

**Prepared in cooperation with the State of North Dakota
and with other agencies**

Water Resources Data North Dakota Water Year 2003

Volume 1. Surface Water

Water-Data Report ND-03-1

CALENDAR FOR WATER YEAR 2003

2002

OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14
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27	28	29	30	31			24	25	26	27	28	29	30	29	30	31				

2003

JANUARY							FEBRUARY							MARCH						
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19	20	21	22	23	24	25	16	17	18	19	20	21	22	16	17	18	19	20	21	22
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APRIL							MAY							JUNE						
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13	14	15	16	17	18	19	11	12	13	14	15	16	17	15	16	17	18	19	20	21
20	21	22	23	24	25	26	18	19	20	21	22	23	24	22	23	24	25	26	27	28
27	28	29	30				25	26	27	28	29	30	31	29	30					

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13	14	15	16	17	18	19	10	11	12	13	14	15	16	14	15	16	17	18	19	20
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27	28	29	30	31			24	25	26	27	28	29	30	28	29	30				

Water Resources Data North Dakota Water Year 2003

Volume 1. Surface Water

By S.M. Robinson, R.F. Lundgren, B.A. Sether, S.W. Norbeck, and J.M. Lambrecht

Water-Data Report ND-03-1

Prepared in cooperation with the State of North Dakota
and with other agencies

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PREFACE

This edition of the annual hydrologic data report of North Dakota is one of a series of annual reports that document hydrologic data collected from the U.S. Geological Survey's collection networks in each State, Puerto Rico, and the Trust Territories. These records of stream flow, ground-water levels, and quality of water provide the hydrologic information needed by Federal, State, local agencies, and the private sector for developing and managing land and water resources in North Dakota. The records are contained in 2 volumes:

Volume 1. Surface-Water Data

Volume 2. Ground-Water Data

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. In addition to the authors, who had the primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to U.S. Geological Survey policy and established guidelines, the following North Dakota District personnel contributed significantly to the collection, processing, and tabulation of the data:

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13. ABSTRACT (Maximum 200 words)
Water-resources data for the 2003 water year for North Dakota consists of records of discharge, stage, and water quality for streams; contents, stage, and water quality for lakes and reservoirs; and water levels and water quality for ground-water wells. Volume 1 contains records of water discharge for 108 streamflow-gaging stations; stage only for 24 river-stage stations; contents and/or stage for 14 lake or reservoir stations; annual maximum discharge for 32 crest-stage stations; and water-quality for 99 streamflow-gaging stations, 5 river-stage stations, 11 lake or reservoir stations, 8 miscellaneous sample sites on rivers, and 63 miscellaneous sample sites on lakes and wetlands. Data are included for 7 water-quality monitor sites on streams and 2 precipitation-chemistry stations. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating Federal, State, and local agencies in North Dakota.

14. SUBJECT TERMS *North Dakota, *Hydrologic data, *Surface water, *Water quality, Flow rate, Gaging stations, Lakes, Reservoirs, Chemical analyses, Sediments, Water temperature, Sampling sites, Water analyses, Floods, Drought	15. NUMBER OF PAGES 583
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SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH
RECORDS ARE PUBLISHED IN THIS VOLUME

[Letters after station names designate type of data: (d) discharge, (e) elevation, gage heights, or contents, (c) chemical, (b) biological, (m) microbiological, (t) water temperature, (s) sediment, (r) radiochemical, (p) pesticides]

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ARE PUBLISHED IN THIS VOLUME

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PRECIPITATION SITES, FOR WHICH CHEMICAL-QUALITY DATA ARE PUBLISHED IN THIS VOLUME

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STUTSMAN COUNTY

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WATER RESOURCES DATA—NORTH DAKOTA, 2003

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

The following continuous-record surface-water discharge or stage-only stations (gaging stations) in North Dakota have been discontinued. Daily stream flow or stage records were collected and published for the period of record, expressed in water years, shown for each station. Those stations with an asterisk (*) after the station number are currently operated as crest-stage partial-record stations. 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; (e), elevation (stage only); 1, not published (records only available from computer and/or manual files); --, no data].

Station name	Station number	Drainage area (mi ²)	Period of record
RED RIVER OF THE NORTH BASIN			
Bois de Sioux River near Fairmount, ND (d)	05050500	1,540	1919-44
Wild Rice River near Cayuga, ND (d)	05051700	955	1956-79
Wild Rice River near Mantador, ND (d)	05052000	1,357	1944-50
Richland County Drain No. 65 near Great Bend, ND (d)	05052100	38	1981-85
Sheyenne River near Harvey, ND (d)	05055000	534	1946-56
North Fork Sheyenne River near Wellsburg, ND (d)	05055100	693	1958-67
Big Coulee near Maddock, ND (d)	05055200	146	1957-67
Sheyenne River at Sheyenne, ND (d)	05055500	1,790	1929-33, 1940-51
Big Coulee near Fort Totten, ND (d)	05055520	23.2	1966-75
Webster Coulee at Webster, ND (d)	05056225	670	1980-82 (e), 1983-87 (e1), 1994
Calio Coulee near Starkweather, ND (d)	05056247	130	1986-88, 1994
Little Coulee at Leeds, ND (d)	05056300	280	1955-67
Little Coulee near Brinsmade, ND (d)	05056390	350	1976-97
Big Coulee near Churchs Ferry, ND (d)	05056400	1,620	1950-97
Comstock Coulee near Minnewaukan, ND (d)	05056403	58	1986-88 (1), 1994
Channel A near Penn, ND (d)	05056410	930	1984-99
Sheyenne River near Kathryn, ND (d)	05058600	8,000	1995-96, 2002
Cass County Drain 52 near Amenia, ND (d)	05060510	13.5	1981-85
Rush River near Prosper, ND (d)	05060550	170	1981-85
Lower Branch Rush River near Prosper, ND (d)	05060570	35.8	1981-85
Elm River near Kelso, ND (d)	05062200	199	1956-63, 1981-86
Beaver Creek near Hatton, ND (d)	05065000	162	1954-57
Goose River near Portland, ND (d)	05065500	517	1940-75, 1981-86
South Branch Goose River near Portland, ND (d)	05066000	362	1940-42

WATER RESOURCES DATA—NORTH DAKOTA, 2003
DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
RED RIVER OF THE NORTH BASIN--Continued			
Turtle River at Manvel, ND (d)	05083000	613	1946-70, 1980-82 (e)
Middle Branch Forest River near Whitman, ND (d)	05083600	47.7	1961-90
Forest River near Minto, ND (d)	05084500	578	1932-44
South Branch Park River near Park River, ND (d)	05088000	214	1940-50
Homme Reservoir near Park River, ND (e)	05088500	226	1949-94, 2001-2002 (1)
South Branch Park River below Homme Dam, ND (d)	05089000	226	1950-94
Middle Branch Park River near Union, ND (d)	05089100	15.3	1966-86
Cart Creek at Mountain, ND (d)	05089500	16.9	1954-84
Pembina County Drain No. 20 near Glasston, ND (d)	05092200	80	1972-86
Hidden Island Coulee near Hansboro, ND (d)	05098700	38	1961-95
Cypress Creek near Sarles, ND (d)	05098800	71	1961-88
Cypress Creek above International Boundary near Sarles, ND (d)	05098820	83	1988-95
Herzog Creek near Concrete, ND (d)	05100500	18.9	1954-77
Tongue River at Cavalier, ND (d)	05101500	167	1939-51
Tongue River near Pembina, ND (d)	05102000	460	1940-42
Long Creek near Crosby, ND (d)	05113500	2,080	1943-65
West Branch Short Creek near Columbus, ND (d)	05113700	167	1978-81
Des Lacs River near Kenmare, ND (d)	05116150	687	1988-93
Wintering River near Bergen, ND (d)	05120200	176	1957-78
Souris River near Towner, ND (d)	05121500	13,100	1933-41
Willow Creek at Dunseith, ND (d)	05122500	142	1953-70
Lake Metigoshe near Bottineau, ND (e)	05123000	59	1931-32 1953-87 1992-96
Oak Creek at Lake Metigoshe Outlet near Bottineau, ND (d)	05123100	59	1954-81
Stone Creek near Kramer, ND (d)	05123500	168	1986-93, 1999-2000
Egg Creek near Granville, ND (d)	05123600	289	1957-81
Cut Bank Creek at North Lake Outlet near Granville, ND (d)	05123700	534	1957-80
Cut Bank Creek near Upham, ND (d)	05123750	722	1975-80, 1986-91, 1999-2000
Boundary Creek near Landa, ND (d)	05123900	230	1957-81 1985-94 1999-2000

WATER RESOURCES DATA—NORTH DAKOTA, 2003
DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
MISSOURI RIVER BASIN			
Charbonneau Creek near Charbonneau, ND (d)	06329597	149	1967-81
Missouri River Stage Gage No. 8 near Trenton, ND (e)	06329680	164,000	1959-79 (e)
Blacktail Creek near Bonetrail, ND (d)	06330500	30	1956-60
Little Muddy Creek near Williston, ND (d)	06331500	1,010	1904-09, 1932-33, 1946-54
Stony Creek near Williston, ND (d)	06331570	146	1978-81
Missouri River Stage Gage No. 10 near Williston, ND (e)	06331600	165,000	1959-75 (e)
Missouri River Stage Gage No. 11 near Williston, ND (e)	06331650	165,000	1959-80 (e)
Tobacco Garden Creek near Watford City, ND (d)	06331680	135	1977-82
Beaver Creek near Ray, ND (d)	06331850	102	1977-82
White Earth River at White Earth, ND (d)	06332000	780	1954-82
Missouri River at Sanish, ND (d)	06332500	166,000	1928-32
Shell Creek near Parshall, ND (d)	06332520	465	1965-81
Little Beaver Creek near Marmarth, ND (d)	06335000	587	1938-79
Hay Creek No. 2 near Wibaux, MT (d)	06336510	11.4	1978-82
Hay Creek near Wibaux, MT (d)	06336515	11.4	1978-82
Little Beaver Creek near Wibaux, MT (d)	06336545	96.2	1978 (1), 1979-81
Deep Creek near Amidon, ND (d)	06335750	250	1978-83
Missouri River near Elbowwoods, ND (d)	06337500	179,800	1940-53
Missouri River below Garrison Dam, ND (d)	06339000	181,400	1948-69, 1970-76 (e)
Stray Creek near Manning, ND (d)	06339180	30.3	1979-81
Knife River at Marshall, ND (d)	06339300	722	1971-81
Elm Creek near Golden Valley, ND (d)	06339490	82	1967-81
Coyote Creek near Zap, ND (d)	06339550	65.2	1978-83
Brush Creek near Beulah, ND (d)	06339560	23.9	1975-91
Spring Creek below Lake Ilo at Dunn Center, ND (d)	06339800	116	1978-81
Spring Creek near Halliday, ND (d)	06339900	260	1978-81
West Branch Otter Creek near Beulah, ND (d)	06340200	26.5	1965-82
Antelope Creek above Hazen, ND (d)	06340520	47.2	1977-86
West Branch Antelope Creek No. 5 near Zap, ND (d)	06340524	4.37	1978-82
West Branch Antelope Creek No. 4 near Zap, ND (d)	06340528	8.46	1977-86
West Branch Antelope Creek No. 2 near Beulah, ND (d)	06340536	28.3	1977-80

WATER RESOURCES DATA—NORTH DAKOTA, 2003
DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
MISSOURI RIVER BASIN--Continued			
West Branch Antelope Creek near Hazen, ND (d)	06340540	37.7	1978-83
Coal Creek near Stanton, ND (d)	06340580	15.8	1978-81
Alderin Creek near Fort Clark, ND (d)	06340780	21.9	1978-83
Missouri River Tributary No. 2 near Hensler, ND (d)	06340890	9.80	1979-81
Coal Lake Coulee near Hensler, ND (d)	06340905	70.5	1978-89
Buffalo Creek near Washburn, ND (d)	06340930	57.3	1979-83
Turtle Creek near Turtle Lake, ND (d)	06341400	310	1957-76
Square Butte Creek near Hannover, ND (d)	06342040	16.9	1978-81
Square Butte Creek Tributary No. 2 near Center, ND (d)	06342100	13	1965-76
Square Butte Creek above Nelson Lake near Center, ND (d)	06342200	75.8	1977-82
Hagel Creek near Center, ND (d)	06342230	45.6	1977-82
Norwegian Creek near Bel eld, ND (d)	06342850	39.8	1979-81
South Branch Heart River near South Heart, ND (d)	06342900	132	1979-83
North Creek near South Heart, ND (d)	06342970	40.8	1979-81
Heart River near South Heart, ND (d)	06343000*	311	1946-70, 1978-84
Heart River below Dickinson Dam near Dickinson, ND (d)	06344000	404	1952-72
Heart River at Dickinson, ND (d)	06344300	440	1984 (1), 1985-96
Heart River at Lehigh, ND (d)	06344500	443	1943-52
Green River Tributary near New Hradec, ND (d)	06344610	22.4	1979-81
Green River near Gladstone, ND (d)	06345000	356	1946-75
Heart River below Heart Butte Dam near Glen Ullin, ND (d)	06346500	1,710	1943-72
Wilson Creek near Glen Ullin, ND (d)	06347100	41.4	1965-70
Heart River near Lark, ND (d)	06348000	2,750	1946-95
Missouri River below Mandan, ND (e)	06349070	189,800	1966-94
Long Lake Creek below Long Lake near Mof t, ND (d)	06349275	700	1989-93
Cannonball River at New England, ND (d)	06349900	285	1979-81
Coal Bank Creek near Havelock, ND (d)	06349930	70	1975-83
Cannonball River below Bentley, ND (d)	06351000	1,140	1943-81
Cannonball River near Heil, ND (d)	06351500	1,340	1951-53
White Butte Fork Cedar Creek near Scranton, ND (d)	06351680	42.9	1965-67 (1), 1968-95
Cedar Creek near North Lemmon, ND (d)	06352300	901	1959-63

WATER RESOURCES DATA—NORTH DAKOTA, 2003
DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
MISSOURI RIVER BASIN--Continued			
Cannonball River near New Leipzig, ND (d)	---	1,180	1943-50
Timber Creek near Bentley, ND (d)	06352400	100	1978-81
Cedar Creek near Pretty Rock, ND (d)	06352500	1,340	1943-76
Cannonball River near Timmer, ND (d)	06353500	3,670	1903-09, 1911-18, 1922, 1924, 1928-35
Beaver Creek at Linton, ND (d)	06354500	717	1949-89
Porcupine Creek near Fort Yates, ND (d)	06354815	220	1991-99
North Fork Grand River at Haley, ND (d)	06355000	509	1908-17, 1945-95
Buffalo Creek Tributary near Gascoyne, ND (d)	06355310	15.7	1975-87
James River near Manfred, ND (d)	06467600	253	1958-94
Big Slough at Hamberg, ND (d)	06467900	60	1957-68, 1970-75
James River at New Rockford, ND (d)	06468000	714	1950-69
Juanita Lake Tributary near Grace City, ND (d)	06468190	94	1986-89
Kelly Creek below Niccum Reservoir near Bordulac, ND (d)	06468300	188	1986-89
James River near Pingree, ND (d)	06468500	1,670	1953-68
Pipestem Creek near Buchanan, ND (d)	06469500	758	1950-74
Pilot Drain at Oakes, ND (d)	06470833	5.10	1972-82
James River near Hecla, SD (e)	06470980	5,520	1982-85 (1), 1986-91

WATER RESOURCES DATA—NORTH DAKOTA, 2003

DISCONTINUED CONTINUOUS-RECORD SURFACE-WATER-QUALITY STATIONS

The following stations were discontinued as continuous-record surface-water quality stations prior to the current water year. Daily records of temperature, specific conductance or sediment were collected and published for the periods shown for each station.

