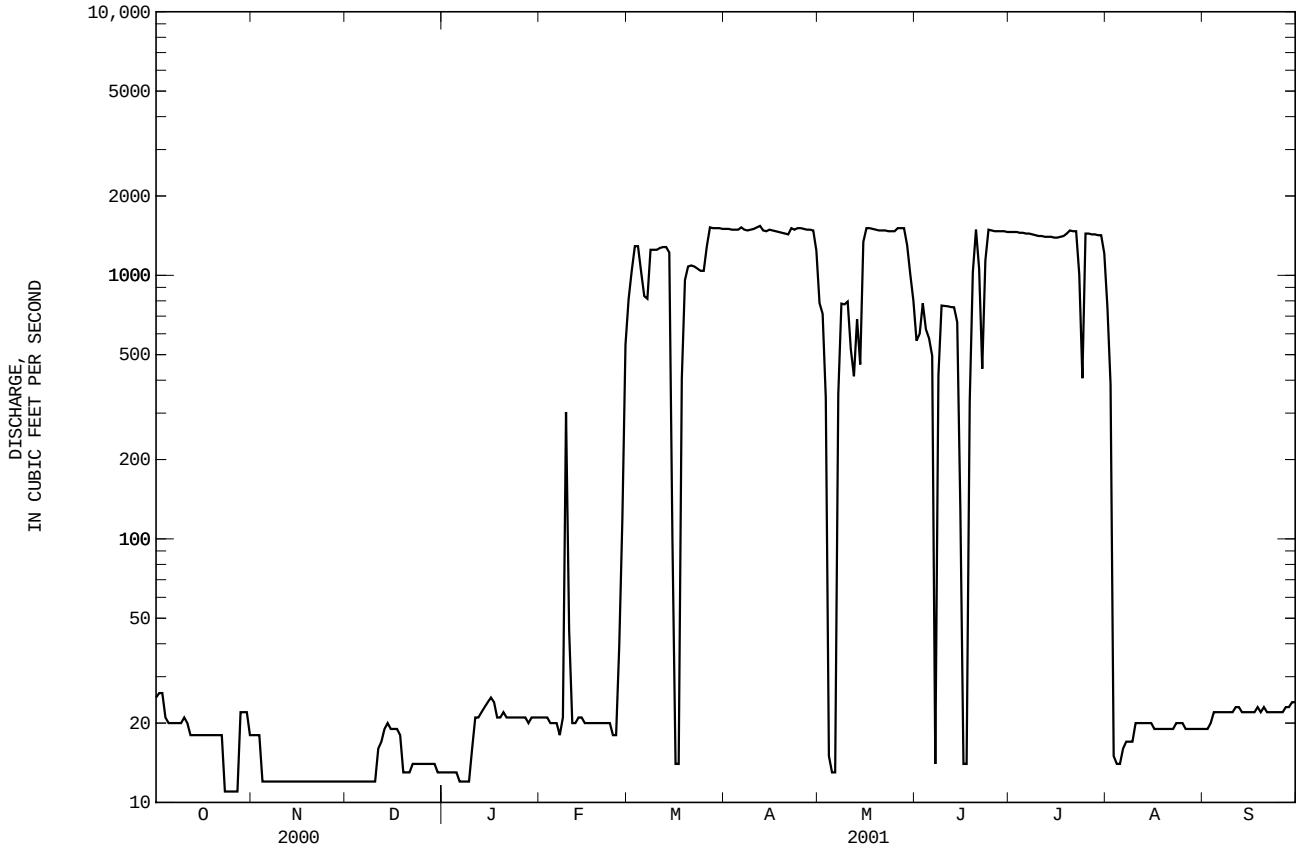
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2001, BY WATER YEAR (WY)

MEAN	271	283	411	243	321	462	377	440	480	591	488	312
MAX	1790	1828	1364	1546	1550	1271	1480	1281	1573	1377	1826	1707
(WY)	1994	1994	1993	1993	1993	1993	2001	1973	1973	2001	1993	1993
MIN	11.5	9.97	5.54	8.98	5.60	9.40	6.74	19.3	16.6	6.53	9.10	11.0
(WY)	1975	1975	1970	1970	1970	1970	1970	1977	1988	1970	1970	1974

06903900 CHARITON RIVER NEAR RATHBUN, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1970 - 2001a	
ANNUAL TOTAL	7473		180572			
ANNUAL MEAN	20.4		495		391	
HIGHEST ANNUAL MEAN					1164	1993
LOWEST ANNUAL MEAN					20.4	1989
HIGHEST DAILY MEAN	29	Sep 20	1540	Apr 12	1950	Oct 17 1993
LOWEST DAILY MEAN	11	Oct 23	11	Oct 23b	.00	Oct 26 1977
ANNUAL SEVEN-DAY MINIMUM	12	Nov 4	12	Nov 4	1.0	Apr 1 1970
MAXIMUM PEAK FLOW			1990	Jun 21	2780	Dec 14 1993
MAXIMUM PEAK STAGE			12.64	Jun 21	14.94	Dec 14 1993
ANNUAL RUNOFF (AC-FT)	14820		358200		283000	
10 PERCENT EXCEEDS	26		1480		1200	
50 PERCENT EXCEEDS	20		22		58	
90 PERCENT EXCEEDS	12		12		16	

a Post regulation.
b Also Oct. 24-27.
e Estimated.



06904010 CHARITON RIVER NEAR MOULTON, IA

LOCATION.--Lat 40°41'30", long 92°46'15", in $SE^1/_4$ $NE^1/_4$ sec.14, T.68 N., R.17 W., Appanoose County, Hydrologic Unit 10280201, on right bank 6 ft downstream from bridge on County Highway J45 (543rd St.), 0.7 mi downstream from Hickory Creek, 5.0 mi west of Moulton, 8.0 mi upstream from Iowa-Missouri border, 20.8 mi downstream from Rathbun Dam, and at mile 121.5.

DRAINAGE AREA.--740 mi^2.

PERIOD OF RECORD--August 1979 to current year.

GAGE--Water stage recorder. Datum of gage is 800.00 ft above sea level (U.S. Army Corps of Engineers bench mark).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Rathbun Reservoir (station 06903880) 20.8 mi upstream. U.S. Geological Survey satellite and telephone modem data collection platform and U.S. Army Corps of Engineers rain gage at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of about 45 ft, discharge unknown, from information by U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	35	26	e20	e44	1260	1630	1030	e3500	1580	992	72
2	25	42	24	e18	e40	1030	1620	925	e1700	1570	828	52
3	25	37	e20	e20	e48	1460	1610	526	e1310	1560	265	49
4	39	33	e18	e22	e66	1630	1590	653	e2050	1550	200	46
5	41	28	e14	e24	e80	1470	1600	225	2200	1540	94	50
6	43	39	e18	e28	e120	1060	1840	212	2700	1530	70	50
7	32	113	e20	e24	e180	946	1730	202	1080	1530	52	54
8	28	58	e24	e20	e280	1240	1640	839	385	1520	48	70
9	27	43	e22	e18	e480	1340	1780	910	958	1510	48	68
10	27	39	e24	e22	e340	1350	1980	1040	958	1500	56	74
11	31	30	e20	e26	e220	1610	2000	2550	937	1500	47	78
12	29	28	e18	e30	e140	1760	2370	1120	923	1490	43	86
13	28	27	e20	e34	e100	1760	1830	1120	906	1490	41	81
14	29	25	e22	e40	e80	1530	1680	1700	1360	1480	41	91
15	27	26	e24	e44	e70	5010	2070	1620	2950	1480	40	83
16	28	28	e26	e40	e66	4800	1910	1630	826	1470	54	e79
17	35	25	e22	e36	e60	1730	1680	1630	741	1470	43	e80
18	37	33	e20	e34	e70	829	1610	1630	551	1510	40	e76
19	34	31	e18	e30	e60	1470	1590	1580	958	1520	36	e67
20	33	41	e20	e28	e80	2030	1580	1560	1580	1570	35	70
21	27	46	e18	e32	e120	2210	1570	1570	4110	1580	35	451
22	23	37	e16	e34	e180	1940	1730	1550	2360	1560	36	86
23	27	33	e20	e36	e240	1660	1910	1530	1420	1520	44	58
24	31	31	e18	e30	e600	1400	1730	1540	1680	702	52	52
25	25	27	e16	e26	3510	1280	1660	1540	1660	1500	93	43
26	21	27	e20	e28	2200	1270	1630	1560	1620	1550	84	39
27	20	26	e18	e26	1030	1620	1610	1600	1600	1540	51	37
28	19	27	e22	e32	722	1640	1600	1680	1590	1530	46	36
29	36	26	e26	e44	---	1630	1590	1820	e1590	1530	45	36
30	38	26	e28	e60	---	1630	1560	1440	e1590	1520	44	36
31	33	---	e24	e50	---	1630	---	3870	---	1500	118	---
TOTAL	925	1067	646	956	11226	53225	51930	42402	47793	46402	3721	2250
MEAN	29.8	35.6	20.8	30.8	401	1717	1731	1368	1593	1497	120	75.0
MAX	43	113	28	60	3510	5010	2370	3870	4110	1580	992	451
MIN	19	25	14	18	40	829	1560	202	385	702	35	36
AC-FT	1830	2120	1280	1900	22270	105600	103000	84100	94800	92040	7380	4460
CFSM	.04	.05	.03	.04	.54	2.32	2.34	1.85	2.15	2.02	.16	.10
IN.	.05	.05	.03	.05	.56	2.68	2.61	2.13	2.40	2.33	.19	.11

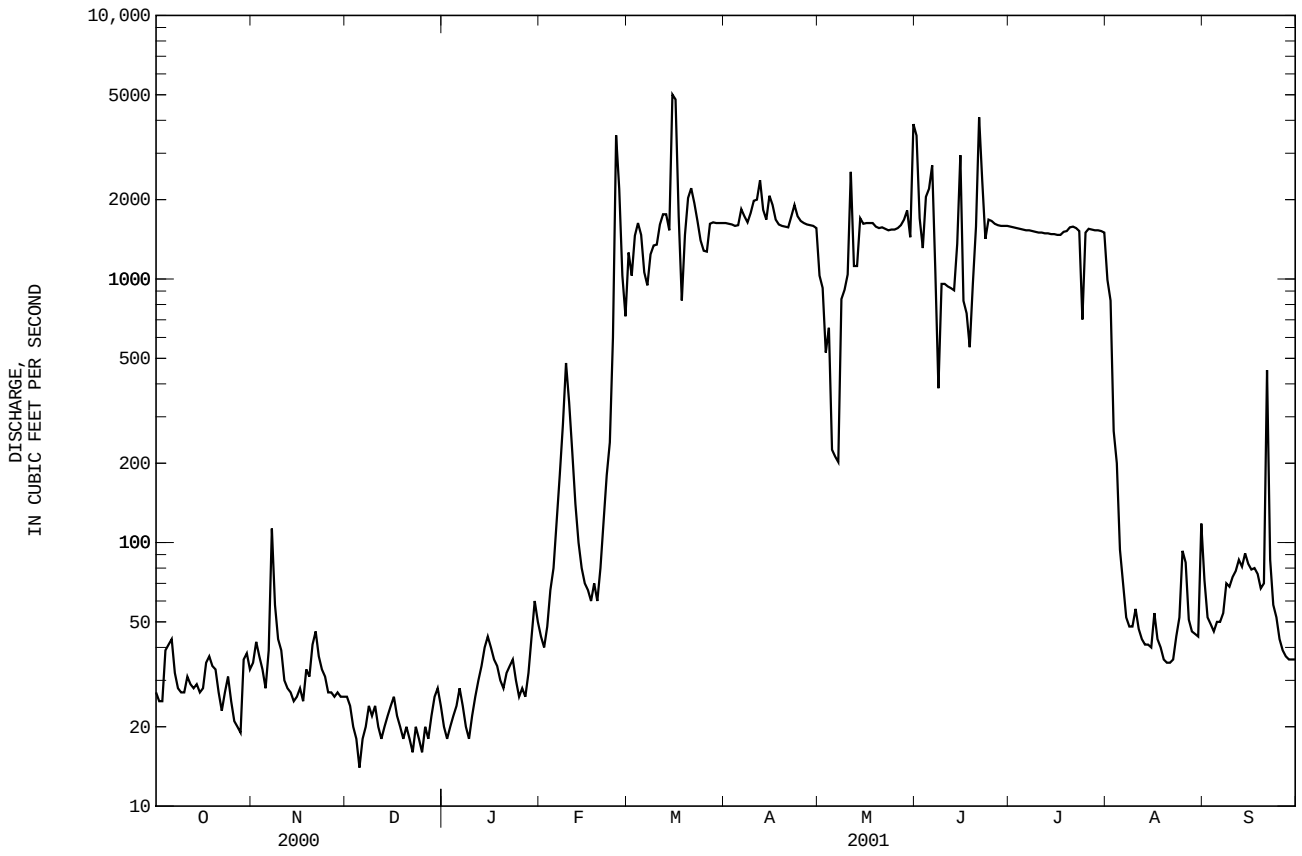
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2001, BY WATER YEAR (WY)

MEAN	404	399	516	318	456	724	672	721	700	942	659	466
MAX	1874	1931	1557	1696	1772	1831	1731	1421	1593	2849	2004	1976
(WY)	1994	1994	1983	1993	1983	1993	2001	1995	2001	1982	1993	1993
MIN	24.2	23.0	20.1	22.2	20.6	24.3	22.7	32.2	20.3	17.9	21.0	26.6
(WY)	1989	1989	1990	1989	1989	1989	1989	2000	1988	1988	1988	1988

06904010 CHARITON RIVER NEAR MOULTON, IA--Continued

SUMMARY STATISTICS	FOR 2000 CALENDAR YEAR		FOR 2001 WATER YEAR		WATER YEARS 1980 - 2001	
ANNUAL TOTAL	23508		262543			
ANNUAL MEAN	64.2		719		582	
HIGHEST ANNUAL MEAN					1555	1993
LOWEST ANNUAL MEAN					43.6	1989
HIGHEST DAILY MEAN	1910	Jun 26	5010	Mar 15	8720	Jul 17 1982
LOWEST DAILY MEAN	14	Dec 5	14	Dec 5	14	Jun 22 1988a
ANNUAL SEVEN-DAY MINIMUM	18	Dec 19	18	Dec 19	15	Jun 22 1988
MAXIMUM PEAK FLOW			6390	Mar 15	11200	Jul 16 1982
MAXIMUM PEAK STAGE			34.27	Mar 15	36.83	Jul 16 1982
ANNUAL RUNOFF (AC-FT)	46630		520800		422000	
ANNUAL RUNOFF (CFSM)	.087		.97		.79	
ANNUAL RUNOFF (INCHES)	1.18		13.20		10.69	
10 PERCENT EXCEEDS	80		1680		1440	
50 PERCENT EXCEEDS	37		83		291	
90 PERCENT EXCEEDS	25		24		27	

a Also June 23, 27 and July 9, 1988.
e Estimated.



The following table contains annual maximum discharge for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, but is not published herein. The years given in the period of record represent water years up to the current year for which the annual maximum has been determined.

MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS

[+--Not determined, a--peak stage did not reach bottom of gage, b--ice affected, c--old gage datum, d--estimate, e--peak affected by backwater]

Station name and number	Location and drainage area	Period of record	Water year 2001 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
BIG SIOUX RIVER BASIN								
Dawson Creek near Sibley, IA (06483440)	Lat 43°23′23″, long 95°42′53″, near NW corner sec.20, T.99 N., R.41 W., Osceola County, Hydrologic Unit 10170204, at culvert on County Highway A30, 2 mi southeast of Sibley. Drainage area 4.35 mi^2.	1952-	06-13-01	9.78	(+)	06-13-01	9.78	(+)
Burr Oak Creek near Perkins, IA (06483495)	Lat 43°14′43″, long 96°10′38″, in SE1/4, sec.5, T.97 N., R.45 W., Sioux County, Hydrologic Unit 10170204, at bridge on U.S. Highway 75, 4 mi north of Perkins. Drainage area 30.9 mi^2.	1966-	04-24-01	86.42	750	06-20-83	88.37	(+)
PERRY CREEK BASIN								
Perry Creek near Merrill, IA (06599800)	Lat 42°43′15″, long 96°20′33″, in NW1/4, sec.12, T.91, N., R.47 W., Plymouth County, Hydrologic Unit 10230001, at bridge on County Highway C44, 5 mi west of Merrill. Drainage area 8.17 mi^2.	1953-1995, 1996-	03-11-01	9.98	(+)	03-27-62	12.22	(+)
Perry Creek near Hinton, IA (06599950)	Lat 42°37′11″, long 96°22′20″, in NE1/4, sec.15, T.90 N., R.47 W., Plymouth County, Hydrologic Unit 10230001, at bridge on county highway, 4 mi west of Hinton. Drainage area 33.1 mi^2.	1953-	03-20-01	23.52	38	06-14-81	38.68	[d]5,500
FLOYD RIVER BASIN								
Little Floyd River near Sanborn, IA (06600030)	Lat 43°11′10″, long 95°43′30″, in NE1/4, sec.31, T.97 N., R.41 W., O'Brien County, Hydrologic Unit 10230002, at bridge on U.S. Highway 18, 3.5 mi west of Sanborn. Drainage area 8.44 mi^2.	1966-	2001	(a)	<104	03-02-70	89.04	(+)
Sweeney Creek tributary near Sheldon, IA (0660036)	Lat 43°11′10″, long 95°44′38″, in SW1/4, sec.25, T.97 N., R.42 W., O'Brien County, Hydrologic Unit 10230002, at culvert on U.S. Highway 18, 4.8 mi east of Sheldon. Drainage area 0.62 mi^2.	1991-	07-25-01	97.65	(+)	07-14-93	99.27	(+)
West Branch Floyd River near Struble, IA (06600300)	Lat 42°55′26″, long 96°10′36″, in SE1/4, sec.29, T.94 N., R.45 W., Sioux County, Hydrologic Unit 10230002, at bridge on county highway B62, 0.1 mi west of U.S. Highway 75, 2.2 mi northeast of Struble. Drainage area 180 mi^2	1996-	08-04-01	11.10	1,450	03-04-94	15.86	8,920
MONONA-HARRISON DITCH BASIN								
Big Whiskey Slough near Remsen, IA (06601480)	Lat 42°48′28″, long 95°53′21″, in NW1/4, sec.11, T.92 N., R.43 W., Plymouth County, Hydrologic Unit 10230004, at bridge on State Highway 3, 4.2 mi east of Remsen. Drainage area 12.9 mi^2.	1966-	03-21-01	93.22	(+)	03-22-79	94.87	(+)

Station name and number	Location and drainage area	Period of record	Water year 2001 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
MONONA-HARRISON DITCH BASIN--continued								
Elliott Creek at Lawton, IA (06602190)	Lat 42°28′30″, long 96°11′22″, in NW1/4, sec.3, T.88 N., R.46 W. Woodbury County, Hydrologic Unit 10230004, at bridge on U.S. Highway 20, at west edge of Lawton. Drainage area 34.8 mi^2.	1966-	2001	(a)	<356	06-12-84	86.14	3,150
LITTLE SIOUX RIVER BASIN								
Ocheyedan River near Ocheyedan, IA (06604510)	Lat 43°25′58″, long 95°36′41″, in NE1/4, sec.6, T.99 N., R.40 W., Osceola County, Hydrologic Unit 10230003, at bridge on State Highway 9, 4 mi northwest of Ocheyedan. Drainage area 73.5 mi^2.	1966-	04-25-01	84.88	1,500	06-29-93	86.79	2,200
Dry Run Creek near Harris, IA (06604584)	Lat 43°26′42″, long 95°27′21″, in NE1/4, sec.33, T.100 N., R.39 W., Osceola County, Hydrologic Unit 10230003, at culvert on county highway M12, 1 mi west of Harris. Drainage area 4.30 mi^2.	1990-	04-12-01	12.13	60	06-29-93	16.44	419
			Revised Record:					
			06-16-90	11.66	[d]48			
			1994	(a)	[d]<12			
			03-12-95	12.94	[d]110			
			03-20-97	15.18	[d]280			
			1998	(a)	[d]<20			
			02-15-99	13.71	[d]160			
			2000	(a)	[d]<17			
Prairie Creek near Spencer, IA (06605340)	Lat 43°05′16″, long 95°09′40″, in SE1/4, sec.36, T.96 N., R.37 W., Clay County, Hydrologic Unit 10230003, at bridge on U.S. Highway 71, 4 mi south of Spencer. Drainage area 22.3 mi^2.	1966-	05-07-01	89.86	1,070	07-04-71	90.77	2,200
Willow Creek near Cornell, IA (06605750)	Lat 42°58′21″, long 95°09′40″, in SE1/4, sec.12, T.94 N., R.37 W., Clay County, Hydrologic Unit 10230003, at bridge on U.S. Highway 71, 2 mi northwest of Cornell. Drainage area 78.6 mi^2.	1966-	05-07-01	88.28	1,100	03-22-79	91.49	4,200
Little Sioux River tributary near Peterson, IA (06605868)	Lat 42°55′25″, long 95°21′55″, in NW1/4, sec.32, T.94 N., R.38 W., Clay County, Hydrologic Unit, 10230003, at culvert on State Highway 10, 1.2 mi northwest of Peterson. Drainage area 0.29 mi^2.	1991-	04-27-01	85.49	(+)	05-31-93	91.81	(+)
Willow Creek near Calumet, IA (06606231)	Lat 42°58′05″, long 95°32′56″ in NE1/4, sec. 15, T.94 N., R.40 W., O'Brian County, Hydrologic Unit 10230003, at culvert on State Highway 10, 1.2 mi north of Calumet. Drainage area 4.13 mi^2.	1991-	06-18-01	97.52	(+)	07-14-93	100.92	(+)
Halfway Creek at Schaller, IA (0660683710)	Lat 42°30′18″, long 95°17′19″, in SW1/4, sec.24, T.89 N., R.38 W., Sac County, Hydrologic Unit 10230005, at culvert on State Highway 110, 0.1 mi north of Schaller. Drainage area 1.74 mi^2.	1990-	2001	(a)	(+)	07-14-92	94.11	(+)
BOYER RIVER BASIN								
Boyer River tributary at Woodbine, IA (06609482)	Lat 41°43′58″, long 95°43′19″, in SE1/4, sec.15, T.80 N., R.42 W., Harrison County, Hydrologic Unit 10230007, at culvert on county highway F32, 0.5 mi west of Woodbine. Drainage area 0.67 mi^2.	1990-	05-02-01	84.85	(+)	05-18-91	90.84	(+)
Willow Creek near Soldier, IA (06609560)	Lat 41°55′17″, long 95°42′05″, near S1/4 corner sec.11, T.82 N., R.42 W., Monona County, Hydrologic Unit 10230001, at bridge on State Highway 37, 6 mi southeast of Soldier. Drainage area 29.1 mi^2.	1966-	06-14-01	78.01	2,770	07-09-93	84.66	6,840

Station name and number	Location and drainage area	Period of record	Water year 2001 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
MOSQUITO CREEK BASIN								
Moser Creek near Earling, IA (06610510)	Lat 41°46′35″, long 95°26′55″, in NE1/4, sec.1, T.80 N., R.40 W., Shelby County, Hydrologic Unit 10230006, at bridge on State Highway 37, 1.5 mi west of Earling. Drainage area 21.6 mi^2.	1966-	06-14-01	76.21	1,820	06-15-84	87.89	(+)
Mosquito Creek tributary near Neola, IA (06610581)	Lat 41°30′06″, long 95°35′44″, in NE1/4, sec.6, T.77 N., R.41 W., Pottawattamie County, Hydrologic Unit 10230006, at culvert on State Highway 191, 3.8 mi north of Neola. Drainage area 3.22 mi^2.	1991-	03-21-01	78.64	56	08-07-99	[d]82.7	[d]770
			Revised Record:					
			06-14-91	80.98	[d]420			
			09-09-92	79.96	[d]240			
			07-09-93	81.06	[d]440			
			07-01-94	80.20	[d]280			
			05-28-95	[e]79.22	[d]120			
			07-17-96	82.03	[d]630			
			02-19-97	79.05	[d]100			
			06-14-98	[d]82.7	[d]770			
			08-07-99	82.44	[d]710			
			2000	(a)	[d]<4			
Keg Creek tributary near Mineola, IA (06805849)	Lat 41°07′53″, long 95°43′31″, in SW1/4, sec.7, T.73 N., R.42 W., Mills County, Hydrologic Unit 10240001, at culvert on county highway H12, 2.4 mi southwest of Mineola. Drainage area 2.01 mi^2.	1991-	04-12-01	76.26	[d]25	07-10-99	82.97	[d]600
			Revised Record:					
			1995	(a)	[d]<1			
NISHNABOTNA RIVER BASIN								
Elm Creek near Jacksonville, IA (0680737930)	Lat 41°38′44″, long 95°12′18″, in SW1/4, sec.18, T.79 N., R.37 W., Shelby County, Hydrologic Unit 10240002, at culvert on State Highway 44, 2.8 mi west of Jacksonville. Drainage area 9.43 mi^2.	1990-	03-14-01	90.63	[d]350	05-15-98	93.73	[d]1,220
			Revised Record:					
			06-14-91	91.12	[d]460			
			1992	(a)	[d]<100			
			07-09-93	90.93	[d]410			
			1994	(a)	[d]<110			
			03-12-95	89.91	[d]210			
			07-17-96	93.44	[d]1,130			
			05-01-97	89.98	[d]220			
			05-15-98	93.73	[d]1,220			
			07-09-99	90.80	[d]380			
			2000	(a)	[d]<130			
Indian Creek near Emerson, IA (06807470)	Lat 41°01′50″, long 95°22′51″, in NW1/4, sec.19, T.72 N., R.39 W., Montgomery County, Hydrologic Unit 10240002, at bridge on U.S. State Highway 34, 1 mi east of Emerson. Drainage area 37.3 mi^2.	1966-	2001	(a)	<766	06-15-82 08-07-99	92.63 94.32	15,800 13,600
Middle Silver Creek near Oakland, Ia (06807760)	Lat 41°19′28″, long 95°33′19″, in E1/4 corner, sec.4, T.75 N., R.41 W., Pottawattamie County, Hydrologic Unit 10240002, at bridge on county highway, 8.5 mi northwest of Oakland. Drainage area 25.7 mi^2.	1953-2001	03-15-01	8.69	342	07-14-98	15.63	2,540
Bluegrass Creek at Audubon, IA (06808880)	Lat 41°42′46″, long 94°44′46″, in NW1/4, sec.28, T.80 N., R.35 W., Audubon County, Hydrologic Unit 10240003, at bridge on U.S. Highway 71, near south edge of Audubon. Drainage area 15.4 mi^2.	1966-	03-13-01	74.31	206	07-09-93	88.55	(+)
TARKIO RIVER BASIN								
Tarkio River near Elliott, IA (06811760)	Lat 41°06′06″, long, 95°06′09″, near NE corner sec.28, T.73 N., R.37 W., Montgomery County, Hydrologic Unit 10240005, at bridge on county highway, 4.5 mi southeast of Elliott. Drainage area 10.7 mi^2.	1952-	03-15-01	7.12	605	08-29-93	12.98	4,640
East Tarkio Creek near Stanton, IA (06811800)	Lat 41°04′48″, long 95°05′34″, in W1/2 sec.34, T.73 N., R.37 W., Montgomery County, Hydrologic Unit 10240005, at bridge on county highway H24, 7 mi north of Stanton. Drainage area 4.66 mi^2.	1952-	2001	(a)	<471	06-09-67	13.74	4,790

Station name and number	Location and drainage area	Period of record	Water year 2001 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
TARKIO RIVER BASIN--continued								
Tarkio River tributary near Stanton, IA (06811820)	Lat 41°02′38″, long 95°05′55″, in NE1/4 sec.16, T.72 N., R.37 W., Montgomery County, Hydrologic Unit 10240005, at box culvert on county highway H63, 4 mi north of Stanton. Drainage area 0.67 mi^2.	1952-	2001	(a)	(+)	06-23-99	5.56	1,070
Snake Creek near Yorktown, IA (06811875)	Lat 40°44′33″, long 95°07′46″, in NW1/4, sec.32, T.69 N., R.37 W., Page County, Hydrologic Unit 10240005, at bridge on State Highway 2, 1.5 mi northeast of Yorktown. Drainage area 9.10 mi^2.	1966-1991, 1997-	2001	(a)	<343	07-09-87	95.24	3,080
NODAWAY RIVER BASIN								
West Nodaway River at Massena, IA (06816290)	Lat 41°14′44″, long 94°45′27″, in SE1/4, sec.33, T.75 N., R.34 W., Cass County, Hydrologic Unit 10240009, at bridge on State Highway 148, at southeast corner of Massena. Drainage area 23.4 mi^2.	1966-	02-25-01	72.42	262	02-01-73	82.39	(+)
PLATTE RIVER BASIN								
Platte River near Diagonal, IA (06818750)	Lat 40°46′02″, long 94°24′46″, in NW1/4, sec. 22, T.69 N., R.31 W., Ringgold County, Hydrologic Unit 10240012, at bridge on county highway, 2.2 mi upstream from Turkey Creek, 4.6 mi. southwest of Diagonal, and 4.9 mi downstream from Gard Creek. Drainage area 217 mi^2.	1968-1991, 1997-	06-01-01	18.53	4,180	09-09-89	23.60	8,630
Middle Branch 102 River near Gravity, IA (06819110)	Lat 40°49′40″, long 94°44′18″, in SE1/4, sec.27, T.70 N., R.34 W., Taylor County, Hydrologic Unit 10240013, at bridge on State Highway 148, 4.8 mi north of Gravity. Drainage area 34.5 mi^2.	1966-	06-05-01	63.26	787	02-01-73 07-05-93	c83.65 76.83	(+) [d]4,790
GRAND RIVER BASIN								
Sevenmile Creek, near Thayer, IA (06897858)	Lat 41°01′37″, long 94°00′03″, in SE1/4, sec.18, T.72 N., R.27 W., Clarke County, Hydrologic Unit 10280102, at culvert on U.S. Highway 34, 2.6 mi east of Thayer. Drainage area 6.61 mi^2.	1991-	2001	(a)	(+)	09-15-92	24.92	[d]1,330
Elk Creek near Decatur City, IA (06897950)	Lat 40°43′18″, long 93°56′12″, in SE1/4, sec. 34, T.69 N., R.27 W., Decatur County, Hydrologic Unit 10280102, at bridge on county Highway, 1,000 ft. downstream from West Elk Creek, 5.8 mi. upstream from mouth, and 5.5 mi. (Revised) west of Decatur City. Drainage area 52.5 mi^2.	1968-	04-09-01	23.82	8,630	07-05-93	29.93	32,800

ADAMS COUNTY

410247094324801. Local number, 72-32-09 CBCC.
LOCATION.--Lat 41°02'48", long 94°32'48", Hydrologic Unit 10240010, on the east side of county road, approximately 4 mi northeast of the City of Prescott. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age (might be in Albany buried-channel).
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 276 ft, screened 266-276 ft, gravel packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,220 ft above sea level, from topographic map. Measuring point: Top of casing, 1.40 ft above land-surface datum.
REMARKS.--Well SW-78.
PERIOD OF RECORD.--October 1987 to November 1987, June 1990, and November 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.30 feet below land-surface datum, May 08, 2001; lowest measured, 3.08 ft below land-surface datum, December 06, 1996.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 06	2.34	MAY 08	2.30	JUL 30	2.59

WATER YEAR 2001 HIGHEST 2.30 MAY 08, 2001 LOWEST 2.59 JUL 30, 2001

410248094324801. Local number, 72-32-09 CCBB.
LOCATION.--Lat 41°02'48", long 94°32'48", Hydrologic Unit 10240010, on the east side of county road, approximately 4 mi northeast of the City of Prescott. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 136 ft, screened 130-136 ft, gravel packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,220 ft above sea level, from topographic map. Measuring point: Top of casing, 2.65 ft above land-surface datum.
REMARKS.--Well SW-83.
PERIOD OF RECORD.--August 1988, June 1990, and November 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.72 feet below land-surface datum, February 3, 1994; lowest measured, 5.45 ft below land-surface datum, November 30, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 30	5.45	NOV 30	2.61	FEB 06	5.18	MAY 08	5.15	JUL 30	5.39

WATER YEAR 2001 HIGHEST 2.61 NOV 30, 2000 LOWEST 5.45 NOV 30, 2000

APPANOOSE COUNTY

404103092404001. Local number, 68-16-15 DDAD.
LOCATION.--Lat 40°41'03", long 92°40'29", Hydrologic Unit 10280201, located approximately 4 mi south of State Highway 2 on State Highway 202 beneath water tower in the Town of Moulton. Owner: Town of Moulton.
AQUIFER.--Cambrian/Ordovician.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 8 and 12.75 in., depth 2377 ft, screened 1713-1736 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 992.00 ft above sea level, by unknown method. Measuring point: Top of well cover, 1.07 ft above land-surface datum.
REMARKS.-- Moulton Town Well.
PERIOD OF RECORD.--October 1961 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 355.00 feet below land surface datum, March 10, 1961; lowest measured, 389.00 feet below land-surface datum February 08, 1999.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	386.23	FEB 12	387.31	MAY 07	387.63	AUG 07	388.13

WATER YEAR 2001 HIGHEST 386.23 NOV 06, 2000 LOWEST 388.13 AUG 07, 2001

AUDUBON COUNTY

413044094565601. Local number, 78-36-35 ADCC1.
LOCATION.--Lat 41°30'44", long 94°56'56", Hydrologic Unit 10240003, 2.5 mi south of the Town of Brayton on Highway 71, and 0.3 mi west on the north side of County Road F-67. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 115 ft, screened 94-101 ft, open hole 101-115 ft., gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,230 ft above sea level, from topographic map. Measuring point: Top of casing, 2.37 ft above land-surface datum.
REMARKS.-- Well WC-69.
PERIOD OF RECORD.--June 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 29.43 ft below land-surface datum, August 11, 1993; lowest measured, 53.55 ft below land-surface datum, April 12, 1990.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 04	51.60	MAY 09	50.97	JUL 31	51.24

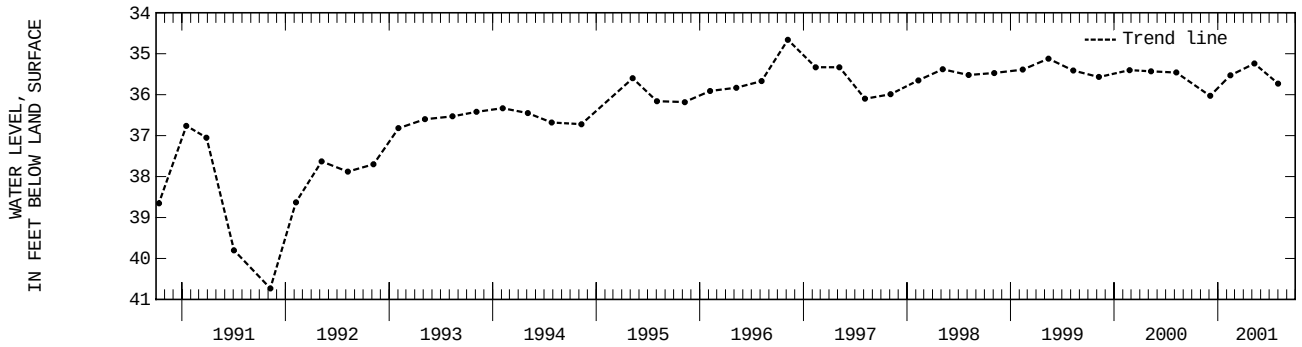
WATER YEAR 2001 HIGHEST 50.97 MAY 09, 2001 LOWEST 51.60 DEC 04, 2000

413958094544501. Local number, 79-35-10 CABB.
LOCATION.--Lat 41°39'59", long 94°54'45", Hydrologic Unit 10240003, approximately 0.3 mi west of the Town of Hamlin, on the south side of Highway 44. Owner: Geological Survey Bureau/DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 221 ft, screened 168-188 ft, open hole 210-221 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,280 ft above sea level, from topographic map. Measuring point: Top of casing, 5.37 ft above land-surface datum.
REMARKS.-- Well WC-17.
PERIOD OF RECORD.--August 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 34.66 ft below land-surface datum, November 6, 1997 and May 09, 1995; lowest measured, 40.73 ft below land-surface datum, November 8, 1991.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 04	36.03	FEB 13	35.53	MAY 09	35.24	AUG 01	35.73

WATER YEAR 2001 HIGHEST 35.24 MAY 09, 2001 LOWEST 36.03 DEC 04, 2000



415023094593801. Local number, 81-36-12 CBCA
LOCATION.--Lat 41°50'23", long 94°59'38", Hydrologic Unit 10240002, approximately 0.5 mi west of the Town of Gray on the east side of County Road N-14, south of the Gray Cemetery. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 315 ft, screened 279-295 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,393 ft above sea level, from topographic map. Measuring point: Top of casing, 1.40 ft above land-surface datum.
REMARKS.-- Well WC-18.
PERIOD OF RECORD.--August 1981 to current year.
REVISION.--Measuring point revised February 13, 1990 to August 4, 1992.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 159 ft below land-surface datum, August 05, 1998; lowest measured, 168.52 ft below land-surface datum, October 6, 1987.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 13	162.05	MAY 09	161.98	AUG 01	162.60

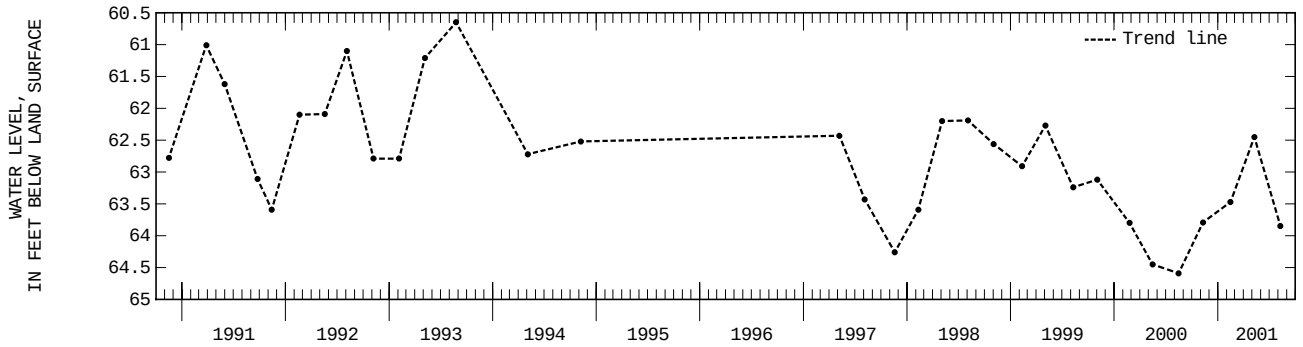
WATER YEAR 2001 HIGHEST 161.98 MAY 09, 2001 LOWEST 162.60 AUG 01, 2001

420731092083801. Local number, 85-11-33 CCBC1.
LOCATION.--Lat 42°07'31", long 92°08'38", Hydrologic Unit 07080205, approximately 1 mi south of the Town of Garrison, just east of County Road V-56. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: Cedar Valley limestone of Middle Devonian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 0.75 in., depth 237 ft, cement plug 97-100 ft, screened below cement plug, open hole 170-237 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 905 ft above sea level, from topographic map. Measuring point: Top of 6 in. casing, 2.20 ft above land-surface datum.
REMARKS.-- Garrison 170 well; Garrison wells 109 and 340 also in this hole.
PERIOD OF RECORD.--June 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 60.18 ft below land-surface datum, April 19, 1983; lowest measured, 64.96 ft below land-surface datum, August 2, 1994.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	63.79	FEB 14	63.47	MAY 09	62.45	AUG 09	63.85

WATER YEAR 2001 HIGHEST 62.45 MAY 09, 2001 LOWEST 63.85 AUG 09, 2001



420731092083803. Local number, 85-11-33 CCBC3.
LOCATION.--Lat 42°07'31", long 92°08'38", Hydrologic Unit 07080205, approximately 1 mi south of the Town of Garrison, just east of County Road V-56. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: Cedar Valley limestone of Middle Devonian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in., depth 97 ft, open hole 90-97 ft, cement plug 97-100 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 905 ft above sea level, from topographic map. Measuring point: Top of 6 in. casing, 2.20 ft above land-surface datum.
REMARKS.-- Garrison 109 well; Garrison wells 170 and 340 also in this hole.
PERIOD OF RECORD.--June 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 60.63 ft below land-surface datum, March 23, 1979; lowest measured, 66.87 ft below land-surface datum, August 4, 1997.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	63.82	FEB 14	63.48	MAY 09	62.47	AUG 09	63.90

WATER YEAR 2001 HIGHEST 62.47 MAY 09, 2001 LOWEST 63.90 AUG 09, 2001

420731092083802. Local number, 85-11-33 CCBC.
LOCATION.--Lat 42°07'31", long 92°08'38", Hydrologic Unit 07080205, approximately 1 mi south of the Town of Garrison, just east of County Road V-56. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Silurian
WELL CHARACTERISTCS.--Drilled observation artesian water well, diameter 6in., depth 538 ft, casing information unknown
IINSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 905 ft above sea level, from topographic map. Measuring point: Top of 6 in. casing, 2.20 ft above land-surface datum.
REMARKS.-- Garrison 340 well; Garrison wells 170 and 109 also in this hole.
PERIOD OF RECORD.--October 1975 to March 1981; November 1982 to November 1990; November 1993 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 67.50 ft below land-surface datum, August 4 1997; lowest measured, 104.94 ft below land-surface datum, August 21, 1985.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	84.41	FEB 14	84.85	MAY 09	83.51	AUG 09	78.01

WATER YEAR 2001 HIGHEST 78.01 AUG 09, 2001 LOWEST 84.85 FEB 14, 2001

BREMER COUNTY

424224092133901. Local number, 91-12-11 DBB.
LOCATION.--Lat 42°42'15", long 92°13'29", Hydrologic Unit 07080102, located in the town of Readlyn, approximately 0.5 mi south of State Highway 3, in the northwest corner of town limits. Owner: Town of Readlyn.
AQUIFER.--Silurian, Alexanderian Series dolomite.
WELL CHARACTERISTICS.--Drilled public-use well, diameter 16 in, depth 154 ft, casing open from 99-154 ft.
INSTRUMENTATION.--Quarterly measurement with airline by USGS personnel
DATUM.--Elevation of land-surface is 1038 feet above sea level, by topographic map.
REMARKS.-- Readlyn No. 2
PERIOD OF RECORD.--August 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 86 feet below land-surface datum, November 05, 1998, lowest measured, 92 feet below land-surface datum, May 05, 1998.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	91	FEB 14	88	MAY 08	87.0	AUG 03	89.0

WATER YEAR 2001 HIGHEST 87.0 MAY 08, 2001 LOWEST 91 NOV 07, 2000

BUENA VISTA COUNTY

424023095571401. Local number, 91-35-26 BCCC
LOCATION.--Lat 42°40'09", long 94°57'15", Hydrologic Unit 07100006, approximately 2.7 mi west and 0.5 mi north of the village of Varina. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: in sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in., depth 357 ft, cased tp 357 ft. screened interval 338-347 ft. Paleozoic rock present at 347 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by U.S.G.S. personnel.
DATUM.--Elevation of land-surface datum is 1,291 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.
REMARKS.-- Well D-24.
PERIOD OF RECORD.--December 1978 to August 1994, November 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.04 ft below land-surface datum, January 7,1980; lowest measured, 96.16 ft below land-surface datum, August 04, 1999.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	96.94	FEB 13	97.04	MAY 07	96.29	AUG 06	97.40

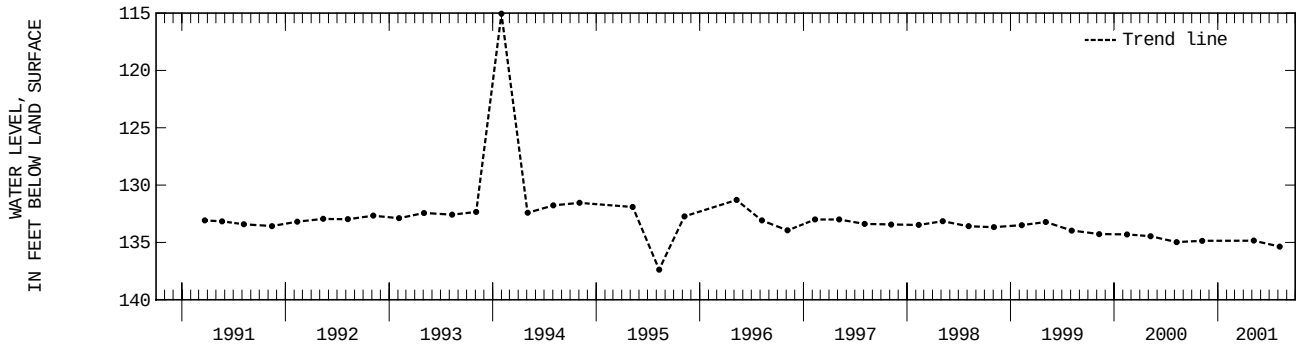
WATER YEAR 2001 HIGHEST 96.29 MAY 07, 2001 LOWEST 97.40 AUG 06, 2001

425233094545001. Local number, 93-35-13 ADAA.
LOCATION.--Lat 42°52'33", long 94°54'49", Hydrologic Unit 07100006, south of the Chicago, Rock Island and Pacific Railroad track, approximately 3.5 mi east and 0.75 mi north of the Town of Marathon. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 1.50 in., depth 381 ft, screened 350-360 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,330 ft above sea level, from topographic map. Measuring point: Top of casing, 3.00 ft above land-surface datum.
REMARKS.-- Well D-36.
PERIOD OF RECORD.--February 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 115.06 ft below land-surface datum, January 31, 1994; lowest measured, 137.37 ft below land-surface datum, August 10, 1995.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	134.86	MAY 07	134.85	AUG 06	135.36

WATER YEAR 2001 HIGHEST 134.85 MAY 07, 2001 LOWEST 135.36 AUG 06, 2001



CALHOUN COUNTY

422812094383501. Local number, 88-32-01 BACD.
LOCATION.--Lat 42°28'12", long 94°38'35", Hydrologic Unit 07100006, located approximately 4.5 mi north of Rockwell City, in a trailer park at the south end of North Twin Lake in Twin Lakes State Park. Owner: Pauline Goins.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Dug unused water-table well, diameter 24 in., depth 35 ft, casing interval unknown.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,222 ft above sea level, from topographic map. Measuring point: Top of casing, 1.12 ft above land-surface datum.
REMARKS.-- Twin Lakes (33F2) well.
PERIOD OF RECORD.--May 1989 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.86 ft below land-surface datum, April 19, 1991; lowest measured, 16.96 ft below land-surface datum, February 28, 1990.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	9.82	MAY 07	2.96

WATER YEAR 2001 HIGHEST 2.96 MAY 07, 2001 LOWEST 9.82 NOV 08, 2000

422339094375101. Local number, 88-33-36 ADAA.
LOCATION.--Lat 42°23'46", long 94°37'56", Hydrologic Unit 07100006, located at the corner of main and 3rd street, three blocks south of U.S. Highway 20. Owner: City of Rockwell.
AQUIFER.--Cambrian/Ordovician: Prairie du Chen Formation dolomite
WELL CHARACTERISTICS.--Drilled public supply well, diameter 16 in., depth 1970 ft., casing interval 1592-1970? ft, gravel packed.
INSTRUMENTATION.--Quarterly measurements with airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,227 ft above sea level, from topographic map.
REMARKS.-- Rockwell City Well No. 4
PERIOD OF RECORD.--February 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 199 ft below land-surface datum, Oct. 07, 1997 and Feb. 10, 1998; lowest measured, 296 ft below land-surface datum, August 09, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	289	FEB 13	293	MAY 10	280	AUG 06	282

WATER YEAR 2001 HIGHEST 280 MAY 10, 2001 LOWEST 293 FEB 13, 2001

CARROLL COUNTY

420230094455101. Local number, 84-34-35 DAAA.
LOCATION.--Lat 42°02'31", long 94°45'51", Hydrologic Unit 07100007, on the south side of county road, approximately 1 mi east of Arthur N. Neu County Airport. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Alluvial and glacial drift: Middle Raccoon River sand and gravel and glacial drift of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 40 ft, screened 28-40 ft, gravel packed. Glacial till 31-36 ft and 37-40 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,185 ft above sea level, from topographic map. Measuring point: Top of casing, 2.35 ft above land-surface datum.
REMARKS.--Well WC-146.
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.50 feet below land-surface datum, May 10, 1995; lowest measured, 8.27 ft below land-surface datum, November 07, 1995.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	8.02	MAY 10	2.86	AUG 06	5.28

WATER YEAR 2001 HIGHEST 2.86 MAY 10, 2001 LOWEST 8.02 NOV 08, 2000

420233094475901. Local number, 83-35-34 BCDC.
LOCATION.--Lat 42°02'33", long 94°47'59", Hydrologic Unit 07100007, approximately 3.5 mi west and 1.5 mi south of the Town of Glidden near the airport, west of County Road N-38. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 100 ft, screened 72-76 ft; gravel packed, open hole 99-100 ft. Pennsylvanian rock 80-100 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,225 ft above sea level, from topographic map. Measuring point: Top of casing, 2.85 ft above land-surface datum.
REMARKS.-- Well WC-148.
PERIOD OF RECORD.--October 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.56 ft below land-surface datum, May 4, 1983; lowest measured, 24.85 ft below land-surface datum, November 08, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	24.85	MAY 10	21.46	AUG 06	21.25

WATER YEAR 2001 HIGHEST 21.25 AUG 06, 2001 LOWEST 24.85 NOV 08, 2000

420643094403701. Local number, 84-33-03 CADA.
LOCATION.--Lat 42°06'43", long 94°40'37", Hydrologic Unit 07100006, 3.5 mi north and 2.5 mi east of the Town of Glidden, on the west side of County Road N-50. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Alluvial: North Raccoon River sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 15 ft, screened 13-15 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,090 ft above sea level, from topographic map. Measuring point: Top of casing, 2.31 ft above land-surface datum.
REMARKS.--Well WC-131.
PERIOD OF RECORD.--September 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.06 ft below land-surface datum, July 10, 1990; lowest measured, 12.53 ft below land-surface datum, February 12, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	11.94	FEB 12	12.53	MAY 10	9.96	AUG 06	12.29

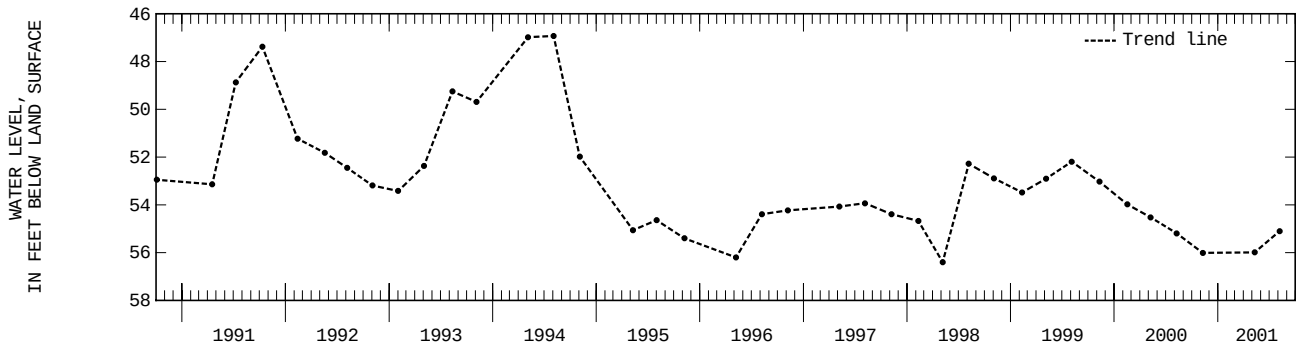
WATER YEAR 2001 HIGHEST 9.96 MAY 10, 2001 LOWEST 12.53 FEB 12, 2001

420705094394501. Local number, 84-33-02 BDBA.
LOCATION.--Lat 42°07'05", long 94°39'45", Hydrologic Unit 07100006, 3.75 mi north and 3.25 mi east of the Town of Glidden, east of County Road N-50 and the Kendal Bridge. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 76 ft., screened 73-76 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,110 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.
REMARKS.--Well WC-132.
PERIOD OF RECORD.--September 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 46.93 ft below land-surface datum, August 3, 1994; lowest measured, 57.30 ft below land-surface datum, February 13, 1990.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	56.01	MAY 10	55.99	AUG 06	55.10

WATER YEAR 2001 HIGHEST 55.10 AUG 06, 2001 LOWEST 56.01 NOV 08, 2000



421058094582701. Local number, 85-35-07 CCCC.
LOCATION.--Lat 42°10'58", long 94°58'29", Hydrologic Unit 07100006, approximately 1 block north of Iowa Highway 217, next to the town maintenance building, Breda. Owner: Town of Breda.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled municipal artesian water well, diameter 10 in., depth 340 ft, screened 320-340 ft. Original depth 349 ft.
INSTRUMENTATION.--Quarterly measurement with chalked taped by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,362 ft above sea level, from topographic map. Measuring point: Vent pipe, 1.60 ft above land-surface datum.
REMARKS.--City of Breda Well No. 3, previously referred to as Town Well No. 2.
PERIOD OF RECORD.--March 1942 to August 1966, March 1968 to November 1971, June 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 179.65 ft below land-surface datum, August 08, 2000; lowest measured, 250.40 ft below land-surface datum, May 24, 1977.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 13	207	MAY 10	205	AUG 23	247

WATER YEAR 2001 HIGHEST 205 MAY 10, 2001 LOWEST 247 AUG 23, 2001

CASS COUNTY

411900094530101. Local number, 75-35-07 BBAB.
LOCATION.--Lat 41°19'00", long 94°55'30", Hydrologic Unit 10240003, approximately 3 mi north and 2.9 mi west of the Town of Cumberland, 2 mi south of County Road G-35 and 2.9 mi west of County Road N-28. Owner: Geological Survey Bureau/ DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in., depth 218 ft, screened 189-209 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,295 ft above sea level, from topographic map. Measuring point: Top of casing, 2.35 ft above land-surface datum.
REMARKS.--Well SW-17.
PERIOD OF RECORD.--July 1986 to October 1987, February 1990 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 111.65 ft below land-surface datum, August 5, 1993; lowest measured, 125.75 ft below land-surface datum, March 14, 1990.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 04	120.72	FEB 06	120.89	MAY 08	118.20	JUL 30	117.42

WATER YEAR 2001 HIGHEST 117.42 JUL 30, 2001 LOWEST 120.89 FEB 06, 2001

412832095033501. Local number, 77-37-13 BBBB.
LOCATION.--Lat 41°28'32", long 95°03'35", Hydrologic Unit 10240003, approximately 1 mi south of U.S. Interstate 80, and east of Highway 173. Approximately 2 mi north and 3 mi east of the Town of Marne. Owner: Geological Survey Bureau/DNR and U.S. Geological Survey.
AQUIFER.--Pennsylvanian: limestone of Pennsylvanian age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in., depth 201 ft, screened 196-201 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,298 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.
REMARKS.--Well SW-18.
PERIOD OF RECORD.--July 1986 to October 1987, February 1990 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 113.50 ft below land-surface datum, November 4, 1993; lowest measured, 128.40 ft below land-surface datum, March 14, 1990.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 04	121.37	FEB 13	123.00	MAY 09	121.53	JUL 31	121.96

WATER YEAR 2001 HIGHEST 121.37 DEC 04, 2000 LOWEST 123.00 FEB 13, 2001

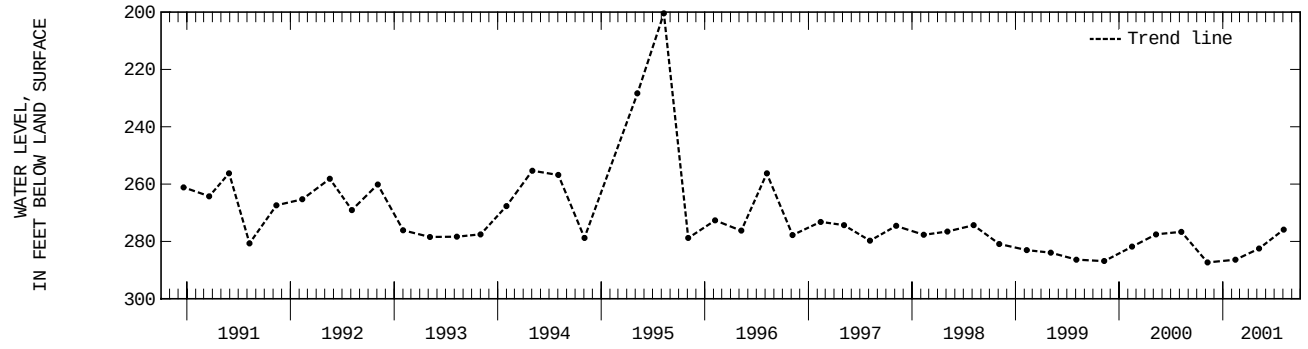
CERRO GORDO COUNTY

430757093131801. Local number,96-20-17 DAAD.
LOCATION.--Lat 43°07'57", long 93°13'18", Hydrologic Unit 07080203, in southwest Mason City, 1 mi west of Highway 65 and south of the Iowa Terminal Rail-yard. Owner: AMPI Creamery (formerly State Brand Creameries).
AQUIFER.--Cambrian-Ordovician: sandstone of Late Cambrian age and sandy dolomite of Early Ordovician age.
WELL CHARACTERISTICS.--Unused drilled industrial artesian water well, diameter 10 to 6 in. from 0-1080 ft, depth 1,336 ft, open hole from 1,080-1,336 ft.
INSTRUMENTATION.--Quarterly measurement with electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,162 ft above sea level, from topographic map. Measuring point: Top of casing, 1.50 ft above land-surface datum.
REMARKS.-- State Brand Creameries Well #1. Records for 1968-1971 and 1973-1989 are unpublished and available in the files of the Iowa District Office.
PERIOD OF RECORD.--October 1968 to March 1971, and March 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 170.80 ft below land-surface datum, August 4, 1977; lowest measured, 298.80 ft below land-surface datum, October 22, 1968.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	287.33	FEB 14	286.38	MAY 08	282.5	AUG 03	275.85

WATER YEAR 2001 HIGHEST 275.85 AUG 03, 2001 LOWEST 287.33 NOV 07, 2000



CERRO GORDO COUNTY--Continued

430806093164501. Local number, 96-21-13 BCCB.
LOCATION.--Lat 43°08'04", long 93°16'46", Hydrologic Unit 07080203, south of the County Home, just north of Iowa Highway 106, east of the City of Clear Lake. Owner: Mason City and Clear Lake Railroad.
AQUIFER.--Devonian: Cedar Valley limestone of Middle Devonian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 5 in., depth 198 ft. Casing information is not available.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,165 ft above sea level, from topographic map. Measuring point: Top of well curb, 1.30 ft above land-surface datum.
PERIOD OF RECORD.--November 1940 to August 1971, March 1973 to current year. REMARKS:-- Mason City and Clear Lake Railroad well.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.44 ft below land-surface datum, February 12, 1982; lowest measured, 17.26 ft below land-surface datum, November 18, 1955.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	6.95	FEB 14	7.76	MAY 08	3.65	AUG 03	5.96

WATER YEAR 2001 HIGHEST 3.65 MAY 08, 2001 LOWEST 7.76 FEB 14, 2001

CHEROKEE COUNTY

423833095365701. Local number, 90-40-06 BDCD.
LOCATION.--Lat 42°38'33", long 95°36'57", Hydrologic Unit 10230003, approximately 3.1 mi west of U.S. Highway 59 and 0.55 mi north of Iowa Highway 31 along the Illinois Central Railroad track. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 1.25 in., depth 253 ft, sandpoint 252-253 ft.
INSTRUMENTATION.--Quarterly measurements with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,182 ft above sea level, from topographic map. Measuring point: Top of casing, 3.93 ft above land-surface datum.
REMARKS.--Well D-6.
PERIOD OF RECORD.--December 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.38 ft below land-surface datum, August 27, 1983; lowest measured, 40.85 ft below land-surface datum, January 15, 1991.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	35.93	MAY 09	32.28	AUG 06	32.26

WATER YEAR 2001 HIGHEST 32.26 AUG 06, 2001 LOWEST 35.93 NOV 20, 2000

424132095480211. Local number, 91-42-16 DDDD11.
LOCATION.--Lat 42°41'32", long 95°48'02", Hydrologic Unit 10230004, approximately 2 mi north of the Village of Fielding at the junction of County Roads L-36 and C-44. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 390 ft, screened 386-390 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,320 ft above sea level, from topographic map. Measuring point: Top of casing, 1.50 ft above land-surface datum.
REMARKS.--Well D-11.
PERIOD OF RECORD.--March 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 141.67 ft below land-surface datum, May 5, 1993; lowest measured, 156.77 ft below land-surface datum, August 07, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	157.29	FEB 13	157.15	MAY 09	156.21	AUG 06	156.28

WATER YEAR 2001 HIGHEST 156.21 MAY 09, 2001 LOWEST 157.29 NOV 20, 2000

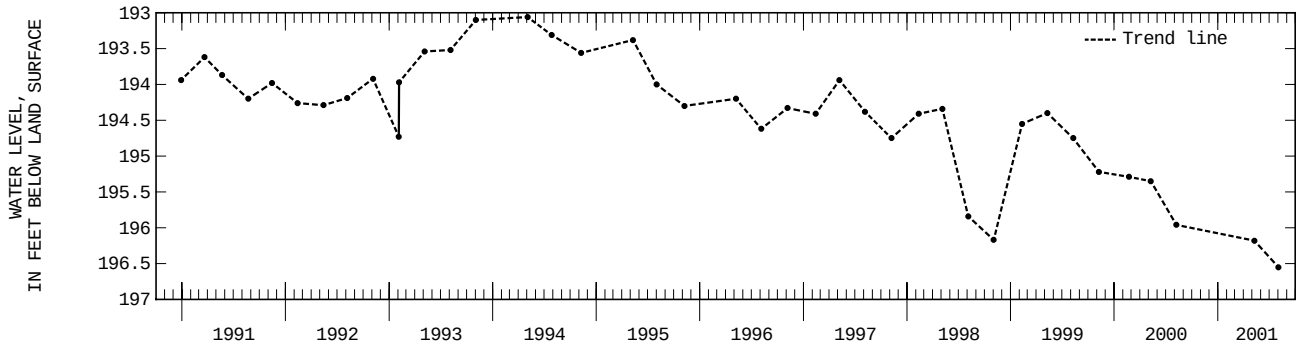
CHEROKEE COUNTY--Continued

424348095231601. Local number, 91-39-01 ADAD1.
LOCATION.--Lat 42°43'48", long 95°23'15", Hydrologic Unit 10230005, approximately 2 mi east and 0.5 mi north of the Town of Aurelia at the Larson Lake County Park. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Cambrian-Ordovician: sandstone of Cambrian age and dolomite of Ordovician age.
WELL CHARACTERISITICS.--Drilled observation artesian water well, diameter 6 in. to 236 ft, 5 in. to 486 ft, 2 in. to 1,126 ft, depth 1,545 ft, open hole 1,126 to 1,545 ft.
INSTRUMENTATION.--Quarterly measurement with electric line or chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,370 ft above sea level, from topographic map. Measuring point: Top of casing, 1.55 ft above land-surface datum.
REMARKS.--Well D-28.
PERIOD OF RECORD.--September 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 189.65 ft below land-surface datum, December 19, 1984; lowest measured, 196.17 ft below land-surface datum, November 02, 1998.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 09	196.18	AUG 02	196.55

WATER YEAR 2001 HIGHEST 196.18 MAY 09, 2001 LOWEST 196.55 AUG 02, 2001



424348095231602. Local number, 91-39-01 ADAD2.
LOCATION.--Lat 42°43'48", long 95°23'15", Hydrologic Unit 10230005, approximately 2 mi east and 0.5 mi north of the Town of Aurelia at the Larson Lake County Park. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 4 in., depth 340 ft, screened 235-240 ft.
INSTRUMENTATION.--Quarterly measurement with electric line or chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,370 ft above sea level, from topographic map. Measuring point: Top of casing, 1.75 ft above land-surface datum.
REMARKS.--Well D-29.
PERIOD OF RECORD.--September 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 188.65 ft below land-surface datum, April 20, 1988; lowest measured, 194.15 ft below land-surface datum, August 24, 1982.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 09	193.61	AUG 02	193.92

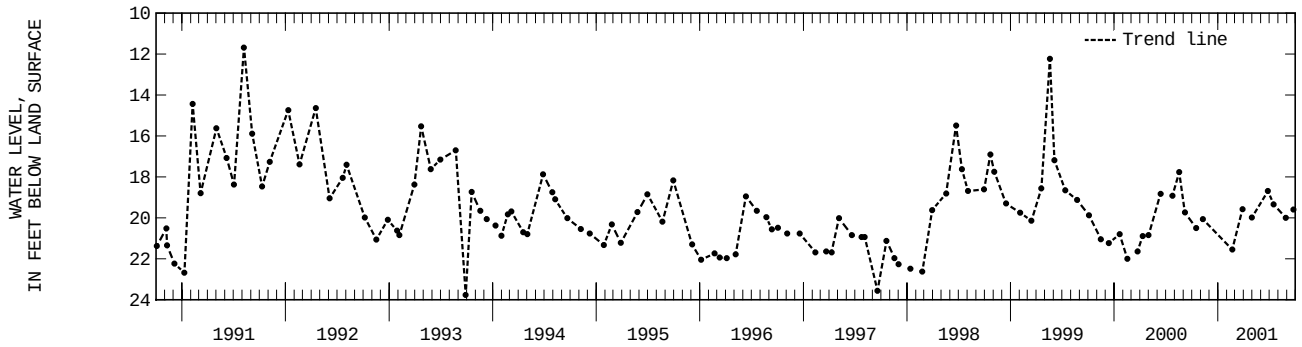
WATER YEAR 2001 HIGHEST 193.61 MAY 09, 2001 LOWEST 193.92 AUG 02, 2001

424023091291201. Local number, 91-05-30 BBBB.
LOCATION.--Lat 42°40'23", long 91°29'12", Hydrologic Unit 07060006, 5 mi northwest of the City of Edgewood, or 2 mi northwest of the junction of Iowa Highways 3 and 13, east of Strawberry Point. Owner: Harold Knight.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Dug unused water-table well, diameter 36 in., depth 36 ft. Casing information not available.
INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,233 ft above sea level, from topographic map. Measuring point: Hole in pump base at land-surface datum.
PERIOD OF RECORD.--June 1957 to current year. REMARKS:-- Harold Knight well.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.68 ft below land-surface datum, August 7, 1991; lowest measured, 30.68 ft below land-surface datum, January 12, 1959.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	20.50	FEB 20	21.55	APR 30	19.99	JUL 16	19.34	SEP 24	19.59		
NOV 08	20.06	MAR 28	19.58	JUN 26	18.69	AUG 28	20.00				

WATER YEAR 2001 HIGHEST 18.69 JUN 26, 2001 LOWEST 21.55 FEB 20, 2001



425736091260303. Local number, 94-05-31 A.
LOCATION.--Lat 42°57'36", long 91°26'03", Hydrologic Unit 07060004, approximately 100 feet south of Robert's Creek on County Highway X16.
AQUIFER.--Cambrian-Ordovician: St. Peter Sandstone.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1030 ft above sea level, from topographic map. Measuring point: Top of casing, 2.50 ft above land-surface datum.
REMARKS.--Well BS2-G.
PERIOD OF RECORD.--January 1989 to April 1989, May 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 182.82 ft above land-surface datum, August 25, 1999, lowest water level recorded 185.60 ft below land-surface datum, February 20, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	185.03	FEB 20	185.60	AUG 29	185.14

WATER YEAR 2001 HIGHEST 185.03 NOV 08, 2000 LOWEST 185.60 FEB 20, 2001

425433091285002. Local number, 94-05-31 DACC2.
LOCATION.--Lat 42°54'38", long 91°28'25", Hydrologic Unit 07060004, located at entrance to Big Spring Fish Hatchery 4.5 mi west and 1.25 mi south of the Town of St. Olaf. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Cambrian-Ordovician: Galena dolomite of Middle Ordovician age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in., depth 85 ft, open hole 61-85 ft.
INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 855 ft above sea level, from topographic map. Measuring point: Top of recorder platform, 2.23 ft above land-surface datum.
REMARKS.--Well BS1-B. Historical water-level data published in OFR 91-63 and OFR 92-67.
PERIOD OF RECORD.--December 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 0.62 ft above land-surface datum, August 20, 1993 (revised); lowest water level recorded 13.37 ft below land-surface datum, February 15, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	13.03	FEB 20	13.32	AUG 27	6.21

WATER YEAR 2001 HIGHEST 6.21 AUG 27, 2001 LOWEST 13.32 FEB 20, 2001

CLAYTON COUNTY--Continued

430156091182901. Local number, 95-04-22 BCBD.
LOCATION.--Lat 43°01'56", long 91°18'29", Hydrologic Unit 07060001, approximately 2 mi north of the junction of U.S. Highway 18 and U.S. Highway 52-Iowa Highway 13, near Spook Cave. Owner: Gerald Mielke.
AQUIFER.--Cambrian-Ordovician: St. Peter sandstone of Middle Ordovician age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 6 in., depth 49 ft. Casing information not available.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 940 ft above sea level, from topographic map. Measuring point: Top of casing, 1.00 ft above land-surface datum.
PERIOD OF RECORD.--October 1957 to current year.
REMARKS.-- USGS 22E1
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.98 ft below land-surface datum, December 7, 1983; lowest measured, 27.88 ft below land-surface datum, March 4, 1968.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	22.94	FEB 21	23.64	AUG 29	22.74

WATER YEAR 2001 HIGHEST 22.74 AUG 29, 2001 LOWEST 23.64 FEB 21, 2001

CLINTON COUNTY

414921090450401. Local number, 81-02E-17 ACA.
LOCATION.--Lat 41°49'32", long 90°45'08", Hydrologic Unit 07080103, located below water tower near sub-station in the Town of Calamus. Owner: Town of Calamus.
AQUIFER.--Silurian
WELL CHARACTERISTICS.--Drilled pumping well, diameter 12 in. to 90 ft, 10 in. to 190 ft, depth 278 ft.
INSTRUMENTATION.--Quarterly measurements with airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 712 feet above sea level, by topographic map.
PERIOD OF RECORD.--August 1997 to current year.
REMARKS.-- Calamus No.1
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 43 feet below land-surface datum, August 06, 1997; lowest measured, 104 ft below land-surface datum, August 09, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	97	FEB 15	96	MAY 08	97	MAY 09	102	AUG 09	104

WATER YEAR 2001 HIGHEST 96 FEB 15, 2001 LOWEST 104 AUG 09, 2001

414806090212301. Local number, 81-05E-22 DDD.
LOCATION.--Lat 41°48'03", long 90°21'26", Hydrologic Unit 07080101, approximately 1 mile south of the intersection of U.S. Interstate 30 and county road 36, on the northwest corner of intersection. Owner: Town of Low Moor.
AQUIFER.--Silurian, Alexanderian Series
WELL CHARACTERISTICS.--Drilled public-use well, diameter 12 in. to 62 ft, 8 in. to 62 ft, depth 322 ft, open hole from 85- 322 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 651 feet above sea level, by topographic map.
PERIOD OF RECORD.--August 1997 to current year
REMARKS.-- Low Moor No.2
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 19.99 feet below land-surface datum, February 09, 1999; lowest measured, 30.50 ft below land-surface datum, May 03, 1999.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 08	20.19	AUG 08	22.46

WATER YEAR 2001 HIGHEST 20.19 MAY 08, 2001 LOWEST 22.46 AUG 08, 2001

CRAWFORD COUNTY

415514095312001. Local number, 82-40-17 AABB.
LOCATION.--Lat 41°55'14", long 95°31'20", Hydrologic Unit 10230007, approximately 1.5 mi west of the Town of Dow City on the south side of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 141 ft, screened 123-141 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,150 ft above sea level, from topographic map. Measuring point: Top of casing, 2.50 ft above land-surface datum.
REMARKS.--Well WC-9.
PERIOD OF RECORD.--June 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 38.15 ft below land-surface datum, May 3, 1983; lowest measured, 43.86 ft below land-surface datum, June 11, 1981.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	43.46	FEB 15	42.74	MAY 10	40.46	AUG 01	42.27

WATER YEAR 2001 HIGHEST 40.46 MAY 10, 2001 LOWEST 43.46 NOV 21, 2000

420608095111701. Local number, 84-37-08 BCCB.
LOCATION.--Lat 42°06'08", long 95°11'14", Hydrologic Unit 10230007, approximately 3 mi north of the Town of Vail on the east side of County Road E-25. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Fremont buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 541 ft, screened 527-541 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,380 ft above sea level, from topographic map. Measuring point: Top of casing, 1.65 ft above land-surface datum.
REMARKS.--Well WC-226.
PERIOD OF RECORD.--August 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 208.35 ft below land-surface datum, July 17, 1988; lowest measured, 217.70 ft below land-surface datum, February 11, 1999.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	214.46	FEB 13	214.41	MAY 09	214.05	AUG 02	214.72

WATER YEAR 2001 HIGHEST 214.05 MAY 09, 2001 LOWEST 214.72 AUG 02, 2001

421005095342801. Local number, 85-41-13 CCCC.
LOCATION.--Lat 42°10'05", long 95°34'28", Hydrologic Unit 10230001, approximately 7 mi west of the Town of Schleswig, northeast of the junction of County Roads L-51 and E-16. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota and glacial drift: sandstone of Cretaceous age and sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 361 ft, screened 307-322 ft, gravel-packed. Open to Dakota 320-361 ft.
INSTRUMENTATION.--Quarterly measurement with electric line or chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,375 ft above sea level, from topographic map. Measuring point: Top of casing, 3.49 ft above land-surface datum.
REMARKS.--Well WC-6.
PERIOD OF RECORD.--May 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 244.23 ft below land-surface datum, July 28, 1981; lowest measured, 249.05 ft below land-surface datum, February 5, 1982.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	248.52	FEB 13	248.33	MAY 09	247.78	AUG 02	248.61

WATER YEAR 2001 HIGHEST 247.78 MAY 09, 2001 LOWEST 248.61 AUG 02, 2001

421031095225601. Local number, 85-39-16 ADDD1.
LOCATION.--Lat 42°10'31", long 95°22'56", Hydrologic Unit 10230007, approximately 2.5 mi east and 0.5 mi north of the Town of Schleswig on the west side of County Road M-27. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in., depth 351 ft, screened 315-330 ft, gravel-packed. Open to Pennsylvanian rock 344-351 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,370 ft above sea level, from topographic map. Measuring point: Top of casing, 3.14 ft above land-surface datum.
REMARKS.--Well WC-7A.
PERIOD OF RECORD.--June 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 232.61 ft below land-surface datum, October 7, 1986; lowest measured, 239.65 ft below land-surface datum, August 2, 1995.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 13	236.12	MAY 09	236.13	AUG 02	236.14

WATER YEAR 2001 HIGHEST 236.12 FEB 13, 2001 LOWEST 236.14 AUG 02, 2001

421031095225602. Local number, 85-39-16 ADDD2.
LOCATION.--Lat 42°10'31", long 95°22'56", Hydrologic Unit 10230007, approximately 2.5 mi east and 0.5 mi north of the Town of Schleswig on the west side of County Road M-27. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Mississippian: limestone of Mississippian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 561 ft, screened 543-561 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,370 ft above sea level, from topographic map. Measuring point: Top of casing, 3.14 ft above land-surface datum.
REMARKS.--Well WC-7B.
PERIOD OF RECORD.--June 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 296.63 ft below land-surface datum, May 07, 1996, lowest measured, 307.64 ft below land-surface datum, October 4, 1983.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 13	304.43	MAY 09	304.15	AUG 08	304.56

WATER YEAR 2001 HIGHEST 304.15 MAY 09, 2001 LOWEST 304.56 AUG 08, 2001

CRAWFORD COUNTY--Continued

421106095125501. Local number, 85-38-12 DCBA.
LOCATION.--Lat 42°11'06", long 95°12'55", Hydrologic Unit 10230007, approximately 5.5 mi east of the Town of Kiron on the south side of County Road E-16 near the Town of Boyer. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Fremont buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 341 ft, screened 300-310 ft, open hole from 315-341 ft., gravel packed. Open to Pennsylvanian limestone and shale 331-341 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,225 ft above sea level, from topographic map. Measuring point: Top of casing, 3.70 ft above land-surface datum.
REMARKS.--Well WC-14.
PERIOD OF RECORD.--July 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.---Highest water level measured, 62.76 ft below land-surface datum, April 16, 1987; lowest measured, 67.29 ft below land-surface datum, August 07, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	67.69	FEB 13	67.46	MAY 09	67.25	AUG 02	67.85

WATER YEAR 2001 HIGHEST 67.25 MAY 09, 2001 LOWEST 67.85 AUG 02, 2001

DALLAS COUNTY

413613093530401. Local number, 79-26-33 CDBA.
LOCATION.--Lat 40°36'13", long 93°53'05", Hydrologic Unit 07100006, approximately 0.5 miles south of the Town of Waukee on county road R-22, 100 ft east of roadway, well located inside 48 in concrete culvert. Owner: Town of Waukee.
AQUIFER.--Cambrian/Ordovician, Jordan sandstone.
WEL CHARACTERISTICS.--Drilled public use well, diameter 16 in., depth 2730 ft, casing interval unknown, gravel packed.
INSTRUMENTATION.--Quarterly measurement with airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 1012 ft above sea level, from topographic map.
REMARKS.-- Waukee Well No. 2
PERIOD OF RECORD.--May 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 389 ft below land-surface datum, May 9, 1997; lowest measured 428 ft below land-surface datum, February 09,1998.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	408	FEB 12	402	MAY 09	398	AUG 02	405

WATER YEAR 2001 HIGHEST 398 MAY 09, 2001 LOWEST 408 NOV 08, 2000

DECATUR COUNTY

404422093445602. Local number, 69-25-29 DDDD
LOCATION.--Lat 40°44'24", long 93°44'58", Hydrologic Unit 10280102, approximately 7 mi east of Interstate 35 in the City of Leon, within open field between Iowa Highway 2 and NW 2nd Ave. on NW School St. Owner: City of Leon.
AQUIFER.--Cambrian/Ordovician: Jordan sandstone.
WELL CHARCTREISTICS.--Drilled public use well, diameter 8 in, depth 2853 ft, screened 2740-2790 ft, gravel packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1105.60 ft above sea level, from levels. MEasuring point: Top of casing, 3.70 ft above land-surface datum.
REMARKS.-- Leon City Well No. 4
PERIOD OF RECORD.--May 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 439.80 ft below land-surface datum, May 30, 1996; lowest measured, 445.22 ft below land-surface datum, July 26, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 30	444.43	FEB 07	444.61	MAY 02	444.40	JUL 26	445.22