[--, no data]

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
Wild Rice River near Cayuga, ND	05051700	955	temperature	1958
Wild Rice River near Abercrombie, ND	05053000	2,080	temperature specific conductance	1967-81 1968-81
Red River of the North below Fargo, ND	05054020	6,820	temperature specific conductance	1973-82 1973-82
Sheyenne River above Harvey, ND	05054500	424	temperature	1954
Sheyenne River near Warwick, ND	05056000	2,070	temperature specific conductance	1951-53, 1955-62, 1964-80 1952-60, 1964-80
Big Coulee near Churchs Ferry, ND	05056400	2,510	temperature specific conductance	1983-89 1983-89
Channel A near Penn, ND	05056410	---	temperature specific conductance	1983-89, 1991 1983-89
Sheyenne River at Lisbon, ND	05058700	8,190	temperature specific conductance sediment	1956-81 1964-80 1976-79
Sheyenne River near Kindred, ND	05059000	8,800	temperature specific conductance sediment	1971-81 1976-81 1976-80
Red River of the North at Grand Forks, ND	05082500	30,100	temperature	1957-73
Red River of the North at Oslo, MN	05083500	31,200	temperature specific conductance	1974-78 1974-78
Red River of the North at Drayton, ND	05092000	34,800	temperature	1957-61, 1965-75
Pembina River at Walhalla, ND	05099600	3,350	temperature specific conductance sediment	1962-81 1965-81 1962-76
Red River of the North at Emerson, Manitoba	05102500	40,200	temperature specific conductance	1978-96 1978-96
Souris River near Sherwood, ND	05114000	8,940	sediment	1975-81
Souris River near Foxholm, ND	05116000	9,470	temperature specific conductance	1973-81 1973-81
Souris River near Verendrye, ND	05120000	11,300	temperature specific conductance	1973-83 1973-83
Deep River below Cut Bank Creek near Upham, ND	05123760	1,722	temperature specific conductance sediment	1974-81, 1989 1974-81 1989
Turtle River at Turtle River State Park near Arvilla, ND	05082625	311	temperature specific conductance	1993-97 1993-97
Souris River near Westhope, ND	05124000	16,900	temperature specific conductance sediment	1974-81 1974-81 1956-59, 1989
Missouri River near Williston, ND	06330000	164,500	temperature specific conductance	1952-65 1952-60, 1965

WATER RESOURCES DATA—NORTH DAKOTA, 2003
DISCONTINUED CONTINUOUS-RECORD SURFACE-WATER-QUALITY STATIONS

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record (water years)
Bear Den Creek near Mandaree, ND	06332515	74	temperature speci c conductance	1969-71, 1989-91 1969-71
Little Missouri River at Marmarth, ND	06335500	4,640	temperature sediment	1952-54 1952-54
Little Missouri River at Medora, ND	06336000	6,190	temperature sediment	1947-49 1946-51
Little Missouri River near Watford City, ND	06337000	8,310	temperature speci c conductance sediment	1972-81 1972-81 1947-48, 1972-76
Missouri River Below Garrison Dam, ND	06339000	181,400	temperature	1952-71
Knife River near Golden Valley, ND	06339500	1,230	temperature sediment	1964-65 1946-49, 1964-65
Knife River at Hazen, ND	06340500	2,240	temperature speci c conductance	1975-82 1975-82
Missouri River near Hensler, ND	06340900	183,000	temperature	1967-77
Missouri River at Bismarck, ND	06342500	186,400	temperature speci c conductance sediment	1967-75 1972-75 1972-81
Heart River near Richardton, ND	06345500	1,240	sediment	1946-52
Heart River near Mandan, ND	06349000	3,310	temperature speci c conductance sediment	1972-76, 1978-82 1972-76, 1978-82 1972-76
Missouri River near Schmidt, ND	06349700	191,700	temperature	1967-75
Cannonball River at Regent, ND	06350000	580	temperature speci c conductance sediment	1965-66 1965-66 1965-66
Cedar Creek near Pretty Rock, ND	06352500	1,340	sediment	1946-49
Cannonball River at Breien, ND	06354000	4,100	temperature speci c conductance sediment	1972-82, 1991 1972-82 1972-76
North Fork Grand River at Haley, ND	06355000	509	temperature	1951-52
James River at LaMoure, ND	06470500	4,390	temperature speci c conductance	1953-75, 1977-96 1976-96
James River at Oakes, ND	06470800	5,320	temperature speci c conductance	1983-99 1983-99
James River at Dakota Lake Dam near Ludden, ND	06470875	5,480	temperature speci c conductance	1983-99 1983-99
Pilot Drain at Oakes, ND	06470833	5.10	temperature speci c conductance	1972-80, 1982 1972-80, 1982
James River at North Dakota-South Dakota State line	06470878	6,650	temperature speci c conductance	1974-88 1974-88

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INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with many other agencies, obtains a large amount of data pertaining to the water resources of North Dakota 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 these data readily available to interested parties outside the U.S. Geological Survey, the data are published annually in this report series entitled "Water Resources Data - North Dakota."

This report includes records of discharge, stage, and water quality for streams and contents, stage, and water quality for lakes and reservoirs. Specifically, it contains records of water discharge for 108 streamflow-gaging stations; stage only for 24 river-stage stations; contents and/or stage for 14 lake or reservoir stations; annual maximum discharge for 32 crest-stage stations; and water quality for 99 streamflow-gaging stations, 5 river-stage stations, 11 lake or reservoir stations, 8 miscellaneous sample sites on rivers, and 63 miscellaneous sample sites on lakes and wetlands. Locations of these stations are shown in figures 1 and 2 except for the miscellaneous water-quality sites. Data are included for 7 water-quality monitor sites on streams and for 2 precipitation-chemistry stations. These data represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in North Dakota.

This series of annual reports for North Dakota began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. For the 1975-95 water years, the report format was changed to present, in one volume, data on quantities of surface water, quality of surface and ground water, and ground-water levels. Beginning with the 1996 water year, ground-water levels and ground-water quality data have been published in a separate volume for North Dakota.

Prior to introduction of this series and for several water years concurrent with it, water-resources data for North Dakota were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United States, Parts 5 and 6." For the 1961-70 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941-70 water years were published annually under the title "Quality of Surface Waters of the United States," and ground-water levels for the 1935-74 water years were published under the title "Ground-Water Levels in the United States." The above mentioned Water-Supply Papers may be consulted in the libraries of the

principal cities of the United States and may be purchased from U.S. Geological Survey, Information Services, Box 25286, Denver, CO 80225-0286.

Publications similar to this report are published annually by the U.S. Geological Survey for all States. These official Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example this volume is identified as "U.S. Geological Survey Water-Data Report ND-2003-1." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on the back of the title page or by telephoning (701) 250-7406.

COOPERATION

The U.S. Geological Survey and agencies of the State of North Dakota have had cooperative agreements for the collection of streamflow records since 1903, ground-water levels since 1937, and water-quality records since 1946. Organizations that assisted in collecting the data in this report through cooperative agreement with the Survey are: North Dakota State Water Commission, Dale Frink, State Engineer; North Dakota Department of Health, Terry L. Dwelle, M.D., State Health Officer; Devils Lake Basin Joint Water Resource Board, Mike Connor, Director; Lower Heart River Water Resources District, W. S. Russell, Chairman; Morton County Water Resources District, A. C. Mork, Chairman; Oliver County Water Resources District, Duane Bueligen, Chairman; Red River Joint Water Resource Board, Donald Elston, Chairman; Red River Watershed Management Board, Ronald Osowski, Chairman; Southeast Cass Water Resources District, Thomas L. Fischer, Chairman; City of Minot, Curt Zimbleman, Mayor; North Dakota Department of Transportation, D. A. Sprynczynatyk, P.E., Director; Cass County Joint Water Resource District, Thomas L. Fischer, Chairman; Nelson County Water Resource District, Ben Varnson, Chairman; Three Affiliated Tribes, Tex G. Hall, Tribal Chairman; Spirit Lake Sioux Nation, Phillip G. Longie, Tribal Chairman.

Assistance with funds or services was given by the U.S. Army Corps of Engineers for 20 streamflow-gaging stations, 17 river-stage stations, 2 reservoir stations, 1 crest-stage gage, and water quality for 2 streamflow-gaging stations; the U.S. Bureau of Reclamation for 4 streamflow-gaging stations, 1 river-stage station, 1 lake station, and water quality for 2 streamflow-gaging stations and for 2 lake or reservoir stations; International Joint Commission of the U.S. State Department for 3 streamflow-gaging stations and 1 reservoir

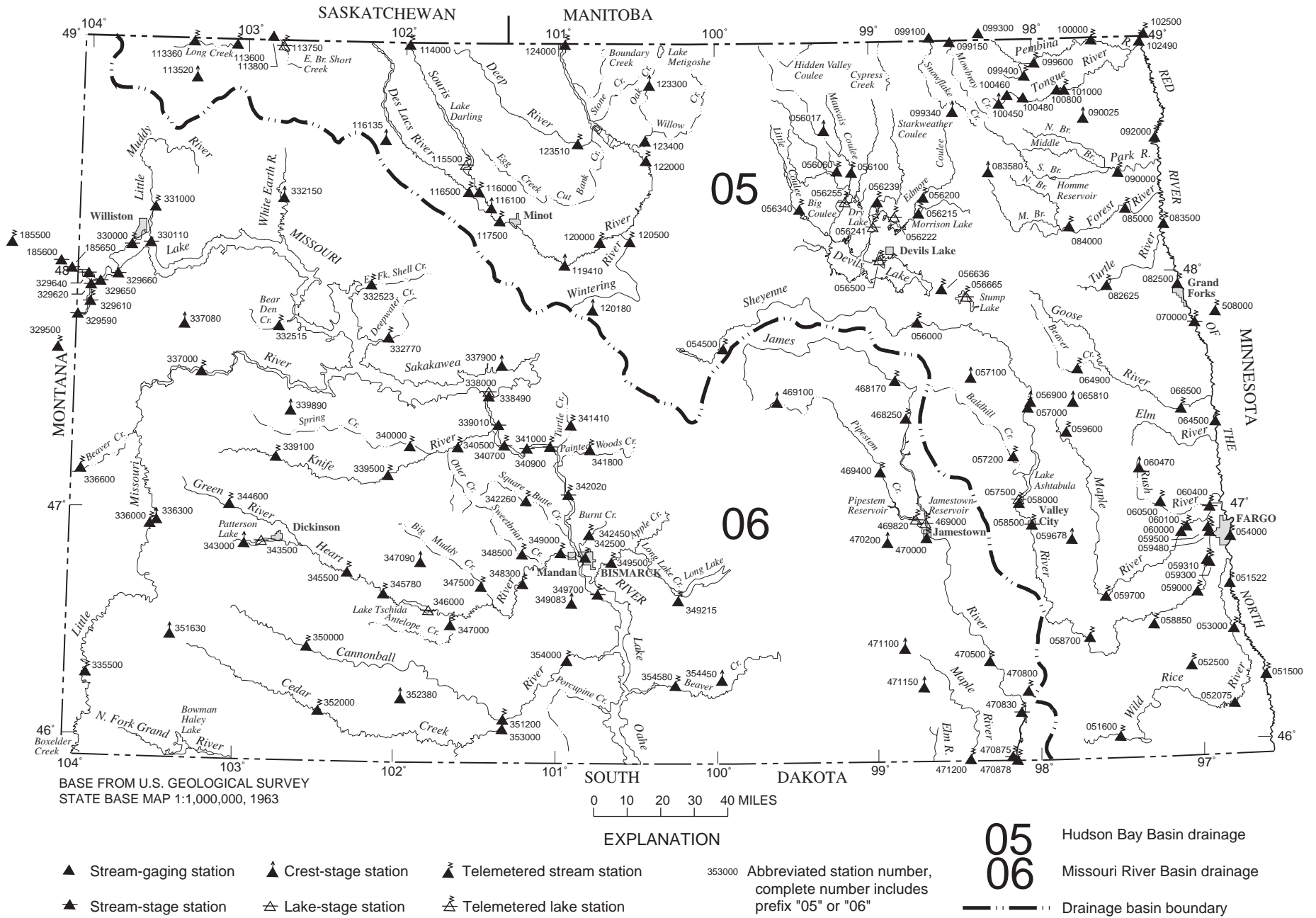
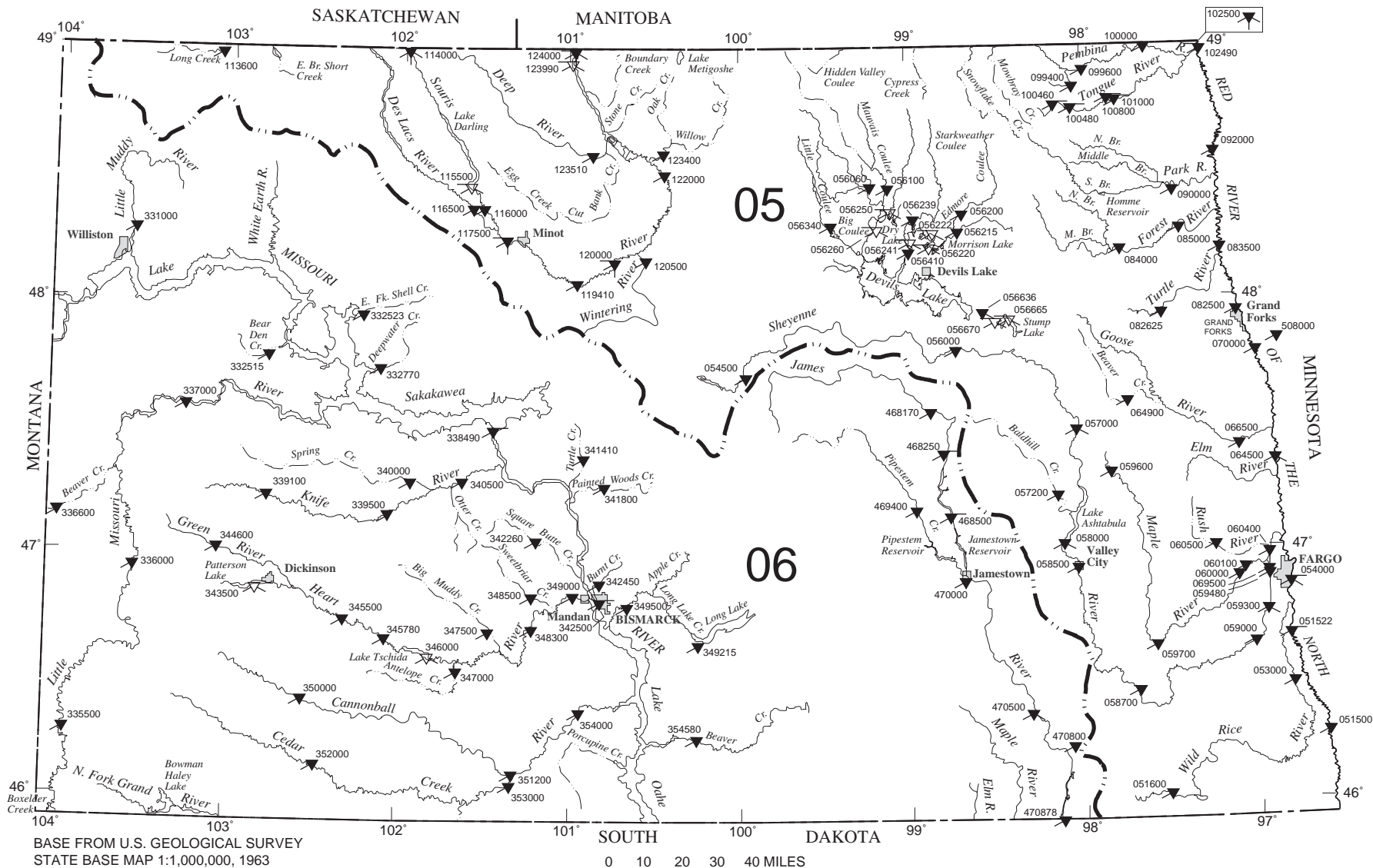


Figure 1. Location of active surface-water gaging stations.