WATER YEAR 2001 HIGHEST 444.40 MAY 02, 2001 LOWEST 445.22 JUL 26, 2001

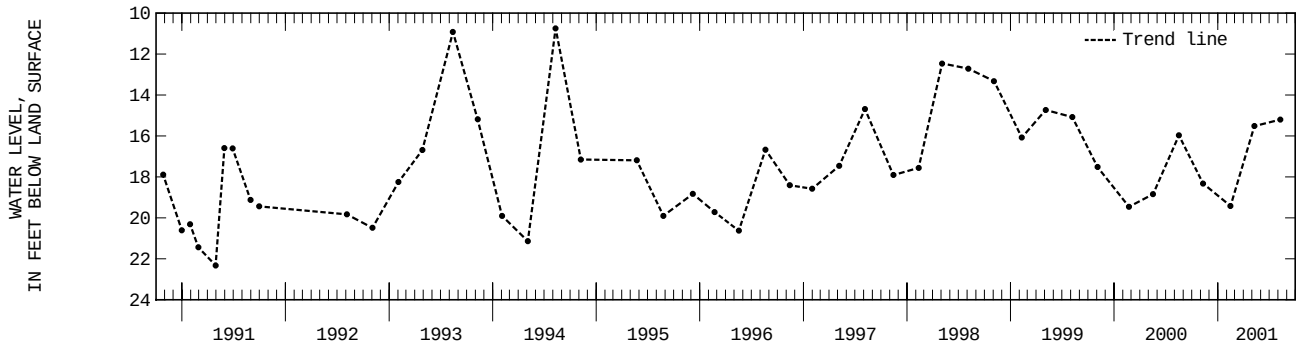
DELAWARE COUNTY

422029091144302. Local number, 87-03-18 CBCD2.
LOCATION.--Lat 42°20'37", long 91°14'47", Hydrologic Unit 07060006, behind the municipal utilities building in downtown Hopkinton. Owner: Town of Hopkinton.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 8 in., depth 86 ft. Casing information not available.
INSTRUMENTATION.--Quarterly measurement with chalked tape by observer.
DATUM.--Elevation of land-surface datum is 863 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 2.46 ft above land- surface datum.
REMARKS.-- Hopkinton #1 well. Water levels affected by pumping of a nearby well.
PERIOD OF RECORD.--December 1984 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.74 ft below land-surface datum, August 10, 1994; lowest measured, 27.19 ft below land-surface datum, December 30, 1989.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	18.32	FEB 14	19.42	MAY 09	15.52	AUG 09	15.2

WATER YEAR 2001 HIGHEST 15.2 AUG 09, 2001 LOWEST 19.42 FEB 14, 2001



DUBUQUE COUNTY

422901090471901. Local number, 89-01-36 ABC.
LOCATION.--Lat 42°28'55", long 90°47'18", Hydrologic Unit 07060005, located within white shed northeast of Amoco plant main office on Old Fairground Road, 4 mi east of Centralia on County Highway 966. Owner: Julien Standard Oil.
AQUIFER.--Cambrian/Ordovician.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 13 in., depth 1230 ft, casing open 499-1230 ft, gravel packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 899.00 ft above sea level, from levels. Measuring point: Top of vent cap, 2.90 above land-surface datum.
REMARKS.-- Standard Oil No.2
PERIOD OF RECORD.--January 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 240.38 ft below land-surface datum, January 31, 1997; lowest measured, 248.02 ft below land-surface datum, May 04, 1999.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	241.39	FEB 14	242.08	MAY 08	242.33	AUG 08	246.58

WATER YEAR 2001 HIGHEST 241.39 NOV 08, 2000 LOWEST 246.58 AUG 08, 2001

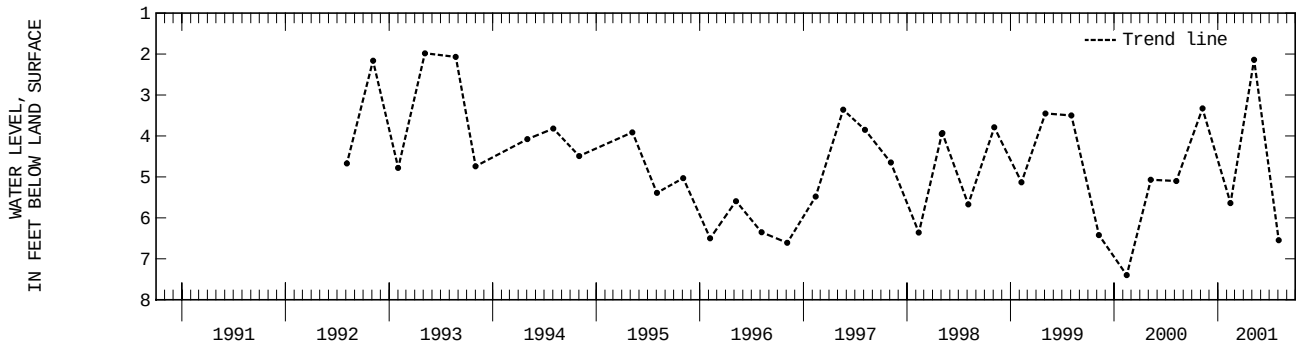
FLOYD COUNTY

430200092435301. Local number, 95-16-22 BCA1.
LOCATION.--Lat 43°02'02", long 92°43'55", Hydrologic Unit 07080201, approximately 2 mi southwest of Charles City, 1.7 mi south of Highway 14 on County Road T47. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 29 ft, screened 10-29 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,105 ft above sea level, from topographic map. Measuring point: Top of casing, 1.92 ft above land-surface datum.
REMARKS.-- Well FM-3 (T).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.98 ft above land-surface datum, May 6, 1993; lowest measured, 7.40 ft below land-surface datum, February 14, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	3.33	FEB 14	5.64	MAY 08	2.14	AUG 03	6.55

WATER YEAR 2001 HIGHEST 2.14 MAY 08, 2001 LOWEST 6.55 AUG 03, 2001



430200092435303. Local number, 95-16-22 BCA3.
LOCATION.--Lat 43°02'02", long 92°43'55", Hydrologic Unit 07080201, approximately 2 mi southwest of Charles City, 1.7 mi south of Highway 14 on County Road T47. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1 in., depth 103 ft, screened 91-103 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,105 ft above sea level, from topographic map. Measuring point: Top of casing, 2.94 ft above land-surface datum.
REMARKS.-- Well FM-3 (1).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 36.01 ft above land-surface datum, November 01, 1994; lowest measured, 83.41 ft below land-surface datum, February 14, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	80.50	FEB 14	83.41	MAY 08	68.78	AUG 03	74.15

WATER YEAR 2001 HIGHEST 68.78 MAY 08, 2001 LOWEST 83.41 FEB 14, 2001

430200092435304. Local number, 95-16-22 BCA4.
LOCATION.--Lat 43°02'02", long 92°43'55", Hydrologic Unit 07080201, approximately 2 mi southwest of Charles City, 1.7 mi south of Highway 14 on County Road T47. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 207 ft, screened 167-207 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,105 ft above sea level, from topographic map. Measuring point: Top of casing, 2.77 ft above land-surface datum.
REMARKS.-- Well FM-3 (2).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 56.05 ft above land-surface datum, August 23, 1993; lowest measured, 89.07 ft below land-surface datum, February 14, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	85.89	FEB 14	89.07	MAY 08	71.33	AUG 03	79.13

WATER YEAR 2001 HIGHEST 71.33 MAY 08, 2001 LOWEST 89.07 FEB 14, 2001

FLOYD COUNTY--Continued

430200092435305. Local number, 95-16-22 BCA5.
LOCATION.--Lat 43°02'02", long 92°43'55", Hydrologic Unit 07080201, approximately 2 mi southwest of Charles City, 1.7 mi south of Highway 14 on County Road T47. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 297 ft, screened 257-297 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,105 ft above sea level, from topographic map. Measuring point: Top of casing, 2.73 ft above land-surface datum.
REMARKS.-- Well FM-3 (3).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 55.21 ft above land-surface datum, August 23, 1993; lowest measured, 83.13 ft below land-surface datum, February 14, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	80.53	FEB 14	83.13	MAY 08	69.04	AUG 03	74.37

WATER YEAR 2001 HIGHEST 69.04 MAY 08, 2001 LOWEST 83.13 FEB 14, 2001

430200092435306. Local number, 95-16-22 BCA6.
LOCATION.--Lat 43°02'02", long 92°43'55", Hydrologic Unit 07080201, approximately 2 mi southwest of Charles City, 1.7 mi south of Highway 14 on County Road T47. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 360 ft, screened 340-360 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,105 ft above sea level, from topographic map. Measuring point: Top of casing, 2.53 ft above land-surface datum.
REMARKS.-- Well FM-3 (4).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 56.23 ft above land-surface datum, August 23, 1993; lowest measured, 88.44 ft below land-surface datum, February 6, 1996.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	85.79	FEB 14	83.49	MAY 08	71.36	AUG 03	79.12

WATER YEAR 2001 HIGHEST 71.36 MAY 08, 2001 LOWEST 85.79 NOV 07, 2000

430800092540301. Local number, 96-17-18 CDBA.
LOCATION.--Lat 43°07'47", long 92°54'06", Hydrologic Unit 07080202, on the north side of city street approximately 0.5 miles east of county road T-26 in the Town of Rude. Owner: Town of Rude
AQUIFER.--Cambrian/Ordovician: Jordan sandstone and Prairie du Chien Formation dolomite.
WELL CHARACTERISTICS.--Drilled public well, diameter 8 in., depth 1290 ft, screened 846-855 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement by airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,123 ft above sea level, by altimeter.
REMARKS.-- Rudd Town Well No.2
PERIOD OF RECORD.--February 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 161 ft below land surface datum, August 5, 1997; lowest measured 198 ft below land-surface datum, August 03, 1999.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	196	FEB 14	196	MAY 08	196	AUG 03	196

WATER YEAR 2001 WATER YEAR 2001 HIGHEST 196 LOWEST 196

GREENE COUNTY

420116094363001. Local number, 83-32-08 BBBC.
LOCATION.--Lat 42°01'16", long 94°36'33", Hydrologic Unit 07100006, approximately 3 mi west of the Town of Scranton, south of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Hardin Creek buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 181 ft, screened 161-171 ft, gravel-packed. Open to Pennsylvanian shale and siltstone 171-181 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,135 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.
REMARKS.-- Well WC-229.
PERIOD OF RECORD.--September 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 39.44 ft below land-surface datum, August 19, 1993; lowest measured, 51.03 ft below land-surface datum, July 8, 1985.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	42.90	MAY 09	43.09	AUG 06	47.57

WATER YEAR 2001 HIGHEST 42.90 NOV 08, 2000 LOWEST 47.57 AUG 06, 2001

GREENE COUNTY--Continued

420146094272301. Local number, 83-31-04 ADDB.
LOCATION.--Lat 42°01'47", long 94°27'23", Hydrologic Unit 07100006, approximately 4 mi west of the City of Jefferson and 0.5 mi south of U.S. Highway 30, on the west side of County Road P-14. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 54 ft, screened 40-51 ft, gravel- packed. Open to Pennsylvanian shale 51-54 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,000 ft above sea level, from topographic map. Measuring point: Top of casing, 2.10 ft above land-surface datum.
REMARKS.-- Well WC-120.
PERIOD OF RECORD.--August 1982 to July 1987, February 1990 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.39 ft below land-surface datum, July 5, 1983; lowest measured, 19.57 ft below land-surface datum, November 06, 1997.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	19.41	FEB 12	18.89	MAY 09	10.37	AUG 06	16.20

WATER YEAR 2001 HIGHEST 10.37 MAY 09, 2001 LOWEST 19.41 NOV 08, 2000

415449094155601. Local number, 82-29-18 DBAA.
LOCATION.--Lat 41°54'49", long 94°15'56", Hydrologic Unit 07100006, approximately 3.25 mi west and 1.5 mi south of the Town of Rippey, south of County Road E-57. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 90 ft, screened 65-75 ft, gravel- packed; open hole from 75-90 ft. Pleistocene glacial till 75-86 ft, and Pennsylvanian shale and siltstone 86-90 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,005 ft above sea level, from topographic map. Measuring point: Top of casing, 1.85 ft above land-surface datum.
REMARKS.-- Well WC-117.
PERIOD OF RECORD.--August 1982 to November 1995.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 32.20 ft below land-surface datum, August 17, 1993; lowest measured, 40.13 ft below land-surface datum, February 13, 1990.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	37.65	FEB 12	37.97	MAY 09	34.56	AUG 02	35.25

WATER YEAR 2001 HIGHEST 34.56 MAY 09, 2001 LOWEST 37.97 FEB 12, 2001

420149094344701. Local number, 83-32-04 ACCC.
LOCATION.--Lat 42°01'49", long 94°34'47", Hydrologic Unit 07100006, 1.5 mi west of the Town of Scranton south of U.S. Highway 30, adjacent to the Scranton Cemetery. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 240 ft, screened 220-240 ft, gravel-packed. Open to Pennsylvanian shale 234-240 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,202 ft above sea level, from topographic map. Measuring point: Top of casing, 2.10 ft above land-surface datum.
REMARKS.-- Well WC-228.
PERIOD OF RECORD.--July 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 151.44 ft below land-surface datum, February 8, 1996; lowest measured, 155.48 ft below land-surface datum, April 17, 1991.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	152.45	FEB 12	152.88	MAY 09	152.42	AUG 06	152.80

WATER YEAR 2001 HIGHEST 152.42 MAY 09, 2001 LOWEST 152.88 FEB 12, 2001

420507094141901. Local number, 84-29-16 CBAB.
LOCATION.--Lat 42°05'07", long 94°14'19", Hydrologic Unit 07100006, approximately 1.5 mi south of the Town of Dana, east of Iowa Highway 144 near the Chicago and Northwestern Railroad. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Beaver buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 181 ft, screened 161-176 ft, gravel-packed. Open to Pennsylvanian shale 177-181 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,075 ft above sea level, from topographic map. Measuring point: Top of casing, 1.80 ft above land-surface datum.
REMARKS.-- Well WC-233.
PERIOD OF RECORD.--August 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 38.63 ft below land-surface datum, April 2, 1985; lowest measured, 43.28 ft below land-surface datum, October 2, 1989.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	41.85	FEB 12	41.26	MAY 09	41.10	AUG 02	41.15

WATER YEAR 2001 HIGHEST 41.10 MAY 09, 2001 LOWEST 41.85 NOV 08, 2000

GRUNDY COUNTY

422611092552501. Local number, 88-18-14 BCCB.
LOCATION.--Lat 42°26'07", long 92°55'27", Hydrologic Unit 07080205, located on county road T-19 0.5 miles north of county road D-25 in the City of Wellsburg. Owner: City of Wellsburg
AQUIFER.--Cambrian: Jordan Formation sandstone
WELL CHARACTERISTICS.--Drilled public artesian water well, diameter 12 in., depth 2050 ft, casing open 1536-2050 ft
INSTRUMENTATION.--Quarterly measurement with airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,094 ft above sea level, from topographic map.
REMARKS.-- Wellsburg Well No. 1
PERIOD OF RECORD.--November 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 275 ft below land-surface datum, February 11, 1997; lowest measured, 296 ft below land-surface datum, August 02, 1999.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	284	MAY 09	292	AUG 02	289.

WATER YEAR 2001 HIGHEST 284 NOV 07, 2000 LOWEST 292 MAY 09, 2001

GUTHRIE COUNTY

413223094150801. Local number, 78-29-24 CAAB
LOCATION.--Lat 41°32'23", long 94°15'08", Hydrologic Unit 07100007, approximately 0.5 mi west and 1.5 north of the Town of Dexter. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drill observation artesian water well, diameter 2 in., depth 72 ft, screened 60-68 ft, gravel- packed. Open to Pennsylvanian shale 65-72 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,020 ft above sea level, from topographic map. Measuring point: Top of casing, 2.10 ft above land-surface datum.
REMARKS.-- Well WC-238.
PERIOD OF RECORD.--August 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 38.20 ft below land-surface datum, May 10, 1995; lowest measured, 48.82 ft below land-surface datum, April 10, 1986.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	40.83	FEB 12	40.41	MAY 09	39.70	AUG 02	41.26

WATER YEAR 2001 HIGHEST 39.70 MAY 09, 2001 LOWEST 41.26 AUG 02, 2001

413248094314301. Local number, 78-32-21 AAAA.
LOCATION.--Lat 41°32'48", long 94°31'43", Hydrologic Unit 07100008, approximately 2.25 mi north of the Town of Casey. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 161 ft, cased to 135 ft, slotted 125-135 ft, gravel-packed. Open to Pennsylvanian shale and siltstone 158-161 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,250 ft above sea level, from topographic map. Measuring point: Top of casing, 1.90 ft above land-surface datum.
REMARKS.-- Well WC-239.
PERIOD OF RECORD.--August 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 70.50 ft below land-surface datum, January 12, 1988; lowest measured, 74.38 ft below land-surface datum, January 9, 1985.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	73.06	FEB 12	73.28	MAY 09	72.97	AUG 02	73.30

WATER YEAR 2001 HIGHEST 72.97 MAY 09, 2001 LOWEST 73.30 AUG 02, 2001

414728094385301. Local number, 81-33-26 DDDD.
LOCATION.--Lat 41°47'29", long 94°38'54", Hydrologic Unit 07100007, approximately 5 mi south and 1.25 mi east of the Town of Coon Rapids on the north side of County Road F-24. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 80 ft, screened 60-65 ft, gravel- packed, open hole 67-80 ft. Open to Pennsylvanian shale 67-80 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,205 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.
REMARKS.-- Well WC-93.
PERIOD OF RECORD.--July 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 36.76 ft below land-surface datum, May 4, 1994; lowest measured, 40.98 ft below land-surface datum, January 3, 1983.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	39.87	FEB 12	40.00	MAY 09	39.37	AUG 02	39.56

WATER YEAR 2001 HIGHEST 39.37 MAY 09, 2001 LOWEST 40.00 FEB 12, 2001

GUTHRIE COUNTY--Continued

414821094271301. Local number, 81-31-22 CCCC.
LOCATION.--Lat 41°48'21", long 94°27'12", Hydrologic Unit 07100007, approximately 2.5 mi south and 1 mi west of the Town of Bagley, north of Spring Brook State Park. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 153 ft, screened 143-153 ft, gravel-packed. Open to Pennsylvanian shale 149-153 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,190 ft above sea level, from topographic map. Measuring point: Top of casing, 1.45 ft above land-surface datum.
REMARKS.-- Well WC-105.
PERIOD OF RECORD.--August 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 46.84 ft below land-surface datum, August 3, 1994; lowest measured, 69.88 ft below land-surface datum, December 9, 1982.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	60.55	FEB 12	61.42	MAY 09	61.64	AUG 02	61.51

WATER YEAR 2001 HIGHEST 60.55 NOV 08, 2000 LOWEST 61.64 MAY 09, 2001

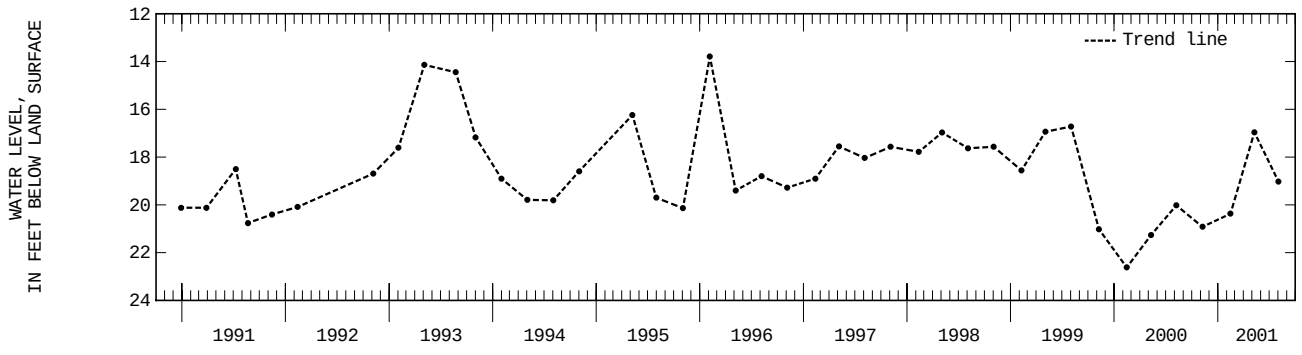
HARDIN COUNTY

423310093032802. Local number, 89-19-02 BDAC2.
LOCATION.--Lat 42°33'08", long 93°03'31", Hydrologic Unit 07080205, 0.35 south and 0.10 mi west of the intersection of U.S. Highway 20 and County Road S-56. Well is in a shed at the west end of 2nd Avenue adjacent to railroad tracks. Owner: City of Ackley.
AQUIFER.--Mississippian: limestone and dolomite of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 10 in., depth 134 ft, screened 57-60 ft, open hole 68-134 ft. Open to Devonian rock 131-134 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Analog digital water-level recorder, 60 minute punch, to October, 1992.
DATUM.--Elevation of land-surface datum is 1,085 ft above sea level, from topographic map. Measuring point: Top of recorder base, 0.8 ft above land-surface datum.
REMARKS.-- Ackley No. 5 well.
PERIOD OF RECORD.--September 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.79 ft below land-surface datum, February 5, 1996; lowest measured, 27.20 ft below land-surface datum, February 25, 1990.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	20.92	FEB 14	20.37	MAY 09	16.96	AUG 02	19.02

WATER YEAR 2001 HIGHEST 16.96 MAY 09, 2001 LOWEST 20.92 NOV 07, 2000



413024095353901. Local number, 78-41-31 DDDD.
LOCATION.--Lat 41°30'24", long 95°35'39", Hydrologic Unit 10230006, approximately 4.5 mi south of the Town of Persia and west of Iowa Highway 191 to the north of the Tri-County High School. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Glacial drift: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 129 ft, screened 109-119 ft, gravel-packed. Open to Pennsylvanian shale and limestone 118-129 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,158 ft above sea level, from topographic map. Measuring point: Top of casing, 2.05 ft above land-surface datum.
REMARKS.-- Well WC-27.
PERIOD OF RECORD.--January 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 55.26 ft below land-surface datum, July 7, 1982; lowest measured, 60.54, July 5, 1989.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 04	58.33	FEB 13	58.30	MAY 08	57.57	JUL 31	57.14

WATER YEAR 2001 HIGHEST 57.14 JUL 31, 2001 LOWEST 58.33 DEC 04, 2000

413523095483101. Local number, 78-43-05 ACDD.
LOCATION.--Lat 41°35'23", long 95°48'30", Hydrologic Unit 10230007, approximately 3.25 mi south of the Town of Logan and 1.5 mi east of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 179 ft, screened 168-175 ft, gravel-packed. Open to Pennsylvanian shale 175-179 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,080 ft above sea level, from topographic map. Measuring point: Top of casing, 2.35 ft above land-surface datum.
REMARKS.-- Well WC-33.
PERIOD OF RECORD.--May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 66.20 ft below land-surface datum, March 21, 1990; lowest measured, 74.90 ft below land-surface datum, February 16, 1988.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	71.81	FEB 15	72.92	MAY 10	71.04	AUG 01	71.10

WATER YEAR 2001 HIGHEST 71.04 MAY 10, 2001 LOWEST 72.92 FEB 15, 2001

413524095490601. Local number, 78-43-05 BCDD.
LOCATION.--Lat 41°35'24", long 95°49'06", Hydrologic Unit 10230007, approximately 2 mi north and 3.5 mi east of the Town of Missouri Valley and 1 mi east of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Alluvial: Boyer River sand and gravel of Holocene age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 51 ft, screened 48-51 ft, gravel- packed.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,010 ft above sea level, from topographic map. Measuring point: Top of casing, 3.40 ft above land-surface datum.
REMARKS.-- Well WC-32.
PERIOD OF RECORD.--May 1982 to current year.
REVISION.--Measuring point revised September 4, 1990 to September 29, 1992.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.68 ft below land-surface datum, July 07, 1998; lowest measured, 7.00 ft below land-surface datum, September 9, 1988, October 18, 1990 and December 5, 1990.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	4.71	FEB 15	4.68	APR 30	4.19	MAY 31	2.65	AUG 01	3.57		
JAN 31	5.23	MAR 26	3.60	MAY 10	2.61	JUN 28	3.54	SEP 29	5.96		

WATER YEAR 2001 HIGHEST 2.61 MAY 10, 2001 LOWEST 5.96 SEP 29, 2001

413838095462001. Local number, 79-42-19 AADB.
LOCATION.--Lat 41°38'38", long 95°46'20", Hydrologic Unit 10230007, approximately 0.5 mi east of the Town of Logan, north of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Mississippian: dolomite of Mississippian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 628 ft, screened 588-628 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,045 ft above sea level, from topographic map. Measuring point: Top of casing, 4.40 ft above land-surface datum.
REMARKS.-- Well WC-22.
PERIOD OF RECORD.--November 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.33 ft above land-surface datum, June 19, 1987; lowest measured, 16.37 ft below land-surface datum, June 3, 1982.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	5.12	FEB 15	4.71	MAY 10	4.50	AUG 01	4.52

WATER YEAR 2001 HIGHEST 4.50 MAY 10, 2001 LOWEST 5.12 NOV 20, 2000

HARRISON COUNTY--Continued

414700095373001. Local number, 81-41-33 CAAA.
LOCATION.--Lat 41°47'00", long 95°37'30", Hydrologic Unit 10230007, approximately 4.5 mi south of the Town of Dunlap, and 2 mi east of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 169 ft, screened 145-154 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,182 ft above sea level, from topographic map. Measuring point: Top of casing, 2.90 ft above land-surface datum.
REMARKS.-- Well WC-52.
PERIOD OF RECORD.--June 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 70.50 ft below land-surface datum, August 12, 1993; lowest measured, 85.03 ft below land-surface datum, June 4, 1982.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	76.75	FEB 15	77.38	MAY 10	74.53	AUG 01	74.08

WATER YEAR 2001 HIGHEST 74.08 AUG 01, 2001 LOWEST 77.38 FEB 15, 2001

HENRY COUNTY

405010091424901. Local number, 70-07-30 BCDD.
LOCATION.--Lat 40°50'10", long 91°42'49", Hydrologic Unit 07080107, in the Hillsboro City Park adjacent to water tower. Owner: City of Hillsboro.
AQUIFER.--Mississippian: limestone of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused test hole, diameter 6 in., depth 365 ft, cased to 74.8 ft, open hole 74.8-365 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 733 ft above sea level, from topographic map. Measuring point: Hole in top of casing, 1.15 ft above land-surface datum.
REMARKS.-- Hillsboro Test 1.
PERIOD OF RECORD.--August 1989 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 70.12 ft below land-surface datum, February 23, 1996, May 6, 1994; lowest measured, 78.03 ft below land-surface datum, February 22, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	71.60	FEB 12	72.05	MAY 07	71.59	AUG 07	71.86

WATER YEAR 2001 HIGHEST 71.59 MAY 07, 2001 LOWEST 72.05 FEB 12, 2001

410852091394301. Local number, 73-07-09 AABD.
LOCATION.--Lat 41°08'51", long 91°39'43", Hydrologic Unit 07080107, north of Main Street near the water tower, Wayland. Owner: Town of Wayland.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Dug unused water-table well, diameter 4 ft, depth 52 ft. Casing information not available.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 735 ft above sea level, from topographic map. Measuring point: Hole in top of casing, 0.21 ft above land-surface datum.
REMARKS.-- Wayland Town Well
PERIOD OF RECORD.--August 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.30 ft below land-surface datum, September 1, 1965; lowest measured, 14.69 ft below land-surface datum, February 15, 1977.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	11.06	FEB 12	9.60	MAY 07	9.14	AUG 07	9.92

WATER YEAR 2001 HIGHEST 9.14 MAY 07, 2001 LOWEST 11.06 NOV 06, 2000

HOWARD COUNTY

432158092065801. Local number, 99-11-26 BCA.
LOCATION.--Lat 43°21'58", long 92°06'58", Hydrologic Unit 07060004, located approximately 1 mi west of the town of Cresco, 0.5 mi south from state highway 9 on county road V-58. Owner: Town of Cresco.
AQUIFER.--Cambrian/Ordovician.
WELL CHARACTERISTICS.--Drilled public use artesian well, diameter 16 in, depth 1120 ft., Casing information not available.
INSTRUMENTATION.--Quarterly measurement using an airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 1288 ft above sea level, from topographic map.
REMARKS.-- Cresco Well No. 4.
PERIOD OF RECORD.--February 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 318 ft below land surface datum, May 20, 1997; lowest measured, 355 ft below land-surface datum, May 09, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	352	FEB 14	353	MAY 08	338	AUG 03	355

WATER YEAR 2001 HIGHEST 338 MAY 08, 2001 LOWEST 355 AUG 03, 2001

HUMBOLDT COUNTY

424039094103601. Local number, 91-28-20 CAAA.
LOCATION.--Lat 42°40'29", long 94°10'47", Hydrologic Unit 07100004, approximately 3 mi south of the Town of Dakota City, on the west side of County Road P-56. Owner: Elmer Gravdlund.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Unused water-table well, diameter 3 ft, cribbed with field stone, depth 24.5 ft, casing information unavailable.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,135 ft above sea level, from topographic map. Measuring point: Top of casing, 0.30 ft above land-surface datum. REMARKS: Gravdlund/G-1 well.
PERIOD OF RECORD.--July 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.40 ft below land-surface datum, April 26, 1991; lowest measured, 19.29 ft below land-surface datum, March 12, 1990.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	12.68	DEC 28	13.68	FEB 13	14.02	APR 19	6.29	JUN 18	5.98	AUG 21	7.82
NOV 06	13.03	JAN 24	13.97	MAR 19	12.88	MAY 07	5.40	JUL 12	6.90	SEP 25	8.84

WATER YEAR 2001 HIGHEST 5.40 MAY 07, 2001 LOWEST 14.02 FEB 13, 2001

IDA COUNTY

422215095390811. Local number, 87-41-05 CCCC11.
LOCATION.--Lat 42°22'15", long 95°39'08", Hydrologic Unit 10230005, approximately 0.75 mi east and 6.5 mi south of the Village of Cushing. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 490 ft, screened 301-305 ft. Original depth 510 ft, cemented back to 490 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,344 ft above sea level, from topographic map. Measuring point: Top of casing, 2.18 ft above land-surface datum.
REMARKS.-- Well D-10.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 202.55 ft below land-surface datum, June 4, 1980; lowest measured, 208.27 ft below land-surface datum, November 20, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	208.27	FEB 13	208.03	MAY 09	207.56	AUG 06	207.25

WATER YEAR 2001 HIGHEST 207.25 AUG 06, 2001 LOWEST 208.27 NOV 20, 2000

423107095383201. Local number, 89-41-13 CCCC.
LOCATION.--Lat 42°31'07", long 95°38'28", Hydrologic Unit 10230003, at a roadside park on County Road D-15, approximately 1.5 mi east and 3.5 mi north of the Village of Cushing. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Mississippian: limestone of Mississippian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 469 ft, sand point 465-468 ft, open hole 468-469 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,320 ft above sea level, from topographic map. Measuring point: Top of casing, 2.11 ft above land-surface datum.
REMARKS.-- Well D-9.
PERIOD OF RECORD.--December 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 177.06 ft below land-surface datum, August 06, 2001; lowest measured, 244.55 ft below land-surface datum, July 9, 1980.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	182.01	FEB 13	182.98	MAY 09	178.99	AUG 06	177.06

WATER YEAR 2001 HIGHEST 177.06 AUG 06, 2001 LOWEST 182.98 FEB 13, 2001

420842090165701. Local number, 85-6E-29 ACAD1.
LOCATION.--Lat 42°08'41", long 90°16'56", Hydrologic Unit 07060005, 1 mi east of U.S. Highway 52, 2 mi southeast of the Village of Green Island beside the Chicago, Milwaukee, St. Paul and Pacific Railroad tracks in the Upper Mississippi River Wildlife and Fish Refuge. Owner: U.S. Geological Survey.
AQUIFER.--Dresbach: Mt. Simon sandstone of Early Cambrian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 1,804 ft, screened 1,705-1,725 ft, open hole 1,725-1,804 ft.
INSTRUMENTATION.--Quarterly measurement with engineers rule by USGS personnel.
DATUM.--Elevation of land-surface datum is 610 ft above sea level, from topographic map. Measuring point: Mark on angle iron attached to well house, 6.05 ft above land- surface datum.
REMARKS.--Flowing well. Green Island #1.
PERIOD OF RECORD.--May 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.81 ft above land-surface datum, May 16, 1988; lowest measured, 9.23 ft above land-surface datum, September 02, 1998.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	9.34	FEB 13	9.35	AUG 08	9.6

WATER YEAR 2001 HIGHEST 9.34 NOV 08, 2000 LOWEST 9.6 AUG 08, 2001

420842090165702. Local number, 85-06E-29 ACAD2.
LOCATION.--Lat 42°08'41", long 90°16'56", Hydrologic Unit 07060005, 1 mi east of U.S. Highway 52, 2 mi southeast of the Village of Green Island beside the Chicago, Milwaukee, St. Paul and Pacific Railroad tracks in the Upper Mississippi River Wildlife and Fish Refuge. Owner: U.S. Geological Survey.
AQUIFER.--Cambrian-Ordovician, Wonewoc sandstone of Late Cambrian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 1,275 ft, screened 1,204.4-1,224.4 ft, open hole 1,224.4-1,275 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 610 ft above sea level, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum
REMARKS.-- Green Island No. 2 well. Well pumped during winter to supply water to goose pond. Water levels for water years 1986 to 1989 affected by oil in the well.
PERIOD OF RECORD.--July 1982 to November 1983, September 1986 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, +1.84 ft above land-surface datum, May 21, 1987; lowest measured, 3.88 below land-surface datum, November 4, 1982.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	.38	FEB 13	.00	AUG 08	1.1

WATER YEAR 2001 HIGHEST .00 FEB 13, 2001 LOWEST 1.1 AUG 08, 2001

420842090165703. Local number, 85-6E-29 ACAD3
LOCATION.--Lat 42°08'41", long 90°16'56", Hydrologic Unit 07060005, 1 mi east of U.S. Highway 52, 2 mi southeast of the Village of Green Island beside the Chicago, Milwaukee, St. Paul and Pacific Railroad tracks in the Upper Mississippi River Wildlife and Fish Refuge. Owner: U.S. Geological Survey.
AQUIFER.--Cambrian-Ordovician: Prairie du Chien dolomite of Early Ordovician age and St. Peter sandstone of Middle Ordovician age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 910 ft, screened 604.2-624.2 ft, open hole 624.2-910 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 610 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.
REMARKS.-- Green Island No. 3.
PERIOD OF RECORD.--May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.19 ft below land-surface datum, January 8, 1986; lowest measured 9.90 ft below land-surface datum, August 31, 1983.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	6.64	FEB 13	6.15	AUG 08	5.19

WATER YEAR 2001 HIGHEST 5.19 AUG 08, 2001 LOWEST 6.64 NOV 08, 2000

420433090502401. Local number, 84-01E 22
LOCATION.--Lat 42°04'34", long 90°50'23", Hydrologic Unit 07060006, located just east of the water-tower in the Town of Baldwin. Owner: Town of Baldwin.
AQUIFER.--Devonian/Silurian
WELL CHARACTERISTICS.--Drilled public-use well, diameter 14 in., depth 190 ft, open hole from 80-190 ft.
INSTRUMENTATION.--Quarterly measurement using airline by USGS personnel.
DATUM.--Elevation of land-surface is 760 feet above sea level, by topographic map.
REMARKS.-- Baldwin No. 2
PERIOD OF RECORD.--August 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 59.74 feet below land-surface datum, May 03, 1999; lowest measured, 64.22 feet below land-surface datum, February 09, 1999.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	63.53	FEB 14	62.54	MAY 08	62.13	AUG 08	62.98

WATER YEAR 2001 HIGHEST 62.13 MAY 08, 2001 LOWEST 63.53 NOV 08, 2000

JACKSON COUNTY--Continued

420842090165704. Local number, 85-6E-29 ACAD4.
LOCATION.--Lat 42°08'41", long 90°16'56", Hydrologic Unit 07060005, 1 mi east of U.S. Highway 52, 2 mi southeast of the Village of Green Island beside the Chicago, Milwaukee, St. Paul and Pacific Rail- road tracks in the Upper Mississippi River Wildlife and Fish Refuge. Owner: U.S. Geological Survey.
AQUIFER.--Cambrian-Ordovician: Galena dolomite of Middle Ordovician age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 400 ft, screened 300-320 ft, open hole 320-400 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 610 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.
REMARKS.-- Green Island No. 4.
PERIOD OF RECORD.--May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.39 ft below land-surface datum April 27, 1993; lowest measured, 19.46 ft below land-surface datum, September 20, 1988.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	16.27	FEB 13	15.85	AUG 08	16.9

WATER YEAR 2001 HIGHEST 15.85 FEB 13, 2001 LOWEST 16.9 AUG 08, 2001

JASPER COUNTY

414210092592001. Local number, 80-18-31 ABBB.
LOCATION.--Lat 41°42'10", long 92°59'20", Hydrologic Unit 07080105, approximately 3 mi east of the City of Newton just south of U.S. Highway 6. Owner: P.W. Beukema.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Dug stock water-table well, diameter 36 in., depth 37 ft, cribbed with brick.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 940 ft above sea level, from topographic map. Measuring point: Top of cement platform, 0.70 ft above land-surface datum.
REMARKS.-- Beukema well
PERIOD OF RECORD.--February 1940 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.67 ft below land-surface datum, June 10, 1947; lowest measured, 27.15 ft below land-surface datum, December 18, 1948.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	8.41	FEB 12	8.47	MAY 07	4.40	AUG 07	5.34

WATER YEAR 2001 HIGHEST 4.40 MAY 07, 2001 LOWEST 8.47 FEB 12, 2001

413908093071100. Local number, 79-19-01 CCCB.
LOCATION.--Lat 41°39'08", long 93°07'11", Hydrologic Unit 07080105, located approximately .5 miles east of Newton airport on county road. Owner: Newton Waterworks.
AQUIFER.--Cambrian/Ordovician.
WELL CHARACTERISTICS.--Drilled public-supply well, diameter 24 in. and 16 in., depth 2256.00 ft, open hole 1705-2256 ft.
INSTRUMENTATION.--Intermitent measurement by Newton Waterworks personnel by airline.
DATUM.--Elevation of land-surface datum is 775.00 ft above sea level, by levels.
REMARKS.-- Newton No. 24.
PERIOD OF RECORD.--October 2000 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 182 feet below land surface datum, Decemeber 18, 2000; lowest measured, 205 feet below land-surface datum March 24, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	192	DEC 18	182	FEB 16	197	MAR 24	205	AUG 23	200		
NOV 21	197	JAN 16	200	23	197	APR 17	200	SEP 13	201		

WATER YEAR 2001 HIGHEST 182 DEC 18, 2000 LOWEST 205 MAR 24, 2001

413925091324001. Local number, 79-06-09 DDBC.
LOCATION.--Lat 41°39'34", long 91°32'42", Hydrologic Unit 07080209, at the Quadrangle Dormitory, University of Iowa, Iowa City. Owner: University of Iowa.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 12 in., depth 430.5 ft, cased to 225 ft, open hole 225-430.5 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel, measured twice per month as part of project 461908100.
DATUM.--Elevation of land-surface datum is 714 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 1.81 ft above land- surface datum.
REMARKS.-- University of Iowa Quadrangle Dormitory. Water levels affected by nearby wells pumping in late spring, summer, and early fall.
PERIOD OF RECORD.--April 1975 to current year.
REVISED RECORDS.--WDR IA-84-1, WDR IA-88-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 74.63 ft below land-surface datum, March 21, 1979; lowest measured, 174.62 ft below land-surface datum, September 5, 1995.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	127.84	JAN 23	116.22	APR 10	121.03	JUN 04	150.44	JUL 26	162.37	SEP 14	137.31
NOV 14	120.41	FEB 21	114.36	30	120.48	21	153.60	AUG 13	150.29		
DEC 19	118.65	MAR 20	118.89	MAY 15	145.09	JUL 09	163.24	28	132.64		

WATER YEAR 2001 HIGHEST 114.36 FEB 21, 2001 LOWEST 163.24 JUL 09, 2001

414132091345502. Local number, 80-06-31 ADBC1.
LOCATION.--Lat 41°41'45", long 91°35'00", Hydrologic Unit 07080209, located in the City of Coralville, north of U.S. Interstate 80. Owner: City of Coralville.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in. to 130 ft, 2 in. to 300 ft, depth 500 ft, open hole 300-500 ft.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel, measured twice per month March 1995 to September 1997.
DATUM.--Elevation of land-surface datum is 795 ft above sea level, from topographic map. Measuring point: top of casing, 1.03 ft above land-surface datum.
REMARKS.-- Coralville Observation No. 3, North.
PERIOD OF RECORD.--June 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest level measured, 169.04 ft below land-surface datum, June 21, 1988; lowest water level measured, 253.83 ft. below land-surface datum, July 09, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	246.35	JAN 23	238.83	MAR 20	239.01	MAY 15	244.79	AUG 13	252.77		
NOV 14	240.15	26	231.91	APR 10	241.55	JUN 04	245.44	28	253.70		
DEC 19	238.11	FEB 21	238.91	30	243.36	JUL 09	253.83	SEP 14	251.96		

WATER YEAR 2001 HIGHEST 231.91 JAN 26, 2001 LOWEST 253.83 JUL 09, 2001

414107091322901. Local number, 79-06-04 AAAA.
LOCATION.--Lat 41°41'07", long 91°32'29", Hydrologic Unit 07080209, at Forest View Trailer Court, northern edge of Iowa City. Owner: Forest View Trailer Court.
AQUIFER.--Silurian: limestone of Silurian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 6 in., depth 280 ft, cased to 96 ft, open hole 96-280 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel, measured twice per month March 1995 to October 1995. Graphic water-level recorder May 1971 to October 1986.
DATUM.--Elevation of land-surface datum is 735 ft above sea level, from topographic map. Measuring point: Nipple on plate welded to top of casing, 1.62 ft above land- surface datum.
REMARKS.--Forest View Trailer Court. Water levels affected by wells in the area pumping in late spring, summer, and early fall. The large number of water-level measurements in June 1996 are a result of the well being used as an observation well for a nearby pump test.
PERIOD OF RECORD.--May 1971 to current year.
REVISED RECORDS.--WDR IA-84-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 96.93 ft below land-surface datum, March 23, 1979; lowest measured, 153.24 ft below land-surface datum, July 30, 1998.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	138.01	JAN 23	132.28	APR 10	140.04	JUN 04	140.58	JUL 26	149.40	SEP 14	141.46
NOV 14	135.44	FEB 21	131.96	30	141.57	21	141.52	AUG 13	144.58		
DEC 19	133.79	MAR 20	136.99	MAY 15	139.84	JUL 09	147.74	28	140.68		

WATER YEAR 2001 HIGHEST 131.96 FEB 21, 2001 LOWEST 149.40 JUL 26, 2001

414132091345503. Local number, 80-06-31 ADBD1.
LOCATION.--Lat 41°41'44", long 91°34'35", Hydrologic Unit 07080209, located in the City of Coralville, north of U.S. Interstate 80. Owner: City of Coralville.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled public-supply water well, 12 in. diameter, depth 500 ft, cased 0-200 ft, open hole 200-500 ft.
INSTRUMENTATION.--Monthly airline measurement by USGS personnel, measured twice per month March 1995 to October 1995.
DATUM.--Elevation of land-surface datum is 795 ft above sea level, from topographic map. Measuring point: airline gauge, 2.88 ft above land-surface datum.
REMARKS.-- Coralville Production No. 9.
PERIOD OF RECORD.--June 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 204 ft below land-surface datum, July 25, 1988; lowest water level measured, 314 ft below land-surface datum, August 13, 2001 and August 28, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	301	JAN 23	293	APR 10	296	JUN 04	299	JUL 26	256	SEP 14	312
NOV 14	294	FEB 21	293	30	296	21	298	AUG 13	314		
DEC 19	292	MAR 20	293	MAY 15	296	JUL 09	310	28	314		

WATER YEAR 2001 HIGHEST 256 JUL 26, 2001 LOWEST 314 AUG 13, 2001 AUG 28, 2001

414145091350101. Local number, 80-06-31 ADC.
LOCATION.--Lat 41°41'45", long 91°35'01". Hydrologic unit 07080209, located in the city of Coralville., north of U.S. Interstate 80. Owner: City of Coralville.
AQUIFER.--Cambrian- Jordan sandstone.
WELL CHARACTERISTICS.--Drilled public-supply water well, diameter 16 in, depth 1710 ft., casing information not available.
INSTRUMENTATION.--Bi-monthly measurements using airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 740 ft above sea level, from unknown method.
REMARKS.-- Coralville No. 10.
PERIOD OF RECORD.--June 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.--highest water level measured, 318 ft below land-surface datum, May 07, 1997; lowest water level measured, 419 ft. below land surface datum, August 13, 2001 and August 28, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	408	JAN 23	402	APR 10	400	JUN 04	405	JUL 26	368	SEP 14	416
NOV 14	401	FEB 21	404	30	404	21	409	AUG 13	419		
DEC 19	398	MAR 20	393	MAY 15	405	JUL 09	415	28	419		

WATER YEAR 2001 HIGHEST 368 JUL 26, 2001 LOWEST 419 AUG 13, 2001 AUG 28, 2001

414315091252001. Local number, 80-05-22 CBCB1.
LOCATION.--Lat 41°43'15", long 91°25'18", Hydrologic Unit 07080209, along the abandoned Chicago, Rock Island, and Pacific Railroad track, 500 ft southeast of Rapid Creek Road, approximately 5.5 mi northeast of the junction of Interstate 80 and Iowa Highway 1. Owner: Chicago, Rock Island and Pacific Railroad Co.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 2.25 in., depth 18.43 ft, screened 16.43-18.43 ft. Depth originally 20 ft, depth of 18.43 ft measured June 23, 1989.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel. Graphic water-level recorder February 1942 to October 1965, measured twice per month March 1995 to October 1995.
DATUM.--Elevation of land-surface datum is 753 ft above sea level, from topographic map. Measuring point: Nipple welded to casing, 4.47 ft above land-surface datum.
REMARKS.-- At the site of the former Elmira depot.
PERIOD OF RECORD.--May 1941 to September 1956, January 1958 to current year.
REVISED RECORDS.--WDR IA-88-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.84 ft below land-surface datum, April 29, 1947 (revised); lowest measured, dry, November 10, 15, 20, 25, and 30, 1964, December 5, 10, 15, 20, 25 and 31, 1964, December 1 and 10, 1975, October 21, November 23, and December 17, 1976, and January 20 and February 18, 1977.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	14.92	JAN 24	15.60	APR 10	13.79	JUN 06	12.59	JUL 27	12.41	SEP 13	12.97
NOV 15	15.12	FEB 22	16.42	MAY 01	13.43	22	12.31	AUG 10	12.55		
DEC 20	15.48	MAR 21	14.37	16	13.22	JUL 10	12.28	29	12.77		

WATER YEAR 2001 HIGHEST 12.28 JUL 10, 2001 LOWEST 16.42 FEB 22, 2001

JOHNSON COUNTY--Continued

4142210091361101. Local number, 80-07-25 DBAC1.
LOCATION.--Lat 41°42'24", long 91°36'16", Hydrologic Unit 07080209, located at the Iowa Department of Natural Resources/ Geological Survey Bureaús Oakdale core repository. Owner: Geological Survey Bureau/DNR.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in. to 164 ft, 5 in. to 319 ft, 4 in. 319- 361.5 ft, liner set 310-361.5 ft, depth 532 ft, open hole 361.5-532 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel, measured twice per month March 1995 to October 1995.
DATUM.--Elevation of land-surface datum is 790 ft above sea level, from topographic map. Measuring point: top of recorder platform, 2.65 ft above land-surface datum.
REMARKS.-- Oakdale No. 1 (ODW-1).
PERIOD OF RECORD.--April 1990 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 126.23 ft below land-surface datum, July, 31 1997; lowest water level measured, 245.93 ft below land-surface datum, July 26, 1991.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	231.33	JAN 23	217.75	APR 10	225.34	JUN 04	227.58	JUL 26	242.61	SEP 14	235.60
NOV 14	222.51	FEB 21	223.77	30	226.61	21	227.32	AUG 13	235.98		
DEC 19	226.47	MAR 20	225.78	MAY 15	227.12	JUL 09	236.63	28	234.47		

WATER YEAR 2001 HIGHEST 217.75 JAN 23, 2001 LOWEST 242.61 JUL 26, 2001

4142210091361102. Local number, 80-07-25 DBAC2.
LOCATION.--Lat 41°42'24", long 91°36'16", Hydrologic Unit 07080209, located at the Iowa Department of Natural Resources/ Geological Survey Bureaús Oakdale core repository. Owner: Geological Survey Bureau/DNR.
AQUIFER.--Devonian: limestone and dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in., depth 301 ft, cased 0-175 ft, open hole 175-301 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel, measured twice per month March 1995 to October 1995.
DATUM.--Elevation of land-surface datum is 790 ft above sea level, from topographic map. Measuring point: top of recorder platform, 2.55 ft above land-surface datum.
REMARKS.-- Oakdale No. 2, (ODW-2).
PERIOD OF RECORD.--April 1990 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 198.65 ft below land-surface datum, June 2 and 7, 1996; lowest water level measured, 227.09 ft below land-surface datum, August 28, 1991.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	214.43	JAN 23	208.13	APR 10	208.25	JUN 04	209.77	JUL 26	222.09	SEP 14	217.21
NOV 14	211.28	FEB 21	207.90	30	209.49	21	210.06	AUG 13	218.54		
DEC 19	208.40	MAR 20	208.14	MAY 15	209.82	JUL 09	217.12	28	209.90		

WATER YEAR 2001 HIGHEST 207.90 FEB 21, 2001 LOWEST 222.09 JUL 26, 2001

413950091322402. Local number, 79-06-10 BCCD.
LOCATION.--Lat 41°39'57", long 91°32'14", Hydrologic Unit 07080209, located on the northeast corner of the terminal end of North Madison Street just north of the Iowa City water treatment plant, approximately 0.5 miles north of Burlington St. Owner: The city of Iowa City.
AQUIFER.--Cambrian/Ordovician. Dolomite from the Prairie Du Chien Formation
WELL CHARACTERISTICS.--Drilled public use well, diameter 26 in, depth 1570 ft, open interval from 1000-1570 ft.
INSTRUMENTATION.--Bi-weekly measurements using an airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 650 ft above sea level, from topographic map.
REMARKS.-- Iowa City Well No. 1
PERIOD OF RECORD.--April 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 154 ft below land-surface datum, September 25, 1996, May 07, 1997, June 18, 1997, July 02,1997; lowest water level measured, 360 ft below land-surface datum, May 12, 1999.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	267	JAN 23	277	APR 10	200	JUN 04	271	JUL 26	292	SEP 14	168.17
NOV 14	279	FEB 21	277	30	264	21	286	AUG 13	268		
DEC 19	278	MAR 20	276	MAY 15	286	JUL 09	287	28	197		

WATER YEAR 2001 HIGHEST 168.17 SEP 14, 2001 LOWEST 292 JUL 26, 2001

413929091322401. Local number, 79-06-10 CCCB.
LOCATION.--Lat 41°39'30", long 91°32'25". Hydrologic Unit 07080209, located at University of Iowa water treatment plant. Owner: University of Iowa.
AQUIFER.--Cambrian-Jordan sandstone.
WELL CHARACTERISTICS.--Drilled artesian well used for withdrawal and testing, diameter 20 in, depth 1550 ft, casing open from 1063-1550 ft.
INSTRUMENTATION.--Bi-weekly measurements using airline by USGS personnel
DATUM.--Elevation of land-surface datum is 654.51 ft. above sea level, by levels run to accuracy of 0.01 ft. Measuring point is airline connection, 0.85 ft. above land surface datum.
REMARKS.-- SUI water treatment plant
PERIOD OF RECORD.--May 17, 1995 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 160 ft below land-surface datum, June 04, 1997; lowest water level measured, 222 ft. below land-surface datum, June 21, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	144	JAN 23	160	APR 10	185	JUN 04	205	JUL 26	189	SEP 14	172
NOV 14	144	FEB 21	140	30	175	21	222	AUG 13	184		
DEC 19	143	MAR 20	168	MAY 15	189	JUL 09	215	28	180		

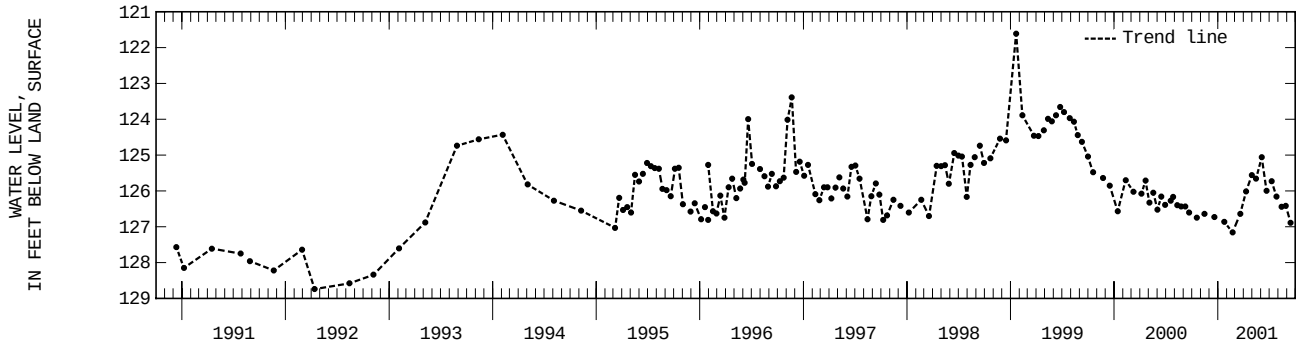
WATER YEAR 2001 HIGHEST 140 FEB 21, 2001 LOWEST 222 JUN 21, 2001

414221091361103. Local number, 80-07-25 DBAD1.
LOCATION.--Lat 41°42'24", long 91°36'16", Hydrologic Unit 07080209, located at the Iowa Department of Natural Resources/ Geological Survey Bureaús Oakdale core repository. Owner: Geological Survey Bureau/DNR.
AQUIFER.--Buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 4 in., depth 171 ft, screened 153-171. ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel, measured twice per month March 1995 to October 1995.
DATUM.--Elevation of land-surface datum is 790 ft above sea level, from topographic map. Measuring point: top of recorder platform, 2.55 ft above land-surface datum.
REMARKS.-- Oakdale No. 3 (ODW-3).
PERIOD OF RECORD.--April 1990 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 121.61 ft below land-surface datum, January 20, 1999; lowest water level measured, 128.74 ft below land-surface datum, April 12, 1992.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	126.75	JAN 23	126.86	APR 10	126.01	JUN 04	125.06	JUL 26	126.16	SEP 14	126.89
NOV 14	126.64	FEB 21	127.16	30	125.56	21	126.00	AUG 13	126.44		
DEC 19	126.73	MAR 20	126.64	MAY 15	125.66	JUL 09	125.73	28	126.42		

WATER YEAR 2001 HIGHEST 125.06 JUN 04, 2001 LOWEST 127.16 FEB 21, 2001



JOHNSON COUNTY--Continued

414315091252002. Local number, 80-05-22 CBCB2.
LOCATION.--Lat 41°43'15", long 91°25'18", Hydrologic Unit 07080209, along the abandoned Chicago, Rock Island, and Pacific Railroad track, 500 ft southeast of Rapid Creek Road, approximately 5.5 mi northeast of the junction of Interstate 80 and Iowa Highway 1.
Owner: Chicago, Rock Island and Pacific Railroad Co.
AQUIFER.--Devonian: Cedar Valley limestone of Middle Devonian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 5 in., depth 82.5 ft. Casing information not available.
INSTRUMENTATION.--Intermittant measurement with chalked tape by USGS personnel. Shaft encoder and data collection platform (dcp) installed July, 1998.
DATUM.--Elevation of land-surface datum is 753 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 4.01 ft above land- surface datum.
REMARKS.-- At the site of the former Elmira depot.
PERIOD OF RECORD.--December 1941 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.58 ft below land-surface datum, November 27, 1992; lowest measured, 21.65 ft below land-surface datum, August 21, 1989.

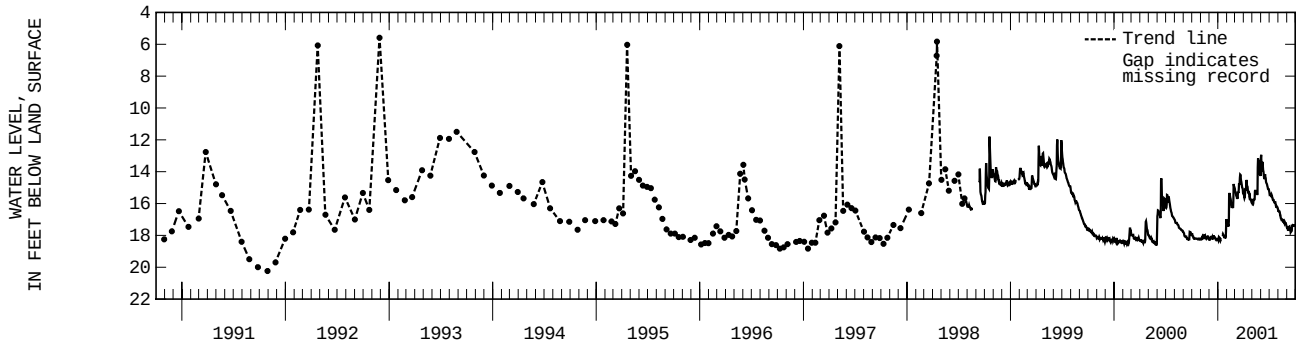
WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	18.21	JAN 24	18.11	APR 10	14.65	JUN 06	13.29	JUL 27	16.31	SEP 13	17.76
NOV 15	18.08	FEB 22	16.26	MAY 01	15.89	22	14.82	AUG 10	16.93		
DEC 20	18.14	MAR 21	14.25	16	15.34	JUL 10	15.57	29	17.40		

WATER YEAR 2001 HIGHEST 13.29 JUN 06, 2001 LOWEST 18.21 OCT 19, 2000

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.92	18.22	18.25	18.28	17.20	15.05	15.41	15.88	13.14	15.30	16.45	17.52
2	17.92	18.20	18.32	18.32	17.28	15.21	15.28	15.95	12.94	15.44	16.45	17.54
3	18.01	18.24	18.24	18.22	17.22	15.26	15.59	16.06	13.46	15.43	16.49	17.54
4	18.05	18.25	18.12	18.10	17.24	15.28	15.66	16.07	13.90	15.42	16.50	17.63
5	18.06	18.24	18.19	18.12	17.30	15.39	15.60	16.01	13.97	15.48	16.51	17.71
6	18.15	18.10	18.12	18.14	17.39	15.51	15.42	15.80	13.45	15.52	16.51	17.64
7	18.18	18.06	18.04	18.23	17.44	15.54	15.06	15.76	13.38	15.54	16.59	17.49
8	18.21	18.11	18.20	18.29	17.13	15.59	15.18	15.76	13.67	15.53	16.74	17.47
9	18.21	18.08	18.15	18.34	15.44	15.71	15.09	15.76	13.91	15.46	16.75	17.50
10	18.18	18.18	18.15	18.29	15.34	15.64	14.93	15.74	13.98	15.51	16.91	17.48
11	18.19	18.17	18.11	18.25	15.42	15.68	14.52	15.22	14.17	15.63	16.94	17.61
12	18.19	18.04	18.26	18.27	15.50	15.35	14.59	15.15	14.35	15.65	16.95	17.61
13	18.19	18.03	18.20	---	15.63	15.27	14.88	15.22	14.37	15.76	17.04	17.60
14	18.20	18.08	18.18	---	15.68	15.34	14.91	15.22	14.47	15.78	17.04	17.80
15	18.20	18.04	18.11	17.95	15.78	15.11	14.95	15.22	14.23	15.78	17.02	17.77
16	18.20	18.02	18.00	17.96	15.99	14.73	15.15	15.32	14.16	15.78	17.02	17.76
17	18.20	18.16	18.10	17.96	16.14	14.83	15.32	15.32	14.37	15.86	17.08	17.74
18	18.21	18.16	18.12	17.91	16.12	14.72	15.34	15.36	14.40	15.92	17.06	17.70
19	18.21	18.09	18.13	17.95	16.03	14.37	15.30	15.46	14.63	15.92	17.07	17.38
20	18.21	18.20	18.11	18.01	16.17	14.18	15.29	15.39	14.70	15.92	17.14	17.36
21	18.21	18.23	18.12	18.06	16.28	14.20	15.41	13.72	14.73	15.92	17.18	17.38
22	18.25	18.21	18.20	18.09	16.22	14.38	15.57	13.17	14.77	15.92	17.18	17.40
23	18.25	18.17	18.22	18.07	16.27	14.56	15.54	13.40	14.83	16.05	17.23	17.40
24	18.25	18.13	18.27	18.10	15.70	14.63	15.73	13.84	14.92	16.14	17.15	17.40
25	18.22	18.06	18.29	18.11	14.77	14.76	15.76	14.17	14.98	16.12	17.19	17.30
26	18.20	18.06	18.26	18.00	14.90	14.87	15.76	14.05	15.08	16.14	17.23	17.40
27	18.20	18.10	18.22	18.12	14.94	15.00	15.76	13.27	15.10	16.22	17.24	17.40
28	18.25	18.14	18.22	18.12	15.00	15.03	15.85	13.44	15.11	16.23	17.24	17.40
29	18.26	18.18	18.22	17.74	---	15.08	15.92	13.84	15.11	16.23	17.33	17.40
30	18.25	18.24	18.22	16.98	---	15.33	15.92	14.19	15.21	16.27	17.38	17.40
31	18.25	---	18.23	17.06	---	15.37	---	14.27	---	16.33	17.45	---
MEAN	18.18	18.14	18.18	18.04	16.13	15.06	15.36	14.94	14.32	15.81	16.97	17.52
MAX	18.26	18.25	18.32	18.34	17.44	15.71	15.92	16.07	15.21	16.33	17.45	17.80
MIN	17.92	18.02	18.00	16.98	14.77	14.18	14.52	13.17	12.94	15.30	16.45	17.30



JONES COUNTY

415808091160501. Local number, 83-04-25 CBBB.
LOCATION.--Lat 41°58'08", long 91°16'05", Hydrologic Unit 07080103, 4 mi north of the Town of Mechanicsville and 1 mi west of County Road X-40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in. to 41 ft, 5 in. 41-517 ft, depth 517 ft, open hole 41-517 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 811 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 2.16 ft above land- surface datum.
REMARKS.-- White Oak Creek well.
PERIOD OF RECORD.--July 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.78 ft below land-surface datum, May 3, 1993; lowest measured, 6.21 ft below land-surface datum, September 11, 1989.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	3.96	FEB 15	2.74	MAY 09	2.05	AUG 08	3.92

WATER YEAR 2001 HIGHEST 2.05 MAY 09, 2001 LOWEST 3.96 NOV 08, 2000

KEOKUK COUNTY

412030092121601. Local number, 76-12-35 DBDC
LOCATION.--Lat 41°20'27", long 92°12'22", Hydrologic Unit 07080106, approximately 0.25 mi north of the town of Sigourney, 0.25 mi north of Highway 92. Owner: City of Sigourney.
AQUIFER.--Mississippian: limestone and dolomite of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 14 in., depth 300 ft, cased to 128 ft, open hole 128-300 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Analog digital water-level recorder January 1989 to September 1992.
DATUM.--Elevation of land-surface datum is 769 ft above sea level, from topographic map. Measuring point: Top of recorder base, 1.56 ft above land-surface datum.
REMARKS.-- Sigourney South Rock Island No. 1 well. Water levels affected by nearby pumping.
PERIOD OF RECORD.--July 1988 to present.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 80.99 ft below land-surface datum, May 17, 1995; lowest measured, 118.29 ft below land-surface datum, August 31, 1991.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	85.37	FEB 13	83.39	MAY 08	85.33	AUG 08	92.56

WATER YEAR 2001 HIGHEST 83.39 FEB 13, 2001 LOWEST 92.56 AUG 08, 2001

LEE COUNTY

404306091270201. Local number, 68-05-05 DAAC.
LOCATION.--Lat 40°43'06", long 91°27'01", Hydrologic Unit 07080104, located on the south side of State Highway 2 approximately 7 mi east of Donnellson and 6 mi south of West Point.
AQUIFER.--Cambrian-Jordan sandstone
WELL CHARACTERISTICS.--Drilled public-use well, diameter 20 to 10 in., depth 1910 ft, open hole from 1290-1910 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 763 ft., from topographic map. Measuring point: Top of casing 3.00 ft above land-surface datum.
REMARKS.-- West Point No. 3
PERIOD OF RECORD.--November 15, 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 262.04 ft below land-surface datum, January 28, 1997; lowest measured, 271.77 ft. below land-surface datum, August 07, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	269.28	FEB 12	269.30	MAY 07	270.34	AUG 07	271.77

WATER YEAR 2001 HIGHEST 269.28 NOV 06, 2000 LOWEST 271.77 AUG 07, 2001

LINN COUNTY

415343091360101. Local number, 82-07-25 AAAB.
LOCATION.--Lat 41°53'43", long 91°36'01", Hydrologic Unit 07080208, 0.5 mi northwest of the Town of Ely at the southwest corner of the junction of County Roads E-70 and W-6E. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Silurian: limestone and dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in., depth 401 ft, cased to 121.5 ft, open hole 121.5-401 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder April 1978 to October 1979. Intermittent measurement with chalked tape by USGS personnel May 1976 to April 1978.
DATUM.--Elevation of land-surface datum is 772 ft above sea level, from topographic map. Measuring point: Top of casing, 1.76 ft above land-surface datum.
REMARKS.-- Ely (Northwest) Railroad well. Records for May 1976 to September 1988 are unpublished and available in the files of the Iowa District Office.
PERIOD OF RECORD.--May 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.03 ft below land-surface datum, August 26, 1993; lowest measured, 19.96 ft below land-surface datum, June 14, 1977.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	14.95	FEB 15	14.12	MAY 09	10.69	AUG 08	10.59

WATER YEAR 2001 HIGHEST 10.59 AUG 08, 2001 LOWEST 14.95 NOV 09, 2000

415422091422601. Local number, 82-07-18 CDCD.
LOCATION.--Lat 41°54'22", long 91°42'29", Hydrologic Unit 07080205, on 76th Avenue SW, approximately 1.5 mi west of U.S. Highway 218, Cedar Rapids. Owner: Edwin J. Hynek.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Dug unused water-table well, diameter 4 ft, depth 13.5 ft, cribbed with brick.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder July 1959 to September 1987.
DATUM.--Elevation of land-surface datum is 835 ft above sea level, from topographic map. Measuring point: Base of recorder shelter, 0.37 ft above land-surface datum.
REMARKS.-- Well previously owned by Lester Petrak.
PERIOD OF RECORD.--July 1959 to current year.
REVISED RECORDS.--WDR IA-84-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 1.09 ft below land-surface datum, August 4, 1968; lowest recorded, 11.75 ft below land-surface datum, February 8, 1977.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	8.46	FEB 15	4.88	MAY 09	4.90	AUG 09	7.30

WATER YEAR 2001 HIGHEST 4.88 FEB 15, 2001 LOWEST 8.46 NOV 09, 2000

415725091410101. Local number, 83-07-32 ACDC.
LOCATION.--Lat 41°57'25", long 91°41'01", Hydrologic Unit 07080205, northwest corner of 22nd Avenue SW and 11th Street SW, Cedar Rapids. Owner: Floyd Fetter.
AQUIFER.--Silurian: limestone of Silurian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 5 in., depth 282 ft. Casing information not available.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 805 ft above sea level, from topographic map. Measuring point: Plug in well cover at land-surface datum.
REMARKS.-- Water levels may be affected by pumping of near by wells.
PERIOD OF RECORD.--July 1940 to current year.
REVISED RECORDS.--WDR IA-88-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 75.88 ft below land-surface datum, January 26, 1942; lowest measured, 107.00 ft below land-surface datum, September 16, 1976.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	89.72	MAY 09	87.06	AUG 09	90.89

WATER YEAR 2001 HIGHEST 87.06 MAY 09, 2001 LOWEST 90.89 AUG 09, 2001

415834091351601. Local number, 83-06-30 ABBA.
LOCATION.--Lat 41°58'34", long 91°35'14", Hydrologic Unit 07080206, approximately 200 ft west of 5201 Mount Vernon Road SE, Cedar Rapids. Owner: Vulcan Auto Yard. Formerly owned by B.L. Anderson.
AQUIFER.--Silurian-Devonian: dolomite of Silurian and limestone and dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 6 in., depth 76.5 ft. Casing information not available.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 755 ft above sea level, from topographic map. Measuring point: Hole in pump base, 0.50 ft above land-surface datum.
REMARKS.-- Katz well.
PERIOD OF RECORD.--May 1940 to current year.
EXTREMES OF PERIOD OF RECORD.--Highest water level measured, 37.68 ft below land-surface datum, August 24, 1993; lowest measured, 53.90 ft below land-surface datum, December 21, 1970.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	50.8	FEB 15	50.59	MAY 09	47.96	AUG 09	49.21

WATER YEAR 2001 HIGHEST 47.96 MAY 09, 2001 LOWEST 50.8 NOV 09, 2000

420300091325801. Local number, 84-06-33 ABBB.
LOCATION.--Lat 42°03'00", long 91°32'58", Hydrologic Unit 07080206, near the City of Marion on the east side of Iowa Highway 13, approximately 1 mi north of U.S. Highway 151. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 6 in. to 142 ft, 5 in. 142-161 ft, depth 481 ft, open hole 161-481 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 838 ft above sea level, from topographic map. Measuring point: Top of casing, 0.90 ft above land-surface datum.
REMARKS.-- Marion well.
PERIOD OF RECORD.--June 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 42.15 ft below land-surface datum, June 18, 1986; lowest measured, 50.26 ft below land-surface datum, December 1, 1989.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	48.39	FEB 14	48.59	MAY 09	45.89	AUG 09	48.7

WATER YEAR 2001 HIGHEST 45.89 MAY 09, 2001 LOWEST 48.7 AUG 09, 2001

420508091395811. Local number, 84-07-16 DBBB.
LOCATION.--Lat 42°05'15", long 91°40'04", Hydrologic Unit 07080205, approximately 0.5 mi south of County Road E-34, north of the Town of Robins. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in. to 60.6 ft, 5 in. to 173 ft, depth 520 ft, open hole 173-520 ft. Open to Devonian rock 173-197, Silurian 196.5-510 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder November 1975 to September 1979. Intermittent measurement with chalked tape by USGS personnel April 1975 to November 1975.
DATUM.--Elevation of land-surface datum is 873 ft above sea level, from topographic map. Measuring point: Top of casing, 1.20 ft above land-surface datum.
REMARKS.-- Robins well. Records for April 1975 to September 1988 are unpublished and available in the files of the Iowa District Office.
PERIOD OF RECORD.--April 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 36.33 ft below land-surface datum, August 24, 1993; lowest measured, 57.50 ft below land-surface datum, December 1, 1989.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	48.95	FEB 14	46.84	MAY 09	43.41	AUG 09	47.86

WATER YEAR 2001 HIGHEST 43.41 MAY 09, 2001 LOWEST 48.95 NOV 09, 2000

LINN COUNTY--Continued

420526091370701. Local number, 84-07-13 BCBB.
LOCATION.--Lat 42°05'26", long 91°37'07", Hydrologic Unit 07080206, approximately 0.25 mi south of the junction of County Roads W-58 and E-34, on the east side of the road, or approximately 3.75 mi north of the City of Marion. Owner: U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 1.25 in., depth 17 ft, screened 15-17 ft.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 882 ft above sea level, from topographic map. Measuring point: Nipple welded to casing, 1.24 ft above land-surface datum.
REMARKS.-- USGS13E2 well.
PERIOD OF RECORD.--September 1948 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.93 ft below land-surface datum, May 18, 1982; lowest measured, 15.19 ft below land-surface datum, January 20, 1977.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	7.53	DEC 21	6.42	FEB 16	4.14	APR 26	3.32	JUL 16	5.96		
NOV 30	6.05	JAN 11	3.49	MAR 12	2.61	JUN 29	4.41	SEP 24	5.35		

WATER YEAR 2001 HIGHEST 2.61 MAR 12, 2001 LOWEST 7.53 OCT 19, 2000

420730091490401. Local number, 85-08-31 DDCD1.
LOCATION.--Lat 42°07'29", long 91°49'01", Hydrologic Unit 07080205, at the fenced north end of Pleasant Creek Reservoir near the beach house in the beach area. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in. to 53.5 ft, 5 in. to 214 ft, depth 481 ft, open hole 214-481 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder May 1975 to December 1979.
DATUM.--Elevation of land-surface datum is 833 ft above sea level, from topographic map. Measuring point: Top of casing, 1.17 ft above land-surface datum.
REMARKS.-- Pleasant Creek Reservoir/Silurian well. Records for May 1975 to September 1988 are unpublished and available in the files of the Iowa District Office.
PERIOD OF RECORD.--May 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 20.73 ft below land-surface datum, May 03, 1999; lowest measured, 108.49 ft below land-surface datum, August 4, 1997.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	39.49	FEB 14	41.49	MAY 09	45.98	AUG 09	32.68

WATER YEAR 2001 HIGHEST 32.68 AUG 09, 2001 LOWEST 45.98 MAY 09, 2001

420730091490402. Local number, 85-08-31 DDCD2.
LOCATION.--Lat 42°07'29", long 91°49'01", Hydrologic Unit 07080205, at the fenced north end of Pleasant Creek Reservoir near the beach house in the beach area. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: limestone and dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 5 in., depth 205 ft, cased to 52 ft, open hole 52-205 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder May 1975 to December 1979.
DATUM.--Elevation of land-surface datum is 841 ft above sea level, from topographic map. Measuring point: Top of casing, 2.38 ft above land-surface datum.
REMARKS.-- Pleasant Creek Reservoir/Devonian well. Records for May 1975 to September 1989 are unpublished and available in the Iowa District Office.
PERIOD OF RECORD.--May 1975 to May 1980, April 1984 to present.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.60 ft below land-surface datum, May 31, 1991; lowest measured, 48.55 ft below land-surface datum, November 12, 1976.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	20.52	FEB 14	19.87	MAY 09	19.56	AUG 09	21.15

WATER YEAR 2001 HIGHEST 19.56 MAY 09, 2001 LOWEST 21.15 AUG 09, 2001

LINN COUNTY--Continued

421149091403301. Local number, 85-07-04 CCCC.
LOCATION.--Lat 42°11'51", long 91°40'33", Hydrologic Unit 07080205, approximately 5 mi east of the Town of Center Point, north side of County Road E-16. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Silurian-Devonian: dolomite of Silurian age and limestone and dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in. to 41 ft, 5 in 129-147 ft, depth 435 ft, open hole 41-129 ft and 147-435 ft. Devonian rock 23-139 ft, Silurian rock 139-431 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder March 1974 to December 1979. Intermittent measurement with chalked tape by USGS personnel July 1973 to March 1974.
DATUM.--Elevation of land-surface datum is 912 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 1.21 ft above land- surface datum.
REMARKS.-- Alice well.
PERIOD OF RECORD.--July 1973 to current year.
REVISED RECORDS.--WDR IA-84-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.06 ft below land-surface datum, June 10, 1974; lowest measured, 34.27 ft below land-surface datum, December 1, 1989.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	29.38	FEB 14	28.84	MAY 09	24.85	AUG 09	27.72

WATER YEAR 2001 HIGHEST 24.85 MAY 09, 2001 LOWEST 29.38 NOV 09, 2000

421207091312201. Local number, 85-06-03 DABB.
LOCATION.--Lat 42°12'07", long 91°31'24", Hydrologic Unit 07080102, located east of State Highway 13 in the Town of Central City. Owner: Town of Central City.
AQUIFER.--Silurian
WELL CHARCTERISTICS.--Drilled pumping well, diameter 6 in., depth 106 ft., casing information not available.
INSTRUMENTATION.--Quarterly measurements with airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 825 ft, by topographic map.
REMARKS.--Central City Well
PERIOD OF RECORD.--August 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.0 feet below land-surface datum, May 09, 2001; lowest measured, 22 ft below land-surface datum, February 23, 1998.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	15	FEB 14	15	MAY 09	8.0	AUG 09	14.0

WATER YEAR 2001 HIGHEST 8.0 MAY 09, 2001 LOWEST 15 NOV 09, 2000 FEB 14, 2001

LYON COUNTY

431812096302701. Local number, 98-48-16 DDAD.
LOCATION.--Lat 43°18'21", long 96°30'29", Hydrologic Unit 10170203, approximately 3.5 mi east of the City of Canton, S.D., south of U.S. Highway 18. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 358 ft, screened 335-355 ft. Open to Late Precambrian Sioux quartzite 353-358 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,268 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.
REMARKS.-- Well D-20.
PERIOD OF RECORD.--December 1978 to December 1980, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 91.89 ft below land-surface datum, July 8, 1986; lowest measured, 107.60 ft below land-surface datum, November 7, 1991.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	105.34	FEB 14	105.41	MAY 10	104.69	AUG 07	105.1

WATER YEAR 2001 HIGHEST 104.69 MAY 10, 2001 LOWEST 105.41 FEB 14, 2001

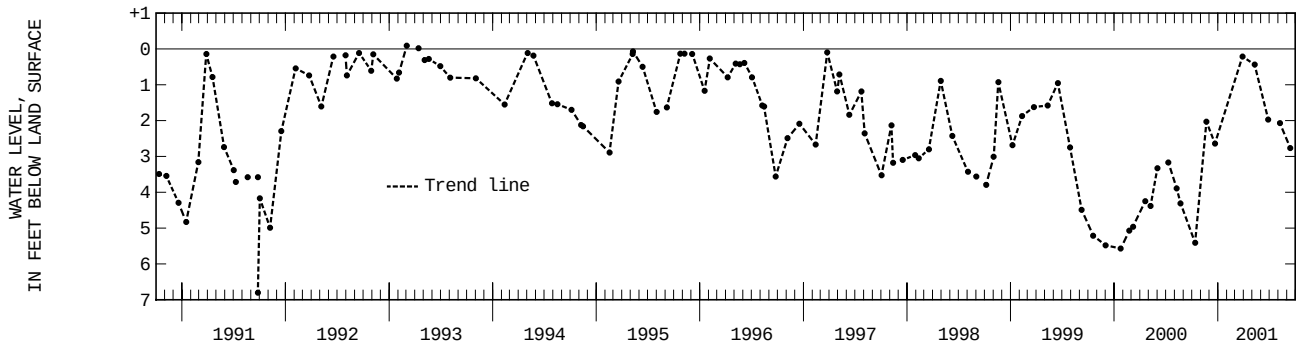
LYON COUNTY--Continued

432140095595301. Local number, 99-44-26 DDDD.
LOCATION.--Lat 43°21'40", long 95°59'53", Hydrologic Unit 10170204, 1 mi north of the City of George, west of Iowa Highway 339. Owner: State of Iowa.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 20 in., depth 38 ft, lined with tile.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,400 ft above sea level, from topographic map. Measuring point: Plug in well cover, 2.01 ft above land-surface datum. REMARKS.- -Well No. 26R1.
PERIOD OF RECORD.--October 1940 to June 1943, May 1947 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, -0.41 ft above land-surface datum, May 10, 1995; lowest measured, 9.74 ft below land-surface datum, October 24, 1940.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	5.41	DEC 21	2.64	MAY 10	.44	AUG 07	2.07				
NOV 21	2.03	MAR 28	.21	JUN 27	1.97	SEP 13	2.77				