BASE FROM U.S. GEOLOGICAL SURVEY
STATE BASE MAP 1:1,000,000, 1963

EXPLANATION

- | | | | | | |
|---------------------------|--------------------------|-------------------------------|--------|--|--|
| ▼ Stream station | ▼ Biological measurement | ↗ Chemical measurement | 353000 | Abbreviated station number, complete number includes prefix "05" or "06" | 05 Hudson Bay Basin drainage
06 Missouri River Basin drainage |
| ▼ Sediment measurement | ▽ Lake station | ▼ Microbiological measurement | | | |
| ▼ Temperature measurement | | | | | — · · — · · — Drainage basin boundary |

Figure 2. Location of active surface-water-quality stations.

station; the U.S. Fish and Wildlife Service for 7 streamflow-gaging stations and water quality for 2 reservoir stations; and the U.S. Forest Service for 1 streamflow-gaging station.

Certain stations are maintained under agreement with Canada and the records are obtained and compiled in a manner equally acceptable to both countries. Most of these are designated as "international gaging stations."

Organizations that provided data are acknowledged in station descriptions.

SUMMARY OF HYDROLOGIC CONDITIONS

Climate

In North Dakota, normal annual precipitation ranges from about 13 inches in the west-central part of the State to about 22 inches in the southeastern part of the State (U.S. Department of Commerce, 2002, Monthly station normals of temperature, precipitation, and heating and cooling degree days, 1971-2000, North Dakota: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Environmental Satellite, Data, and Information Service, National Climatic Data Center, Asheville, North Carolina, Climatography of the United States, No. 81). Three-fourths of this precipitation occurs during April through September. The greatest normal monthly precipitation for the entire State occurs during June. Normal, as used in reference to meteorological data in this report, is a mean value for the reference period 1961 through 1990. Meteorological data were obtained from publications of the National Climatic Data Center (U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Climatic Data Center, 2002, 2003, Climatological data, North Dakota: Asheville, North Carolina, v. 111, no. 10-12, and v. 112, no. 1-9).

North Dakota is divided into nine climatological divisions (fig. 3). Precipitation during water year 2003 generally was below normal for all of the climatological divisions except the west-central and east-central divisions where precipitation was above normal. A comparison of monthly precipitation for water year 2003 to normal monthly precipitation for 1961-90 for the nine climatological divisions in North Dakota is shown in figure 3. Data shown in figure 3 are means of monthly precipitation for reporting stations within each climatological division.

Statewide monthly precipitation was 74 percent of normal from October through February and ranged from 29 percent of normal in November to 133 percent of normal in December. Precipitation was less than normal in all nine climatological divisions in October, November, January, and February.

The north-central division had 210 percent of normal precipitation in December. Precipitation for March ranged from 0.3 inch (25 percent) in the southeast to 2.3 inches (343 percent) in the southwest. During April, eight of the nine

climatological divisions had less-than-normal precipitation, except for the northwest division where precipitation was 115 percent of normal. During May, the entire State had greater-than-normal precipitation. The greatest amount of precipitation was 5.3 inches (247 percent) in the central division.

During June, when statewide precipitation usually is greatest, four of the nine climatological divisions reported greater-than-normal precipitation. The northwest, north-central, west-central, southwest, and south-central divisions had less-than-normal precipitation. Statewide monthly precipitation ranged from about 2.1 inches (73 percent) in the northwest division to about 5.2 inches (148 percent) in the southeast division.

Statewide monthly mean precipitation during July was less than normal for all nine climatological divisions. Total precipitation ranged from about 0.9 inch (45 percent) in the southwest division to about 2.6 inches (90 percent) in the northeast division.

Statewide monthly mean precipitation during August was less than normal. Total precipitation ranged from about 0.8 inch (32 percent) in the southeast division to about 1.6 inches (65 percent) in the northeast division.

Statewide monthly mean precipitation during September ranged from 1.2 inches (68 percent) in the northwest division to 2.8 inches (181 percent) in the southwest division.

Temperatures during October were below normal statewide. November through January monthly mean temperatures were as great as 9°F above normal. Statewide monthly mean temperatures were 5 to 11°F below normal for February and March. April temperatures averaged 2 to 4°F above normal. The influence of temperatures on streamflow in North Dakota is diminished substantially after the snowpack has melted, and temperatures have little effect on streamflow from May through September. However, August temperatures were 3 to 6°F above normal, which aggravated the dry conditions in the State.

Streamflow

The largest mean monthly discharge of North Dakota rivers generally is coincident with snowmelt runoff. Because above-freezing temperatures normally occur earlier in the southwestern part of the State than in the northeastern part of the State, snowmelt runoff usually begins first on the Missouri River tributaries in southwestern North Dakota and progresses from southwest to northeast across the State. Hydrographs of mean monthly discharge (fig. 4) for the period of record for selected streams within each of the climatological divisions verify this pattern. For example, the largest mean monthly discharges for the period of record for Bear Den Creek near Mandaree, which is in the west-central division, and for Cedar Creek near Haynes, which is in the southwest division, occur in March, whereas the largest mean monthly discharges for the remaining streamflow-gaging stations occur in April.

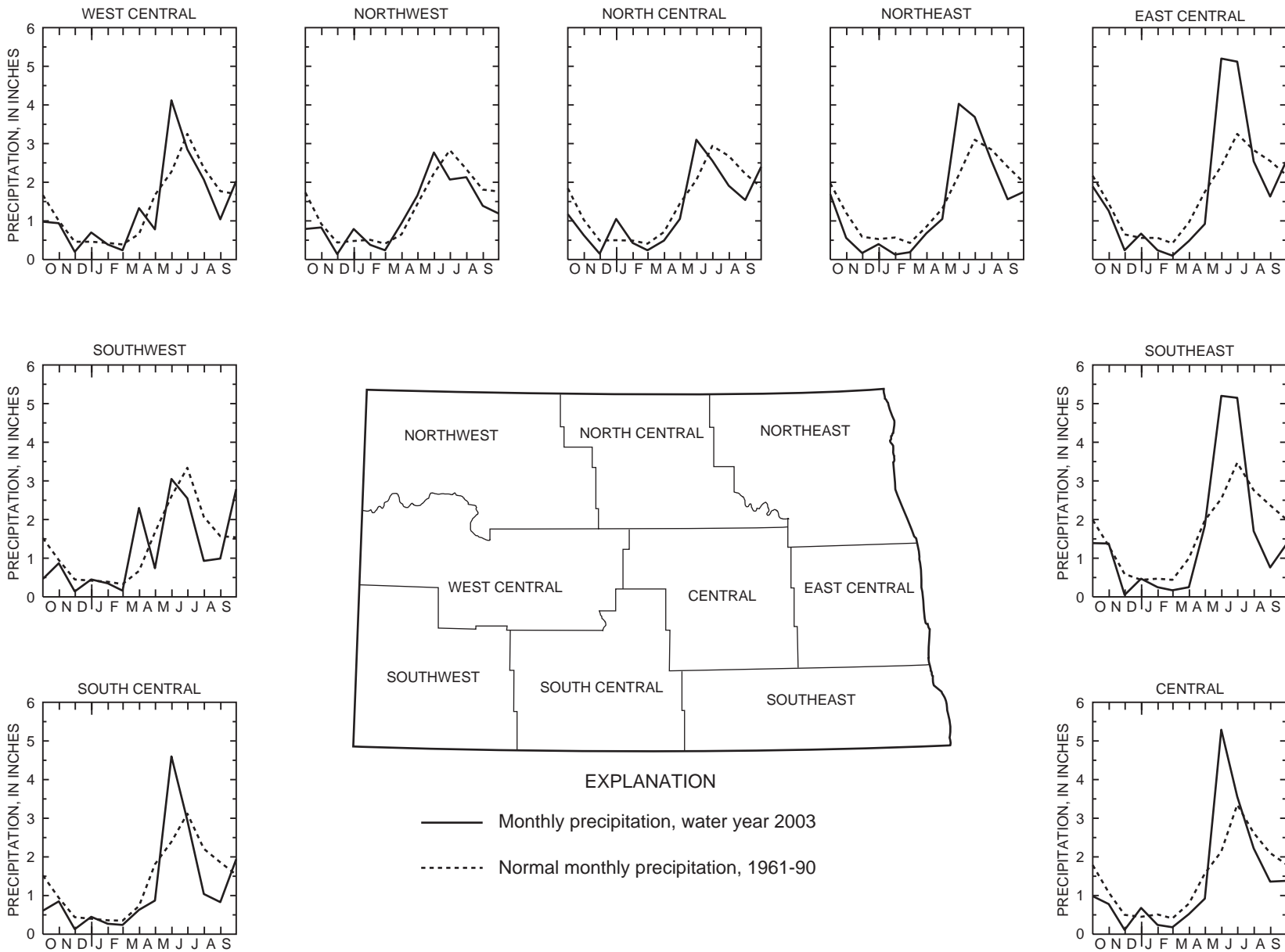


Figure 3. Comparison, by climatological division, of monthly precipitation, water year 2003, to normal monthly precipitation, 1961-90.

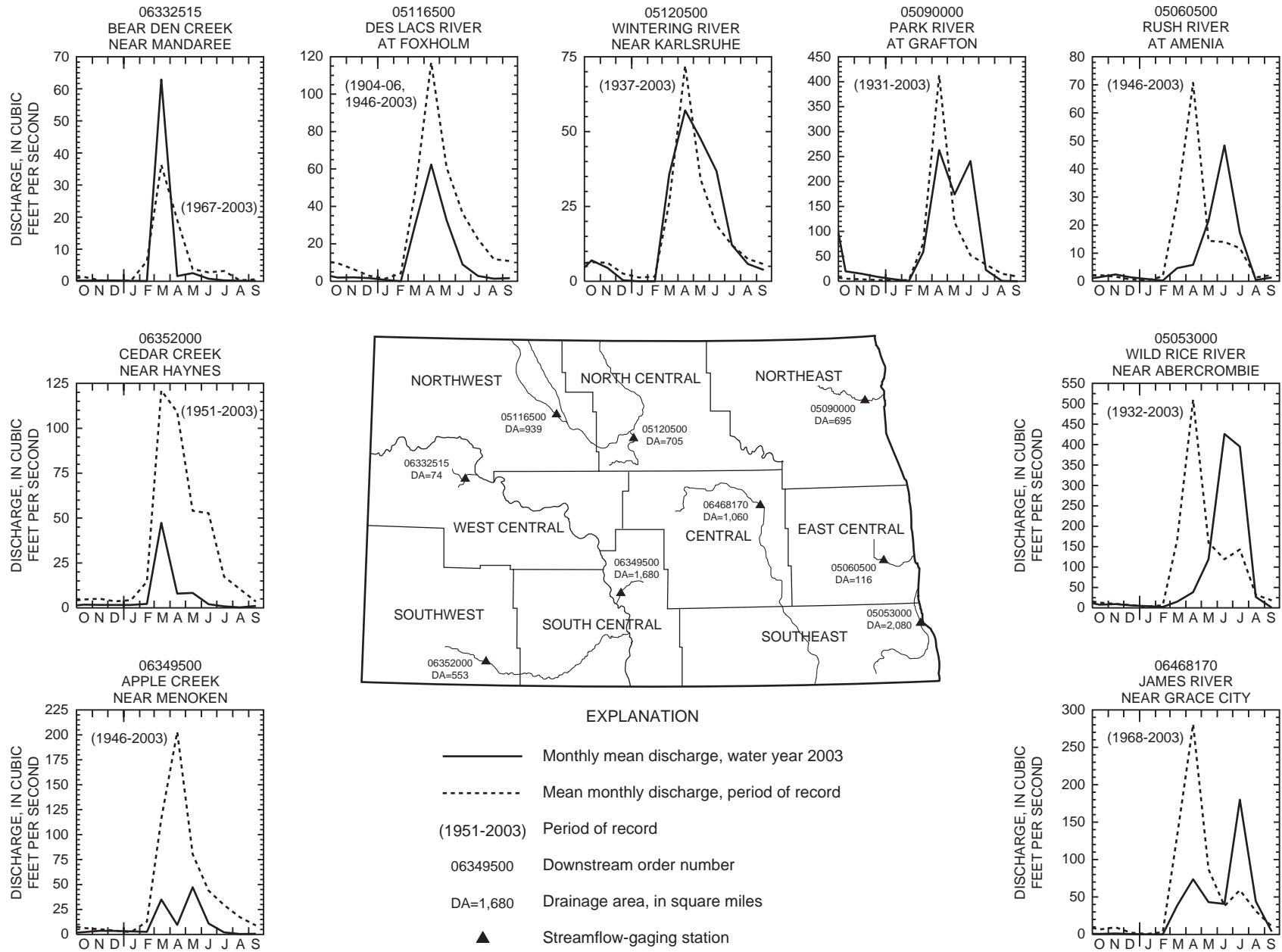


Figure 4. Comparison of monthly mean discharge during water year 2003 to mean monthly discharge for the period of record.

Although many inferences about hydrologic conditions in the State can be made from precipitation (fig. 3) and streamflow (fig. 4) data, sound hydrologic judgment should be used. Variability of rainfall intensity and distribution should be considered when making conclusions about hydrologic response to rainfall, especially for small basins. Problems also may occur because different reporting periods are used in figures 3 and 4. Normal monthly precipitation is computed using data for a 30-year period (1961-90), but mean monthly discharge is computed using data for the period of record at each streamflow-gaging station--58 years (1946-2003) in the case of Apple Creek near Menoken.

According to the National Weather Service "Weekly Palmer Drought Index Report" (written commun., 2003), western North Dakota experienced drought conditions at the beginning of the water year while central and eastern North Dakota were moist. Conditions were classified as moderate to severe drought in the southwest climatological division to extremely moist in the northeast division.