WATER YEAR 2001 HIGHEST .21 MAR 28, 2001 LOWEST 5.41 OCT 12, 2000

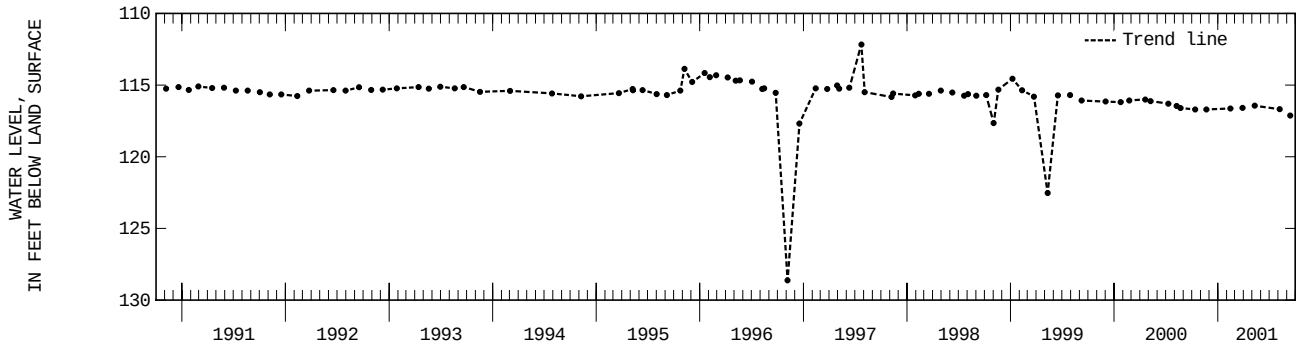


432553096105701. Local number, 99-45-05 ABAC.
LOCATION.--Lat 43°25'53", long 96°10'57", Hydrologic Unit 10170204, 0.05 mi south of Iowa Highway 9 on 2nd Street, Rock Rapids. Owner: City of Rock Rapids.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 10 in., depth 375 ft, cased to 296 ft, open hole 296- 375 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,368 ft above sea level, from topographic map. Measuring point: Plug in cover over casing, 1.00 ft above land-surface datum.
REMARKS.-- City test well No. 3.
PERIOD OF RECORD.--August 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 100.08 ft below land-surface datum, July 27, 1964; lowest measured, 128.62 ft below land-surface datum, November 5, 1996.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	116.70	FEB 14	116.63	MAY 10	116.44	SEP 13	117.12				
NOV 21	116.70	MAR 28	116.59	AUG 06	116.68						

WATER YEAR 2001 HIGHEST 116.44 MAY 10, 2001 LOWEST 117.12 SEP 13, 2001



LYON COUNTY--Continued

432601096335511. Local number, 100-48-31 CCCC11.
LOCATION.--Lat 43°26'01", long 96°33'55", Hydrologic Unit 10170203, 0.5 mi west and 2.5 mi south of the Village of Granite.
Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 657 ft, screened 450-455 ft and 630-650 ft. Dakota 437-653 ft, Sioux Quartzite 653-657 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,417 ft above sea level, from topographic map. Measuring point: Top of casing at land-surface datum.
REMARKS.-- Well D-19.
PERIOD OF RECORD.--December 1978 to December 1980, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 151.57 ft below land-surface datum, February 11, 1994; lowest measured, 158.25 ft below land-surface datum, April 11, 1990.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 14	156.18	MAY 10	153.24	AUG 07	153.70

WATER YEAR 2001 HIGHEST 153.24 MAY 10, 2001 LOWEST 156.18 FEB 14, 2001

MADISON COUNTY

411727093483001. Local number, 75-26-23 AAAC.
LOCATION.--Lat 41°17'26", long 93°48'36", Hydrologic Unit 07100008, near the shelter house in the city park, St. Charles. Owner: City of St. Charles.
AQUIFER.--Mississippian: limestone of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 8 in., depth 867 ft, cased to 657 ft, open hole 657- 867 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,067 ft above sea level, from topographic map. Measuring point: Plug in well cover, 1.20 ft above land-surface datum.
REMARKS.-- City well No. 1.
PERIOD OF RECORD.--November 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 261.76 ft below land-surface datum, November 20, 1962; lowest measured, 281.43 ft below land-surface datum, July 26, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 30	281.25	FEB 06	281.20	MAY 02	280.90	JUL 26	281.43

WATER YEAR 2001 HIGHEST 280.90 MAY 02, 2001 LOWEST 281.43 JUL 26, 2001

MAHASKA COUNTY

411912092273601. Local number, 75-14-10 BAAC.
LOCATION.--Lat 41°19'13", long 92°27'36", Hydrologic Unit 07080106, approximately 0.5 mi south of Iowa Highway 92 in the town of Rose Hill. Owner: City of Rose Hill.
AQUIFER.--Mississippian: limestone and dolomite of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 6 in., depth 370 ft, casing information not available.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Analog digital water-level recorder July 1990 to October 1992. Intermittent measurement with chalked tape by USGS personnel May 1989 to June 1989.
DATUM.--Elevation of land-surface datum is 815 ft above sea level, from topographic map. Measuring point: Top of recorder platform, 1.63 ft above land-surface datum.
REMARKS.-- Rose Hill No. 2 well.
PERIOD OF RECORD.--May 1989 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 100.69 ft below land-surface datum, July 30, 1992; lowest measured, 107.51 ft below land-surface datum, February 08, 1999.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	100.80	FEB 13	101.26	MAY 08	101.03	AUG 08	100.79

WATER YEAR 2001 HIGHEST 100.79 AUG 08, 2001 LOWEST 101.26 FEB 13, 2001

MAHASKA COUNTY--Continued

411914092274701. Local number, 75-14-10 BABC.
LOCATION.--Lat 41°19'14", long 92°27'47", Hydrologic Unit 07080106, approximately 0.45 mi south of Iowa Highway 92, behind City Hall in the Town of Rose Hill. Owner: City of Rose Hill.
AQUIFER.--Mississippian: limestone and dolomite of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 5 in., depth 273 ft, cased to 106 ft, open hole 106-273 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 817 ft above sea level, from topographic map. Measuring point: Top of casing, 1.56 ft above land-surface datum.
REMARKS.-- Rose Hill No. 4 well.
PERIOD OF RECORD.--September 1988 to current year.
REVISION.--Site identification number. Previously published as 411914092273001.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 99.56 ft below land-surface datum, May 17, 1995; lowest measured, 106.03 ft below land-surface datum, May 05, 1999.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	100.38	FEB 13	100.82	MAY 08	100.53	AUG 08	100.29

WATER YEAR 2001 HIGHEST 100.29 AUG 08, 2001 LOWEST 100.82 FEB 13, 2001

412020092471002. Local number, 76-17-35 CADB.
LOCATION.--Lat 41°20'26", long 92°47'09", Hydrologic Unit 07100009, 150 ft east of the old treatment plant near a retirement village on the north end of the Town of Leighton. Owner: Town of Leighton.
AQUIFER.--Cambrian-Ordovician: sandstone of Late Cambrian and sandstone and sandy dolomite of Early Ordovician age.
WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 8 in. to 383 ft, 5 in. 383-1778 ft, depth 2200 ft, open 1778-2200 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 820 ft above sea level, from topographic map. Measuring point: Top of casing, 5.43 ft above land-surface datum.
REMARKS.-- Leighton No. 4 well.
PERIOD OF RECORD.--May 1989 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 99.67 ft below land-surface datum, May 16, 2000; lowest measured, 282.96 ft below land-surface datum, August 20, 1996.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	178.85	FEB 12	157.96	MAY 07	146.07	AUG 07	153.91

WATER YEAR 2001 HIGHEST 146.07 MAY 07, 2001 LOWEST 178.85 NOV 07, 2000

MARION COUNTY

411323093142601. Local number, 74-21-11 DBCB1.
LOCATION.--Lat 41°13'25", long 93°14'27", Hydrologic Unit 07100008, north of the water tower in the town square. Owner: Town of Melcher.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 18 in., depth 9.7 ft, lined with tile. Depth originally 25 ft, depth measured in 1981 and 1991 at 12.2 ft.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 948 ft above sea level, from topographic map. Measuring point: Top of tile casing at land-surface datum.
REMARKS.-- Town well No. 2.
PERIOD OF RECORD.--March 1950 to current year.
REVISION.--Highest water level measured, 0.20 ft below land-surface datum, October 10, 1973; lowest measured, 15.27 ft below land-surface datum, October 22, 1953.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.20 ft below land-surface datum, October 10, 1973; lowest measured, 15.27 ft below land-surface datum, October 22, 1953.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	6.33	DEC 04	6.39	APR 10	2.90	JUL 21	5.36				
NOV 06	5.53	FEB 12	4.41	MAY 07	4.35	AUG 07	6.01				

WATER YEAR 2001 HIGHEST 2.90 APR 10, 2001 LOWEST 6.39 DEC 04, 2000

MARION COUNTY--Continued

411328093143503. Local number, 74-21-11 CAAD3.
LOCATION.--Lat 41°13'30", long 93°14'33", Hydrologic Unit 07100008, northeast corner of the junction of West 1st Street and North A Street, Melcher. Owner: Town of Melcher.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 1.25 in., depth 96.5 ft, screened 78-80 ft, open hole 80-96.5 ft.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 944 ft above sea level, from topographic map. Measuring point: Nipple welded to casing, 0.51 ft above land-surface datum.
REMARKS.--Town well No. 5, well 11L1.
PERIOD OF RECORD.--August 1953 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.29 ft below land-surface datum, May 7, 1996; lowest measured (nearby well pumping), 55.16 ft, revised, below land-surface datum, March 4, 1954.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	12.82	FEB 12	12.34	MAY 07	11.64	AUG 07	12.54

WATER YEAR 2001 HIGHEST 11.64 MAY 07, 2001 LOWEST 12.82 NOV 06, 2000

411329093142902. Local number, 74-21-11 DBBB2.
LOCATION.--Lat 41°13'33", long 93°14'29", Hydrologic Unit 07100008, southeast corner of the T junction of North B Street and Main Street, Melcher. Owner: Town of Melcher.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 6 in., depth 119 ft, cased to 76 ft, open hole 76-119 ft.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 943 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 1.82 ft above land- surface datum.
REMARKS.-- Town well No. 3, well 11K1.
PERIOD OF RECORD.--July 1945 to December 1955, October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.16 ft below land-surface datum, May 07, 1996; lowest measured (nearby well pumping), 108.85 ft below land-surface datum, December 4, 6-7, 1949.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	21.41	FEB 12	20.80	MAY 07	20.75	AUG 07	21.25

WATER YEAR 2001 HIGHEST 20.75 MAY 07, 2001 LOWEST 21.41 NOV 06, 2000

MARSHALL COUNTY

420355092534701. Local number, 84-18-24 CDCA.
LOCATION.--Lat 42°03'55", long 92°53'47", Hydrologic Unit 07080208, east of Riverview Park and south of the sewage treatment plant, Marshalltown. Owner: City of Marshalltown.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 8 in., depth 200 ft, screened 190-200 ft.
INSTRUMENTATION.--Quarterly measurement with electric line or chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 871 ft above sea level, from topographic map. Measuring point: Top of casing, 0.22 ft above land-surface datum.
REMARKS.-- Marshalltown city well.
PERIOD OF RECORD.--May 1949 to August 1971, March 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.92 ft below land-surface datum, July 13, 1951; lowest measured, 61.04 ft below land-surface datum, November 2, 1995.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	52.30	FEB 14	51.91	MAY 09	51.34	AUG 03	57.51

WATER YEAR 2001 HIGHEST 51.34 MAY 09, 2001 LOWEST 57.51 AUG 03, 2001

MILLS COUNTY

405641095365101. Local number, 71-42-24 AAAA.
LOCATION.--Lat 40°56'41", long 95°36'51", Hydrologic Unit 10240002, at the intersection of County Roads M-16 and H-46, approximately 5 mi southeast of the City of Malvern. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Buried channel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 255 ft, screened 240-250 ft, gravel packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,102 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.
REMARKS.-- Well SW-41.
PERIOD OF RECORD.--June 1990 and August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 135.50 feet below land-surface datum, August 5, 1993; lowest measured, 170.00 ft below land-surface datum, July 30, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 30	140.90	FEB 12	140.87	MAY 08	138.58	JUL 30	139.22	JUL 30	170.00

WATER YEAR 2001 HIGHEST 138.58 MAY 08, 2001 LOWEST 170.00 JUL 30, 2001

MILLS COUNTY--Continued

405813095433201. Local number, 71-42-07 BBCD.
LOCATION.--Lat 40°58'13", long 95°43'32", Hydrologic Unit 10240001, on the west side of the T-intersection of county roads, approximately 5.5 mi south of the City of Glenwood. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 351 ft, screened 332-342 ft, gravel packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,122 ft above sea level, from topographic map. Measuring point: Top of casing, 1.80 ft above land-surface datum.
REMARKS.-- Well SW-40.
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 165.70 feet below land-surface datum, August 5, 1993; lowest measured, 171.94 ft below land-surface datum, November 10, 1994.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 30	170.87	FEB 12	171.53	MAY 08	168.31

WATER YEAR 2001 HIGHEST 168.31 MAY 08, 2001 LOWEST 171.53 FEB 12, 2001

MITCHELL COUNTY

432156092484101. Local number, 95-17-23 DAA1.
LOCATION.--Lat 43°22'42", long 92°48'41", Hydrologic Unit 07080201, approximately 4 mi southwest of Staceyville, at the intersection of Highway 218 and County Road T40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 27 ft, screened 10-27 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,210 ft above sea level, from topographic map. Measuring point: Top of casing, 2.41 ft above land-surface datum.
REMARKS.-- Well FM-2T.
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.46 ft above land-surface datum, May 6, 1993; lowest measured, 6.46 ft below land-surface datum, February 14, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	2.34	FEB 14	3.31	MAY 08	2.17	AUG 03	3.32

WATER YEAR 2001 HIGHEST 2.17 MAY 08, 2001 LOWEST 3.32 AUG 03, 2001

432156092484102. Local number, 95-17-23 DAA2.
LOCATION.--Lat 43°22'42", long 92°48'41", Hydrologic Unit 07080201, approximately 4 mi southwest of Staceyville, at the intersection of Highway 218 and County Road T40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1 in., depth 70 ft, screened 55-70 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,210 ft above sea level, from topographic map. Measuring point: Top of casing, 2.58 ft above land-surface datum.
REMARKS.-- Well FM-2 (1).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.89 ft above land-surface datum, August 23, 1993; lowest measured, 12.44 ft below land-surface datum, February 14, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	10.47	FEB 14	11.21	MAY 08	7.08	AUG 03	9.95

WATER YEAR 2001 HIGHEST 7.08 MAY 08, 2001 LOWEST 11.21 FEB 14, 2001

432156092484103. Local number, 95-17-23 DAA3.
LOCATION.--Lat 43°22'42", long 92°48'41", Hydrologic Unit 07080201, approximately 4 mi southwest of Staceyville, at the intersection of Highway 218 and County Road T40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 150 ft, screened 110-150 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,210 ft above sea level, from topographic map. Measuring point: Top of casing, 2.55 ft above land-surface datum.
REMARKS.-- Well FM-2 (2).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.78 ft above land-surface datum, August 23, 1993; lowest measured, 13.32 ft below land-surface datum, February 14, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	11.40	FEB 14	12.17	MAY 08	7.55	AUG 03	10.18

WATER YEAR 2001 HIGHEST 7.55 MAY 08, 2001 LOWEST 12.17 FEB 14, 2001

MITCHELL COUNTY--Continued

432156092484104. Local number, 95-17-23 DAA4.
LOCATION.--Lat 43°22'42", long 92°48'41", Hydrologic Unit 07080201, approximately 4 mi southwest of Staceyville, at the intersection of Highway 218 and County Road T40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 250 ft, screened 188-250 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,210 ft above sea level, from topographic map. Measuring point: Top of casing, 2.44 ft above land-surface datum.
REMARKS.-- Well FM-2 (3).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.54 ft above land-surface datum, May 6, 1993; lowest measured, 16.52 ft below land-surface datum, May 9, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	14.46	FEB 14	16.41	MAY 08	8.74	AUG 03	11.62

WATER YEAR 2001 HIGHEST 8.74 MAY 08, 2001 LOWEST 16.41 FEB 14, 2001

432156092484105. Local number, 95-17-23 DAA5.
LOCATION.--Lat 43°22'42", long 92°48'41", Hydrologic Unit 07080201, approximately 4 mi southwest of Staceyville, at the intersection of Highway 218 and County Road T40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 348 ft, screened 278-348 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,210 ft above sea level, from topographic map. Measuring point: Top of casing, 2.37 ft above land-surface datum.
REMARKS.-- Well FM-2 (4).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.04 ft above land-surface datum, August 23, 1993; lowest measured, 22.16 ft below land-surface datum, May 09, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	19.67	FEB 14	22.06	MAY 08	13.12	AUG 03	15.29

WATER YEAR 2001 HIGHEST 13.12 MAY 08, 2001 LOWEST 22.06 FEB 14, 2001

MONONA COUNTY

415456095414101. Local number, 82-42-14 ADCA.
LOCATION.--Lat 41°54'56", long 95°41'41", Hydrologic Unit 10230007, approximately 6 mi southeast of the Town of Soldier, on the north side of Iowa Highway 37. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 341 ft, slotted 311-336 ft, gravel-packed, open 336-341 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,340 ft above sea level, from topographic map. Measuring point: Top of casing, 2.02 ft above land-surface datum.
REMARKS.-- Well WC-4.
PERIOD OF RECORD.--May 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 240.25 ft below land-surface datum, January 10, 1984; lowest measured, 246.69 ft below land-surface datum, July 28, 1981.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	245.34	FEB 14	245.29	MAY 10	244.60	AUG 01	244.58

WATER YEAR 2001 HIGHEST 244.58 AUG 01, 2001 LOWEST 245.34 NOV 21, 2000

420004095451501. Local number, 83-42-17 ACDD.
LOCATION.--Lat 41°00'04", long 95°45'15", Hydrologic Unit 10230001, approximately 1.75 mi northeast of the Town of Soldier, 0.25 mi west of Iowa Highway 183. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 161 ft, screened 149-154 ft. Open to Pennsylvanian shale and limestone 153-161 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,160 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.
REMARKS.-- Well WC-176.
PERIOD OF RECORD.--May 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 54.50 ft below land-surface datum, November 6, 1991; lowest measured, 64.09 ft below land-surface datum, September 7, 1983.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	59.78	FEB 15	59.86	MAY 10	59.37	AUG 01	60.41

WATER YEAR 2001 HIGHEST 59.37 MAY 10, 2001 LOWEST 60.41 AUG 01, 2001

MONONA COUNTY--Continued

420139095155701. Local number, 83-43-04 CBCB.
LOCATION.--Lat 41°01'39", long 95°51'57", Hydrologic Unit 10230005, approximately 5.5 mi northwest of the Town of Soldier and 1.5 mi north of Iowa Highway 37. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 321 ft, screened 297-315 ft, gravel-packed, open hole 315-321 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,235 ft above sea level, from topographic map. Measuring point: Top of casing, 2.53 ft above land-surface datum.
REMARKS.-- Well WC-5.
PERIOD OF RECORD.--May 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 183.60 ft below land-surface datum, November 3, 1993; lowest measured, 189.96 ft below land-surface datum, February 2, 1982.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	186.17	FEB 14	186.10	MAY 10	184.95	AUG 02	185.02

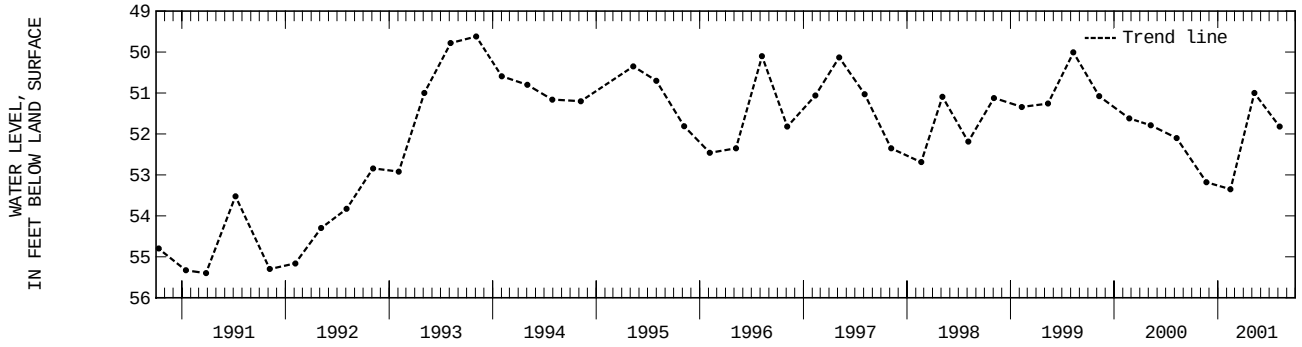
WATER YEAR 2001 HIGHEST 184.95 MAY 10, 2001 LOWEST 186.17 NOV 21, 2000

421018095591301. Local number, 85-44-17 DCAA.
LOCATION.--Lat 41°10'18", long 95°59'13", Hydrologic Unit 10230003, approximately 2.5 mi southwest of the Town of Rodney on the north side of County Road L-12. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 135 ft, screened 115-125 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,110 ft above sea level, from topographic map. Measuring point: Top of casing, 2.70 ft above land-surface datum.
REMARKS.-- Well WC-158.
PERIOD OF RECORD.--October 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 49.62 ft below land-surface datum, November 3, 1993; lowest measured, 55.99 ft below land-surface datum, January 11, 1990.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	53.18	FEB 14	53.35	MAY 09	51.00	AUG 06	51.82

WATER YEAR 2001 HIGHEST 51.00 MAY 09, 2001 LOWEST 53.35 FEB 14, 2001



MONTGOMERY COUNTY

405841095012702. Local number, 71-36-06 DADA2.
LOCATION.--Lat 40°58'41", long 95°01'27", Hydrologic Unit 10240009, located east of dam at Viking Lake State Park, approximately 0.3 mi south of Iowa Highway 34 on the west side of road. Owner: Geological Survey Bureau, DNR, and U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 36 ft, screened 33-36 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by observer and U.S.G.S. personnel.
DATUM.--Elevation of land-surface datum is 1,080 ft above sea level, from topographic map. Measuring point: Top of casing, 2.28 ft above land-surface datum.
REMARKS.-- Viking Lake No. 2 (6J2) well.
PERIOD OF RECORD.--June 1989 to present.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.51 ft below land-surface datum, September 9, 1989; lowest measured, 17.15 ft below land-surface datum, August 15, 1989.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 30	15.24	FEB 12	14.98	MAY 08	12.39	JUL 30	16.42

WATER YEAR 2001 HIGHEST 12.39 MAY 08, 2001 LOWEST 16.42 JUL 30, 2001

410057095075101. Local number, 72-37-29 BABA.
LOCATION.--Lat 41°00'57", long 95°07'50", Hydrologic Unit 10240005, approximately 4.35 mi east of the City of Red Oak, just south of County Road H-34. Owner: John Ogden.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 3 in., depth 40 ft, screened interval unavailable.
INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel. Submersible pressure transducer and transmitting data collection platform (dcp) installed July, 1998.
DATUM.--Elevation of land-surface datum is 1,275 ft above sea level, from topographic map. Measuring point: Top of casing, 1.20 ft above land-surface datum.
PERIOD OF RECORD.--June 1937 to current year.
REVISION.--Measuring point revised May 10, 1990 to September 10, 1992.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.14 ft below land-surface datum, July 22, 1993; lowest measured, dry, July 8, 1963 and February 3, 1964.

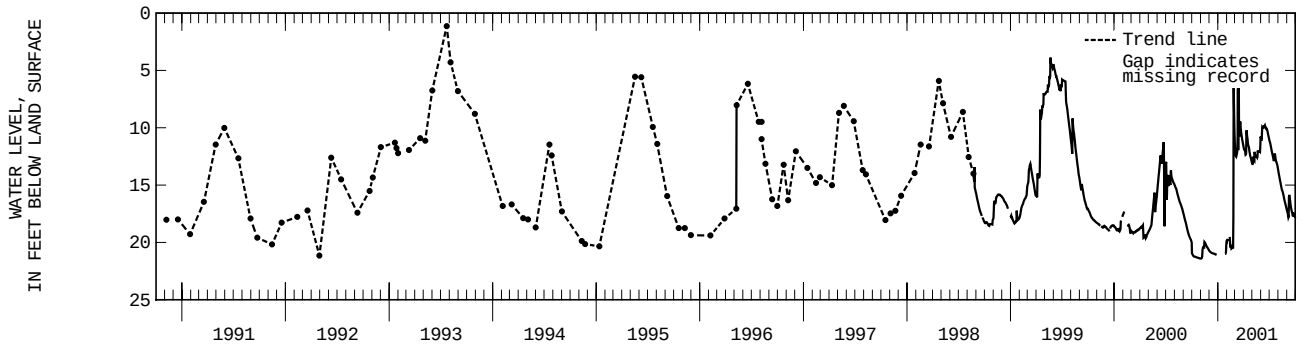
WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	20.77	JAN 18	24.10	FEB 12	20.35	APR 30	13.07	JUN 21	10.06	JUL 25	12.91
NOV 07	20.27	31	19.88	MAR 13	14.14	MAY 31	10.86	28	10.81	SEP 05	17.72

WATER YEAR 2001 HIGHEST 10.06 JUN 21, 2001 LOWEST 24.10 JAN 18, 2001

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.09	20.91	20.71	---	19.78	10.90	11.36	13.14	10.95	11.15	13.72	17.31
2	20.17	20.91	20.75	---	19.76	11.47	11.50	13.23	11.02	11.24	13.88	17.40
3	20.26	20.90	20.78	---	19.61	11.89	11.62	13.23	11.08	11.31	14.03	17.49
4	20.34	20.87	20.80	---	19.49	11.99	11.67	13.09	11.08	11.40	14.15	17.61
5	20.42	20.84	20.83	---	19.40	12.08	11.71	12.69	10.36	11.52	14.28	17.71
6	20.49	20.72	20.85	---	19.31	12.09	11.71	12.59	10.01	11.64	14.43	17.77
7	20.55	20.24	20.86	---	19.17	11.97	11.91	12.85	10.05	11.77	14.57	17.72
8	20.61	20.02	20.88	---	---	11.85	12.15	12.95	10.06	11.91	14.70	15.96
9	20.65	19.92	20.90	---	18.79	11.72	12.14	12.98	10.05	12.03	14.82	15.80
10	20.68	19.89	20.91	---	18.74	11.31	12.03	12.17	9.99	12.16	14.96	15.92
11	20.71	19.89	20.92	---	18.65	10.21	10.19	12.44	9.93	12.28	15.09	16.12
12	20.75	19.89	20.93	---	19.34	6.39	10.05	12.57	9.94	12.36	15.22	16.32
13	20.76	19.91	20.94	---	20.29	11.39	10.48	12.56	9.96	12.48	15.36	16.53
14	20.77	19.95	20.96	---	20.25	6.21	10.69	12.52	9.87	12.59	15.47	16.73
15	20.79	19.98	20.96	---	20.27	4.54	10.89	12.51	9.83	12.70	15.54	16.90
16	20.80	20.01	20.97	---	20.33	9.62	11.17	12.53	9.93	12.82	15.60	17.04
17	20.81	20.08	20.98	---	20.44	10.26	11.38	12.58	10.01	12.92	15.69	17.16
18	20.82	20.13	20.99	---	20.38	10.01	11.50	12.63	10.01	12.69	15.79	17.27
19	20.82	20.17	21.00	---	20.18	9.26	11.56	12.68	10.10	12.35	15.90	17.38
20	20.83	20.24	21.00	---	20.18	8.98	11.67	12.59	10.14	12.25	16.01	17.48
21	20.84	20.30	21.02	---	20.28	9.16	11.88	12.06	10.09	12.35	16.10	17.60
22	20.85	20.34	21.03	---	20.28	9.64	12.09	12.17	10.12	12.53	16.22	17.71
23	20.86	20.38	21.04	---	20.26	9.90	12.20	12.17	10.20	12.70	16.36	17.54
24	20.87	20.42	21.06	---	17.47	10.09	12.41	12.15	10.30	12.86	16.47	17.46
25	20.87	20.46	21.06	---	5.43	10.27	12.51	12.14	10.42	12.94	16.56	17.47
26	20.87	20.49	21.07	21.00	7.55	10.47	12.60	12.10	10.56	13.00	16.66	17.50
27	20.88	20.54	21.08	21.00	9.00	10.65	12.70	12.08	10.70	13.11	16.75	17.57
28	20.89	20.58	---	20.94	10.16	10.78	12.83	12.11	10.81	13.17	16.87	17.66
29	20.89	20.63	---	20.80	---	10.93	12.96	12.14	10.92	13.28	16.97	17.77
30	20.90	20.67	---	20.18	---	11.07	13.07	11.66	11.03	13.40	17.08	17.87
31	20.91	---	---	19.86	---	11.22	---	10.84	---	13.55	17.20	---
MEAN	20.70	20.34	20.94	20.63	17.96	10.27	11.75	12.46	10.32	12.40	15.56	17.19
MAX	20.91	20.91	21.08	21.00	20.44	12.09	13.07	13.23	11.08	13.55	17.20	17.87
MIN	20.09	19.89	20.71	19.86	5.43	4.54	10.05	10.84	9.83	11.15	13.72	15.80



MUSCATINE COUNTY

412120091080401. Local number, 76-02-30 CBAA1.
LOCATION.--Lat 41°21'20", long 91°08'01", Hydrologic Unit 07080101, west of the Town of Fruitland on an Iowa State University Agricultural Experiment Farm. Owner: U.S. Geological Survey.
AQUIFER.--Alluvial: Mississippi River sand and gravel of Holocene age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 6 in., depth 27 ft, screened 24-27 ft.
INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel. Graphic water-level recorder May 1966 to October 1987.
DATUM.--Elevation of land-surface datum is 546 ft above sea level, from topographic map. Measuring point: Top of casing, 3.40 ft above land-surface datum.
REMARKS.--Fruitland/30M4 well.
PERIOD OF RECORD.--May 1966 to current year.
REVISED RECORDS.-- WDR IA-84-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 7.15 ft below land-surface datum, September 7, 1993; lowest measured, 17.86 ft below land-surface datum, August 2, 1989.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	16.40	FEB 13	16.72	MAY 08	15.30	AUG 08	15.2

WATER YEAR 2001 HIGHEST 15.2 AUG 08, 2001 LOWEST 16.72 FEB 13, 2001

412120091080402. Local number, 76-02-30 CBAA.
LOCATION.--Lat 41°21'20", long 91°08'04", Hydrologic Unit 07080101, west of the Town of Fruitland on an Iowa State University Agricultural Experiment Farm. Owner: U.S. Geological Survey.
AQUIFER.--Silurian-Devonian: limestone of Silurian and Devonian age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 189 ft, screened 169-189 ft.
INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 546 ft above sea level, from topographic map. Measuring point: Top of casing, 3.01 ft above land-surface datum.
REMARKS.-- Fruitland 13B well.
PERIOD OF RECORD.--October 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 7.12 ft below land-surface datum, August 24, 1993; lowest measured, 16.73 ft below land-surface datum, February 22, 1996.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	16.33	FEB 13	16.79	MAY 08	15.24	AUG 08	15.11

WATER YEAR 2001 HIGHEST 15.11 AUG 08, 2001 LOWEST 16.79 FEB 13, 2001

412120091080403. Local number, 76-02-30 CBAA.
LOCATION.--Lat 41°21'20", long 91°08'04", Hydrologic Unit 07080101, west of the Town of Fruitland on an Iowa State University Agricultural Experiment Farm. Owner: U.S. Geological Survey.
AQUIFER.--Alluvial: Mississippi River sand and gravel of Quarternary age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 100 ft, screened 90-100 ft.
INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 546 ft above sea level, from topographic map. Measuring point: Top of casing, 3.13 ft above land-surface datum.
REMARKS.-- Fruitland 13C well.
PERIOD OF RECORD.--October 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 7.20 ft below land-surface datum, September 10, 1993; lowest measured, 16.84 ft below land-surface datum, February 22, 1996.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	16.49	FEB 13	16.79	MAY 08	15.39	AUG 08	15.31

WATER YEAR 2001 HIGHEST 15.31 AUG 08, 2001 LOWEST 16.79 FEB 13, 2001

O'BRIEN COUNTY

425610095250611. Local number, 94-39-26 BADB11.
LOCATION.--Lat 41°56'10", long 95°25'06", Hydrologic Unit 10230003, near a dead-end road just south of the Little Sioux River, 0.9 mi north of Iowa Highway 10, approximately 5 mi southeast of the Town of Sutherland. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2.5 in, depth 352 ft, screened 291-295 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,212 ft above sea level, from topographic map. Measuring point: Top of casing, 2.30 ft above land-surface datum.
REMARKS.-- Well D-3.
PERIOD OF RECORD.--April 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 34.94 ft below land-surface datum, May 09, 1995; lowest measured, 37.26 ft below land-surface datum, August 08, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	37.30	FEB 13	37.50	MAY 07	36.88	AUG 10	37.49

WATER YEAR 2001 HIGHEST 36.88 MAY 07, 2001 LOWEST 37.50 FEB 13, 2001

O'BRIEN COUNTY--Continued

430930095350401. Local number, 96-40-05 DDDA1.
LOCATION.--Lat 43°09'28", long 95°35'06", Hydrologic Unit 10230003, approximately 3 mi east of the Town of Sanborn and 2 mi south of U.S. Highway 18. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Ordovician and Dakota: sandy shale of Ordovician age and sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 701 ft, screened 661-701 ft. Dakota 487-688 ft, Ordovician 688-701 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,560 ft above sea level, from topographic map. Measuring point: Top of casing, 4.00 ft above land-surface datum.
REMARKS.-- Well D-41.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 358.39 ft below land-surface datum, July 8, 1986; lowest measured, 364.74 ft below land-surface datum, November 7, 1991.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	362.24	FEB 13	361.94	MAY 10	361.90	AUG 07	362.07

WATER YEAR 2001 HIGHEST 361.90 MAY 10, 2001 LOWEST 362.24 NOV 21, 2000

OSCEOLA COUNTY

431613095251801. Local number, 98-39-26 CDCC.
LOCATION.--Lat 43°16'13", long 95°25'18", Hydrologic Unit 10230003, 3.5 mi south and 2.5 mi east of the Village of May City. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 500 ft, screened 490-500 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,398 ft above sea level, from topographic map. Measuring point: Top of casing, 2.70 ft above land-surface datum.
REMARKS.-- Well D-39.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 189.99 ft below land-surface datum, June 17, 1980; lowest measured, 196.85 ft (nearby well pumping) below land-surface datum, September 6, 1984.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	192.85	FEB 13	193.14	MAY 07	192.86	AUG 07	194.00

WATER YEAR 2001 HIGHEST 192.85 NOV 06, 2000 LOWEST 194.00 AUG 07, 2001

431620095250501. Local number, 98-39-26 CDAD1.
LOCATION.--Lat 43°16'18", long 95°25'01", Hydrologic Unit 10230003, 3.5 mi south and 2.5 mi east of the Village of May City. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Cambrian-Ordovician: St. Peter sandstone of Middle Ordovician age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 662 ft, screened 622-662 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,402 ft above sea level, from topographic map. Measuring point: Top of low pipe, 1.47 ft above land-surface datum.
REMARKS.-- Well D-38, Deep Hibbing; in same borehole as well D-38 Shallow Hibbing.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 192.96 ft below land-surface datum, November 20, 1989; lowest measured, 202.43 ft below land-surface datum, February 07, 1996.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	198.92	MAY 07	199.14	AUG 07	199.67

WATER YEAR 2001 HIGHEST 198.92 NOV 06, 2000 LOWEST 199.67 AUG 07, 2001

431620095250511. Local number, 98-39-26 CDAD11.
LOCATION.--Lat 43°16'18", long 95°25'01", Hydrologic Unit 10230003, 3.5 mi south and 2.5 mi east of the Village of May City. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 345 ft, screened 335-345 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,402 ft above sea level, from topographic map. Measuring point: Top of high pipe, 2.60 ft above land-surface datum.
REMARKS.-- Well D-38, Shallow Hibbing; in same borehole as well D-38 Deep Hibbing.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 192.20 ft below land-surface datum, September 10, 1981; lowest measured, 197.03 ft below land-surface datum, May 05, 1999.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	194.73	MAY 07	195.37	AUG 07	195.53

WATER YEAR 2001 HIGHEST 194.73 NOV 06, 2000 LOWEST 195.53 AUG 07, 2001

OSCEOLA COUNTY--Continued

432828095283611. Local number, 100-39-17 DCCB11.
LOCATION.--Lat 43°28'33", long 95°28'35", Hydrologic Unit 10230003, approximately 2 mi west and 2 mi north of the Town of Harris, east of County Road M-12. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in. to 461 ft, 4 in. 440-760 ft, depth 760 ft, screened 680-700 ft.
INSTRUMENTATION.--Quarterly measurement with electric line or chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,560 ft above sea level, from topographic map. Measuring point: Top of casing, 3.00 ft above land-surface datum.
REMARKS.-- Well D-13.
PERIOD OF RECORD.--July 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 341.80 ft below land-surface datum, August 5, 1980; lowest measured, 350.68 ft below land-surface datum, November 05, 1997.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	345.10	FEB 16	345.35	MAY 07	345.33	AUG 07	345.57

WATER YEAR 2001 HIGHEST 345.10 NOV 06, 2000 LOWEST 345.57 AUG 07, 2001

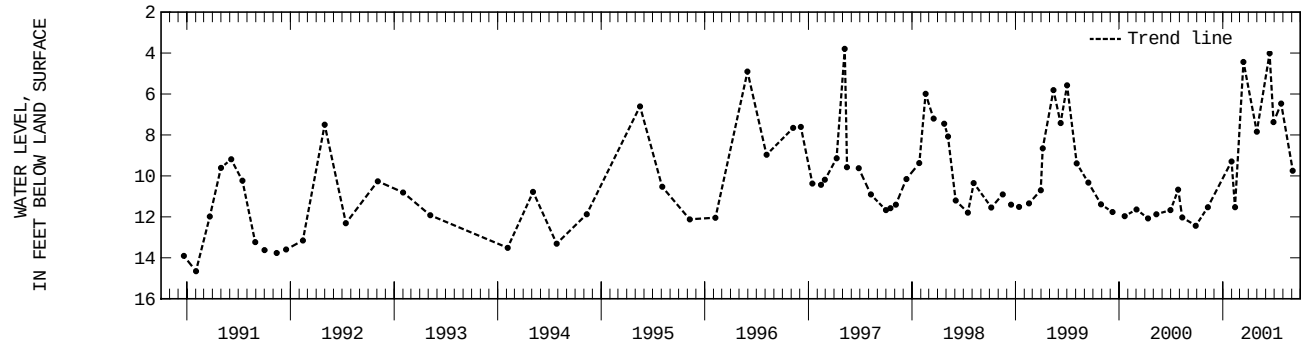
PAGE COUNTY

404257095150801. Local number, 68-38-07 CCAA.
LOCATION.--Lat 40°42'57", long 95°15'08", Hydrologic Unit 10240005, approximately 2 mi south of the Village of Norwich and 1.5 mi west of County Road M-48. Owner: William Brayman.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in., depth 44 ft, lined with tile.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,087 ft above sea level, from topographic map. Measuring point: Top of well, 1.20 ft below original land-surface datum.
REMARKS.-- Braymen Farm Well. Terracing of the farm land surrounding well has lowered the land surface below the original measuring point.
PERIOD OF RECORD.--January 1938 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.09 ft below land-surface datum, March 26, 1946; lowest measured, 22.76 ft below land-surface datum, June 23, 1947.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	11.53	FEB 12	11.53	APR 30	7.84	JUN 28	7.37	SEP 04	9.75		
JAN 31	9.29	MAR 14	4.43	JUN 14	4.02	JUL 25	6.47				

WATER YEAR 2001 HIGHEST 4.02 JUN 14, 2001 LOWEST 11.53 NOV 08, 2000 FEB 12, 2001



PLYMOUTH COUNTY

424833096324701. Local number, 92-48-06 DDDA.
LOCATION.--Lat 42°48'35", long 96°32'49", Hydrologic Unit 10170203, just south of the curve on Iowa Highway 3, 1 mi south of the Town of Akron. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: in sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 4 in. to 184 ft, 2 in. to 581 ft, depth 581 ft, screened 430-434 ft and 510-515 ft. Paleozoic rock 576-581 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel,.
DATUM.--Elevation of land-surface datum is 1,282 ft above sea level, from topographic map. Measuring point: Top of casing, 4.50 ft above land-surface datum.
REMARKS.-- Well D-35.
PERIOD OF RECORD.--December 1979 to December 1980, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 135.73 ft below land-surface datum, February 10, 1999; lowest measured, 159.82 ft below land-surface datum, August 06, 1980.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	137.28	FEB 14	137.27	MAY 10	136.85	AUG 06	137.18

WATER YEAR 2001 HIGHEST 136.85 MAY 10, 2001 LOWEST 137.28 NOV 21, 2000

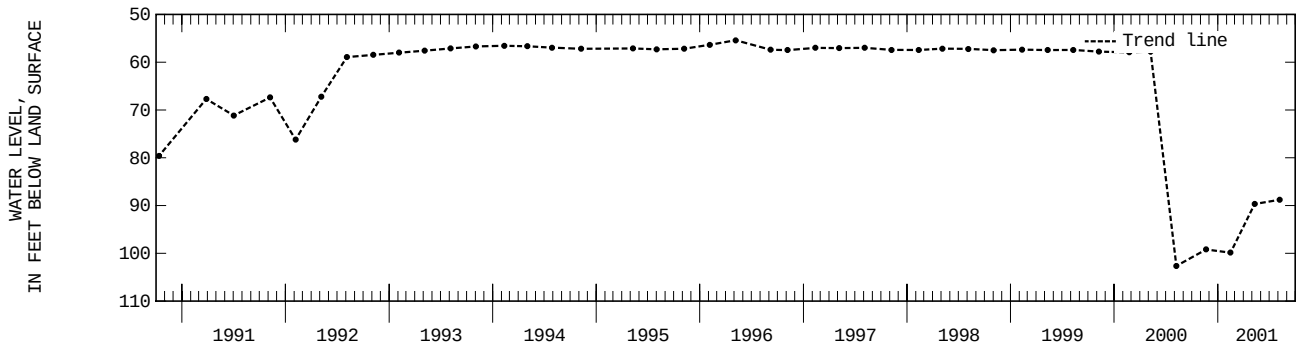
PLYMOUTH COUNTY--Continued

424850096074801. Local number, 92-45-02 CBCB.
LOCATION.--Lat 42°48'50", long 96°08'02", Hydrologic Unit 10230002, approximately 3.8 mi west and 0.6 mi south of the Village of Oyens. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Cambrian-Ordovician: dolomite of Cambrian and Ordovician age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in. to 161 ft, 4 in. to 598 ft, 2 in. to 1,340 ft, depth 1,340 ft, cased to 598 ft, open hole 598-1,340 ft. Well deepened from 1,089 ft to 1,340 ft in May, 1984. Ordovician rock 568-782 ft, Cambrian rock 782-1062 ft, Precambrian 1062-1340 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,245 ft above sea level, from topographic map. Measuring point: Top of casing, 2.80 ft above land-surface datum.
REMARKS.-- Well D-21.
PERIOD OF RECORD.--May 1979 to January 1981, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 55.40 ft below land-surface datum, May 06, 1996; Lowest measured, 102.64 ft below land-surface datum, August 07, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	99.20	FEB 14	99.87	MAY 10	89.68	AUG 06	88.79

WATER YEAR 2001 HIGHEST 88.79 AUG 06, 2001 LOWEST 99.87 FEB 14, 2001



425249096125001. Local number, 93-46-12 DDDD.
LOCATION.--Lat 42°52'49", long 96°12'50", Hydrologic Unit 10230002, 1 mi west and 1 mi south of the Village of Struble. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2.5 in., depth 570 ft, screened 356-360 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,280 ft above sea level, from topographic map. Measuring point: Top of coupling, 2.25 ft above land-surface datum.
REMARKS.-- Well D-2.
PERIOD OF RECORD.--March 1980 to December 1980, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 117.78 ft below land-surface datum, April 9, 1980; lowest measured, 125.45 ft below land-surface datum, August 08, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 10	125.11	AUG 06	125.31

WATER YEAR 2001 HIGHEST 125.11 MAY 10, 2001 LOWEST 125.31 AUG 06, 2001

POTTAWATTAMIE COUNTY

411359095171901. Local number, 74-39-01 CCCC.
LOCATION.--Lat 41°13'59", long 95°17'19", Hydrologic Unit 10240002, approximately 6.5 mi east of the Town of Carson, on the northeast corner of the junction of Iowa Highway 92 and County Road M-41. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 216 ft, screened 189-206 ft, gravel-packed, open to Pennsylvanian shale 207-216 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,245 ft above sea level, from topographic map. Measuring point: Top of casing, 2.50 ft above land-surface datum.
REMARKS.-- Well SW-21.
PERIOD OF RECORD.--July 1986 to current year.
REVISION.--Lowest water level measured, 129.38 ft below land-surface datum, August 20, 1986.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 122.74 ft below land-surface datum, May 11, 2000; lowest measured, 129.38 ft below land-surface datum, August 20, 1986.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 04	124.42	FEB 06	124.55	MAY 08	124.65	JUL 30	124.21

WATER YEAR 2001 HIGHEST 124.21 JUL 30, 2001 LOWEST 124.65 MAY 08, 2001

POTTAWATTAMIE COUNTY--Continued

412407095391201. Local number, 76-42-10 ADBC.
LOCATION.--Lat 41°24'01", long 95°39'17", Hydrologic Unit 10230006, approximately 1 mi east of the Town of Underwood, behind structure at reststop on eastbound Interstate 80. Owner: Iowa Highway Commission
AQUIFER.--Cambrian: sandstone and dolomite. from the Jordan and Prairie du Chen formations.
WELL CHARACTERISTICS.--Drilled public use well, diameter 16 in., depth 2520 ft, screened 2420-2460 ft, gravel packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,093 ft above sea level, from topographic map. Measuring point: Top of casing, 1.72 ft above land-surface datum.
REMARKS.--Underwood Well
PERIOD OF RECORD.--October 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 72.17 ft below land surface datum, May 09, 2001; lowest measured, 74.18 ft below land surface datum, October 28, 1996.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 04	72.72	FEB 15	72.35	MAY 09	72.17

WATER YEAR 2001 HIGHEST 72.17 MAY 09, 2001 LOWEST 72.72 DEC 04, 2000

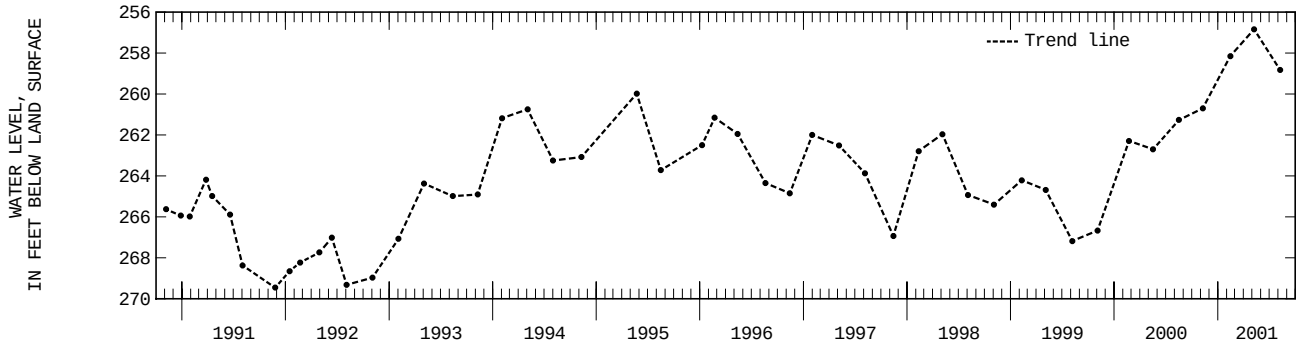
SCOTT COUNTY

413544090212901. Local number, 78-5E-03 AADA.
LOCATION.--Lat 41°35'44", long 91°21'29", Hydrologic Unit 07080101, at the Bridgeview Elementary School corner of 12th and Davenport Streets, Le Claire. Owner: City of Le Claire.
AQUIFER.--Cambrian-Ordovician: sandstone of Late Cambrian and sandstone and sandy dolomite of Early Ordovician age.
WELL CHARACTERISTICS.--Drilled unused municipal artesian water well, diameter 16 to 10 in., depth 1,607 ft, cased to 1,300 ft, open hole 1,300-1,607 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder July 1975 to December 1984.
DATUM.--Elevation of land-surface datum is 703 ft above sea level, from topographic map. Measuring point: Nipple on plate welded to casing, 2.11 ft above land-surface datum.
REMARKS.-- Le Claire Well No. 3.
PERIOD OF RECORD.--July 1975 to current year.
REVISED RECORDS.--WRD IA-84-1, WDR IA-88-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 247.46 ft below land-surface datum, July 8, 1975; lowest recorded, 276.86 ft below land-surface datum, September 1, 1978.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	260.70	FEB 13	258.15	MAY 08	256.84	AUG 08	258.83

WATER YEAR 2001 HIGHEST 256.84 MAY 08, 2001 LOWEST 260.70 NOV 08, 2000



SHELBY COUNTY

413255095070401. Local number, 78-37-17 DDDD.
LOCATION.--Lat 41°32'55", long 95°07'04", Hydrologic Unit 10240003, 3 mi south and 3 mi west of the Town of Elkhorn on the east side of County Road M-56 near Elkhorn Creek. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota and Pennsylvanian: sandstone of Cretaceous age and shale and limestone of Pennsylvanian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 181 ft, screened 121-179 ft, gravel-packed, open to Dakota 121-140 ft, Pennsylvanian 140-181 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,208 ft above sea level, from topographic map. Measuring point: Top of casing, 2.80 ft above land-surface datum.
REMARKS.-- Well WC-16.
PERIOD OF RECORD.--August 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 36.60 ft below land-surface datum, August 11, 1993; lowest measured, 43.23 ft below land-surface datum, December 04, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 04	43.23	FEB 13	42.66	MAY 09	41.82	JUL 31	42.24

WATER YEAR 2001 HIGHEST 41.82 MAY 09, 2001 LOWEST 43.23 DEC 04, 2000

413359095182701. Local number, 78-39-11 CCBC.
LOCATION.--Lat 41°33'59", long 95°18'27", Hydrologic Unit 10240002, approximately 5.5 mi south of the City of Harlan, 0.75 mi south of County Road F-58, and 1.5 mi east of U.S. Highway 59. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Fremont buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 541 ft, screened 520-535 ft, gravel-packed. Pennsylvanian shale 537-541 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,310 ft above sea level, from topographic map. Measuring point: Top of casing, 1.65 ft above land-surface datum.
REMARKS.-- Well WC-227.
PERIOD OF RECORD.--July 1983 to current year.
REVISION.--Lowest water level measured, 153.32 below land-surface datum, April 12, 1990.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 146.61 ft below land-surface datum, September 6, 1983; lowest measured, 153.32 ft below land-surface datum, April 12, 1990.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 04	152.41	FEB 13	152.30	MAY 09	152.12	JUL 31	152.51

WATER YEAR 2001 HIGHEST 152.12 MAY 09, 2001 LOWEST 152.51 JUL 31, 2001

413953095302601. Local number, 79-40-09 DBCA.
LOCATION.--Lat 41°39'53", long 95°30'26", Hydrologic Unit 10230006, east of State Highway 191, approximately 1 mi northeast of the Town of Portsmouth. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 210 ft, screened 160-175 ft, gravel packed, open hole 200-210 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,205 ft above sea level, from topographic map. Measuring point: Top of casing, 4.10 ft above land-surface datum.
REMARKS.-- Well WC-15.
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.29 feet below land-surface datum, May 9, 1995; lowest measured, 19.93 ft below land-surface datum, August 07, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	19.73	FEB 14	19.71	MAY 09	19.55	JUL 31	19.89

WATER YEAR 2001 HIGHEST 19.55 MAY 09, 2001 LOWEST 19.89 JUL 31, 2001

414624095252301. Local number, 80-39-06 AADC.
LOCATION.--Lat 41°46'24", long 95°25'22", Hydrologic Unit 10230006, west of the Town of Earling on the north side of Iowa Highway 37 near the junction of Iowa Highways 37 and 191. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 370 ft, screened 332-347 ft, open to Pennsylvanian sandstone, shale, and limestone 347-370 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,305 ft above sea level, from topographic map. Measuring point: Top of casing, 2.60 ft above land-surface datum.
REMARKS.-- Well WC-10.
PERIOD OF RECORD.--June 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 89.91 ft below land-surface datum, April 10, 1984; lowest measured, 131.70 ft below land-surface datum, April 12, 1990.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	107.76	FEB 14	113.75	MAY 09	112.37	AUG 01	114.93

WATER YEAR 2001 HIGHEST 107.76 NOV 20, 2000 LOWEST 114.93 AUG 01, 2001

414856095160101. Local number, 81-38-21 ADAD
LOCATION.--Lat 41°48'56", long 95°16'01", Hydrologic Unit 10240002, approximately 3.75 mi east of the Town of Defiance on the west side of County Road M-36. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Fremont buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 535 ft, screened 525-535 ft, gravel-packed. Open to Pennsylvanian shale 530-535 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,370 ft above sea level, from topographic map. Measuring point: Top of casing, 2.90 ft above land-surface datum.
REMARKS.-- Well WC-222.
PERIOD OF RECORD.--August 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 208.09 ft below land-surface datum, April 15, 1987; lowest measured, 212.97 ft below land-surface datum, October 11, 1990.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	211.64	MAY 09	211.28	AUG 01	211.82

WATER YEAR 2001 HIGHEST 211.28 MAY 09, 2001 LOWEST 211.82 AUG 01, 2001

SIOUX COUNTY

430140095573101. Local number, 95-43-07 AAAA.
LOCATION.--Lat 43°04'10", long 95°57'32", Hydrologic Unit 10230002, just south of County Road B-40, 1 mi east of the Village of Newkirk. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 681 ft, screened 641-681 ft. Open to Paleozoic rock from 674-681 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,390 ft above sea level, from topographic map. Measuring point: Top of casing, 3.70 ft above land-surface datum.
REMARKS.-- Well D-43.
PERIOD OF RECORD.--July 1980 to December 1980, May 1982 to current year.
REVISED RECORDS.--WDR IA-88-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 213.66 ft below land-surface datum, March 13, 1984; lowest measured, 219.57 ft below land-surface datum, February 5, 1996.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	219.59	FEB 14	219.45	MAY 10	219.32	AUG 06	219.68

WATER YEAR 2001 HIGHEST 219.32 MAY 10, 2001 LOWEST 219.68 AUG 06, 2001

430913096033201. Local number, 96-44-08 ADAA.
LOCATION.--Lat 43°09'13", long 96°03'32", Hydrologic Unit 10230002, west side of County Road K-64, approximately 2.5 mi west of the Town of Boyden and approximately 2.2 mi south of U.S. Highway 18. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 682 ft, screened 647-667 ft. Open to Paleozoic rock 681-682 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,373 ft above sea level, from topographic map. Measuring point: Top of casing, 3.70 ft above land-surface datum.
REMARKS.-- Well D-44.
PERIOD OF RECORD.--August 1980 to December 1980, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 187.85 ft below land-surface datum, October 16, 1984; lowest measured, 196.72 ft below land-surface datum, August 08, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	195.17	FEB 14	196.77	MAY 10	196.65	AUG 06	196.90

WATER YEAR 2001 HIGHEST 195.17 NOV 21, 2000 LOWEST 196.90 AUG 06, 2001

STORY COUNTY

420129093273701. Local number, 83-22-06 CDBD.
LOCATION.--Lat 42°01'30", long 93°27'33", Hydrologic Unit 07080105, approximately one mile north of Highway 30 near 1st and N ave. Owner: City of Nevada.
AQUIFER.--Cambrian-Ordovician aquifer.
WELL CHARACTERISTICS.--Drilled public supply well, diameter 16 in., depth 2630 ft, open hole 2015-2630 ft
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 991 ft above sea level, from topographic map.
REMARKS.-- Nevada well no. 4
PERIOD OF RECORD.--February 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 295 ft below land-surface datum, February 08, 1999; lowest measured, 373 ft below land-surface datum, February 11, 1997.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	380	FEB 14	365	MAY 09	310	AUG 02	350

WATER YEAR 2001 HIGHEST 310 MAY 09, 2001 LOWEST 380 NOV 08, 2000

420137093361501. Local number, 83-24-02 DABC.
LOCATION.--Lat 42°01'32", long 93°36'21", Hydrologic Unit 07080105, in Ames, north of the Chicago and Northwestern Railroad and County Road E-41, approximately 0.75 mi east of U.S. Highway 69. Owner: City of Ames.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled municipal well, depth 124 ft, casing information unavailable.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 926 ft above sea level, from topographic map. Measuring point: Top of casing, 0.82 ft above land-surface datum.
REMARKS.-- Ames city well No. 4.
PERIOD OF RECORD.--September 1987 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 49.98 ft below land-surface datum, March 14, 1991; lowest measured, 76.06 ft below land-surface datum, August 08, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	65.62	FEB 14	70.73	AUG 02	60.02

WATER YEAR 2001 HIGHEST 60.02 AUG 02, 2001 LOWEST 70.73 FEB 14, 2001

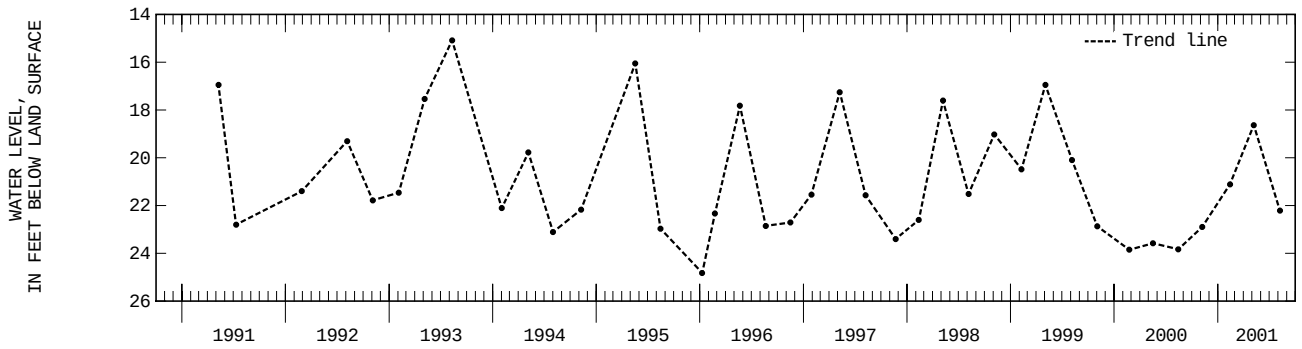
VAN BUREN COUNTY

404150091483001. Local number, 68-08-08 CDD.
LOCATION.--Lat 40°41'53", long 91°48'20", Hydrologic Unit 07100009, located at the west end of the park in the City of Bonaparte, south of County Road J-40. Owner: City of Bonaparte.
AQUIFER.--Mississippian: limestone and dolomite of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused semi-confined public-supply well, diameter 6 in., depth 205 ft, cased to 18 ft, open hole 18-205 ft.
INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel. Graphic water-level recorder December 1988 to July 1990. Intermittent measurement with chalked tape by USGS personnel August 1988 to December 1988.
DATUM.--Elevation of land-surface datum is 552 ft above sea level, from topographic map. Measuring point: Top of recorder platform, 0.65 ft above land-surface datum.
REMARKS.-- Bonaparte No. 1 well. Recorder removed July 17, 1990.
PERIOD OF RECORD.--August 1988 to present.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.08 ft below land-surface datum, August 10, 1993; lowest measured, 32.13 ft below land-surface datum, August 16, 1989.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	22.90	FEB 12	21.11	MAY 07	18.63	AUG 07	22.21

WATER YEAR 2001 HIGHEST 18.63 MAY 07, 2001 LOWEST 22.90 NOV 06, 2000



WASHINGTON COUNTY

411300091320701. Local number, 74-06-15 BDAC.
LOCATION.--Lat 41°12'59", long 91°32'07", Hydrologic Unit 07080107, in the water treatment plant, beneath the water tower in Crawfordsville. Owner: Town of Crawfordsville.
AQUIFER.--Mississippian: dolomite of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused municipal artesian water well, diameter 6.5 in., depth 215 ft, cased to 132 ft, open hole 132-215 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 725 ft above sea level, from topographic map. Measuring point: Nipple on plate welded to casing, 1.10 ft above land-surface datum.
PERIOD OF RECORD.--September 1983, March 1987 to current year. REMARKS: Crawfordsville North.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 69.23 ft below land-surface datum, March 25, 1987; lowest measured, 78.09 ft below land-surface datum, August 05, 1999.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	72.67	FEB 12	72.12	MAY 07	71.53	AUG 07	72.61

WATER YEAR 2001 HIGHEST 71.53 MAY 07, 2001 LOWEST 72.67 NOV 07, 2000

412750091495201. Local number, 77-09-24 AADA.
LOCATION.--Lat 41°27'53", long 91°49'47", Hydrologic Unit 07080209, north of the city sewage treatment plant and west of First Avenue SE, Wellman. Owner: City of Wellman.
AQUIFER.--Mississippian: dolomite of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 10 in. to 27 ft, 8 in. to 47 ft, depth 110 ft, cased to 47 ft, open hole 47 to 110 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 695 ft above sea level, from topographic map. Measuring point: Nipple on plate welded to casing, 1.87 ft above land-surface datum.
REMARKS.-- City test well No. 1.
PERIOD OF RECORD.--May 1963 to October 1971, May 1973 to current year.
REVISED RECORDS.--WDR IA-84-1, WDR IA-88-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.31 ft above land-surface datum, May 08, 2001; lowest measured, 6.80 ft below land-surface datum, October 20, 1964.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	1.28	FEB 13	.86	MAY 08	.31	AUG 08	2.23

WATER YEAR 2001 HIGHEST .31 MAY 08, 2001 LOWEST 2.23 AUG 08, 2001

WASHINGTON COUNTY--Continued

421829091304701. Local number, 75-06-14 ABBB.
LOCATION.--Lat 41°18'28", long 91°30'47", Hydrologic Unit 07080209, 1 mi north and 1.5 mi east of the junction of U.S. Highway 218 and Iowa Highway 92. Owner: Mrs. David Armstrong.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Bored unused water-table well, diameter 12 in., depth 45 ft, lined with tile.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 745 ft above sea level, from topographic map. Measuring point: Nipple welded to barrel, 4.08 ft above land-surface datum.
PERIOD OF RECORD.--November 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.29 ft below land-surface datum, April 16, 1999; lowest measured, 12.65 ft below land-surface datum, November 1, 1988.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	7.00	DEC 21	7.27	FEB 16	2.48	APR 26	3.33	JUL 31	5.34		
NOV 30	7.11	JAN 11	5.10	MAR 12	1.79	JUN 29	4.17	SEP 24	5.86		

WATER YEAR 2001 HIGHEST 1.79 MAR 12, 2001 LOWEST 7.27 DEC 21, 2000

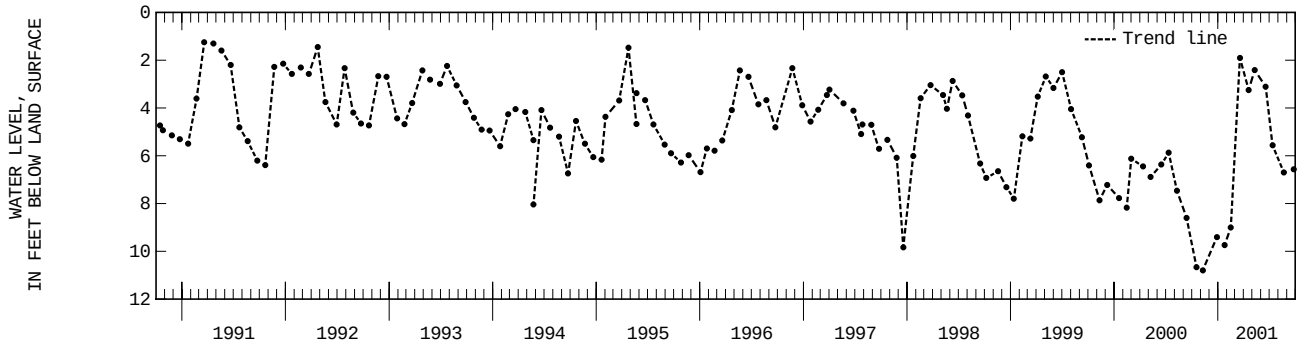
WEBSTER COUNTY

421837094083601. Local number, 87-28-29 CCCD.
LOCATION.--Lat 41°18'38", long 94°08'36", Hydrologic Unit 07100006, 3 mi north and 2 mi east of the Town of Harcourt. Owner: Grace Helms.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in., depth 42 ft, lined with tile.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel. Graphic water-level recorder October 1942 to December 1976.
DATUM.--Elevation of land-surface datum is 1,165 ft above sea level, from topographic map. Measuring point: Top of casing, 1.29 ft above land-surface datum.
PERIOD OF RECORD.--October 1942 to June 1956, March 1958 to current year.
REMARKS.--Sometimes called Harcourt well.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.05 ft below land-surface datum, August 1, 1972; lowest measured, 13.62 ft below land-surface datum, March 12, 1956.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	10.66	DEC 28	9.40	FEB 15	9.00	APR 19	3.25	JUN 18	3.11	AUG 21	6.70
NOV 08	10.80	JAN 24	9.74	MAR 19	1.90	MAY 10	2.41	JUL 12	5.56	SEP 25	6.57

WATER YEAR 2001 HIGHEST 1.90 MAR 19, 2001 LOWEST 10.80 NOV 08, 2000



423018094214701. Local number, 89-30-23 CCBB.
LOCATION.--Lat 42°30'18", long 94°21'47", Hydrologic Unit 07100004, 75 ft west of the new school addition, Barnum. Owner: Johnson Township Consolidated School.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 4 in., depth 208 ft, screened 203-208 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,174 ft above sea level, from topographic map. Measuring point: Top of casing at land-surface datum.
PERIOD OF RECORD.--October 1942 to September 1945, May 1947 to current year.
REVISED RECORDS.--WDR IA-88-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 30.36 ft below land-surface datum, October 21, 1942; lowest measured, 45.85 ft below land-surface datum, July 28, 1980.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	45.03	MAY 07	37.88	AUG 10	43.35

WATER YEAR 2001 HIGHEST 37.88 MAY 07, 2001 LOWEST 45.03 NOV 08, 2000

422058095573701. Local number, 87-44-15 CBBB.
LOCATION.--Lat 42°20'58", long 95°57'37", Hydrologic Unit 10230003, approximately 3.5 mi west and 5.5 mi north of the Village of Oto. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 197 ft, screened 185-189 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,165 ft above sea level, from topographic map. Measuring point: Top of casing, 1.50 ft above land-surface datum.
REMARKS.-- Well D-34.
PERIOD OF RECORD.--April 1980 to December 1980, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured,51.54 ft below land-surface datum, August 7, 1996; lowest measured, 63.56 ft below land-surface datum, November 02, 1982.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 21	56.02	FEB 14	55.17	MAY 09	54.24

WATER YEAR 2001 HIGHEST 54.24 MAY 09, 2001 LOWEST 56.02 NOV 21, 2000

422830096000511. Local number, 88-44-16 BAAB11.
LOCATION.--Lat 42°28'30", long 96°00'31", Hydrologic Unit 10230004, approximately 3 mi east and 0.5 mi south of the Town of Moville. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 4 in. to 235 ft, 2 in. to 337 ft, depth 337 ft, screened 332-337 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,340 ft above sea level, from topographic map. Measuring point: Top of casing, 3.50 ft above land-surface datum.
REMARKS.-- Well D-33. Damaged March 1998
PERIOD OF RECORD.--October 1979 to December 1980, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 198.60 ft below land-surface datum, November 09, 1999; lowest measured, 202.90 ft below land-surface datum, October 17, 1979.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 20	199.72	FEB 14	199.58	MAY 09	199.18	AUG 06	199.32

WATER YEAR 2001 HIGHEST 199.18 MAY 09, 2001 LOWEST 199.72 NOV 20, 2000

GROUND WATER QUALITY MONITORING PROGRAM

[Geologic unit abbreviations used in this table: 110QRCU, Quarternary-Cretaceous Undifferentiated; 110QRNR, Quarternary System; 111ALVM, Holocene Alluvium; 111ENRV, East Nishnabotna River Allvuial; 111SDRV, Soldier River Alluvial; 112AFNN, Aftonian Interglacial Deposits; 112PLSC, Pleistocene Series]

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

STATION NUMBER	STATION NAME	COUNTY	DATE	TIME	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE (G/M) (00058)
411727094374001	075N33W15DDBB 1976Fontanelle 5	Adair	08-14-01	1500	111ALVM	39.00	60
405632094534401	071N35W20AACB 1990Nodaway 4	Adams	08-13-01	1645	111ALVM	35.00	55
413234094552401	078N35W19BCDB 1976Brayton 1	Audubon	08-17-01	1100	111ENRV	41.00	75
420535091524002	084N09W15ACC 1932Shellsburg 2	Benton	08-02-01	1130	340DVSL	335.00	100
422819092212701	089N13W34DDAA 12031 1960Waterloo 17	Black Hawk	08-29-01	0945	344DVNNM	215.00	2400
420451093561301	084N27W13DCAA 1940Boone 20	Boone	07-26-01	1030	111ALVM	64.00	200
420959094001901	085N27W16CCDC 1967Pilot Mound 3	Boone	07-26-01	0845	112PLSC	30.00	32
422852092040101	089N10W31AAB 09382 1957Jesup 2	Buchanan	08-29-01	1130	358KNKK	380.00	275
424708094570801	092N35W14BCCC 04044 1949Albert City 1	Buena Vista	07-23-01	1200	112PLSC	190.00	170
425344095090401	093N37W01DDDD 1977Sioux Rapids 2	Buena Vista	07-23-01	1400	111ALVM	54.00	185
425355092475801	093N17W01ACCC 03522 1948Greene 1	Butler	09-14-01	1230	111ALVM	115	--
415233094403201	082N33W34ABBD 1938Coon Rapids 1, North	Carroll	08-02-01	1345	217DKOT	191.00	100
411639094521101	075N35W22CBDC 1978Cumberland (5) 4	Cass	08-14-01	1200	217DKOT	213.00	40
411622094520901	075N35W27BBAB 1921Cumberland 1	Cass	08-14-01	1200	112PLSC	155.00	30
414032091210001	079N04W06DACD 1979West Branch 4	Cedar	09-19-01	0930	358ALXD	450	230
423744095383301	090N41W11ADAD 1967Quimby 1	Cherokee	08-01-01	1115	217DKOT	218.00	100
424341095331301	091N40W03ACCC 18613 1966Cherokee 7	Cherokee	08-01-01	1545	217DKOT	255.00	600
414652090153201	081N06E33ADA 1956Camanche 2	Clinton	08-06-01	1115	111ALVM	61.2	--
414930090321601	081N04E18ACBB 00183 1923De Witt 3	Clinton	08-06-01	1315	371JRDN	1646	--
420336095115601	084N37W30BDAD 1936Vail (1),2	Crawford	08-02-01	1600	111ALVM	28.00	150
415057094065301	081N28W09ABBB 1987Perry 9R	Dallas	07-26-01	1500	111ALVM	45.00	310
413836094161701	079N29W19BAAC 19060 1966Linden 3	Dallas	08-15-01	0815	330MSSP	940.00	60
423020091273701	089N05W20DBBB 1981Manchester 7	Delaware	08-29-01	1400	350SLRN	270.00	--
423135090383201	089N03E18AADD 1969Dubuque 9	Dubuque	09-11-01	1215	111ALVM	125	--
423602090595201	090N01W19AA 1987Holy Cross 1	Dubuque	09-11-01	1530	111ALVM	665	--
432349094285201	099N31W14BBCD 1995Armstrong 7	Emmet	07-24-01	0815	112PLSC	136.00	280
425717091382602	094N07W14CBAD 1954Elgin 2	Fayette	09-12-01	0930	111ALVM	220	--
425341093132501	093N20W05DDAB 1956Sheffield 2	Franklin	07-25-01	0815	110QRNR	27.00	110
404327095284801	068N40W07BCAA 1980Farragut 79-2 (North)	Fremont	08-13-01	1140	111ALVM	65	--
421322092522001	086N17W31ABDA 13238 1962Conrad 3	Grundy	09-05-01	0900	339HMPN	120.00	150
422611092552501	088N18W14BCCB 10984 1960Wellsburg 1	Grundy	09-18-01	0945	371JRDN	2050	350
430015093360501	095N23W31ACA 11168 1959Klemme 2	Hancock	07-24-01	1415	341LMCK	185.00	50
430015093360502	095N23W31ABDD 00265 1934Klemme 1	Hancock	08-27-01	1425	371JRDN	1512.00	125
414236096012501	080N45W25DABD 1951Mondamin 2, South	Harrison	08-27-01	1130	111ALVM	90.00	150
432650092170401	100N12W29DBD 1968Lime Springs 2	Howard	09-13-01	0930	111ALVM	380	--
422106095280201	087N40W14ACBB 1965Ida Grove 3	Ida	12-13-00	1130	112PLSC	65	--
422915095323504	089N39W33CDDD 1985Holstein 3	Ida	08-02-01	0830	111ALVM	54.00	110
414825091511201	081N09W23DADA 21060 1968East Amana 2	Iowa	08-30-01	1145	340DVSL	550.00	50
414520092112001	080N12W12ADDC 05509 1952Ladora 1	Iowa	09-20-01	0915	112PLSC	72.5	--
420414090113201	084N07E20BCDD 1895Sabula 1	Jackson	08-06-01	0930	360OVCB	973	--
413913093070001	079N20W13ADDA 07999 1955Newton 13	Jasper	09-05-01	1230	111ALVM	45.00	--
410046091555701	Fairfield Municipal Well nr Walton Lake	Jefferson	09-06-01	1000	371JRDN	2200.00	1500
421442091120001	086N03W21CAAA 1977Monticello 4	Jones	09-19-01	1300	350SLRN	320	500
412138091571501	076N10W25ACCA 01794 1943Keota 2	Keokuk	08-08-01	0915	339WSVL	153	--
403745091174701	067N04W02CBBC 1991Fort Madison 4	Lee	09-06-01	1300	111ALVM	147.00	600
420005091431201	083N08W13ACDB 1970Cedar Rapids S6	Linn	08-02-01	0930	111ALVM	65.00	800
411644091110703	075N03W22DCBD 1975Grandview 3	Louisa	08-08-01	1345	112AFNN	174	--
405858093175701	071N20W06ABDA 07948 1956Russell 1	Lucas	08-15-01	1215	360OVCB	2520.00	200
432608096201503	100N47W36DCBD 1988Lester (4) 2	Lyon	07-31-01	1930	111ALVM	32.00	45
420352092552401	084N18W22DDDD 1981Marshalltown 14	Marshall	09-04-01	1330	330MSSP	160.00	450
420405092545601	084N18W23CACA 1977Marshalltown 8	Marshall	09-04-01	1430	112PLSC	223.00	775
410656095380201	073N42W23AAAC 1978Silver City 3	Mills	08-27-01	0830	111ALVM	60.00	120
432150092332401	099N15W25DABA 1917Riceville 1	Mitchell	09-13-01	1215	111ALVM	515	--
431654092484501	098N17W26ADBC 16641 1964Osage 5	Mitchell	09-13-01	1515	111ALVM	650	--
432241092550802	099N18W24CABA 1960Saint Ansgar 2	Mitchell	09-14-01	0915	111ALVM	240	--
420955095475601	085N43W24BDBA 1973Mapleton 5	Monona	08-02-01	1015	111ALVM	64.00	350
405850095061701	071N37W04ACD 06207 1953Stanton 1	Montgomery	08-13-01	1430	217DKOT	158.00	120
413521090511001	078N01E04CAA 03238 1948Stockton 1	Muscatine	08-07-01	0915	355HPKN	247	--
431157095502901	097N42W29BBBC 1949Sheldon 5	O'Brien	07-31-01	1615	111ALVM	24.00	60
403906095015001	067N37W01AAAA 1985Shambaugh 3	Page	08-14-01	0715	111ALVM	30.00	30
425731094270801	094N31W13ACCC 1949West Bend 2	Palo Alto	07-23-01	1615	217DKOT	115.00	40
423537095583901	090N43W19CCBB 1956Kingsley 1	Plymouth	07-31-01	1215	110QRNR	37.00	155
411501095251301	075N40W35CBCA 1975Carson (5) 3	Pottawattamie	08-13-01	0830	111ALVM	30.00	50
414430092433001	080N16W16BCCB 06931 1955Grinnell 7	Poweshiek	09-18-01	1230	371JRDN	2550	1000
421617095051001	086N36W07CDBB 1971Wall Lake (3),2	Sac	07-23-01	0900	112PLSC	43.00	325
413923090350901	079N03E11CCBD 1929Eldridge 2	Scott	08-06-01	1500	350SLRN	515	--
413040090455001	078N02E32CC 22757 1971Blue Grass (2),1	Scott	08-07-01	1130	364PLVL	640	--
413049095254501	078N39W34ACCD 1968Shelby 5	Shelby	08-17-01	1345	111ALVM	48.00	15
430017096285301	095N48W35BDDC 1931Hawarden 2	Sioux	07-31-01	1415	110QRCU	36.00	120
415252093411401	082N24W30DCBB 1945Slater 1	Story	07-26-01	1300	112PLSC	180.00	70

GROUND WATER QUALITY MONITORING PROGRAM--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