Because of less-than-normal precipitation from October through February and greater-than-normal temperatures from November through January, there was very little accumulation of snow and little potential for spring snowmelt flooding anywhere in the State. By early March the drought had intensified significantly in the southwest corner of the State. Conditions were classified as moderate to severe drought in the central, southeast, and south-central climatological divisions, as mild drought in the east-central division, and as normal in the remaining divisions.

Temperatures warmed rapidly in mid-March in the northwest, west, and south-central climatological divisions. The warm-up combined with mid-month precipitation resulted in peaks at or above the long-term monthly means for the southwest and northwest third of the State. The rest of the State remained well below long-term mean discharges that usually are seen during the spring breakup.

Although drought conditions continued to be classified as normal to severe through March and April, widespread precipitation in May brought the entire State to the normal range. However, above-normal temperatures and less-than-normal precipitation in June brought the western portion of the State to drought status once again. Heavy rains in mid- to late June kept the eastern part of the State moist and free from drought through July. Continued above-normal temperatures and less-than-adequate rainfall brought the entire State to drought status by August.

Although many summer peaks, particularly in the eastern part of the State, exceeded the snowmelt peaks, no peaks approached the peaks of record. Summer peaks that exceeded snow-melt peaks are shown in figure 4 in the hydrographs for James River near Grace City, Rush River at Amenia, and Wild Rice River near Abercrombie.

The Devils Lake Basin is a 3,810-square-mile closed basin adjacent to the headwaters of the Sheyenne River.

Geologic evidence indicates that, in the past, water flowed from the Devils Lake Basin into the Sheyenne River. However, since 1867 when water levels of Devils Lake first were recorded, Devils Lake has not flowed into the Sheyenne River Basin and the level of the lake has varied greatly in response to wet and dry periods (fig. 5). From 1867 to 1940, the water level generally declined from a maximum of 1,438.4 feet above sea level in 1867 to a minimum of 1,400.9 feet above sea level in 1940. After 1940, the water level generally increased except during 1956-68 and 1987-93. The decline from 1987 to 1993 occurred as a result of a drought in the basin. From 1993 to 1999, the water level increased each year as a result of greater-than-normal precipitation and runoff in the basin. During 2000, for the first time since 1993, the maximum water level did not exceed the maximum from the previous year. In water year 2001, Devils Lake reached a new period-of-record maximum of 1,448.3 feet on July 21, 2001. During 2003, the June peak remained within a foot of the 2001 peak; however, the lake did not set a new maximum level.

As Devils Lake rises, the surface area increases and requires greater volumes of inflow for each incremental increase in elevation. For example, at an elevation of 1,422.4 feet (the lake level at the end of the 1987-92 drought), the surface area of the lake is about 44,000 acres, whereas at an elevation of 1,447 feet, the surface area of the lake is about 124,000 acres.

During the 2001 water year, Devils Lake flowed over the divide into Stump Lake for the first time since records have been kept. The elevation of the divide is 1,446.5 feet (James Landenberger, North Dakota State Water Commission, oral commun., 2002). Flow from Devils Lake to Stump Lake occurred again during the summer of 2003. The maximum daily elevation for Stump Lake during the 2003 water year was 15.26 feet, about 32 feet lower than Devils Lake.

Chemical Quality of Streamflow

Chemical quality of streamflow at any particular site is dependent upon many factors, including source of streamflow, composition of soil over which water flows, location, and time of year; therefore, the quality of streamflow varies considerably across the State. Chemical quality of streamflow also is dependent upon the volume of streamflow. During periods of low flow, most of the flow is derived from ground-water inflow, which is mineralized, and the resulting streamflow has large dissolved-solids concentrations. During periods of high flow, most of the flow is derived from snowmelt or precipitation runoff, which is less mineralized, and the resulting streamflow has low dissolved-solids concentrations.

Five stations were selected to show the water-quality variability in rivers throughout the State. Specific conductance, an indicator of dissolved solids in water, is used to show the variability among these stations and among months at a given station. The mean, maximum, and minimum specific conductance for the period of record and the specific

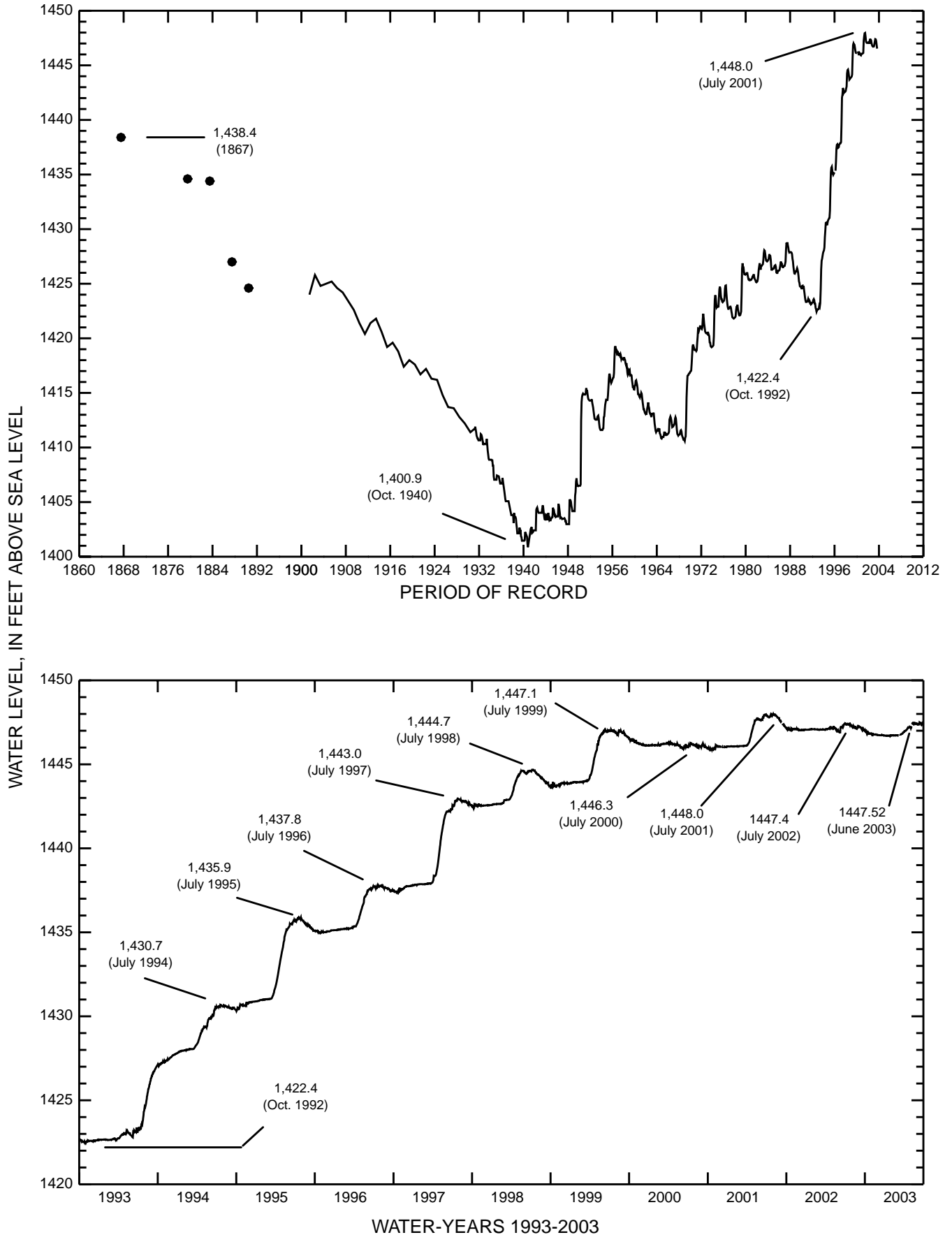


Figure 5. Devils Lake water levels for the period of record and for water years 1993-2003.

conductances measured during the 2003 water year for each station are shown in table 1.

Specific conductance is used as an indicator of the suitability of water for irrigation and other uses. The U.S. Salinity Laboratory (U.S. Salinity Laboratory Staff, 1954, *Diagnosis and improvement of saline and alkali soils: U.S. Department of Agriculture Handbook 60*, 160 p.) has developed an index using specific conductance as an indicator of salinity hazard for irrigation water. The salinity hazard and corresponding specific conductance are as follow:

Salinity hazard	Specific conductance (microsiemens per centimeter at 25 degrees Celsius)
Low	Less than 250
Medium	250 to 750
High	750 to 2,250
Very high	2,250 to 5,000

In the United States, the Red River of the North drains all of eastern North Dakota, much of northwestern Minnesota, and a small part of northeastern South Dakota. Of the five stations listed in table 1, the Red River of the North at Grand Forks (05082500) has the smallest mean monthly specific-conductance values for each month. The smaller mean values are caused partly by more precipitation occurring in the Red River of the North Basin, especially in Minnesota, than in other parts of North Dakota. The salinity hazard of stream water during the irrigation season (April through October) was medium or high in the months when specific-conductance measurements were made.

The Souris River upstream of Sherwood drains about 9,000 square miles of southeastern Saskatchewan, Canada, and a small part of northwestern North Dakota. Generally, the Souris River near Sherwood (05114000) has larger specific-conductance values than the Red River of the North and the James River but smaller specific-conductance values than the Little Missouri River and the Cannonball River. The salinity hazard of stream water during the irrigation season (April through October) was high in the months when specific-conductance measurements were made.

The Little Missouri River drains parts of southwestern North Dakota, northwestern South Dakota, northeastern Wyoming, and southeastern Montana. The Cannonball River drains parts of southwestern North Dakota and northwestern South Dakota. Of the five stations listed in table 1, the Little Missouri River near Watford City (06337000) and the Cannonball River at Breien (06354000) have the largest mean specific-conductance values for the period of record. The salinity hazard of stream water during the irrigation season (April through October) was high in the months when

specific-conductance measurements were made at each of these stations.

The James River drains east-central North Dakota. Flow in the James River Basin is regulated by the Jamestown and Pipestem Reservoirs, which are used primarily for flood control. High flows from snowmelt and rainfall are stored in the reservoirs and released throughout the summer. Specific-conductance values for the James River at LaMoure (06470500) generally are smallest from March through October during high flow or when the stored runoff water is released. The salinity hazard of stream water during the irrigation season (April through October) was high in the months when measurements were made.

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 stream flow representative of 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. At 10 of these sites, water-quality information is being gathered on major ions and nutrients, primarily to assess the effects of acid deposition on stream chemistry. Additional information on the Hydrologic Benchmark Program can be found at <http://water.usgs.gov/hbn/>.

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within the Nation's largest river basins. From 1995 through 1999, a network of approximately 40 stations was operated in the Mississippi, Columbia, Colorado, and Rio Grande basins. For the period 2000 through 2004, sampling was reduced to a few index stations on the Colorado and Columbia so that a network of 5 stations could be implemented on the Yukon River. 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 remobilization 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. Additional information about the NASQAN Program can be found at <http://water.usgs.gov/nasqan/>.

Table 1. Statistical summary of specific-conductance values for the period of record and listing of measured specific-conductance values for water year 2003

[Specific-conductance values are in microsiemens per centimeter at 25 degrees Celsius; --, no data]

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Water year 2003	Period of record
05082500 Red River of the North at Grand Forks (period of record, water years 1949, 1956-2003)														
Mean	523	623	638	601	589	515	464	581	560	502	526	515	702	537
Maximum	700	925	985	1,040	900	910	757	943	949	675	787	792	949	1,040
Minimum	399	440	468	275	400	305	200	325	348	280	266	340	498	200
Number of values	73	46	50	56	53	79	183	99	82	87	69	57	13	934
Measured values for water year 2003	498	564	--	683	662	715	572 687	943	949	530	787 749	792	--	--
05114000 Souris River near Sherwood (period of record, water years 1970, 1972-2003)														
Mean	1,236	1,377	1,631	1,773	1,781	1,145	793	927	1,049	1,093	1,115	1,144	1,368	1,178
Maximum	2,240	2,460	2,230	2,770	2,920	3,500	2,510	2,460	1,530	1,650	2,060	1,960	2,300	3,500
Minimum	710	925	1,250	1,280	540	200	277	345	310	540	128	720	650	128
Number of values	39	38	14	28	32	54	76	36	42	38	43	27	14	467
Measured values for water year 2003	1,170	1,610	--	2,100	--	2,300 650	800 856 1,080	1,000	--	1,300	1,790	1,610 1,470 1,420	--	--
06337000 Little Missouri River near Watford City (period of record, water years 1972-2003)														
Mean	2,027	2,509	2,603	2,546	1,397	997	1,542	1,594	1,541	1,735	1,476	1,944	2,081	1,668
Maximum	3,100	4,000	5,000	3,600	3,020	2,000	2,700	3,100	2,780	3,000	2,550	2,570	3,410	5,000
Minimum	720	814	1,720	1,290	640	400	515	780	750	695	680	900	1,450	400
Number of values	85	53	22	16	8	102	69	68	70	41	122	16	8	672
Measured values for water year 2003	--	3,410	--	2,620	--	1,450 1,570	--	1,870	1,770	1,720	2,240	--	--	--
06354000 Cannonball River at Breien (period of record, water years 1946-50, 1971-2003)														
Mean	1,620	1,978	2,546	2,412	1,836	855	1,267	1,961	1,947	1,487	1,423	1,573	1,791	1,668
Maximum	2,400	3,070	3,290	3,800	4,860	3,100	2,260	2,930	3,020	3,000	2,800	2,300	3,250	4,860
Minimum	650	1,240	284	680	190	190	300	481	288	440	500	730	645	190
Number of values	30	40	23	36	34	61	63	49	71	31	52	47	11	537
Measured values for water year 2003	1,910	2,240	2,890	--	3,250	645	1,270 1,560	--	1,260 1,410	1,570 1,700	--	--	--	--
06470500 James River at LaMoure (period of record, water years 1957-2003)														
Mean	853	974	1,171	1,482	1,318	661	571	812	799	797	762	882	1,167	856
Maximum	1,210	1,300	1,550	2,580	1,780	1,570	987	1,210	1,250	1,280	1,260	1,220	1,570	2,580
Minimum	480	540	890	340	700	185	160	500	170	170	485	480	892	160
Number of values	38	26	11	32	20	43	63	37	31	27	53	28	9	409
Measured values for water year 2003	--	1,280	--	--	--	1,570 938	892 987	1,170	--	1,190	1,260	1,220	--	--

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical constituents in precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 225 precipitation chemistry monitoring sites. This long-term, nationally consistent monitoring program, coupled with ecosystem research, provides critical information toward a national scorecard to evaluate the effectiveness of ongoing and future regulations intended to reduce atmospheric emissions and subsequent impacts to the Nation's land and water resources. Reports and other information on the NADP/NTN Program, as well as all data from the individual sites, can be found at <http://bqs.usgs.gov/acidrain/>.

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 59 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that 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 can be found at <http://water.usgs.gov/nawqa/>.