STATION NUMBER	DATE	PUMP OR FLOW PERIOD PRIOR TO SAM-PLING (MIN) (72004)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)
411727094374001	08-14-01	30	.1	7.0	505	13.0	220	64.0	13.0	2.00	11.0	190
405632094534401	08-13-01	30	.6	6.7	490	12.5	230	60.0	19.0	<1.00	11.0	140
413234094552401	08-17-01	20	.2	6.7	871	12.0	410	110	32.0	1.00	26.0	300
420535091524002	08-02-01	30	--	6.7	691	11.3	270	71.0	21.0	2.30	11.0	210
422819092212701	08-29-01	>30	.5	6.8	664	11.3	350	93.0	25.0	2.30	24.0	220
420451093561301	07-26-01	45	3.9	7.4	673	11.0	280	78.0	30.0	2.70	16.0	230
420959094001901	07-26-01	30	.3	7.1	722	11.5	380	98.0	32.0	2.60	7.3	300
422852092040101	08-29-01	>30	--	6.9	540	13.4	280	71.0	25.0	1.90	7.5	250
424708094570801	07-23-01	30	.9	7.2	1400	10.5	700	170	53.0	7.60	65.0	390
425344095090401	07-23-01	30	5.3	7.0	1140	10.5	480	130	37.0	3.20	30.0	270
425355092475801	09-14-01	--	.3	7.1	399	10.1	230	68.0	15.0	1.00	2.8	210
415233094403201	08-02-01	30	2.7	6.9	417	12.5	210	54.0	16.0	<1.00	6.0	160
411639094521101	08-14-01	30	.2	7.0	386	12.5	200	51.0	13.0	1.30	9.2	190
411622094520901	08-14-01	30	2.5	7.0	343	13.5	270	46.0	12.0	1.40	7.6	160
414032091210001	09-19-01	<30	--	6.6	883	12.2	450	120	36.0	1.50	21.0	380
423744095383301	08-01-01	30	.6	7.2	743	12.0	360	99.0	26.0	4.60	21.0	280
424341095331301	08-01-01	30	.3	7.1	1240	11.5	590	160	45.0	5.20	46.0	280
414652090153201	08-06-01	--	--	--	--	--	190	44.0	16.0	1.20	11.0	120
414930090321601	08-06-01	--	--	--	--	--	230	46.0	24.0	8.30	49.0	260
420336095115601	08-02-01	30	1.3	7.0	847	14.0	390	110	26.0	1.20	24.0	280
415057094065301	07-26-01	30	.2	7.2	683	10.5	360	97.0	27.0	1.70	6.5	280
413836094161701	08-15-01	30	.3	7.5	72000	16.0	840	190	63.0	7.70	300	190
423020091273701	08-29-01	30	4.5	7.2	502	11.0	270	69.0	18.0	1.40	11.0	190
423135090383201	09-11-01	--	.3	7.3	421	12.7	190	46.1	18.6	2.57	10.7	--
423602090595201	09-11-01	--	.4	6.9	582	14.2	340	79.0	34.0	1.80	2.2	310
432349094285201	07-24-01	30	.2	7.0	1140	10.5	540	140	43.0	4.00	54.0	440
425717091382602	09-12-01	--	.6	7.0	640	10.2	340	100	27.0	2.30	5.1	260
425341093132501	07-25-01	30	5.4	7.4	589	12.0	290	77.0	25.0	.83	4.3	200
404327095284801	08-13-01	--	--	--	--	--	320	78.0	24.0	2.70	17.0	240
421322092522001	09-05-01	>30	2.2	7.0	714	11.4	360	90.0	36.0	2.30	12.0	290
422611092552501	09-18-01	30	--	7.0	932	12.9	370	80.0	32.0	18.0	70.0	310
430015093360501	07-24-01	30	.3	7.0	832	11.0	420	95.0	40.0	6.30	19.0	370
430015093360502	08-27-01	20	.5	7.2	724	12.0	550	110	--	--	--	330
414236096012501	08-27-01	30	.3	7.0	1250	12.5	580	140	47.0	16.0	46.0	520
432650092170401	09-13-01	--	.3	7.2	428	8.8	220	63.0	19.0	1.40	4.1	210
422106095280201	12-13-00	--	1.6	7.2	1160	12.8	--	--	--	--	--	--
422915095323504	08-02-01	30	5.3	7.2	801	12.0	400	110	28.0	1.20	13.0	280
414825091511201	08-30-01	30	--	6.8	755	15.0	320	74.0	30.0	1.30	5.0	290
414520092112001	09-20-01	30	.6	7.6	1020	12.2	330	82.0	30.0	2.50	96.0	400
420414090113201	08-06-01	--	--	--	--	--	280	48.0	33.0	4.00	2.0	250
413913093070001	09-05-01	>30	7.7	7.0	664	11.5	360	90.0	33.0	<1.00	7.4	270
410046091555701	09-06-01	30	.3	7.2	1770	23.7	310	74.0	30.0	17.0	270	240
421442091120001	09-19-01	<30	3.2	7.0	582	16.2	310	74.0	31.0	<1.00	5.1	270
412138091571501	08-08-01	--	--	--	--	--	460	110	40.0	2.40	32.0	430
403745091174701	09-06-01	>30	.9	6.9	480	13.6	220	55.0	19.0	2.60	10.0	220
420005091431201	08-02-01	>30	.6	6.9	530	13.3	340	110	15.0	5.10	17.0	270
411644091110703	08-08-01	--	--	--	--	--	290	63.0	17.0	1.00	7.5	240
405858093175701	08-15-01	30	10.1	7.7	1310	21.0	240	57.0	22.0	16.0	180	260
432608096201503	07-31-01	40	.4	7.2	1130	10.0	580	150	46.0	2.60	20.0	320
420352092552401	09-04-01	>30	1.0	6.9	681	10.7	370	90.0	30.0	2.00	10.0	270
420405092545601	09-04-01	>30	.4	7.2	709	10.8	410	90.0	34.0	2.50	17.0	290
410656095380201	08-27-01	30	.3	6.9	996	12.0	470	120	36.0	6.10	44.0	340
432150092332401	09-13-01	--	.8	7.2	622	10.1	310	76.0	29.0	3.40	18.0	300
431654092484501	09-13-01	--	.4	7.2	560	12.8	280	80.0	23.0	1.60	8.9	250
432241092550802	09-14-01	--	4.1	6.3	815	9.8	350	89.0	30.0	1.80	110	240
420955095475601	08-02-01	30	5.4	7.2	860	12.0	420	110	33.0	2.90	17.0	310
405850095061701	08-13-01	30	.6	7.1	504	12.5	270	66.0	16.0	1.30	9.8	210
413521090511001	08-07-01	--	--	--	--	--	320	78.0	28.0	<1.00	10.0	320
431157095502901	07-31-01	30	.6	7.2	833	10.5	450	110	36.0	1.40	12.0	300
403906095015001	08-14-01	30	.3	6.4	451	12.0	200	52.0	11.0	<1.00	19.0	140
425731094270801	07-23-01	30	.2	7.0	773	11.0	390	100	32.0	4.30	16.0	380
423537095583901	07-31-01	30	6.5	7.1	907	14.5	440	120	32.0	2.50	19.0	340
411501095251301	08-13-01	30	.3	6.7	718	11.5	380	100	28.0	1.00	8.4	290
414430092433001	09-18-01	>30	.5	7.1	1100	24.1	380	80.0	38.0	16.0	99.0	300
421617095051001	07-23-01	30	.3	7.1	978	11.0	460	120	34.0	3.40	31.0	300
413923090350901	08-06-01	--	--	--	--	--	230	47.0	24.0	<1.00	12.0	140
413040090455001	08-07-01	--	--	--	--	--	330	78.0	33.0	1.30	15.0	350
413049095254501	08-17-01	30	6.0	6.9	522	15.0	220	66.0	20.0	<1.00	8.3	150
430017096285301	07-31-01	30	7.7	7.3	892	11.0	450	120	35.0	4.20	16.0	310
415252093411401	07-26-01	30	.2	7.7	789	12.0	280	63.0	23.0	6.10	67.0	420

GROUND WATER QUALITY MONITORING PROGRAM--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

STATION NUMBER	DATE	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N) (00607)	PHOSPHORUS ORTHO, DISSOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
411727094374001	08-14-01	13.0	.2	20.0	30.0	300	.300	.70	<.100	.41	<.020	2.2
405632094534401	08-13-01	3.7	.1	20.0	100	320	<.100	.03	1.40	.26	.030	<1.0
413234094552401	08-17-01	57.0	.3	19.0	67.0	500	.090	.40	.100	.24	<.020	1.2
420535091524002	08-02-01	20.0	.4	12.0	34.0	350	.300	.40	6.20	<.10	.070	3.8
422819092212701	08-29-01	20.0	.6	15.0	110	430	.220	.37	.800	.15	<.020	<1.0
420451093561301	07-26-01	23.0	.6	22.0	65.0	410	<.100	.20	5.90	.20	--	2.1
420959094001901	07-26-01	11.0	.5	34.0	78.0	450	<.200	.60	<.100	.40	<.020	1.3
422852092040101	08-29-01	6.4	.7	12.0	23.0	320	.020	.11	3.60	.09	<.020	<1.0
424708094570801	07-23-01	1.1	.6	32.0	400	1000	1.70	1.9	<.100	.20	--	2.5
425344095090401	07-23-01	160	.4	28.0	25.0	680	<.100	<.10	3.50	<.10	<.020	<1.0
425355092475801	09-14-01	<1.0	.3	13.0	14.0	240	<.050	.14	.100	.14	<.020	<1.0
415233094403201	08-02-01	5.1	.3	21.0	35.0	240	<.100	.40	2.20	.40	<.020	<1.0
411639094521101	08-14-01	<1.0	.3	23.0	15.0	230	<.100	.10	<.100	.10	<.020	<1.0
411622094520901	08-14-01	<1.0	.3	23.0	11.0	200	<.100	.15	<.100	.15	<.020	<1.0
414032091210001	09-19-01	53.0	.3	19.0	53.0	560	.710	.82	<.100	.10	.020	1.3
423744095383301	08-01-01	1.2	.9	26.0	110	470	.500	.80	<.100	.40	<.020	<1.0
424341095331301	08-01-01	1.1	.9	28.0	410	910	.400	.70	<.100	.30	<.020	<1.0
414652090153201	08-06-01	22.0	<.1	23.0	30.0	260	<.100	.20	5.60	.20	.060	<1.0
414930090321601	08-06-01	22.0	.8	9.2	34.0	360	.700	1.0	<.100	.30	.890	3.9
420336095115601	08-02-01	38.0	.2	25.0	87.0	5160	<.100	.30	5.10	.30	.130	<1.0
415057094065301	07-26-01	10.0	.5	24.0	65.0	420	<.100	.30	<.100	.30	<.020	1.3
413836094161701	08-15-01	42.0	2.8	7.9	1200	2030	1.10	1.7	<.100	.62	<.020	<1.0
423020091273701	08-29-01	14.0	.1	14.0	26.0	300	.020	<.05	7.90	<.05	<.020	<1.0
423135090383201	09-11-01	15.5	E.1	13.8	15.2	250	.503	.84	E.125	.34	.335	5.0
423602090595201	09-11-01	1.0	.3	9.3	23.0	340	<.050	.16	<.100	.12	<.020	<1.0
432349094285201	07-24-01	1.3	.4	32.0	190	750	.900	2.1	<.100	1.1	4.00	2.2
425717091382602	09-12-01	14.0	.4	12.0	55.0	400	<.050	.13	6.30	.13	<.020	<1.0
425341093132501	07-25-01	8.7	.3	24.0	17.0	330	<.100	<.10	18.0	<.10	.020	<1.0
404327095284801	08-13-01	12.0	.3	23.0	73.0	390	<.100	.30	.800	.32	.110	<1.0
421322092522001	09-05-01	22.0	.3	16.0	47.0	410	.240	.49	5.30	.25	<.020	<1.0
422611092552501	09-18-01	9.6	1.4	7.9	190	600	1.40	1.4	<.100	<.05	.020	<1.0
430015093360501	07-24-01	10.0	.9	15.0	55.0	460	.400	.70	<.100	.30	<.020	2.2
430015093360502	08-27-01	8.1	.9	--	220	650	.970	1.3	<.100	.33	<.020	<1.0
414236096012501	08-27-01	30.0	.3	33.0	120	790	1.40	1.7	<.100	.26	<.020	2.8
432650092170401	09-13-01	1.9	.6	11.0	23.0	240	.300	.39	<.100	<.05	<.020	<1.0
422106095280201	12-13-00	--	--	--	--	--	--	--	--	--	--	--
422915095323504	08-02-01	25.0	.5	21.0	58.0	470	<.100	.30	11.0	.30	.030	<1.0
414825091511201	08-30-01	1.5	.5	10.0	140	480	1.60	1.6	2.40	<.05	<.020	<1.0
414520092112001	09-20-01	<5.0	.7	13.0	180	670	4.00	5.5	<.100	1.5	.100	6.8
420414090113201	08-06-01	1.8	.2	9.2	16.0	270	<.100	.20	.200	.20	<.020	<1.0
413913093070001	09-05-01	16.0	.3	23.0	43.0	400	<.010	.08	7.60	.08	.090	<1.0
410046091555701	09-06-01	140	1.9	11.0	490	1160	1.40	1.4	<.100	<.05	<.020	<1.0
421442091120001	09-19-01	8.7	.3	<.1	27.0	340	<.050	<.05	3.20	<.05	.100	<1.0
412138091571501	08-08-01	4.0	.3	10.0	72.0	540	.700	1.2	<.100	.50	<.020	<1.0
403745091174701	09-06-01	17.0	.2	24.0	8.3	280	4.50	4.6	<.100	.10	.990	4.5
420005091431201	08-02-01	19.0	.3	13.0	50.0	450	.100	.10	3.10	<.10	.020	1.5
411644091110703	08-08-01	<1.0	.2	24.0	<1.0	260	.600	2.3	<.100	1.7	.180	1.0
405858093175701	08-15-01	90.0	2.9	11.0	280	850	.900	1.4	<.100	.51	<.020	<1.0
432608096201503	07-31-01	13.0	.4	19.0	290	800	.100	.60	<.100	.50	.020	2.1
420352092552401	09-04-01	20.0	.3	15.0	48.0	400	.040	.25	3.70	.21	.040	1.4
420405092545601	09-04-01	19.0	.5	17.0	76.0	440	1.20	1.3	<.100	.15	.030	1.3
410656095380201	08-27-01	68.0	.3	24.0	81.0	590	.280	.43	<.100	.15	.040	1.4
432150092332401	09-13-01	2.0	.8	11.0	53.0	370	2.80	2.5	<.100	<.05	.020	1.1
431654092484501	09-13-01	10.0	.4	13.0	48.0	350	.440	.45	<.100	<.05	<.020	<1.0
432241092550802	09-14-01	27.0	.3	11.0	56.0	780	<.050	.13	7.50	.12	.350	<1.0
420955095475601	08-02-01	27.0	.3	27.0	58.0	520	<.100	.20	12.0	.20	.080	<1.0
405850095061701	08-13-01	15.0	.2	24.0	23.0	290	.500	.95	<.100	.46	<.020	<1.0
413521090511001	08-07-01	5.1	.2	15.0	8.7	330	<.100	.20	<.100	.20	.180	<1.0
431157095502901	07-31-01	21.0	.5	22.0	120	540	.200	.60	<.100	.40	.040	2.0
403906095015001	08-14-01	23.0	<.1	28.0	50.0	280	<.100	.30	<.100	.29	.250	4.2
425731094270801	07-23-01	2.9	.6	24.0	38.0	450	.800	.70	<.100	<.10	<.020	1.2
423537095583901	07-31-01	32.0	.5	28.0	69.0	550	<.100	.30	8.30	.30	.140	<1.0
411501095251301	08-13-01	16.0	.3	9.6	60.0	420	<.100	.30	1.30	.32	<.020	<1.0
414430092433001	09-18-01	17.0	1.5	11.0	290	730	1.20	1.1	<.100	<.05	<.020	<1.0
421617095051001	07-23-01	66.0	.6	25.0	100	580	<.100	.50	2.20	.50	.020	1.3
413923090350901	08-06-01	<1.0	.5	16.0	<1.0	240	2.10	2.7	--	.60	.200	2.4
413040090455001	08-07-01	1.1	.2	17.0	13.0	360	<.100	.30	<.100	.30	<.020	<1.0
413049095254501	08-17-01	16.0	.3	21.0	22.0	310	.020	.20	15.0	.17	.020	<1.0
430017096285301	07-31-01	16.0	.3	27.0	100	590	<.100	.30	12.0	.30	.060	<1.0
415252093411401	07-26-01	2.1	.6	10.0	<1.0	460	6.50	13	<.100	6.0	<.020	19

GROUND WATER QUALITY MONITORING PROGRAM--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

STATION NUMBER	DATE	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	CYANIDE TOTAL (MG/L AS CN) (00720)	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)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)
411727094374001	08-14-01	<5.00	21.0	<2.00	<1.00	<10.0	<10.0	<.01	12000	<1.00	610	<50.0
405632094534401	08-13-01	<5.00	5.0	<2.00	<1.00	<10.0	<10.0	<.01	480	<1.00	70.0	<50.0
413234094552401	08-17-01	<5.00	3.0	<2.00	<1.00	<10.0	<10.0	<.01	6200	<1.00	1100	<50.0
420535091524002	08-02-01	<5.00	1.0	<2.00	<1.00	<10.0	<10.0	<.01	90	<1.00	480	<50.0
422819092212701	08-29-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	<90	<1.00	80.0	<50.0
420451093561301	07-26-01	<5.00	1.0	<2.00	<1.00	<10.0	<10.0	<.01	30	2.00	120	<50.0
420959094001901	07-26-01	<5.00	9.0	<2.00	<1.00	<10.0	<10.0	<.02	2700	<1.00	220	<50.0
422852092040101	08-29-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	<20	<1.00	<20.0	<50.0
424708094570801	07-23-01	<5.00	21.0	<2.00	<1.00	<10.0	<10.0	<.01	4300	<1.00	120	<50.0
425344095090401	07-23-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	<20	<1.00	20.0	<50.0
425355092475801	09-14-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	280	<1.00	<20.0	<50.0
415233094403201	08-02-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	250	<1.00	60.0	<50.0
411639094521101	08-14-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	30	<1.00	30.0	<50.0
411622094520901	08-14-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	<20	<1.00	<20.0	<50.0
414032091210001	09-19-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	920	<1.00	170	<50.0
423744095383301	08-01-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	1200	<1.00	90.0	<50.0
424341095331301	08-01-01	<5.00	5.0	<2.00	<1.00	<10.0	<10.0	<.01	1100	<1.00	350	<50.0
414652090153201	08-06-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	<20	<1.00	<20.0	<50.0
414930090321601	08-06-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	600	<1.00	<20.0	<50.0
420336095115601	08-02-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	<20	<1.00	<20.0	<50.0
415057094065301	07-26-01	<5.00	3.0	<2.00	<1.00	<10.0	<10.0	<.01	1900	<1.00	360	<50.0
413836094161701	08-15-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	490	<1.00	<20.0	<50.0
423020091273701	08-29-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	<20	<1.00	<20.0	<50.0
423135090383201	09-11-01	--	--	--	--	--	--	--	1970	--	2570	--
423602090595201	09-11-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	150	<1.00	<20.0	<50.0
432349094285201	07-24-01	<5.00	14.0	<2.00	<1.00	<10.0	<10.0	<.02	2200	<1.00	490	<50.0
425717091382602	09-12-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	<20	<1.00	<20.0	<50.0
425341093132501	07-25-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.02	<20	<1.00	<20.0	<50.0
404327095284801	08-13-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	840	<1.00	120	<50.0
421322092522001	09-05-01	5.00	1.0	2.00	1.00	<10.0	<10.0	<.01	<20	1.00	40.0	<50.0
422611092552501	09-18-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	1100	<1.00	<20.0	<50.0
430015093360501	07-24-01	<5.00	1.0	<2.00	<1.00	<10.0	<10.0	<.01	870	<1.00	60.0	<50.0
430015093360502	08-27-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	--	--	--	--
414236096012501	08-27-01	<5.00	2.0	<2.00	<1.00	<10.0	<10.0	<.01	9700	<1.00	420	<50.0
432650092170401	09-13-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	600	<1.00	<20.0	<50.0
422106095280201	12-13-00	--	--	--	--	--	--	--	--	--	--	--
422915095323504	08-02-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	<50	<1.00	<20.0	<50.0
414825091511201	08-30-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	200	4.00	<20.0	<50.0
414520092112001	09-20-01	<5.00	5.0	<2.00	<1.00	<10.0	<10.0	<.01	1300	<1.00	<20.0	<50.0
420414090113201	08-06-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	60	<1.00	<20.0	<50.0
413913093070001	09-05-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	<20	<1.00	<20.0	<50.0
410046091555701	09-06-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	200	<1.00	<20.0	<50.0
421442091120001	09-19-01	<5.00	<1.0	<2.00	<1.00	<10.0	50.0	<.01	<20	5.00	<20.0	<50.0
412138091571501	08-08-01	<5.00	2.0	<2.00	<1.00	<10.0	<10.0	<.01	830	<1.00	30.0	50.0
403745091174701	09-06-01	<5.00	100	<2.00	<1.00	<10.0	<10.0	<.01	6300	<1.00	2500	<50.0
420005091431201	08-02-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	60	1.00	<20.0	<50.0
411644091110703	08-08-01	<5.00	1.0	<2.00	<1.00	<10.0	<10.0	<.01	1400	<1.00	70.0	<50.0
405858093175701	08-15-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	450	<1.00	30.0	<50.0
432608096201503	07-31-01	<5.00	5.0	<2.00	<1.00	<10.0	<10.0	<.01	3300	<1.00	1200	<50.0
420352092552401	09-04-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	<20	<1.00	280	<50.0
420405092545601	09-04-01	<5.00	3.0	<2.00	<1.00	<10.0	<10.0	<.01	2200	<1.00	50.0	<50.0
410656095380201	08-27-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	4000	<1.00	570	<50.0
432150092332401	09-13-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	530	<1.00	<20.0	<50.0
431654092484501	09-13-01	<5.00	<1.0	<2.00	<1.00	<10.0	20.0	<.01	260	<1.00	<20.0	<50.0
432241092550802	09-14-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	550	<1.00	<20.0	<50.0
420955095475601	08-02-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	<20	<1.00	<20.0	<50.0
405850095061701	08-13-01	<5.00	10.0	<2.00	<1.00	<10.0	<10.0	<.01	2400	<1.00	160	<50.0
413521090511001	08-07-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	270	<1.00	<20.0	<50.0
431157095502901	07-31-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	870	<1.00	900	<50.0
403906095015001	08-14-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	2900	<1.00	400	<50.0
425731094270801	07-23-01	<5.00	22.0	<2.00	<1.00	<10.0	<10.0	<.01	2600	<1.00	170	<50.0
423537095583901	07-31-01	<5.00	1.0	<2.00	<1.00	<10.0	<10.0	<.01	<20	<1.00	20.0	<50.0
411501095251301	08-13-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<10.0	930	<1.00	1400	<50.0
414430092433001	09-18-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	420	<1.00	<20.0	<50.0
421617095051001	07-23-01	<5.00	3.0	<2.00	<1.00	<10.0	<10.0	<.01	650	<1.00	590	<50.0
413923090350901	08-06-01	<5.00	21.0	<2.00	<1.00	<10.0	<10.0	<.01	160	<1.00	<20.0	<50.0
413040090455001	08-07-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	<20	<1.00	<20.0	<50.0
413049095254501	08-17-01	<5.00	2.0	<2.00	<1.00	<10.0	<10.0	<.01	90	1.00	<20.0	<50.0
430017096285301	07-31-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	20	<1.00	<20.0	<50.0
415252093411401	07-26-01	<5.00	5.0	<2.00	<1.00	<10.0	<10.0	<.01	6900	<1.00	110	<50.0

GROUND WATER QUALITY MONITORING PROGRAM--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

STATION NUMBER	DATE	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	1,1,2,2 -TETRA-CHLORO-ETHANE DISSOLV (UG/L) (34517)	1,2,4-TRI-CHLORO-BENZENE DISSOLV (UG/L) (34552)	1,2-DI-CHLORO-BENZENE DISSOLV (UG/L) (34537)	1,3-DI-CHLORO-BENZENE DISSOLV (UG/L) (34567)	1,4-DI-CHLORO-BENZENE DISSOLV (UG/L) (34572)	ACETO-CHLOR, WATER, UNFLTRD REC (UG/L) (49259)	ALA-CHLOR TOTAL RECOVER (UG/L) (77825)
411727094374001	08-14-01	<10.0	<10.0	<1.00	30	<.50	<.50	<.50	<.50	<.50	<.050	<.1
405632094534401	08-13-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
413234094552401	08-17-01	<10.0	<10.0	<1.00	20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
420535091524002	08-02-01	<10.0	<10.0	<1.00	<20	--	--	--	--	--	<.050	<.1
422819092212701	08-29-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
420451093561301	07-26-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
420959094001901	07-26-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
422852092040101	08-29-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
424708094570801	07-23-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.500	<.5
425344095090401	07-23-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
425355092475801	09-14-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
415233094403201	08-02-01	<10.0	<10.0	<1.00	50	<.50	<.50	<.50	<.50	<.50	<.050	<.1
411639094521101	08-14-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
411622094520901	08-14-01	<10.0	<10.0	<1.00	20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
414032091210001	09-19-01	<10.0	<10.0	<1.00	30	<.50	<.50	<.50	<.50	<.50	<.050	<.1
423744095383301	08-01-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
424341095331301	08-01-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
414652090153201	08-06-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
414930090321601	08-06-01	<10.0	<10.0	<1.00	<20	--	--	--	--	--	<.050	<.1
420336095115601	08-02-01	10.0	<10.0	<1.00	60	<.50	<.50	<.50	<.50	<.50	<.050	<.1
415057094065301	07-26-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
413836094161701	08-15-01	<10.0	<10.0	<1.00	30	<.50	<.50	<.50	<.50	<.50	<.050	<.1
423020091273701	08-29-01	<10.0	<10.0	<1.00	<20	--	--	--	--	--	<.050	<.1
423135090383201	09-11-01	--	--	--	--	<.50	--	<.50	<.50	--	--	<.1
423602090595201	09-11-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
432349094285201	07-24-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.500	<.5
425717091382602	09-12-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
425341093132501	07-25-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
404327095284801	08-13-01	<10.0	<10.0	<1.00	50	<.50	<.50	<.50	<.50	<.50	<.050	<.1
421322092522001	09-05-01	<10.0	<10.0	1.00	20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
422611092552501	09-18-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
430015093360501	07-24-01	<10.0	<10.0	<1.00	20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
430015093360502	08-27-01	--	--	--	--	<.50	<.50	<.50	<.50	<.50	--	--
414236096012501	08-27-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
432650092170401	09-13-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
422106095280201	12-13-00	--	--	--	--	--	--	--	--	--	--	--
422915095323504	08-02-01	20.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	.510	<.1
414825091511201	08-30-01	<10.0	<10.0	<1.00	<20	--	--	--	--	--	<.050	<.1
414520092112001	09-20-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
420414090113201	08-06-01	<10.0	<10.0	<1.00	<20	--	--	--	--	--	<.050	<.1
413913093070001	09-05-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
410046091555701	09-06-01	<10.0	<10.0	<1.00	<20	--	--	--	--	--	<.050	<.1
421442091120001	09-19-01	<10.0	<10.0	<1.00	40	<.50	<.50	<.50	<.50	<.50	<.050	<.1
412138091571501	08-08-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
403745091174701	09-06-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
420005091431201	08-02-01	<10.0	<10.0	<1.00	40	<.50	<.50	<.50	<.50	<.50	<.050	<.1
411644091110703	08-08-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
405858093175701	08-15-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
432608096201503	07-31-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
420352092552401	09-04-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
420405092545601	09-04-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
410656095380201	08-27-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
432150092332401	09-13-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
431654092484501	09-13-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
432241092550802	09-14-01	<10.0	<10.0	<1.00	610	<.50	<.50	<.50	<.50	<.50	<.050	<.1
420955095475601	08-02-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
405850095061701	08-13-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
413521090511001	08-07-01	<10.0	<10.0	<1.00	250	<.50	<.50	<.50	<.50	<.50	<.050	<.1
431157095502901	07-31-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
403906095015001	08-14-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
425731094270801	07-23-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
423537095583901	07-31-01	20.0	<10.0	<1.00	80	<.50	<.50	<.50	<.50	<.50	<.050	<.1
411501095251301	08-13-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
414430092433001	09-18-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
421617095051001	07-23-01	20.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
413923090350901	08-06-01	<10.0	<10.0	<1.00	<20	--	--	--	--	--	<.050	<.1
413040090455001	08-07-01	<10.0	<10.0	<1.00	<20	--	--	--	--	--	<.050	<.1
413049095254501	08-17-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
430017096285301	07-31-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
415252093411401	07-26-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

STATION NUMBER	DATE	AME-TRYNE TOTAL (UG/L) (82184)	BROM-ACIL WATER WHLREC (UG/L) (30234)	BROMO-METHANE WATER WHOLE RECOVER (UG/L) (30202)	BUTA-CHLOR WATER WHLREC (UG/L) (30235)	BUTYL-ATE WATER WHLREC (UG/L) (30236)	CARB-ARYL UNFILT RECOVER (UG/L) (39750)	CHLORO-METHANE WATER WHOLE RECOVER (UG/L) (30201)	CLO-MAZONE WATER FLTRD REC (UG/L) (50344)	CYAN-AZINE TOTAL (UG/L) (81757)	DEETHYL ATRA-ZINE, WATER, WHOLE, TOTAL (UG/L) (75981)	DE-ISO PROPYL ATRAZIN WATER, WHOLE, TOTAL (UG/L) (75980)
411727094374001	08-14-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
405632094534401	08-13-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
413234094552401	08-17-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
420535091524002	08-02-01	<.1	<.1	--	<.1	<.1	<.05	--	<.050	<.1	.1	<.1
422819092212701	08-29-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
420451093561301	07-26-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	.1	<.1
420959094001901	07-26-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
422852092040101	08-29-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
424708094570801	07-23-01	<.5	<.5	<.50	<.5	<.5	<.50	<.50	<.500	<.5	<.5	<.5
425344095090401	07-23-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	.1	<.1
425355092475801	09-14-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
415233094403201	08-02-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
411639094521101	08-14-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
411622094520901	08-14-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
414032091210001	09-19-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
423744095383301	08-01-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
424341095331301	08-01-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
414652090153201	08-06-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
414930090321601	08-06-01	<.1	<.1	--	<.1	<.1	<.05	--	<.050	<.1	<.1	<.1
420336095115601	08-02-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
415057094065301	07-26-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
413836094161701	08-15-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
423020091273701	08-29-01	<.1	<.1	--	<.1	<.1	<.05	--	<.050	<.1	.2	<.1
423135090383201	09-11-01	<.1	<.2	<.50	<.1	<.1	--	<.50	--	<.2	<.2	<.2
423602090595201	09-11-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
432349094285201	07-24-01	<.5	<.5	<.50	<.5	<.5	<.50	<.50	<.500	<.5	<.5	<.5
425717091382602	09-12-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
425341093132501	07-25-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	.1	.1
404327095284801	08-13-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
421322092522001	09-05-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	.1	<.1
422611092552501	09-18-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
430015093360501	07-24-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
430015093360502	08-27-01	--	--	<.50	--	--	--	<.50	--	--	--	--
414236096012501	08-27-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
432650092170401	09-13-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
422106095280201	12-13-00	--	--	--	--	--	--	--	--	--	--	--
422915095323504	08-02-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	.1	<.1
414825091511201	08-30-01	<.1	<.1	--	<.1	<.1	<.05	--	<.050	<.1	<.1	<.1
414520092112001	09-20-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
420414090113201	08-06-01	<.1	<.1	--	<.1	<.1	<.05	--	<.050	<.1	<.1	<.1
413913093070001	09-05-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
410046091555701	09-06-01	<.1	<.1	--	<.1	<.1	<.05	--	<.050	<.1	<.1	<.1
421442091120001	09-19-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
412138091571501	08-08-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
403745091174701	09-06-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
420005091431201	08-02-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	.1	<.1
411644091110703	08-08-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
405858093175701	08-15-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
432608096201503	07-31-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
420352092552401	09-04-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	.1	<.1
420405092545601	09-04-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
410656095380201	08-27-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
432150092332401	09-13-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
431654092484501	09-13-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
432241092550802	09-14-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	.1	<.1
420955095475601	08-02-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
405850095061701	08-13-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
413521090511001	08-07-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
431157095502901	07-31-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
403906095015001	08-14-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
425731094270801	07-23-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
423537095583901	07-31-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
411501095251301	08-13-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
414430092433001	09-18-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
421617095051001	07-23-01	<.1	<.1	<.50	<.1	<.1	<.01	<.50	<.050	<.1	<.1	<.1
413923090350901	08-06-01	<.1	<.1	--	<.1	<.1	<.05	--	<.050	<.1	<.1	<.1
413040090455001	08-07-01	<.1	<.1	--	<.1	<.1	<.05	--	<.050	<.1	<.1	<.1
413049095254501	08-17-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
430017096285301	07-31-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	.1	<.1
415252093411401	07-26-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1

GROUND WATER QUALITY MONITORING PROGRAM--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

STATION NUMBER	DATE	DI-METHEN-AMID WATER FLTRD REC (UG/L) (61588)	EPTC WATER WHOLE REC (UG/L) (81894)	METOLA-CHLOR WATER UNFLTRD REC (UG/L) (39356)	METRI-BUZIN IN WHOLE WATER (UG/L) (81408)	PENDI-METH-ALIN TOTAL (UG/L) (79190)	PROME-TONE TOTAL (UG/L) (39056)	PROPA-CHLOR IN WHOLE WATER (UG/L) (77729)	PRO-PAZINE TOTAL (UG/L) (39024)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI-FLURA-LIN TOTAL RECOVER (UG/L) (39030)	1,1,1-TRI-CHLORO-ETHANE TOTAL (UG/L) (34506)
411727094374001	08-14-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
405632094534401	08-13-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
413234094552401	08-17-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
420535091524002	08-02-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	--
422819092212701	08-29-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
420451093561301	07-26-01	<.0500	<.05	.17	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
420959094001901	07-26-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
422852092040101	08-29-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
424708094570801	07-23-01	<.5000	.50	<.50	<.50	<.50	<.5	<.50	<.5	<.500	<.5	<.50
425344095090401	07-23-01	<.0500	<.05	1.90	<.05	<.05	.1	<.05	<.1	<.050	<.1	<.50
425355092475801	09-14-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
415233094403201	08-02-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
411639094521101	08-14-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
411622094520901	08-14-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
414032091210001	09-19-01	<.0500	<.05	2.30	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
423744095383301	08-01-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
424341095331301	08-01-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
414652090153201	08-06-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
414930090321601	08-06-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	--
420336095115601	08-02-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
415057094065301	07-26-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
413836094161701	08-15-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
423020091273701	08-29-01	<.0500	<.05	.13	<.01	<.05	<.1	<.05	<.1	<.050	<.1	--
423135090383201	09-11-01	--	--	--	--	--	<.2	--	<.1	--	<.1	<.03
423602090595201	09-11-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
432349094285201	07-24-01	<.5000	<.50	<.50	<.50	<.50	<.5	<.50	<.5	<.500	<.5	<.50
425717091382602	09-12-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
425341093132501	07-25-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
404327095284801	08-13-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
421322092522001	09-05-01	<.0500	<.05	.13	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
422611092552501	09-18-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
430015093360501	07-24-01	.0900	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
430015093360502	08-27-01	--	--	--	--	--	--	--	--	--	--	<.50
414236096012501	08-27-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
432650092170401	09-13-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
422106095280201	12-13-00	--	--	--	--	--	--	--	--	--	--	--
422915095323504	08-02-01	.6300	<.05	1.60	<.05	<.05	.1	<.05	<.1	<.050	.1	<.50
414825091511201	08-30-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	--
414520092112001	09-20-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
420414090113201	08-06-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	--
413913093070001	09-05-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
410046091555701	09-06-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	--
421442091120001	09-19-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
412138091571501	08-08-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
403745091174701	09-06-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
420005091431201	08-02-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
411644091110703	08-08-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
405858093175701	08-15-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
432608096201503	07-31-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
420352092552401	09-04-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
420405092545601	09-04-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
410656095380201	08-27-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
432150092332401	09-13-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
431654092484501	09-13-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
432241092550802	09-14-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
420955095475601	08-02-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
405850095061701	08-13-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
413521090511001	08-07-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
431157095502901	07-31-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
403906095015001	08-14-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
425731094270801	07-23-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
423537095583901	07-31-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
411501095251301	08-13-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
414430092433001	09-18-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
421617095051001	07-23-01	<.0500	<.05	.36	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
413923090350901	08-06-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	--
413040090455001	08-07-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	--
413049095254501	08-17-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
430017096285301	07-31-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
415252093411401	07-26-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50

GROUND WATER QUALITY MONITORING PROGRAM--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

STATION NUMBER	DATE	1,1,2-TRICHLOROETHANE TOTAL (UG/L) (34511)	1,1-DICHLOROETHANE TOTAL (UG/L) (34496)	1,1-DICHLOROPROPENE, WAT, WH TOTAL (UG/L) (77168)	123-TRICHLOROPROPANE WATER WHOLE TOTAL (UG/L) (77443)	1,2-DICHLOROETHANE TOTAL (UG/L) (32103)	1,2-DICHLOROPROPANE TOTAL (UG/L) (34541)	TRANS-1,2-DICHLOROETHENE TOTAL (UG/L) (34546)	2,2-DICHLOROPROPANE WAT, WH TOTAL (UG/L) (77170)	BENZENE TOTAL (UG/L) (34030)	BROMOBENZENE WATER, WHOLE, TOTAL (UG/L) (81555)	BROMOFORM TOTAL (UG/L) (32104)
411727094374001	08-14-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
405632094534401	08-13-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
413234094552401	08-17-01	<.50	<.50	<.50	<.1	<.5	<.50	<.50	<.50	<.50	<.50	<.50
420535091524002	08-02-01	--	--	--	--	--	--	--	--	--	--	--
422819092212701	08-29-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
420451093561301	07-26-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
420959094001901	07-26-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
422852092040101	08-29-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
424708094570801	07-23-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
425344095090401	07-23-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
425355092475801	09-14-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
415233094403201	08-02-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
411639094521101	08-14-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
411622094520901	08-14-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
414032091210001	09-19-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
423744095383301	08-01-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
424341095331301	08-01-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
414652090153201	08-06-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
414930090321601	08-06-01	--	--	--	--	--	--	--	--	--	--	--
420336095115601	08-02-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
415057094065301	07-26-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
413836094161701	08-15-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
423020091273701	08-29-01	--	--	--	--	--	--	--	--	--	--	--
423135090383201	09-11-01	<.06	<.04	<.03	<.2	<.1	<.03	<.03	<.05	<.04	<.04	<.06
423602090595201	09-11-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
432349094285201	07-24-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
425717091382602	09-12-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
425341093132501	07-25-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
404327095284801	08-13-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
421322092522001	09-05-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
422611092552501	09-18-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
430015093360501	07-24-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
430015093360502	08-27-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
414236096012501	08-27-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
432650092170401	09-13-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
422106095280201	12-13-00	--	--	--	--	--	--	--	--	--	--	--
422915095323504	08-02-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
414825091511201	08-30-01	--	--	--	--	--	--	--	--	--	--	--
414520092112001	09-20-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
420414090113201	08-06-01	--	--	--	--	--	--	--	--	--	--	--
413913093070001	09-05-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
410046091555701	09-06-01	--	--	--	--	--	--	--	--	--	--	--
421442091120001	09-19-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
412138091571501	08-08-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
403745091174701	09-06-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
420005091431201	08-02-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
411644091110703	08-08-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
405858093175701	08-15-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
432608096201503	07-31-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
420352092552401	09-04-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
420405092545601	09-04-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
410656095380201	08-27-01	<.50	1.00	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
432150092332401	09-13-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.60	<.50	<.50	<.50
431654092484501	09-13-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
432241092550802	09-14-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
420955095475601	08-02-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
405850095061701	08-13-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
413521090511001	08-07-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
431157095502901	07-31-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
403906095015001	08-14-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
425731094270801	07-23-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
423537095583901	07-31-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
411501095251301	08-13-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
414430092433001	09-18-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
421617095051001	07-23-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
413923090350901	08-06-01	--	--	--	--	--	--	--	--	--	--	--
413040090455001	08-07-01	--	--	--	--	--	--	--	--	--	--	--
413049095254501	08-17-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
430017096285301	07-31-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
415252093411401	07-26-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50

GROUND WATER QUALITY MONITORING PROGRAM--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

STATION NUMBER	DATE	CARBON TETRA-CHLO-RIDE TOTAL (UG/L) (32102)	CHLORO-BENZENE TOTAL (UG/L) (34301)	CHLORO-ETHANE TOTAL (UG/L) (34311)	CHLORO-FORM TOTAL (UG/L) (32106)	CIS-1,2 -DI-CHLORO-ETHENE WATER TOTAL (UG/L) (77093)	CIS 1,3-DI-CHLORO-PROPENE TOTAL (UG/L) (34704)	DI-BROMO-METHANE WATER WHOLE RECOVER (UG/L) (30217)	ETHYL-BENZENE TOTAL (UG/L) (34371)	METHYL TERT-BUTYL ETHER WAT UNF REC (UG/L) (78032)	META/ PARA-XYLENE WATER UNFLTRD REC (UG/L) (85795)	O-XYLENE WATER WHOLE TOTAL (UG/L) (77135)
411727094374001	08-14-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
405632094534401	08-13-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
413234094552401	08-17-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
420535091524002	08-02-01	--	--	--	--	--	--	--	--	--	--	--
422819092212701	08-29-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
420451093561301	07-26-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
420959094001901	07-26-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
422852092040101	08-29-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
424708094570801	07-23-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
425344095090401	07-23-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
425355092475801	09-14-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
415233094403201	08-02-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
411639094521101	08-14-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
411622094520901	08-14-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
414032091210001	09-19-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
423744095383301	08-01-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
424341095331301	08-01-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
414652090153201	08-06-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
414930090321601	08-06-01	--	--	--	--	--	--	--	--	--	--	--
420336095115601	08-02-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
415057094065301	07-26-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
413836094161701	08-15-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
423020091273701	08-29-01	--	--	--	--	--	--	--	--	--	--	--
423135090383201	09-11-01	<.06	<.03	<.1	<.02	<.04	<.09	<.05	<.03	<.2	E.02	<.04
423602090595201	09-11-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
432349094285201	07-24-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
425717091382602	09-12-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
425341093132501	07-25-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
404327095284801	08-13-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
421322092522001	09-05-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
422611092552501	09-18-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
430015093360501	07-24-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	.50	<.5	<.50	<.50
430015093360502	08-27-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
414236096012501	08-27-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
432650092170401	09-13-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
422106095280201	12-13-00	--	--	--	--	--	--	--	--	--	--	--
422915095323504	08-02-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
414825091511201	08-30-01	--	--	--	--	--	--	--	--	--	--	--
414520092112001	09-20-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
420414090113201	08-06-01	--	--	--	--	--	--	--	--	--	--	--
413913093070001	09-05-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
410046091555701	09-06-01	--	--	--	--	--	--	--	--	--	--	--
421442091120001	09-19-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
412138091571501	08-08-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
403745091174701	09-06-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
420005091431201	08-02-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
411644091110703	08-08-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
405858093175701	08-15-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
432608096201503	07-31-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
420352092552401	09-04-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
420405092545601	09-04-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
410656095380201	08-27-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
432150092332401	09-13-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
431654092484501	09-13-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
432241092550802	09-14-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
420955095475601	08-02-01	<.50	<.50	<.5	6.60	<.50	<.50	<.50	<.50	<.5	<.50	<.50
405850095061701	08-13-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
413521090511001	08-07-01	<.50	<.50	<.5	.60	<.50	<.50	<.50	<.50	<.5	<.50	<.50
431157095502901	07-31-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
403906095015001	08-14-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
425731094270801	07-23-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
423537095583901	07-31-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
411501095251301	08-13-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
414430092433001	09-18-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
421617095051001	07-23-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
413923090350901	08-06-01	--	--	--	--	--	--	--	--	--	--	--
413040090455001	08-07-01	--	--	--	--	--	--	--	--	--	--	--
413049095254501	08-17-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
430017096285301	07-31-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
415252093411401	07-26-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50