EXPLANATION OF THE RECORDS

The surface-water records published in this report are for water year 2003 that began October 1, 2002, and ended

September 30, 2003. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data and stage, content, and water-quality data for lakes and reservoirs. The locations of the stations where the data were collected are shown in figures 1 and 2. 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 were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station in this report is assigned a unique identification number. This number 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 is based on geographic location. Generally, the "downstream-order" system is used for regular surface-water stations and the "latitude-longitude" system is used for surface-water stations where only miscellaneous measurements are made.

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 indentation in the "List of Stations" in the front of this report. Each indentation represents one rank. This downstream order and system of indentation 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 06342500, which appears just to the left of the station name, includes the two-digit Part number "06" plus the six-digit downstream-order number "342500." The Part number designates the major river basin; for example, Part "06" is the Missouri River Basin. All records for a drainage basin encompassing more than one State can be arranged in downstream order by assembling pages from the various State reports by station number to include all records in the basin.

Latitude-Longitude System

The identification numbers for 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 sites within a 1-second grid. This site-identification number, once assigned, is a pure number and has no locational 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. 6). During water year 2003, the true latitude and longitude listed in the LOCATION paragraph was changed slightly at some locations. The change was made based on new information and does not signify a change in the gage location unless otherwise noted.

Miscellaneous Site Numbers

In this report, miscellaneous sites also are numbered according to a system based on the location in the public-land classification of the U.S. Bureau of Land Management. This system is used to identify and locate miscellaneous measurement sites on maps that use the public-land classification of the U.S. Bureau of Land Management. The system is illustrated in figure 7. The first number denotes the township north of a base line, the second number denotes the range west of the fifth principal meridian, and the third numeral denotes the section in which the site is located. The letters A, B, C, and D designate, respectively, the northeast, northwest, southwest, and southeast quarter section, quarter-quarter section, and quarter-quarter-quarter section (10-acre tract). For example, site 139-049-15ADC is in the SW¹/₄SE¹/₄NE¹/₄ sec.15, T.139 N., R.049 W. Consecutive terminal numbers are added if more than one site is recorded within a 10-acre tract.

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."

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics, or

perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records. Locations of all complete-record and crest-stage partial-record stations for which data are given in this report are shown in figure 1.

Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consist 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. These 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 consist of a record of stage and of notations regarding factors that may affect the relationship between stage and lake content. These data are used with stage-area and stage-capacity curves or tables to compute water-surface areas and lake storage.

Continuous records of stage are obtained with electronic data loggers that store data on an electronic chip, or with satellite data platforms that store data electronically and transmit the data periodically via satellite to a computer based data processing facility. Measurements of discharge are made with current meters using methods adopted by the U.S. Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, Water-Supply Paper 2175, and the U.S. Geological Survey Techniques of Water-Resources Investigations (TWRI's), Book 3, Chapter A1 through A19 and Book 8, Chapters A2 and B2. The methods are consistent with the American Society for Testing and Materials (ASTM) standards and generally follow the standards of the International Organization for Standards (ISO).

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

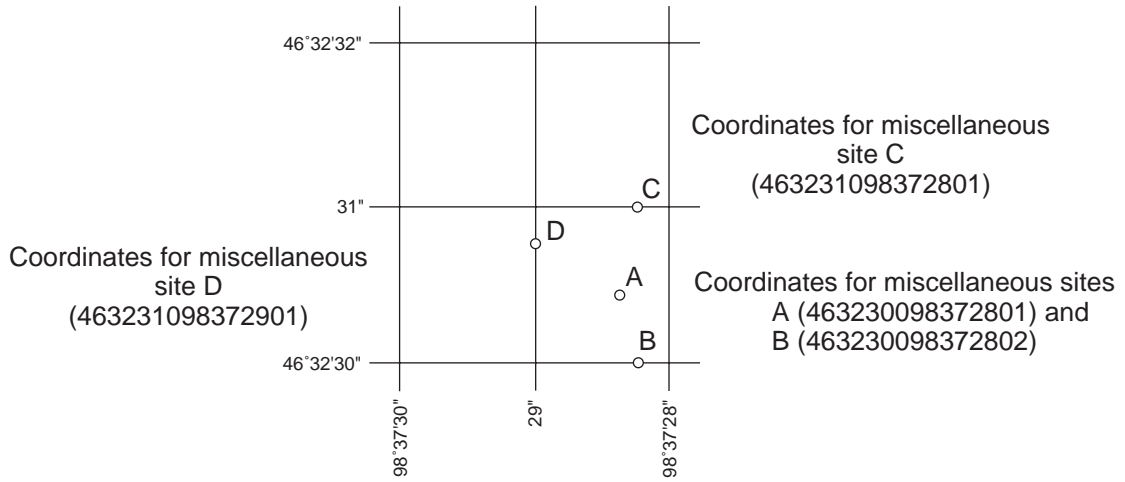


Figure 6. System for numbering miscellaneous sites (latitude and longitude).

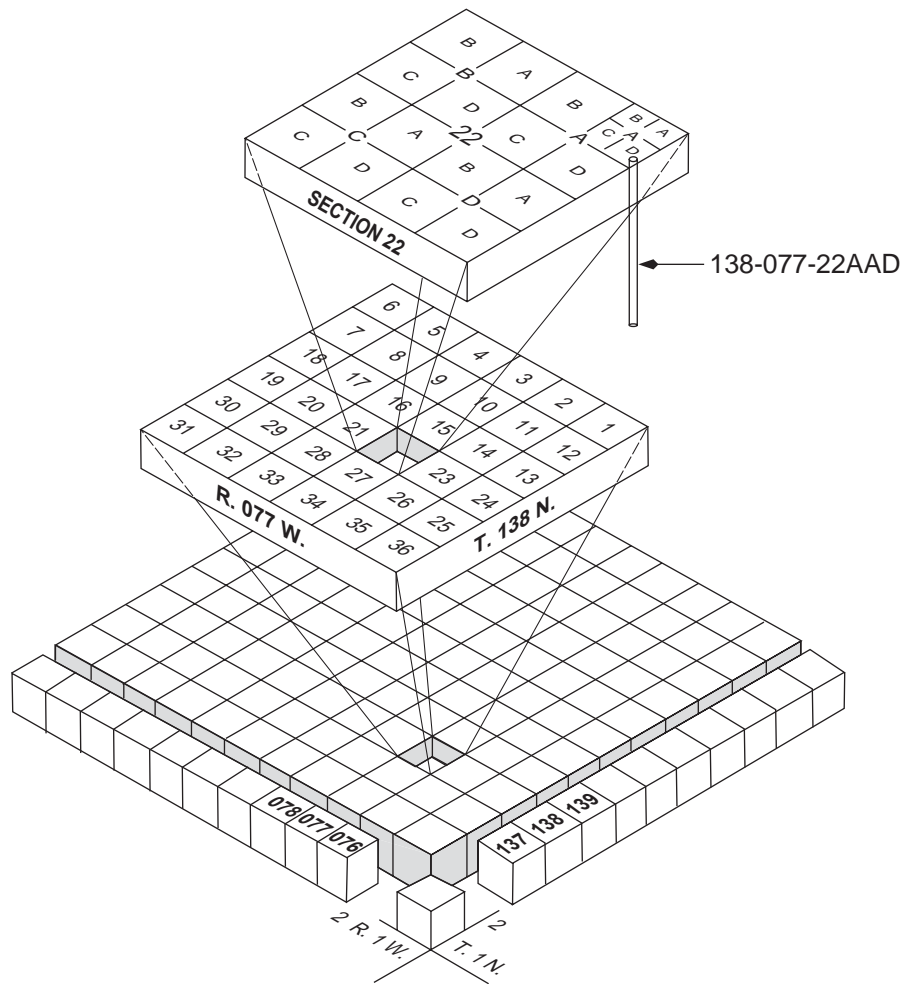


Figure 7. System for numbering miscellaneous sites (township and range).

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.

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 relationship changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relationship. 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 from stage-discharge relationships much as other stream discharges are computed.

For some gaging stations, there are periods when no gage-height record is obtained, or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated from the recorded range in stage, previous or following 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 preferences.

The records published for each continuous-record surface-water discharge station (gaging station) now 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 the 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 gaging station 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 records have been published 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 flow at it can reasonably be considered equivalent to flow at 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 referred to 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 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 U.S. Geological Survey by a cooperating organization are identified here.

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 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. No changes have been made to the data presentations of lake contents.

Data table of daily mean values

The daily table of discharge records for stream-gaging stations gives mean discharge for each day of the water year. In the monthly summary for the table, the line headed "TOTAL" gives the sum of the daily figures for each month; the line headed "MEAN" gives the average flow in cubic feet per second for the month; and the lines headed "MAX" and "MIN" give the maximum and minimum daily mean discharges, respectively, for each 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 or in acre-feet may be omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversion data 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 WATER YEARS ____-____, BY WATER YEAR (WY)," and will list the first and last water years of the range of years selected from 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.

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, "WATER YEARS ____-____," 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. 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.)

MAXIMUM PEAK FLOW.--The maximum instantaneous peak discharge occurring for the water year or designated period. Occasionally the maximum flow for a year may occur at midnight at the beginning or end of the year, on a recession from or rise toward a

higher peak in the adjoining year. In this case, the maximum peak flow is given in the table and the maximum flow may be reported in a footnote or in the REMARKS paragraph in the manuscript.

MAXIMUM PEAK STAGE.--The maximum instantaneous peak stage occurring for the water year or designated period. Occasionally the maximum stage for a year may occur at midnight at the beginning or end of the year, on a recession from or rise toward a higher peak in the adjoining year. In this case, the maximum peak stage is given in the table and the maximum stage may be reported in the REMARKS paragraph in the manuscript or in a footnote. If the dates of occurrence of the maximum peak stage and maximum peak flow are different, the REMARKS paragraph in the manuscript or a footnote may be used to provide further information.

INSTANTANEOUS LOW FLOW.--The maximum 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 use the following unit 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 equal to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

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

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

90 PERCENT EXCEEDS.--The discharge that has been 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 measurements 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 either by flagging individual daily values with the letter symbol "e" and printing a table footnote (e-Estimated) or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

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 ft³/s; to the nearest tenth between 1.0 and 10 ft³/s; to whole numbers between 10 and 1,000 ft³/s; and to 3 significant figures for more than 1,000 ft³/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.

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 the North Dakota District office. 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 office whose address is given on the back of the title page of this report.

Records of Surface-Water Quality

Records of surface-water quality in this report represent a variety of data types and measurement frequencies. Whenever possible, records of surface-water quality are obtained at or near stream-gaging stations because interpretation of surface-water quality and seasonal variation is enhanced by knowledge of corresponding discharge data. Locations of stations for which records on the quality of surface water appear in this report are shown in figure 2.

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 are 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 water-quality data are collected systematically over a period of years, but frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location where samples are collected one time or intermittently to provide better areal coverage for defining water-quality conditions over a broad area in a 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, a series of discrete values punched at short intervals on a paper tape, or electronically stored data from a data logger or satellite data platform. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are 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 2.

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.

Onsite 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, specific conductance, pH, and dissolved oxygen, need to be made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be 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, Chapter D2; Book 3, Chapter A1, A3, and A4; and Book 9, Chapters A1-A9. These references are listed in the "Publications on Techniques of Water-Resources Investigations" section of this report. These methods are consistent with ASTM standards and generally follow ISO standards.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load. All samples obtained for the National Stream Quality Accounting Network (see Definition of Terms) 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 the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly values beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the U.S. Geological Survey North Dakota District office whose address is given on the back of the title page of this report.

Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at the time of discharge measurements for water-discharge stations. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, either mean temperatures or maximum, minimum, and mean temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are published with the water-quality records for each surface-water station in this report.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section. 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. Records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included for some stations.

Laboratory Analyses

Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter ($\mu\text{g/L}$) 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). Present data above the $\mu\text{g/L}$ 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.

Samples for biochemical-oxygen demand (BOD) and samples for indicator bacteria are analyzed locally. Sediment samples are analyzed in the U.S. Geological Survey laboratory in Iowa City, Iowa. All other samples are analyzed in the U.S. Geological Survey laboratory in Arvada, Colo., the North Dakota State Water Commission laboratory in Bismarck, N. Dak., or the North Dakota Department of Health laboratory in Bismarck, N. Dak. 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 laboratory 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, cooperating agencies, and extremes for parameters measured on a daily basis. Tables of chemical, physical, biological, and radiochemical data obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, pH, water temperature, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the stream-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 monitor, 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 U.S. 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 data system, National Water Information System (NWIS), 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.

ACCESS TO USGS WATER DATA

The U.S. Geological Survey 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). These data may be accessed at:

<http://water.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 CD, DVD, 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.)

DEFINITION OF TERMS

Specialized technical terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also table for converting inch/pound units to International System (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).

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 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, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equal to 43,560 cubic feet, 325,851 gallons, or 1,233 cubic meters.

Cubic foot per second per square mile [CFSM, (ft³/s)/mi²] 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.

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.

Bacteria are microscopic unicellular organisms, 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.

Fecal coliform bacteria are bacteria that 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.

Fecal streptococcal bacteria are bacteria found in the intestine of warm-blooded animals. Their presence in water is considered to verify fecal pollution. 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.

Non-ideal colony count (K) is a remark code used in reporting bacteria densities when plate counts fall outside of an ideal range. The lower limit of 20 colonies is set as the number below which statistically valid results become increasingly questionable. The upper limit, which differs according to type of bacteria, represents numbers above which interference from colony crowding, deposition of extraneous material, and other factors appear to result in increasingly questionable results.

Base flow is flow in a channel sustained by ground-water discharge in the absence of direct runoff.

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

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

Bottom material: See “Bed material.”

Cells/volume refers to the number of plankton cells or natural units counted using a microscope and grid or counting cell. Results are generally reported as cells or units per milliliter.

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.

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

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.

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 that meets either of the following conditions:

1. Stage or stream flow are recorded at some interval on a continuous basis. The recording interval is usually 15 minutes, but may be less or more frequent.
2. Water-quality, sediment, or other hydrologic measurements are recorded at least daily.

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 station. 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.

Crest-stage gage is a device for obtaining the elevation of the flood crest of a stream.

Cubic foot per second (CFS, ft³/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, 448.8 gallons per minute, or 0.02832 cubic meters per second.

Cubic foot per second-day (CFS-DAY, Cfs-day, [(ft³/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, 1,9835 acre-feet, 646,317 gallons, or 2,447 cubic meters.

Daily record is a summary of streamflow, sediment, or water-quality values computed from data collected with sufficient frequency to obtain reliable estimates of daily mean values.

Daily record station is a site for which daily records of streamflow, sediment, or water-quality values are computed.

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,” and “National Geodetic Vertical Datum of 1929”)

Discharge, or flow, is the volume of water (or more broadly, volume of fluid including solid- and dissolved-phase material), that passes a given point in a given period of time.

Annual 7-day minimum is the lowest mean discharge for 7 consecutive days in a 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 discharge is the discharge at a particular instant of time.

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

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 agencies that collect water data. Determinations of “dissolved” constituents are made on subsamples of the filtrate.

Dissolved oxygen (DO) content of water in equilibrium with air 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, with small temperature changes having the more significant offset. Photosynthesis and respiration may cause diurnal variations in dissolved-oxygen concentration in water from some streams.

Dissolved-solids concentration of water 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 that analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.4926 to reflect the change. Alternatively, alkalinity concentration (as mg/L CaCO_3) can be converted to carbonate concentration by multiplying by 0.60.