GROUND WATER QUALITY MONITORING PROGRAM--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

STATION NUMBER	DATE	STYRENE TOTAL (UG/L) (77128)	TOLUENE TOTAL (UG/L) (34010)	TRANS-1,3-DI-CHLORO-PROPENE TOTAL (UG/L) (34699)	VINYL CHLO-RIDE TOTAL (UG/L) (39175)	SIMA-ZINE TOTAL (UG/L) (39055)	TRITIUM TOTAL (PCI/L) (07000)
411727094374001	08-14-01	<.50	<.50	<.50	<.5	<.1	--
405632094534401	08-13-01	<.50	<.50	<.50	<.5	<.1	--
413234094552401	08-17-01	<.50	<.50	<.50	<.5	<.1	--
420535091524002	08-02-01	--	--	--	--	<.1	--
422819092212701	08-29-01	<.50	<.50	<.50	<.5	<.1	24.1
420451093561301	07-26-01	<.50	<.50	<.50	<.5	<.1	--
420959094001901	07-26-01	<.50	<.50	<.50	<.5	<.1	--
422852092040101	08-29-01	<.50	<.50	<.50	<.5	<.1	15.0
424708094570801	07-23-01	<.50	<.50	<.50	<.5	<.5	--
425344095090401	07-23-01	<.50	<.50	<.50	<.5	<.1	--
425355092475801	09-14-01	<.50	<.50	<.50	<.5	<.1	.6
415233094403201	08-02-01	<.50	<.50	<.50	<.5	<.1	--
411639094521101	08-14-01	<.50	<.50	<.50	<.5	<.1	--
411622094520901	08-14-01	<.50	<.50	<.50	<.5	<.1	--
414032091210001	09-19-01	<.50	<.50	<.50	<.5	<.1	19.6
423744095383301	08-01-01	<.50	<.50	<.50	<.5	<.1	--
424341095331301	08-01-01	<.50	<.50	<.50	<.5	<.1	--
414652090153201	08-06-01	<.50	<.50	<.50	<.5	<.1	23.8
414930090321601	08-06-01	--	--	--	--	<.1	--
420336095115601	08-02-01	<.50	<.50	<.50	<.5	<.1	--
415057094065301	07-26-01	<.50	<.50	<.50	<.5	<.1	--
413836094161701	08-15-01	<.50	<.50	<.50	<.5	<.1	--
423020091273701	08-29-01	--	--	--	--	<.1	25.3
423135090383201	09-11-01	<.04	E.07	<.09	<.1	<.1	46.7
423602090595201	09-11-01	<.50	<.50	<.50	<.5	<.1	.4
423349094285201	07-24-01	<.50	<.50	<.50	<.5	<.5	--
425717091382602	09-12-01	<.50	<.50	<.50	<.5	<.1	26.2
425341093132501	07-25-01	<.50	<.50	<.50	<.5	<.1	--
404327095284801	08-13-01	<.50	<.50	<.50	<.5	<.1	--
421322092522001	09-05-01	<.50	<.50	<.50	<.5	<.1	25.6
422611092552501	09-18-01	<.50	<.50	<.50	<.5	<.1	.3
430015093360501	07-24-01	<.50	<.50	<.50	<.5	<.1	--
430015093360502	08-27-01	<.50	<.50	<.50	<.5	--	.4
414236096012501	08-27-01	<.50	<.50	<.50	<.5	<.1	--
432650092170401	09-13-01	<.50	<.50	<.50	<.5	<.1	9.2
422106095280201	12-13-00	--	--	--	--	--	--
422915095323504	08-02-01	<.50	<.50	<.50	<.5	<.1	--
414825091511201	08-30-01	--	--	--	--	<.1	--
414520092112001	09-20-01	<.50	<.50	<.50	<.5	<.1	.4
420414090113201	08-06-01	--	--	--	--	<.1	.4
413913093070001	09-05-01	<.50	<.50	<.50	<.5	<.1	27.1
410046091555701	09-06-01	--	--	--	--	<.1	--
421442091120001	09-19-01	<.50	<.50	<.50	<.5	<.1	27.1
412138091571501	08-08-01	<.50	<.50	<.50	<.5	<.1	--
403745091174701	09-06-01	<.50	<.50	<.50	<.5	<.1	50.2
420005091431201	08-02-01	<.50	<.50	<.50	<.5	<.1	26.2
411644091110703	08-08-01	<.50	<.50	<.50	<.5	<.1	--
405858093175701	08-15-01	<.50	<.50	<.50	<.5	<.1	--
432608096201503	07-31-01	<.50	<.50	<.50	<.5	<.1	--
420352092552401	09-04-01	<.50	<.50	<.50	<.5	<.1	24.1
420405092545601	09-04-01	<.50	<.50	<.50	<.5	<.1	33.0
410656095380201	08-27-01	<.50	<.50	<.50	<.5	<.1	--
432150092332401	09-13-01	<.50	<.50	<.50	<.5	<.1	.1
431654092484501	09-13-01	<.50	<.50	<.50	<.5	<.1	18.3
432241092550802	09-14-01	<.50	<.50	<.50	<.5	<.1	31.4
420955095475601	08-02-01	<.50	<.50	<.50	<.5	<.1	--
405850095061701	08-13-01	<.50	<.50	<.50	<.5	<.1	--
413521090511001	08-07-01	<.50	<.50	<.50	<.5	<.1	--
431157095502901	07-31-01	<.50	<.50	<.50	<.5	<.1	--
403906095015001	08-14-01	<.50	<.50	<.50	<.5	<.1	--
425731094270801	07-23-01	<.50	<.50	<.50	<.5	<.1	--
423537095583901	07-31-01	<.50	<.50	<.50	<.5	<.1	--
411501095251301	08-13-01	<.50	<.50	<.50	<.5	<.1	--
414430092433001	09-18-01	<.50	<.50	<.50	<.5	<.1	-0.1
421617095051001	07-23-01	<.50	<.50	<.50	<.5	<.1	--
413923090350901	08-06-01	--	--	--	--	<.1	--
413040090455001	08-07-01	--	--	--	--	<.1	M
413049095254501	08-17-01	<.50	<.50	<.50	<.5	<.1	--
430017096285301	07-31-01	<.50	<.50	<.50	<.5	<.1	--
415252093411401	07-26-01	<.50	<.50	<.50	<.5	<.1	--

GROUND WATER QUALITY MONITORING PROGRAM--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

STATION NUMBER	STATION NAME	COUNTY	DATE	TIME	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE (G/M) (00058)
415417092180101	082N13W24AAAD 12850 1961Belle Plaine 4	Tama	08-30-01	0900	111ALVM	42.00	--
421135092275002	085N14W10ABCD 1894Traer 2	Tama	09-04-01	0845	344CDVL	240.00	196
415753092350201	083N15W27CDD 18841 1966Tama 5	Tama	09-04-01	1115	111ALVM	43.00	440
403659094285301	067N32W12CAAD 1960Blockton 1	Taylor	08-14-01	0915	112PLSC	271.00	80
410907092375301	073N15W06CADA 1995Eddyville 3	Wapello	09-05-01	1515	111ALVM	35.00	--
413040093290501	078N23W34DDBD 1979Carlisle 5	Warren	07-27-01	0915	111ALVM	30.00	250
412850091342901	077N06W17BBA 14835 1961Riverside 5	Washington	08-02-01	1510	112PLSC	250.00	--
412013091485701	076N08W31DDCC 08701 1957West Chester 1	Washington	08-08-01	1230	339WSVL	243	--
423028094115101	089N28W19CAA 1931Fort Dodge 12	Webster	07-25-01	1130	339KDRK	541.00	750
431556093375401	098N24W26DDCC 00304 1934Forest City 2	Winnebago	07-24-01	1045	344CDVL	129.00	1000
431828091473201	098N08W16ACBC 1972Decorah 6	Winneshiek	09-12-01	1530	111ALVM	82	--
422929096254501	089N47W29CCCA 1971Sioux City River 4	Woodbury	07-31-01	0930	217DKOT	297.00	1000
422831095465102	089N42W34DDDD 1927Correctionville 1 W	Woodbury	08-01-01	0900	111ALVM	26.00	20
423954093535801	091N26W27CAAD 1952Eagle Grove 3	Wright	08-27-01	1030	112PLSC	70.00	285

STATION NUMBER	DATE	PUMP OR FLOW PERIOD PRIOR TO SAM-PLING (MIN) (72004)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)
415417092180101	08-30-01	30	.4	10.9	779	18.2	260	100	<.100	3.00	15.0	110
421135092275002	09-04-01	30	.4	7.2	1590	11.6	760	190	73.0	3.90	81.0	210
415753092350201	09-04-01	>30	2.5	7.1	643	11.8	370	92.0	25.0	1.30	13.0	240
403659094285301	08-14-01	30	.1	7.8	1760	13.5	150	36.0	11.0	2.10	340	420
410907092375301	09-05-01	30	2.1	7.0	738	12.6	380	110	28.0	1.50	13.0	250
413040093290501	07-27-01	30	.2	7.3	599	11.0	300	76.0	24.0	1.60	12.0	230
412850091342901	08-02-01	30	.4	7.5	674	15.3	250	58.0	20.0	2.50	57.0	370
412013091485701	08-08-01	--	--	--	--	--	340	70.0	39.0	2.30	52.0	390
423028094115101	07-25-01	30	.2	7.0	928	11.5	470	110	41.0	5.10	31.0	380
431556093375401	07-24-01	30	.3	7.0	753	9.5	400	98.0	33.0	2.40	18.0	370
431828091473201	09-12-01	--	2.0	6.9	647	12.8	370	100	20.0	2.50	12.0	280
422929096254501	07-31-01	15	--	8.1	767	20.5	290	58.0	24.0	5.50	62.0	170
422831095465102	08-01-01	30	.4	7.3	1830	12.5	760	200	54.0	10.0	130	300
423954093535801	08-27-01	20	.6	6.9	717	12.5	430	97.0	35.0	3.40	17.0	390

STATION NUMBER	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)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N) (00607)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
415417092180101	08-30-01	54.0	.6	32.0	94.0	470	.370	.51	5.50	.14	<.020	<1.0
421135092275002	09-04-01	1.7	.8	14.0	760	1280	5.10	4.9	<.100	<.05	.050	2.0
415753092350201	09-04-01	23.0	.3	25.0	67.0	400	<.010	.34	4.40	.25	.080	<1.0
403659094285301	08-14-01	98.0	.9	13.0	330	1130	2.50	4.1	<.100	1.6	.340	14
410907092375301	09-05-01	26.0	.2	16.0	120	470	<.100	.12	3.40	.12	.080	<1.0
413040093290501	07-27-01	24.0	.4	25.0	46.0	350	<.100	.30	.800	.30	.030	<1.0
412850091342901	08-02-01	2.2	.2	14.0	14.0	400	3.30	3.3	<.100	<.10	.240	2.1
412013091485701	08-08-01	2.2	.2	13.0	71.0	490	1.90	2.9	<.100	1.0	.050	1.1
423028094115101	07-25-01	2.8	.9	16.0	130	570	.700	.80	<.100	.10	<.020	1.4
431556093375401	07-24-01	1.6	.5	23.0	41.0	430	.700	1.4	<.100	.70	<.020	1.6
431828091473201	09-12-01	25.0	.2	14.0	28.0	380	<.050	.19	3.10	.19	4.60	<1.0
422929096254501	07-31-01	14.0	.4	<.1	200	480	<.100	.30	<.100	.30	.020	2.1
422831095465102	08-01-01	2.5	1.2	21.0	770	1440	1.60	1.9	<.100	.30	.040	<1.0
423954093535801	08-27-01	3.0	.4	32.0	25.0	460	.960	1.4	<.100	1.4	<.020	1.4

GROUND WATER QUALITY MONITORING PROGRAM--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

STATION NUMBER	DATE	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	CYANIDE TOTAL (MG/L AS CN) (00720)	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)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)
415417092180101	08-30-01	<5.00	2.0	<2.00	<1.00	<10.0	<10.0	<.01	<20	<1.00	<20.0	<50.0
421135092275002	09-04-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	2300	<1.00	90.0	<50.0
415753092350201	09-04-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	<20	<1.00	50.0	<50.0
403659094285301	08-14-01	<5.00	8.0	<2.00	<1.00	<10.0	<10.0	<.01	560	<1.00	30.0	<50.0
410907092375301	09-05-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	<40	<1.00	100	<50.0
413040093290501	07-27-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	530	<1.00	330	<50.0
412850091342901	08-02-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	880	<1.00	50.0	<50.0
412013091485701	08-08-01	<5.00	2.0	<2.00	<1.00	<10.0	<10.0	<10.0	1100	<1.00	<20.0	<50.0
423028094115101	07-25-01	<5.00	1.0	<2.00	<1.00	<10.0	<10.0	<.02	760	<1.00	50.0	<50.0
431556093375401	07-24-01	<5.00	2.0	<2.00	<1.00	<10.0	<10.0	<.02	1400	<1.00	50.0	<50.0
431828091473201	09-12-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	20	1.00	<20.0	<50.0
422929096254501	07-31-01	<5.00	1.0	<2.00	<1.00	<10.0	<10.0	<.01	40	<1.00	150	<50.0
422831095465102	08-01-01	<5.00	<1.0	<2.00	<1.00	<10.0	<10.0	<.01	1400	<1.00	150	<50.0
423954093535801	08-27-01	<5.00	12.0	<2.00	<1.00	<10.0	<10.0	<.01	2800	<1.00	200	<50.0

STATION NUMBER	DATE	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	1,1,2,2 -TETRA-CHLORO-ETHANE DISSOLV (UG/L) (34517)	1,2,4-TRI-CHLORO-BENZENE DISSOLV (UG/L) (34552)	1,2-DI-CHLORO-BENZENE DISSOLV (UG/L) (34537)	1,3-DI-CHLORO-BENZENE DISSOLV (UG/L) (34567)	1,4-DI-CHLORO-BENZENE DISSOLV (UG/L) (34572)	ACETO-CHLOR, WATER, UNFLTRD REC (UG/L) (49259)	ALA-CHLOR TOTAL RECOVER (UG/L) (77825)
415417092180101	08-30-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
421135092275002	09-04-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
415753092350201	09-04-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
403659094285301	08-14-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
410907092375301	09-05-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
413040093290501	07-27-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
412850091342901	08-02-01	<10.0	<10.0	<1.00	30	<.50	<.50	<.50	<.50	<.50	<.050	<.1
412013091485701	08-08-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
423028094115101	07-25-01	<10.0	<10.0	<1.00	40	<.50	<.50	<.50	<.50	<.50	<.050	<.1
431556093375401	07-24-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
431828091473201	09-12-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
422929096254501	07-31-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
422831095465102	08-01-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1
423954093535801	08-27-01	<10.0	<10.0	<1.00	<20	<.50	<.50	<.50	<.50	<.50	<.050	<.1

STATION NUMBER	DATE	AME-TRYNE TOTAL (UG/L) (82184)	BROM-ACIL WATER WHLREC (UG/L) (30234)	BROMO-METHANE WATER WHOLE RECOVER (UG/L) (30202)	BUTA-CHLOR WATER WHLREC (UG/L) (30235)	BUTYL-ATE WATER WHLREC (UG/L) (30236)	CARB-ARYL UNFILT RECOVER (UG/L) (39750)	CHLORO-METHANE WATER WHOLE RECOVER (UG/L) (30201)	CLO-MAZONE WATER FLTRD REC (UG/L) (50344)	CYAN-AZINE TOTAL (UG/L) (81757)	DEETHYL ATRA-ZINE, WATER, WHOLE, TOTAL (UG/L) (75981)	DE-ISO PROPYL ATRAZIN WATER, WHOLE, TOTAL (UG/L) (75980)
415417092180101	08-30-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
421135092275002	09-04-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
415753092350201	09-04-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
403659094285301	08-14-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
410907092375301	09-05-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
413040093290501	07-27-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
412850091342901	08-02-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
412013091485701	08-08-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
423028094115101	07-25-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
431556093375401	07-24-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
431828091473201	09-12-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
422929096254501	07-31-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	.050	<.1	<.1	<.1
422831095465102	08-01-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1
423954093535801	08-27-01	<.1	<.1	<.50	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1

GROUND WATER QUALITY MONITORING PROGRAM--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

STATION NUMBER	DATE	DI-METHEN-AMID WATER FLTRD REC (UG/L) (61588)	EPTC WATER WHOLE REC (UG/L) (81894)	METOLA-CHLOR WATER UNFLTRD REC (UG/L) (39356)	METRI-BUZIN IN WHOLE WATER (UG/L) (81408)	PENDI-METH-ALIN TOTAL (UG/L) (79190)	PROME-TONE TOTAL (UG/L) (39056)	PROPA-CHLOR IN WHOLE WATER (UG/L) (77729)	PRO-PAZINE TOTAL (UG/L) (39024)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI-FLURA-LIN TOTAL RECOVER (UG/L) (39030)	1,1,1-TRI-CHLORO-ETHANE TOTAL (UG/L) (34506)
415417092180101	08-30-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
421135092275002	09-04-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
415753092350201	09-04-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
403659094285301	08-14-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
410907092375301	09-05-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
413040093290501	07-27-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
412850091342901	08-02-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
412013091485701	08-08-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
423028094115101	07-25-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
431556093375401	07-24-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
431828091473201	09-12-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
422929096254501	07-31-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
422831095465102	08-01-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50
423954093535801	08-27-01	<.0500	<.05	<.05	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.50

STATION NUMBER	DATE	1,1,2-TRI-CHLORO-ETHANE TOTAL (UG/L) (34511)	1,1-DI-CHLORO-ETHANE TOTAL (UG/L) (34496)	1,1-DI CHLORO-PRO-PENE, WAT, WH TOTAL (UG/L) (77168)	123-TRI CHLORO-PROPANE WATER WHOLE TOTAL (UG/L) (77443)	1,2-DI-CHLORO-ETHANE TOTAL (UG/L) (32103)	1,2-DI-CHLORO-PROPANE TOTAL (UG/L) (34541)	TRANS-1,2-DI-CHLORO-ETHENE TOTAL (UG/L) (34546)	2,2-DI CHLORO-PRO-PANE WAT, WH TOTAL (UG/L) (77170)	BENZENE TOTAL (UG/L) (34030)	BROMO-BENZENE WATER, WHOLE, TOTAL (UG/L) (81555)	BROMO-FORM TOTAL (UG/L) (32104)
415417092180101	08-30-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
421135092275002	09-04-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
415753092350201	09-04-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
403659094285301	08-14-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
410907092375301	09-05-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
413040093290501	07-27-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
412850091342901	08-02-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
412013091485701	08-08-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
423028094115101	07-25-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
431556093375401	07-24-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
431828091473201	09-12-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
422929096254501	07-31-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
422831095465102	08-01-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50
423954093535801	08-27-01	<.50	<.50	<.50	<.5	<.5	<.50	<.50	<.50	<.50	<.50	<.50

STATION NUMBER	DATE	CARBON TETRA-CHLO-RIDE TOTAL (UG/L) (32102)	CHLORO-BENZENE TOTAL (UG/L) (34301)	CHLORO-ETHANE TOTAL (UG/L) (34311)	CHLORO-FORM TOTAL (UG/L) (32106)	CIS-1,2-DI-CHLORO-ETHENE WATER TOTAL (UG/L) (77093)	CIS 1,3-DI-CHLORO-PROPENE TOTAL (UG/L) (34704)	DI-BROMO-METHANE WATER WHOLE RECOVER (UG/L) (30217)	ETHYL-BENZENE TOTAL (UG/L) (34371)	METHYL TERT-BUTYL ETHER WAT UNF REC (UG/L) (78032)	META/PARA-XYLENE WATER UNFLTRD REC (UG/L) (85795)	O-XYLENE WATER WHOLE TOTAL (UG/L) (77135)
415417092180101	08-30-01	<.50	<.50	<.5	4.40	<.50	<.50	<.50	<.50	<.5	<.50	<.50
421135092275002	09-04-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
415753092350201	09-04-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
403659094285301	08-14-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
410907092375301	09-05-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
413040093290501	07-27-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
412850091342901	08-02-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
412013091485701	08-08-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
423028094115101	07-25-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
431556093375401	07-24-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
431828091473201	09-12-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
422929096254501	07-31-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
422831095465102	08-01-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50
423954093535801	08-27-01	<.50	<.50	<.5	<.50	<.50	<.50	<.50	<.50	<.5	<.50	<.50

GROUND WATER QUALITY MONITORING PROGRAM--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

STATION NUMBER	DATE	STYRENE TOTAL (UG/L) (77128)	TOLUENE TOTAL (UG/L) (34010)	TRANS-1,3-DI-CHLORO-PROPENE TOTAL (UG/L) (34699)	VINYL CHLO-RIDE TOTAL (UG/L) (39175)	SIMA-ZINE TOTAL (UG/L) (39055)	TRITIUM TOTAL (PCI/L) (07000)
415417092180101	08-30-01	<.50	<.50	<.50	<.5	<.1	26.4
421135092275002	09-04-01	<.50	<.50	<.50	<.5	<.1	-0.3
415753092350201	09-04-01	<.50	<.50	<.50	<.5	<.1	44.5
403659094285301	08-14-01	<.50	<.50	<.50	<.5	<.1	--
410907092375301	09-05-01	<.50	<.50	<.50	<.5	<.1	23.8
413040093290501	07-27-01	<.50	<.50	<.50	<.5	<.1	--
412850091342901	08-02-01	<.50	<.50	<.50	<.5	<.1	.00
412013091485701	08-08-01	<.50	<.50	<.50	<.5	<.1	.5
423028094115101	07-25-01	<.50	<.50	<.50	<.5	<.1	--
431556093375401	07-24-01	<.50	<.50	<.50	<.5	<.1	--
431828091473201	09-12-01	<.50	<.50	<.50	<.5	<.1	20.5
422929096254501	07-31-01	<.50	<.50	<.50	<.5	<.1	--
422831095465102	08-01-01	<.50	<.50	<.50	<.5	<.1	--
423954093535801	08-27-01	<.50	<.50	<.50	<.5	<.1	.5

405747093233201 MCNAY RESEARCH STATION NEAR CHARITON, IOWA

LOCATION.--Lat 40°57'47", long 93°23'34", in SW$^1/_4$ NE$^1/_4$ sec. 9, T.71 N., R.23 W., Lucas County, Hydrologic Unit 10280201, 3.1 mi east and 2.0 mi north of Derby, Iowa, 3.4 mi west and 2.8 mi south of Chariton, Iowa.

OWNER.--U.S. Geological Survey.

PERIOD OF RECORD.--September 1984 to current year.

INSTRUMENTATION.--Wet/dry precipitation collector, weighing-bucket type recording rain gage with alter wind shield and event recorder. National Weather Service standard 8-inch rain and snow gage (back-up only).

REMARKS.--Samples collected by Jim Secor and Steve Goben.

EXTREMES FOR PERIOD OF RECORD.--Maximum field pH, 7.1, April 19-26, 1988; minimum field pH, 3.8, February 12-19, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum field pH, 6.6, Dec. 5-12; minimum field pH, 4.3, Dec.12-19.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	PH FIELD ATM DEP WET T (UNITS) (83106)	SPEC. CONDUC-TANCE FIELD ATM DEP WET TOT (US/CM) (83154)	CALCIUM ATM DEP WET DIS (MG/L) (82932)	MAG-NESIUM ATM DEP WET DIS (MG/L) (83002)	POTAS-SIUM ATM DEP WET DIS (MG/L) (83120)	SODIUM ATM DEP WET DIS (MG/L) (83138)	NI-TROGEN AMMON. ATM DEP WET DIS AS N (MG/L) (83044)	NI-TROGEN NITRATE ATM DEP WET DIS AS N (MG/L) (83068)	CHLO-RIDE ATM DEP WET DIS (MG/L) (82944)	SULFATE ATM DEP WET DIS AS SO4 (MG/L) (83160)	PHOS-PHORUS ORTHO ATM DEP WET DIS AS P (MG/L) (83108)
OCT 03-10	6.40	22.7	1.82	.125	.059	.127	.730	.73	.14	2.89	<.001
OCT 10-17	5.59	7.8	.308	.019	.010	.029	.350	.27	.08	1.08	<.001
OCT 17-24	--	--	.125	.016	.023	.079	.610	.35	.18	2.50	<.001
OCT 24-31	4.68	21.0	.367	.047	.038	.228	.660	.56	.28	2.78	<.001
OCT 31-NOV 07	6.07	4.8	.130	.012	.011	.045	.230	.10	.07	.83	<.001
NOV 07-14	--	--	.263	.023	.026	.033	1.37	1.12	.10	3.10	<.001
NOV 14-21	--	--	--	--	--	--	--	--	--	--	--
NOV 21-28	--	--	--	--	--	--	--	--	--	--	--
NOV 28-DEC 05	5.81	14.6	1.19	.041	.017	.044	.550	.65	.09	1.28	<.001
DEC 05-12	6.56	10.3	.767	.057	.007	.021	.290	.33	.05	.23	<.001
DEC 12-19	4.30	30.8	.622	.030	.031	.049	.250	1.25	.06	.79	<.001
DEC 19-26	--	--	.186	.009	.008	.035	.050	.49	.07	.23	<.001
DEC 26 2000-JAN 03 2001	--	--	--	--	--	--	--	--	--	--	--
JAN 03-09	--	--	--	--	--	--	--	--	--	--	--
JAN 09-16	5.06	10.0	.078	.005	.007	.010	.320	.27	.04	.90	<.001
JAN 16-23	--	--	--	--	--	--	--	--	--	--	--
JAN 23-30	4.62	7.3	.046	<.003	<.003	.006	.070	.12	<.03	.70	<.001
JAN 30-FEB 06	--	--	--	--	--	--	--	--	--	--	--
FEB 06-13	4.88	11.9	.123	.011	.009	.035	.220	.22	.05	1.04	<.001
FEB 13-20	--	--	.245	.017	.020	.040	.750	.93	.17	2.62	<.003
FEB 20-27	4.86	8.8	.080	.006	.015	.017	.090	.15	<.03	.57	<.001
FEB 27-MAR 06	--	--	--	--	--	--	--	--	--	--	--
MAR 06-13	5.02	17.1	.511	.056	.032	.056	1.03	.53	.11	2.75	<.001
MAR 13-20	4.71	12.3	.071	.006	.011	.006	.440	.32	.04	1.32	<.001
MAR 20-27	5.23	21.3	.397	.024	.012	.024	1.36	.79	.07	2.33	<.001
MAR 27-APR 03	5.82	17.2	.416	.025	.018	.029	1.40	.63	.05	2.33	<.001
APR 03-10	6.31	18.8	1.29	.086	.098	.403	.820	.38	.43	2.25	<.001
APR 10-17	5.77	13.4	1.06	.065	.074	.134	.400	.32	.16	1.36	<.001
APR 17-24	5.62	8.0	.318	.030	.025	.125	.470	.18	.19	.96	<.001
APR 24-MAY 01	5.35	18.8	1.63	.064	.044	.125	.730	.42	.20	1.99	<.001
MAY 01-08	5.34	10.5	.412	.071	.182	.159	.430	.32	.25	1.21	<.001
MAY 08-15	5.53	11.3	.435	.036	.020	.059	.630	.37	.07	1.24	<.003
MAY 15-22	5.94	19.4	.837	.055	.060	.056	1.10	.72	.10	1.41	<.003
MAY 22-29	6.42	16.8	.884	.102	.298	.130	.900	.25	.17	1.12	.174
MAY 29-JUN 05	5.06	9.6	.179	.018	.014	.061	.200	.22	.09	.97	<.003

405747093233201 MCNAY RESEARCH STATION NEAR CHARITON, IOWA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	PH FIELD ATM DEP WET T (UNITS) (83106)	SPEC. CONDUC-TANCE FIELD ATM DEP WET TOT (US/CM) (83154)	CALCIUM ATM DEP WET DIS (MG/L) (82932)	MAG-NESIUM ATM DEP WET DIS (MG/L) (83002)	POTAS-SIUM ATM DEP WET DIS (MG/L) (83120)	SODIUM ATM DEP WET DIS (MG/L) (83138)	NI-TROGEN AMMON. ATM DEP WET DIS AS N (MG/L) (83044)	NI-TROGEN NITRATE ATM DEP WET DIS AS N (MG/L) (83068)	CHLO-RIDE ATM DEP WET DIS (MG/L) (82944)	SULFATE ATM DEP WET DIS AS SO4 (MG/L) (83160)	PHOS-PHORUS ORTHO ATM DEP WET DIS AS P (MG/L) (83108)
JUN 05-12	5.25	8.1	.392	.034	.042	.112	.280	.26	.14	1.17	<.003
JUN 12-19	5.57	8.9	.597	.041	.041	.145	.340	.27	.17	1.41	<.003
JUN 19-26	5.33	5.5	.153	.015	.014	.017	.220	.16	.04	.64	<.003
JUN 26-JUL 03	--	--	.863	.044	.159	.049	.820	.59	.18	1.05	<.003
JUL 03-10	5.55	8.7	.536	.029	.030	.025	.470	.32	.07	.63	<.003
JUL 10-17	6.14	46.3	3.98	.282	.174	.294	1.29	1.81	.49	4.27	<.003
JUL 17-24	5.68	21.6	1.20	.072	.052	.189	.950	1.01	.26	2.43	<.003
JUL 24-31	5.41	12.4	.635	.033	.025	.076	.610	.52	.12	1.38	<.003
JUL 31-AUG 07	4.99	9.6	.344	.021	.013	.073	.230	.31	.10	.96	<.003
AUG 07-14	--	--	--	--	--	--	--	--	--	--	--
AUG 14-21	5.40	21.3	.953	.074	.030	.035	1.09	.86	.12	3.09	<.003
AUG 21-28	5.02	12.0	.447	.029	.028	.049	.440	.49	.08	1.30	<.003
AUG 28-SEP 04	--	--	--	--	--	--	--	--	--	--	--
SEP 04-11	5.32	6.1	.223	.026	.011	.035	.240	.16	.05	.82	<.003
SEP 11-18	4.77	14.8	.402	.043	.011	.007	.360	.29	.04	2.08	<.003
SEP 18-25	5.27	7.2	.161	.011	.010	.003	.330	.25	.03	.61	<.003
SEP 25-OCT 02	--	--	--	--	--	--	--	--	--	--	--

425435091281101 BIG SPRING FISH HATCHERY NEAR ELKADER, IOWA

LOCATION.--Lat 42°54'35", long 91°28'11", in SE$^1/_4$ NE $^1/_4$ SE$^1/_4$ sec. 31, T.94 N., R.5 W., Clayton County, Hydrologic Unit 07060004, 3.0 mi north and 2.8 mi west of Elkader, Iowa.

OWNER.--U.S. Geological Survey.

PERIOD OF RECORD.--August 1984 to current year.

INSTRUMENTATION.--Wet/dry precipitation collector, weighing-bucket type recording rain gage with alter wind shield and event recorder and National Weather Service standard 8-inch rain and snow gage (back-up only).

REMARKS.--Samples Collected by Robert Zach.

EXTREMES FOR PERIOD OF RECORD.--Maximum field pH, 6.9, April 2-9 1996; minimum field pH, 3.7, August 31 to September 7, 1999.

EXTREMES FOR CURRENT YEAR.--Maximum field pH, 6.8, July 31 to Aug. 7; minimum field pH, 4.3, Jan. 9-16.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	PH FIELD ATM DEP WET T (UNITS) (83106)	SPEC. CONDUC-TANCE FIELD ATM DEP WET TOT (US/CM) (83154)	CALCIUM ATM DEP WET DIS (MG/L) (82932)	MAG-NESIUM ATM DEP WET DIS (MG/L) (83002)	POTAS-SIUM ATM DEP WET DIS (MG/L) (83120)	SODIUM ATM DEP WET DIS (MG/L) (83138)	NI-TROGEN AMMON. ATM DEP WET DIS AS N (MG/L) (83044)	NI-TROGEN NITRATE ATM DEP WET DIS AS N (MG/L) (83068)	CHLO-RIDE ATM DEP WET DIS (MG/L) (82944)	SULFATE ATM DEP WET DIS AS SO4 (MG/L) (83160)	PHOS-PHORUS ORTHO ATM DEP WET DIS AS P (MG/L) (83108)
OCT 03-10	5.19	9.3	.314	.046	.035	.022	.260	.22	.07	.96	<.001
OCT 10-17	5.88	11.7	1.15	.110	.080	.022	.410	.25	.12	.71	<.001
OCT 17-24	4.87	13.3	.216	.069	.027	.018	.340	.19	.05	1.81	<.001
OCT 24-31	4.46	33.0	.275	.044	.040	.090	.840	.54	.22	4.04	<.001
OCT 31-NOV 07	5.71	11.7	.560	.183	.180	.051	.480	.23	.12	2.01	.031
NOV 07-14	4.55	24.2	.175	.029	.015	.015	.740	.84	.12	1.72	<.001
NOV 14-21	5.35	17.4	.896	.058	.032	.044	.820	.96	.06	1.44	<.001
NOV 21-28	--	--	--	--	--	--	--	--	--	--	--
NOV 28-DEC 05	5.39	14.6	.493	.032	.027	.043	.620	.65	.09	1.00	<.001
DEC 05-12	5.50	6.4	.196	.021	.008	.017	.180	.24	.04	.33	<.001
DEC 12-19	4.90	9.2	.155	.013	.009	.023	.110	.29	.06	.38	<.001
DEC 19-26	4.66	12.2	.181	.013	.010	.021	.100	.49	.05	.17	<.001
DEC 26 2000-JAN 02 2001	5.40	8.4	.058	.007	.003	.012	.040	.22	.05	.27	<.001
JAN 02-09	--	--	--	--	--	--	--	--	--	--	--
JAN 09-16	4.30	36.2	.108	.013	.016	.018	.380	.58	.11	2.74	<.001
JAN 16-23	--	--	--	--	--	--	--	--	--	--	--
JAN 23-30	5.23	12.9	.040	.007	.252	.112	.070	.22	.32	1.12	.016
JAN 30-FEB 06	5.34	9.9	.239	.023	.006	.044	.270	.28	.06	1.06	<.001
FEB 06-13	4.43	27.9	.152	.019	.016	.053	.420	.59	.09	1.90	<.001
FEB 13-20	--	--	.260	.035	<.011	.074	.130	.37	.11	.64	<.004
FEB 20-27	4.66	18.1	.100	.024	.029	.023	.350	.40	.06	1.44	<.001
FEB 27-MAR 06	--	--	--	--	--	--	--	--	--	--	--
MAR 06-13	5.34	19.2	.315	.030	.013	.027	.940	.64	.06	2.13	<.001
MAR 13-20	--	--	.174	.022	.014	.047	1.24	.37	.08	1.80	<.001
MAR 20-27	--	--	--	--	--	--	--	--	--	--	--
MAR 27-APR 03	4.82	26.0	.253	.038	.021	.020	1.30	.87	.06	2.78	<.001
APR 03-10	5.82	23.0	1.12	.126	.129	.201	1.06	.50	.20	2.66	<.001
APR 10-17	5.52	16.8	.557	.064	.145	.263	.700	.52	.32	2.17	<.001
APR 17-24	6.02	24.2	1.20	.168	.690	.332	.890	.48	.51	2.47	.053
APR 24-MAY 01	6.00	13.3	.873	.066	.077	.050	.680	.27	.09	1.34	<.001
MAY 01-08	5.26	15.0	.680	.070	.058	.187	.760	.40	.21	1.75	<.001
MAY 08-15	6.51	12.4	.551	.083	.340	.023	.150	.31	.07	.75	<.003
MAY 15-22	6.08	14.5	.366	.079	2.52	.012	.280	.18	.04	1.01	.041
MAY 22-29	6.28	8.8	.230	.056	.117	.007	.490	.31	.04	.76	<.003
MAY 29-JUN 05	5.16	8.6	.201	.042	.023	.039	.230	.20	.06	.86	<.003

425435091281101 BIG SPRING FISH HATCHERY NEAR ELKADER, IOWA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001

DATE	PH FIELD ATM DEP WET T (UNITS) (83106)	SPEC. CONDUC-TANCE FIELD ATM DEP WET TOT (US/CM) (83154)	CALCIUM ATM DEP WET DIS (MG/L) (82932)	MAG-NESIUM ATM DEP WET DIS (MG/L) (83002)	POTAS-SIUM ATM DEP WET DIS (MG/L) (83120)	SODIUM ATM DEP WET DIS (MG/L) (83138)	NI-TROGEN AMMON. ATM DEP WET DIS AS N (MG/L) (83044)	NI-TROGEN NITRATE ATM DEP WET DIS AS N (MG/L) (83068)	CHLO-RIDE ATM DEP WET DIS (MG/L) (82944)	SULFATE ATM DEP WET DIS AS SO4 (MG/L) (83160)	PHOS-PHORUS ORTHO ATM DEP WET DIS AS P (MG/L) (83108)
JUN 05-12	5.50	17.9	.695	.068	.070	.042	.610	.45	.09	1.53	<.003
JUN 12-19	5.71	14.3	.514	.060	.109	.127	.480	.33	.15	1.25	<.003
JUN 19-26	--	--	--	--	--	--	--	--	--	--	--
JUN 26-JUL 03	6.37	33.5	3.25	.360	.230	.061	.630	.87	.15	2.04	<.003
JUL 03-10	--	--	--	--	--	--	--	--	--	--	--
JUL 10-17	--	--	--	--	--	--	--	--	--	--	--
JUL 17-24	5.78	14.0	.801	.142	.071	.069	.570	.58	.13	1.20	<.003
JUL 24-31	6.41	13.8	.558	.140	.145	.022	.620	.33	.07	1.02	<.003
JUL 31-AUG 07	6.82	11.4	1.00	.136	.077	.074	.320	.25	.08	.81	<.003
AUG 07-14	--	--	--	--	--	--	--	--	--	--	--
AUG 14-21	5.74	4.8	.135	.018	.026	<.003	.210	.13	.02	.52	<.003
AUG 21-28	5.04	12.5	.313	.026	.037	.026	.510	.38	.06	1.62	<.003
AUG 28-SEP 04	--	--	--	--	--	--	--	--	--	--	--
SEP 04-11	5.80	7.3	.327	.106	.176	.019	.250	.17	.08	1.03	.033
SEP 11-18	4.70	14.6	.266	.065	.007	.003	.220	.25	.04	1.43	<.003
SEP 18-25	--	10.3	.493	.081	.226	.011	.520	.33	.04	1.28	<.003
SEP 25-OCT 02	--	--	--	--	--	--	--	--	--	--	--