Drainage area of a site on a stream is that area, measured in a horizontal plane, that has a common outlet at the site for its surface runoff. Figures of drainage area 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 is occupied by a drainage system with a common outlet for its surface runoff. (see “Drainage area”)

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 greater 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 referenced to the gage datum. Gage height is often used interchangeably with the more general term “stage,” although gage height is more appropriate when used with a reading on a gage.

Gaging station is a 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.

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

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 U.S. Geological Survey. Each hydrologic unit is identified by an 8-digit number.

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

Micrograms per gram (UG/G, $\mu\text{g/g}$) 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 liter (UG/L, $\mu\text{g/L}$) 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.

Microsiemens per centimeter (US/CM, $\mu\text{S/cm}$) 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.

Miscellaneous site, or miscellaneous station, is a site where streamflow, sediment, and/or water-quality data are collected once, or more often on a random or discontinuous basis.

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>

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.

Normal as related to meteorological data published by the National Weather Service are computed as the average value of a meteorological element over a time period. Effective January 1, 1993, the average period is 1961 to 1990.

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), suspended organic carbon (SOC), or total organic carbon (TOC).

Parameter Code is a 5-digit number used in the U.S. Geological Survey 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 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.

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, or volume.

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.

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

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 $7Q_{10}$.

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

Sea level or "mean sea level" was formerly used in this series of reports to refer to the National Geodetic Vertical Datum of 1929 (NGVD of 1929).

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

Bed load is the sediment that is transported in a stream by rolling, sliding, or skipping along or very close to the bed. In this report, bed load is considered to consist of particles in transit from the bed to an elevation equal to the top of the bed-load sampler nozzle (usually within 0.25 ft of the streambed).

Bed-load discharge (tons per day) is the quantity of sediment moving as bed load, reported as dry weight, that passes a cross section in a given time.

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

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

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

Suspended-sediment discharge (tons/day) is the quantity of sediment moving in suspension, reported as dry weight, 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 (ft³/s) x 0.0027.

Suspended-sediment load is a term that refers to material in suspension. 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.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, reported as dry weight, that passes a cross section in a given time.

Total sediment load or total load is a term that refers to the total sediment (bed load plus suspended-sediment load) that is in transport. 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 total sediment discharge.

Seven-day 10-year low flow ($7Q_{10}$, $7Q_{10}$) is the minimum flow averaged over 7 consecutive days that is expected to occur on average, once in any 10-year period. The $7Q_{10}$ has a 10-percent chance of occurring in any given year.

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. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25 °C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is 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.

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.

Surface area of a lake or impoundment is that area encompassed by the boundary of the lake or impoundment as

shown on U.S. Geological Survey topographic maps, or on other available maps or photographs. The computed surface areas reflect the water levels of the lakes or impoundments at the times when the information for the maps or photographs was obtained.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. It is associated with 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-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 analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative suspended-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 analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term “temperature recorder” is used in the table headings 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

that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot is the dry mass of dissolved solids in 1 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 the rate representing a mass of 1 ton of a constituent in streamflow passing a cross section in 1 day. It is equivalent to 2,000 pounds per day, or 0.9072 metric tons per day.

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

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

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

Total recoverable is the amount of a given constituent that is in solution after a representative suspended-sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the “total” amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of 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.

Turbidity is a measurement of the collective optical properties of a water sample that cause light to be scattered and absorbed rather than transmitted in straight lines; the higher the intensity of scattered light, the higher the turbidity. Turbidity is expressed in nephelometric turbidity units (NTU) or Formazin turbidity units (FTU) depending on the method and equipment used.

Water level is the water-surface elevation or stage of the free surface of a body of water above or below any datum (see “Gage height”), or the surface of water standing in a well, usually indicative of the position of the water table or other potentiometric surface.

Water table is the surface of a ground-water body at which the water is at atmospheric pressure.

Water year in U.S. Geological Survey 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, 2003, is called the “2003 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.

WSP is used as an abbreviation for “Water-Supply Paper” in reference to previously published reports.

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

The USGS publishes a series of manuals titled the “Techniques of Water-Resources Investigations” that describe procedures for planning and conducting specialized work in water-resources investigations. The material in these manuals 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. Each chapter then is limited to a narrow field of the section subject matter. This publication format permits flexibility when revision or printing is required.

Manuals in the Techniques of Water-Resources Investigations series, which are listed below, are available online at <http://water.usgs.gov/pubs/twri/>. Printed copies are available for sale from the USGS, Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (an authorized agent of the Superintendent of Documents, Government Printing Office). Please telephone “1-888-ASK-USGS” for current prices, and refer to the title, book number, section number, chapter number, and mention the “U.S. Geological Survey Techniques of Water-Resources Investigations.” Other products can be viewed online at <http://www.usgs.gov/sales.html>, or ordered by telephone or by FAX to (303)236-4693. Order forms for FAX requests are available online at <http://mac.usgs.gov/isb/pubs/forms/>. Prepayment by major credit card or by a check or money order payable to the “U.S. Geological Survey” is required.

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-A10. *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.
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- 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.
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- 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.

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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 Porter eld: 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.
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Section B. Surface Water

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- 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.
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R.L. Wershaw, M.J. Fishman, R.R. Grabbe, and L.E. Lowe: USGS–TWRI book 5, chap. A3. 1987. 80 p.

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- 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.

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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.
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- 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. A6. 1996. 125 p.
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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.

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- 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.

SURFACE-WATER-DISCHARGE AND SURFACE-WATER-QUALITY RECORDS

Remark Codes

The following remark codes may appear with the water-quality data in this section:

PRINT OUTPUT	REMARK
E	Value is estimated.
>	Actual value is known to be greater than the value shown.
<	Actual value is known to be less than the value shown.
M	Presence of material verified, but not quantified.
N	Presumptive evidence of presence of material.
U	Material specifically analyzed for, but not detected.
A	Value is an average.
V	Analyte was detected in both the environmental sample and the associated blanks.
S	Most probable value.

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 U.S. Geological Survey. These procedures allow for storage of all derived QC data and are identified so that they can be related to corresponding environmental samples.

The dates and times of QC samples are noted in the water quality tables, but the QA data are not displayed. The various types of QA data are available upon request from the U.S. Geological Survey North Dakota District office (see address on back of the title page of this report).

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 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 ($\mu\text{g/L}$) 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 $\mu\text{g/L}$ 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

*NOTE.--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).

RED RIVER OF THE NORTH BASIN

05051500 RED RIVER OF THE NORTH AT WAHPETON, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1942 - 2003	
ANNUAL TOTAL	240,724		211,936			
ANNUAL MEAN	660		581		636	
HIGHEST ANNUAL MEAN					1,600	1997
LOWEST ANNUAL MEAN					54.0	1977
HIGHEST DAILY MEAN	3,300	Jul 12	3,740	Jun 26	12,700	Apr 15, 1997
LOWEST DAILY MEAN	278	Aug 27	82	Sep 24	1.7	Aug 28, 1976
ANNUAL SEVEN-DAY MINIMUM	320	Nov 20	86	Sep 21	1.7	Aug 28, 1976
MAXIMUM PEAK FLOW			3,800	Jun 26	12,800	Apr 15, 1997
MAXIMUM PEAK STAGE			10.72	Jun 26	19.42	Apr 6, 1997
INSTANTANEOUS LOW FLOW					1.7	Aug 28, 1976
ANNUAL RUNOFF (AC-FT)	477,500		420,400		460,400	
10 PERCENT EXCEEDS	1,110		1,040		1,460	
50 PERCENT EXCEEDS	571		377		396	
90 PERCENT EXCEEDS	351		168		110	

e Estimated

05051500 RED RIVER OF THE NORTH AT WAHPETON, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd, mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd, mg/L as N (00610)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite + nitrate water unfltrd, mg/L as N (00630)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Phos- phorus, water, fltrd, mg/L (00666)	Phos- phorus, water, unfltrd, mg/L (00665)	Total nitro- gen, water, fltrd, mg/L (00602)	Total nitro- gen, water, unfltrd, mg/L (00600)	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)
OCT 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
OCT 31...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 31...	435	--	--	--	--	--	--	--	--	--	--	--	--
APR 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 21...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 26...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 16...	--	0.50	0.49	<0.010	<0.010	<0.020	<0.020	0.012	0.017	0.032	0.52	0.51	11.0
SEP 23...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb- denum, water, fltrd, ug/L (01060)	Selen- ium, water, fltrd, ug/L (01145)	Stront- ium, water, fltrd, ug/L (01080)
OCT 03...	--	--	--	--	--	--	--	--	--	--
OCT 31...	--	--	--	--	--	--	--	--	--	--
JAN 07...	--	--	--	--	--	--	--	--	--	--
FEB 06...	--	--	--	--	--	--	--	--	--	--
MAR 31...	--	3.0	20	1	30	20	<0.10	<1	1	210
APR 28...	--	--	--	--	--	--	--	--	--	--
MAY 21...	--	--	--	--	--	--	--	--	--	--
JUN 26...	--	--	--	--	--	--	--	--	--	--
JUN 30...	--	--	--	--	--	--	--	--	--	--
AUG 11...	--	6.3	<10	2	30	40	<0.20	2	<1	230
AUG 28...	--	--	--	--	--	--	--	--	--	--
SEP 16...	<1.0	--	20	--	--	10	--	--	--	--
SEP 23...	--	--	--	--	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

RED RIVER OF THE NORTH BASIN

05051522 RED RIVER OF THE NORTH AT HICKSON, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1975 - 2003	
ANNUAL TOTAL	262,127		233,427		801	
ANNUAL MEAN	718		640		1,772	
HIGHEST ANNUAL MEAN					2001	
LOWEST ANNUAL MEAN					1977	
HIGHEST DAILY MEAN	3,760	Jul 14	4,350	Jun 29	13,100	Apr 15, 1997
LOWEST DAILY MEAN	250	Nov 26	85	Sep 26	0.00	Oct 26, 1976
ANNUAL SEVEN-DAY MINIMUM	303	Nov 22	92	Sep 24	0.00	Oct 26, 1976
MAXIMUM PEAK FLOW			4,390	Jun 29	13,300	Apr 14, 1997
MAXIMUM PEAK STAGE			20.69	Jun 29	37.60	Apr 16, 1997
ANNUAL RUNOFF (AC-FT)	519,900		463,000		580,100	
10 PERCENT EXCEEDS	1,200		1,190		1,820	
50 PERCENT EXCEEDS	593		388		463	
90 PERCENT EXCEEDS	351		203		103	

e Estimated

05051522 RED RIVER OF THE NORTH AT HICKSON, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1976 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Dis-charge, cfs (00060)	Instan- taneous dis- charge, cfs (00061)	Tur- bidity, water, unfltrd field, NTU (61028)	Baro- metric pres- sure, mm Hg (00025)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conduc- tance, wat unfl lab, uS/cm 25 degC (90095)	Specif. conduc- tance, wat unfl uS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)
OCT													
31...	1420	--	396	--	--	--	--	--	--	--	322	--	2.5
JAN													
07...	1425	--	368	--	--	--	--	--	--	--	521	--	0.5
FEB													
06...	1305	--	298	--	--	--	--	--	--	--	541	--	0.0
APR													
07...	1050	--	461	--	--	--	--	9.2	--e	622	619	6.0	4.0
28...	1455	--	881	--	--	--	--	--	--	--	630	12.8	15.0
MAY													
08...	1100	861	--	87	736	10.0	98	8.1	--	--	691	18.5	13.0
21...	1645	--	1,250	--	--	--	--	--	--	--	--	--	--
29...	1045	977	--	80	734	8.2	92	8.3	--	--	680	28.0	19.1
JUN													
12...	1015	747	--	140	729	7.2	83	8.0	--	--	522	22.5	19.8
23...	1100	729	--	92	734	6.4	77	8.0	--	--	505	19.2	22.6
27...	1205	--	3,660	--	--	--	--	--	--	--	416	22.5	19.5
JUL													
01...	1000	3,460	--	140	740	5.3	63	7.6	8.0	502	508	26.0	22.5
02...	1010	--	2,850	--	--	--	--	--	--	--	--	--	--
07...	1000	--	3,330	--	--	--	--	7.6	--	--	508	26.0	22.5
15...	0940	1,920	--	130	743	6.3	78	7.8	--	--	733	21.0	25.0
29...	0945	960	--	95	739	7.6	95	8.0	--	--	511	28.0	24.8
AUG													
11...	1910	--	742	--	--	--	--	--	--	--	644	29.0	26.0
14...	1020	699	--	79	745	7.0	87	8.2	--	--	649	28.5	25.0
26...	1000	179	--	85	740	6.2	77	8.2	--	--	817	20.5	24.5
27...	1600	--	194	--	--	--	--	--	--	--	706	29.0	25.0
SEP													
15...	1215	--	132	34	740	8.0	86	7.6	8.4	623	619	18.1	17.3
22...	1110	118	--	57	739	8.3	87	8.4	--	--	671	11.5	15.8
23...	1535	--	103	--	--	--	--	--	--	--	665	20.5	16.0

05051522 RED RIVER OF THE NORTH AT HICKSON, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sus- pended sedi- ment concen- tration mg/L (80154)	Sus- pended sedi- ment load, tons/d (80155)
OCT		
31...	--	--
JAN		
07...	--	--
FEB		
06...	--	--
APR		
07...	--	--
28...	--	--
MAY		
08...	98	228
21...	--	--
29...	116	306
JUN		
12...	171	345
23...	138	272
27...	--	--
JUL		
01...	204	1,910
02...	--	--
07...	--	--
15...	201	1,040
29...	138	358
AUG		
11...	--	--
14...	95	179
26...	88	43
27...	--	--
SEP		
15...	--	--
22...	66	21
23...	--	--

Remark codes used in this table:
< -- Less than

Null value qualifier codes used in
this table:
e -- Required equipment not
functional/avail

RED RIVER OF THE NORTH BASIN

05051522 RED RIVER OF THE NORTH AT HICKSON, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sample location, cross section ft from rt bank (72103)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conduc-tance, wat unfiltered, uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Location in X-sect. looking dwnstrm ft from l bank (00009)
MAY							
08...	1101	--	10.0	8.0	691	13.0	110
08...	1102	--	10.0	8.1	691	13.0	135
08...	1103	--	9.9	7.8	690	13.0	160
29...	1101	--	8.3	8.3	682	19.1	24.0
29...	1102	--	8.2	8.3	667	19.1	57.0
29...	1103	--	8.2	8.3	680	19.2	80.0
JUN							
12...	1045	--	7.3	8.1	521	19.8	38.0
12...	1048	--	7.2	8.0	522	19.8	64.0
12...	1051	--	7.2	8.0	522	19.8	88.0
23...	1105	--	6.5	8.0	505	22.6	25.0
23...	1106	--	6.4	8.0	505	22.6	55.0
23...	1107	--	6.4	8.0	504	22.6	85.0
JUL							
01...	1021	--	5.3	7.6	507	22.3	45.0
01...	1023	--	5.3	7.6	508	22.3	85.0
01...	1026	--	5.2	7.6	509	22.3	125
15...	0941	42.0	6.4	7.8	733	24.9	--
15...	0942	72.0	6.3	7.8	733	24.9	--
15...	0943	102.0	6.3	7.8	733	24.8	--
29...	0946	--	7.6	7.9	511	24.4	30.0
29...	0947	--	7.5	7.9	511	24.4	60.0
29...	0948	--	7.6	8.0	511	24.4	90.0
AUG							
14...	1021	--	7.0	8.2	647	25.1	50.0
14...	1022	--	6.9	8.2	651	25.1	80.0
14...	1023	--	7.0	8.2	650	25.1	110
26...	1005	--	6.1	8.2	816	24.7	32.0
26...	1006	--	6.2	8.2	817	24.6	57.0
26...	1007	--	6.4	8.2	815	24.6	82.0
SEP							
22...	1125	34.0	8.4	8.3	673	15.8	--
22...	1130	58.0	8.3	8.4	671	15.8	--
22...	1133	82.0	8.4	8.4	673	15.9	--

05051600 WILD RICE RIVER NEAR RUTLAND, ND

LOCATION.--Lat 46°01'20", long 97°30'40", in SE¹₄SE¹₄ sec.36, T.130 N., R.55 W., Sargent County, Hydrologic Unit 09020105, on right bank 1,000 ft upstream from bridge on county highway, 2 mi south of Rutland, and 10 mi upstream from Lake Tewaukon.

DRAINAGE AREA.--546 mi², of which about 250 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1959 to current year (seasonal records only since 1982).

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,197.73 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 11, 1960, nonrecording gage at same site and datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES FOR CURRENT YEAR.-- Maximum discharge, 389 ft³/s, June 27, gage height, 5.41 ft; no flow many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e0.00	3.5	18	39	121	16	0.10
2	---	---	---	---	---	e0.00	e3.2	16	34	88	15	0.22
3	---	---	---	---	---	e0.00	3.1	15	31	71	13	0.14
4	---	---	---	---	---	e0.00	e2.7	20	26	71	13	0.00
5	---	---	---	---	---	e0.00	2.5	21	25	62	12	0.00
6	---	---	---	---	---	e0.00	2.4	32	21	57	11	0.00
7	---	---	---	---	---	e0.00	2.2	35	19	52	11	0.00
8	---	---	---	---	---	e0.00	2.3	37	18	48	11	0.00
9	---	---	---	---	---	e0.00	4.6	44	15	48	10	0.00
10	---	---	---	---	---	e0.00	2.8	49	17	45	12	0.00
11	---	---	---	---	---	e0.00	1.1	48	16	41	11	0.00
12	---	---	---	---	---	e0.00	1.1	48	15	40	9.6	0.00
13	---	---	---	---	---	e0.10	4.5	48	12	38	8.8	0.00
14	---	---	---	---	---	e0.80	1.8	67	10	35	7.9	0.00
15	---	---	---	---	---	e1.4	0.44	77	9.3	33	5.7	0.00
16	---	---	---	---	---	e2.2	9.8	71	8.1	32	4.5	0.00
17	---	---	---	---	---	e4.0	20	64	7.2	31	4.8	0.00
18	---	---	---	---	---	e7.0	27	66	6.5	31	4.8	0.00
19	---	---	---	---	---	e11	39	64	4.9	30	3.5	0.00
20	---	---	---	---	---	e17	46	59	4.6	32	2.9	0.00
21	---	---	---	---	---	19	44	58	4.9	35	1.9	0.00
22	---	---	---	---	---	15	41	54	5.1	37	1.1	0.00
23	---	---	---	---	---	12	39	52	19	34	1.5	0.00
24	---	---	---	---	---	10	36	50	77	32	1.7	0.00
25	---	---	---	---	---	9.5	33	47	142	30	1.1	0.00
26	---	---	---	---	---	7.9	32	45	233	29	0.85	0.00
27	---	---	---	---	---	6.5	28	42	349	26	0.38	0.00
28	---	---	---	---	---	5.0	26	39	367	24	0.81	0.00
29	---	---	---	---	---	3.8	24	37	263	23	0.20	0.00
30	---	---	---	---	---	3.7	21	33	179	e21	0.14	0.00
31	---	---	---	---	---	3.7	---	45	---	e19	0.06	---
TOTAL	---	---	---	---	---	139.60	504.04	1,401	1,977.6	1,316	197.24	0.46
MEAN	---	---	---	---	---	4.50	16.8	45.2	65.9	42.5	6.36	0.015
MAX	---	---	---	---	---	19	46	77	367	121	16	0.22
MIN	---	---	---	---	---	0.00	0.44	15	4.6	19	0.06	0.00
AC-FT	---	---	---	---	---	277	1,000	2,780	3,920	2,610	391	0.9

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2003, BY WATER YEAR (WY)

MEAN	0.54	0.36	0.14	0.004	0.068	25.1	71.3	39.0	23.0	26.9	7.94	6.93
MAX	4.81	5.87	2.90	0.10	1.00	138	756	419	263	379	105	146
(WY)	(1963)	(1963)	(1963)	(1963)	(1976)	(1966)	(1997)	(1998)	(1998)	(1998)	(1998)	(1999)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	(1960)	(1960)	(1960)	(1960)	(1960)	(1965)	(1977)	(1977)	(1973)	(1961)	(1960)	(1960)

05051600 WILD RICE RIVER NEAR RUTLAND, ND—Continued

SUMMARY STATISTICS

WATER YEARS 1960 - 2003

ANNUAL MEAN	8.36	
HIGHEST ANNUAL MEAN	44.8	1969
LOWEST ANNUAL MEAN	0.000	1977
HIGHEST DAILY MEAN	2,540	Apr 4, 1997
LOWEST DAILY MEAN	0.00	Oct 1, 1959
ANNUAL SEVEN-DAY MINIMUM	0.00	Oct 1, 1959
MAXIMUM PEAK FLOW	2,700	Apr 3, 1997
MAXIMUM PEAK STAGE	10.11	Apr 3, 1997
ANNUAL RUNOFF (AC-FT)	6,050	
10 PERCENT EXCEEDS	18	
50 PERCENT EXCEEDS	0.00	
90 PERCENT EXCEEDS	0.00	

e Estimated

05051600 WILD RICE RIVER NEAR RUTLAND, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1997 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
MAR 19...	1015	11	--	--	--	1,950	4.0	0.5	--	--	--	--	--
APR 01...	1550	3.2	--e	7.5	2,050	2,040	9.0	11.0	780	100	130	22.0	3
APR 30...	1115	21	--	--	--	3,370	15.5	12.0	--	--	--	--	--
JUN 19...	1735	4.2	--	--	--	3,560	26.5	27.5	--	--	--	--	--
JUN 25...	1410	142	--	--	--	2,580	20.0	19.5	--	--	--	--	--
JUL 29...	1340	24	8.1	7.8	2,460	2,430	29.0	27.5	1,000	128	174	27.9	3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
MAR 19...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 01...	190	34	205	84.0	0.10	--	920	1,570	14.4	1,660	5.0	10	3
APR 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 19...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 29...	232	32	312	71.4	0.21	27.7	1,000	1,820	118	--	13.0	30	<1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
MAR 19...	--	--	--	--	--	--
APR 01...	170	170	<0.10	2	4	750
APR 30...	--	--	--	--	--	--
JUN 19...	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--
JUL 29...	240	180	<0.20	4	10	920

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

RED RIVER OF THE NORTH BASIN

05052075 WILD RICE RIVER AT GREAT BEND, ND

LOCATION.--Lat 46°09'03", long 96°48'12", in NW¹₄ sec.23, T.131 N., R.49 W., Richland County, Hydrologic Unit 09020105, at bridge on county highway, 0.1 mi south of Great Bend.

DRAINAGE AREA.--Not determined.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March to September 2003 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 947 ft above National Geodetic Vertical Datum of 1929 (from topographic map).

REMARKS.--Records good except for estimated daily discharges, which are poor.

EXTREMES FOR CURRENT YEAR.-- Maximum discharge, 991 ft³/s, June 26, gage height, 22.65 ft; minimum daily discharge, 0.10 ft³/s, Sept. 30, minimum gage height, 9.96 ft, Sept. 3.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e0.80	e13	29	95	363	54	e3.0
2	---	---	---	---	---	e0.60	e12	27	87	340	48	e2.6
3	---	---	---	---	---	e0.60	e11	25	76	325	43	e2.3
4	---	---	---	---	---	e0.50	e10	24	64	324	38	e2.0
5	---	---	---	---	---	e0.50	e9.8	26	63	327	36	e1.8
6	---	---	---	---	---	e0.50	11	40	69	332	33	e1.6
7	---	---	---	---	---	e0.50	11	56	75	340	30	e1.3
8	---	---	---	---	---	e0.50	11	59	83	354	28	e1.0
9	---	---	---	---	---	e0.40	11	60	82	380	27	e0.74
10	---	---	---	---	---	e0.40	11	81	85	412	27	e0.56
11	---	---	---	---	---	e0.40	12	88	128	429	26	e0.40
12	---	---	---	---	---	e0.40	11	81	126	441	23	e0.30
13	---	---	---	---	---	e0.40	13	70	117	446	21	e0.44
14	---	---	---	---	---	e0.70	12	114	87	442	20	e0.36
15	---	---	---	---	---	e1.4	11	183	70	431	18	e0.30
16	---	---	---	---	---	e3.3	17	165	59	413	16	e0.40
17	---	---	---	---	---	e8.2	30	150	55	388	15	e0.58
18	---	---	---	---	---	e13	44	160	51	338	14	e0.60
19	---	---	---	---	---	e17	55	179	49	266	13	e0.58
20	---	---	---	---	---	e25	67	183	42	218	12	e0.60
21	---	---	---	---	---	e17	62	175	34	194	10	e0.56
22	---	---	---	---	---	e15	61	178	55	171	9.8	e0.56
23	---	---	---	---	---	e17	61	182	103	151	9.1	e0.54
24	---	---	---	---	---	e20	56	177	324	137	8.5	e0.42
25	---	---	---	---	---	e23	48	169	829	125	7.6	e0.34
26	---	---	---	---	---	e26	42	159	e910	116	e6.4	e0.28
27	---	---	---	---	---	e28	40	144	e770	103	e5.8	e0.26
28	---	---	---	---	---	e23	35	132	e600	89	e5.0	e0.18
29	---	---	---	---	---	e19	32	122	465	78	e4.4	e0.12
30	---	---	---	---	---	e17	30	111	401	68	e4.0	e0.10
31	---	---	---	---	---	e15	---	103	---	60	e3.4	---
MEAN	---	---	---	---	---	9.52	28.3	111	202	277	19.9	0.83
MAX	---	---	---	---	---	28	67	183	910	446	54	3.0
MIN	---	---	---	---	---	0.40	9.8	24	34	60	3.4	0.10
AC-FT	---	---	---	---	---	585	1,690	6,850	12,010	17,060	1,220	49

e Estimated

RED RIVER OF THE NORTH BASIN
05052500 ANTELOPE CREEK AT DWIGHT, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 2003 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
MAR													
19...	1440	8.4	--	--	--	977	11.0	1.0	--	--	--	--	--
27...	1340	1.9	7.5	7.8	579	600	7.0	0.5	190	42.0	21.0	8.10	1
APR													
22...	1400	5.0	--	--	--	1,250	17.0	13.0	--	--	--	--	--
30...	1545	0.60	--	--	--	1,200	18.0	19.0	--	--	--	--	--
JUN													
24...	1550	77	--	--	--	830	24.0	22.0	--	--	--	--	--
26...	1157	1,350	--	--	--	240	20.0	16.5	--	--	--	--	--
JUL													
08...	1545	9.8	--	--	--	714	23.0	27.0	--	--	--	--	--
AUG													
19...	1655	0.01	7.8	7.7	1,220	1,230	31.5	33.0	580	118	68.7	12.4	1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, 180degC wat flt mg/L (70300)	Residue water, fltrd, tons/d (70302)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
MAR													
19...	--	--	--	--	--	--	--	--	--	--	--	--	--
27...	42.0	31	111	33.0	0.20	--	140	354	1.86	368	3.0	50	1
APR													
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN													
24...	--	--	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
08...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG													
19...	67.3	20	284	40.0	0.32	17.1	342	821	0.02	--	16.5	10	<1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
MAR						
19...	--	--	--	--	--	--
27...	40	310	0.20	<1	1	250
APR						
22...	--	--	--	--	--	--
30...	--	--	--	--	--	--
JUN						
24...	--	--	--	--	--	--
26...	--	--	--	--	--	--
JUL						
08...	--	--	--	--	--	--
AUG						
19...	100	210	<0.20	5	8	590

Remark codes used in this table:
< -- Less than

05053000 WILD RICE RIVER NEAR ABERCROMBIE, ND

LOCATION.--Lat 46°28'05", long 96°47'00", in NE¹₄NE¹₄ sec.36, T.135 N., R.49 W., Richland County, Hydrologic Unit 09020105, on right bank 420 ft upstream from bridge on county highway, 0.75 mi upstream from rubble masonry dam which serves as control, 3.2 mi northwest of Abercrombie, and 7 mi downstream from Antelope Creek.

DRAINAGE AREA.--2,080 mi², of which about 590 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1932 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1388: 1939, 1941(M), WSP 1728: Drainage area.

GAGE.--Water-stage recorder and masonry control. Datum of gage is 907.94 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 7, 1939, nonrecording gage at site 420 ft downstream at datum 5.0 ft lower. Dec. 7, 1939, to Nov. 24, 1952, nonrecording gage at site 0.75 mi downstream at present datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. Some regulation by Fish and Wildlife Service reservoirs, of which Lake Tewaukon is the largest. Some small diversions for irrigation.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in spring of 1897 reached a stage of 27.5 ft, present site and datum, from floodmarks pointed out by local residents.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	20	8.0	5.0	3.1	e1.0	37	34	109	1,400	67	1.9
2	0.97	9.4	7.4	5.1	3.1	e0.95	31	28	102	886	60	1.4
3	0.97	8.1	6.4	5.1	e3.1	e0.93	22	26	96	511	55	1.2
4	1.1	8.2	6.2	4.9	e3.0	e0.87	17	25	90	407	50	1.0
5	1.1	8.7	5.9	5.3	e3.0	e0.83	15	26	81	366	48	1.0
6	1.7	8.5	5.9	5.2	e2.8	e0.77	15	28	73	345	44	0.92
7	1.8	8.7	5.9	5.2	e2.7	e0.73	16	27	68	333	41	0.76
8	1.8	8.3	5.9	5.3	e2.7	e0.70	16	28	76	331	38	0.56
9	1.8	8.0	5.8	5.8	e2.6	e0.68	16	46	79	347	37	0.42
10	1.9	8.1	5.8	5.8	e2.6	e0.68	16	71	89	667	36	0.38
11	1.8	8.0	5.9	5.5	e2.6	e0.68	15	76	91	905	34	0.29
12	1.8	9.2	5.9	5.3	e2.5	e0.68	14	82	89	707	33	0.24
13	10	8.2	5.9	4.5	e2.3	e0.68	13	95	e130	552	32	0.39
14	11	9.0	6.1	e4.1	e2.2	e0.70	16	124	e130	484	30	0.34
15	10	9.2	5.9	e3.8	e2.2	e0.78	17	175	e110	459	28	0.32
16	12	8.9	5.9	e3.7	e2.1	e0.90	23	190	86	445	26	0.24
17	17	9.0	5.9	e3.6	e2.1	e1.4	30	222	79	429	24	0.32
18	17	9.0	5.9	e3.5	e2.1	e2.5	33	206	67	413	22	0.66
19	14	9.3	6.0	e3.5	e2.0	e10	47	181	58	387	19	0.52
20	12	9.6	6.1	e3.5	e1.9	e20	71	174	51	336	17	0.43
21	11	9.8	6.2	e3.2	e1.8	e24	83	194	48	261	16	0.50
22	11	9.8	6.4	e3.0	e1.7	27	102	198	51	210	14	0.42
23	10	9.4	6.5	e2.9	e1.6	31	92	184	49	180	12	0.44
24	9.1	8.0	6.5	e2.9	e1.5	41	76	176	158	158	10	0.35
25	8.1	8.7	6.0	e2.9	e1.5	41	70	176	979	138	8.9	0.32
26	8.2	8.9	5.6	e2.9	e1.4	45	63	173	1,630	124	6.6	0.28
27	10	9.1	5.3	e3.0	e1.3	61	56	165	e2,100	114	4.6	0.24
28	11	9.1	5.4	e3.1	e1.1	42	47	158	e2,200	103	3.8	0.22
29	12	9.0	5.4	e3.2	---	31	42	145	e2,050	94	3.4	0.18
30	14	8.4	5.4	3.2	---	31	38	133	1,770	85	2.9	0.15
31	15	---	5.3	3.0	---	47	---	120	---	74	2.4	---
TOTAL	240.14	275.6	186.7	127.0	62.6	467.46	1,149	3,686	12,789	12,251	825.6	16.39
MEAN	7.75	9.19	6.02	4.10	2.24	15.1	38.3	119	426	395	26.6	0.55
MAX	17	20	8.0	5.8	3.1	61	102	222	2,200	1,400	67	1.9
MIN	0.97	8.0	5.3	2.9	1.1	0.68	13	25	48	74	2.4	0.15
AC-FT	476	547	370	252	124	927	2,280	7,310	25,370	24,300	1,640	33

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 2003, BY WATER YEAR (WY)

MEAN	12.8	9.58	6.77	2.76	6.39	166	510	160	119	143	32.1	18.3
MAX	146	111	188	72.8	210	1,195	5,510	1,246	929	1,787	462	438
(WY)	(1999)	(1999)	(1999)	(1999)	(1998)	(1995)	(1997)	(1998)	(1962)	(1962)	(1993)	(1999)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	2.81	0.11	0.085	0.000	0.000	0.000
(WY)	(1933)	(1933)	(1933)	(1933)	(1934)	(1937)	(1991)	(1934)	(1988)	(1933)	(1932)	(1932)

RED RIVER OF THE NORTH BASIN

05053000 WILD RICE RIVER NEAR ABERCROMBIE, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1932 - 2003	
ANNUAL TOTAL	14,941.26		32,076.49			
ANNUAL MEAN	40.9		87.9		99.5	
HIGHEST ANNUAL MEAN					560	1997
LOWEST ANNUAL MEAN					0.48	1934
HIGHEST DAILY MEAN	989	Jul 12	2,200	Jun 28	9,450	Apr 16, 1997
LOWEST DAILY MEAN	0.80	Sep 30	0.15	Sep 30	0.00	Jul 26, 1932
ANNUAL SEVEN-DAY MINIMUM	0.97	Sep 27	0.25	Sep 24	0.00	Jul 26, 1932
MAXIMUM PEAK FLOW			2,250	Jun 28	a9,540	Apr 11, 1969
MAXIMUM PEAK STAGE			b12.69	Jun 28	c26.59	Apr 6, 1997
ANNUAL RUNOFF (AC-FT)	29,640		63,620		72,100	
10 PERCENT EXCEEDS	87		178		189	
50 PERCENT EXCEEDS	15		9.2		3.1	
90 PERCENT EXCEEDS	4.3		0.89		0.00	

- a Gage height, 24.58 ft
- b From floodmark
- c Backwater from ice
- e Estimated

05053000 WILD RICE RIVER NEAR ABERCROMBIE, ND—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specific conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specific conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
NOV 01...	0945	23	--	--	--	--	--	--	--	1,620	0.5	1.0	--
DEC 19...	1200	5.9	--	--	--	--	--	--	--	2,000	2.0	0.5	--
JAN 30...	1425	2.7	--	--	--	--	--	--	--	3,750	1.5	0.5	--
MAR 13...	1425	0.69	--	--	--	--	--	--	--	3,520	--	0.5	--
MAR 28...	1315	36	--	--	--	--	7.9	7.8	561	556	7.0	0.5	200
MAY 01...	1440	34	--	--	--	--	--	--	--	1,530	21.0	15.5	--
JUN 24...	1355	98	--	--	--	--	--	--	--	2,210	23.5	22.0	--
JUN 27...	1000	2,130	--	--	--	--	--	--	--	382	19.5	18.0	--
JUN 30...	1450	1,690	--	--	--	--	--	--	--	--	--	--	--
JUL 08...	1320	335	--	--	--	--	--	--	--	--	25.5	25.5	--
AUG 19...	1325	20	--	--	--	--	8.0	8.0	1,940	--e	30.5	28.5	850
SEP 17...	0835	0.20	20	732	6.9	77	7.8	8.4	2,060	2,100	20.8	18.5	900

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)
NOV 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 19...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 28...	44.0	23.0	7.70	1	41.0	29	126	22.0	0.20	--	130	344	33.5
MAY 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 24...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 08...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 19...	150	114	21.1	2	155	28	336	55.6	0.30	25.0	706	1,410	76.8
SEP 17...	157	123	20.8	3	174	29	359	62.4	--	--	741	1,490	0.81

05053000 WILD RICE RIVER NEAR ABERCROMBIE, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd, mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd, mg/L as N (00610)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite + nitrate water unfltrd, mg/L as N (00630)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd, mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd, mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)
NOV 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 19...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 28...	347	--	--	--	--	--	--	--	--	--	--	--	--
MAY 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 24...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 08...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 19...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 17...	--	1.2	1.2	<0.010	<0.010	<0.020	<0.020	0.126	0.151	0.194	1.2	1.2	19.2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
NOV 01...	--	--	--	--	--	--	--	--	--	--
DEC 19...	--	--	--	--	--	--	--	--	--	--
JAN 30...	--	--	--	--	--	--	--	--	--	--
MAR 13...	--	--	--	--	--	--	--	--	--	--
MAR 28...	--	3.0	70	1	30	160	<0.10	<1	1	240
MAY 01...	--	--	--	--	--	--	--	--	--	--
JUN 24...	--	--	--	--	--	--	--	--	--	--
JUN 27...	--	--	--	--	--	--	--	--	--	--
JUN 30...	--	--	--	--	--	--	--	--	--	--
JUL 08...	--	--	--	--	--	--	--	--	--	--
AUG 19...	--	20.9	20	<1	160	410	<0.20	9	9	820
SEP 17...	<0.5	--	30	--	--	450	--	--	--	--

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

05054000 RED RIVER OF THE NORTH AT FARGO, ND

LOCATION.--Lat 46°51'40", long 96°47'00", in NW¹₄NE¹₄ sec.18, T.139 N., R.48 W., Cass County, Hydrologic Unit 09020104, at waterplant on 4th Street South in Fargo, 25 mi upstream from mouth of Sheyenne River, and at mile 453.

DRAINAGE AREA.--6,800 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1901 to current year. Published as "at Moorhead, MN.", 1901. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1902-4, 1906-7, 1910-14, 1916, 1918, 1924. WSP 1388: 1905-6, 1917-20(M), 1935(M), 1938-39(M), 1943.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 861.8 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1960, to Sept. 30, 1962, water-stage recorder at present site at datum 5.6 ft higher. See WSP 1728 or 1913 for history of changes prior to Oct. 1, 1960.

REMARKS.--Records good except for periods where discharge is less than 200 ft³/s, which are fair and for estimated daily discharges, which are poor. Flow regulated by; Orwell Reservoir, flood storage capacity, 13,300 acre-ft at elevation 1,070 ft above mean sea level, adjustment of 1912; Mud Lake, flood storage capacity, 78,600 acre-ft at elevation 981 ft above mean sea level, adjustment of 1912; Lake Traverse, flood storage capacity, 75,100 acre-ft at elevation 981 ft above mean sea level, adjustment of 1912; and numerous other controlled lakes and ponds and several powerplants. Figures of daily discharge do not include diversions to cities of Fargo and Moorhead, MN, from the Sheyenne River.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 7, 1897, reached a stage of 39.1 ft present datum, discharge, 25,000 ft³/s at site 1.5 mi downstream.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	360	418	e385	e350	e365	e320	648	854	916	6,500	908	187
2	372	394	e370	e335	e355	e330	589	794	876	5,930	934	175
3	377	377	e355	e340	e350	e310	608	744	824	4,950	904	126
4	391	404	e345	e355	e340	e305	579	753	796	3,760	864	107
5	388	388	e340	e365	e330	e305	468	800	784	3,150	850	97
6	453	374	e345	e365	e315	e305	417	871	916	2,920	814	95
7	421	375	e345	e365	e300	e305	413	806	808	2,760	786	88
8	427	376	e345	e365	e325	e305	496	773	717	2,610	771	84
9	434	382	e360	e360	e330	e305	551	979	699	2,660	756	86
10	432	388	e375	e360	e330	e305	532	1,020	741	2,540	754	95
11	448	389	e380	e355	e330	e305	516	1,000	724	2,780	718	90
12	437	383	e380	e340	e330	e305	539	1,010	847	3,090	724	88
13	424	384	e380	e307	e330	e305	544	1,040	755	3,110	703	154
14	405	374	e380	e330	e330	e300	498	1,120	700	3,020	685	110
15	397	291	e380	e360	e330	e310	484	1,210	671	2,900	660	105
16	399	e280	e380	e375	e340	e335	538	1,330	672	2,780	581	104
17	407	281	e380	e375	e360	e410	620	1,410	661	2,660	497	116
18	425	295	e380	e345	e370	e630	722	1,390	645	2,550	467	169
19	409	357	e375	e325	e370	e740	1,060	1,430	670	2,470	434	143
20	419	439	e370	e315	e355	e780	1,310	1,390	650	2,330	360	159
21	421	467	e365	e310	e345	e800	1,670	1,390	606	1,960	229	190
22	425	422	e360	e310	e330	e800	1,780	1,330	820	1,630	142	149
23	433	388	e350	e320	e310	e770	1,540	1,270	2,130	1,470	127	89
24	423	334	e340	e330	e305	e740	1,310	1,240	1,670	1,390	170	63
25	409	e325	e330	e330	e305	e820	1,140	1,190	2,340	1,260	e180	51
26	413	e280	e310	e325	e310	e940	1,030	1,150	3,370	1,170	e165	48
27	421	261	e330	e325	e325	948	e960	1,120	4,440	1,160	143	46
28	437	279	e350	e325	e330	948	e900	1,090	5,720	1,120	146	48
29	436	326	e370	e350	---	882	885	1,070	6,480	1,070	132	52
30	431	e365	e380	e360	---	799	886	1,050	6,680	1,050	154	61
31	425	---	e365	e365	---	712	---	991	---	933	171	---
TOTAL	12,899	10,796	11,200	10,637	9,345	16,674	24,233	33,615	49,328	79,683	15,929	3,175
MEAN	416	360	361	343	334	538	808	1,084	1,644	2,570	514	106
MAX	453	467	385	375	370	948	1,780	1,430	6,680	6,500	934	190
MIN	360	261	310	307	300	300	413	744	606	933	127	46
AC-FT	25,590	21,410	22,220	21,100	18,540	33,070	48,070	66,680	97,840	158,100	31,600	6,300
+	1,300	1,240	1,230	1,290	1,180	1,300	1,240	860	1,340	1,520	1,940	1,680
*	26,890	22,650	23,450	22,390	19,720	34,370	49,310	67,540	99,180	159,620	33,540	7,980

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1901 - 2003, BY WATER YEAR (WY)

MEAN	335	297	254	230	242	788	2,002	1,167	1,100	946	449	342
MAX	1,741	942	1,261	740	1,353	4,722	17,920	5,365	5,122	5,692	3,293	2,280
(WY)	(1994)	(1907)	(1999)	(1986)	(1998)	(1995)	(1997)	(1997)	(1962)	(1962)	(1993)	(1993)
MIN	0.000	0.000	0.000	0.000	0.18	26.8	102	8.12	2.87	0.000	0.000	0.000
(WY)	(1935)	(1937)	(1938)	(1933)	(1933)	(1937)	(1934)	(1934)	(1936)	(1934)	(1932)	(1934)

RED RIVER OF THE NORTH BASIN

05054000 RED RIVER OF THE NORTH AT FARGO, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1901 - 2003	
ANNUAL TOTAL	324,847		277,514		681	
ANNUAL MEAN	890	*(911)	760	*(782)	2,619	1997
HIGHEST ANNUAL MEAN					17.5	1934
LOWEST ANNUAL MEAN					27,800	Apr 17, 1997
HIGHEST DAILY MEAN	4,210	Jul 13	6,680	Jun 30	0.00	Jul 25, 1932
LOWEST DAILY MEAN	261	Nov 27	46	Sep 27	0.00	Jul 25, 1932
ANNUAL SEVEN-DAY MINIMUM	310	Nov 24	53	Sep 24	28,000	Apr 17, 1997
MAXIMUM PEAK FLOW			6,710	Jun 30	39.72	Apr 18, 1997
MAXIMUM PEAK STAGE			22.63	Jun 30		
ANNUAL RUNOFF (AC-FT)	644,300	*(660,100)	550,400	*(566,600)	493,200	
10 PERCENT EXCEEDS	1,520		1,400		1,520	
50 PERCENT EXCEEDS	755		407		335	
90 PERCENT EXCEEDS	375		173		43	

+ Diversions in acre-ft to cities of Fargo and Moorhead

* Adjusted for diversions to cities of Fargo and Moorhead

e Estimated

05054000 RED RIVER OF THE NORTH AT FARGO, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1956 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: September 1998 to current year.

SPECIFIC CONDUCTANCE: September 1998 to current year.

INSTRUMENTATION.--Water-quality sensors since September 1998.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 30.1°C, Aug. 6-7, 2001; minimum recorded, -0.4°C on many days.

SPECIFIC CONDUCTANCE: Maximum recorded, 1,330 microsiemens, July 19, 2001; minimum recorded, 315 microsiemens, June 20 and 22, 2000.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 28.4°C, Aug. 19-20; minimum recorded, -0.2°C on several days in February, March, and April.

SPECIFIC CONDUCTANCE: Maximum recorded, 962 microsiemens, May 31; minimum recorded, 328 microsiemens, June 24.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Dis-charge, cfs (00060)	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dis-solved oxygen, mg/L (00300)	Dis-solved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unf lab, uS/cm 25 degC (90095)	Specif. conduc-tance, wat unf 25 degC (00095)	Temper-ature, air, deg C (00020)	Temper-ature, water, deg C (00010)
NOV													
19...	1120	--	350	--	--	--	--	--	--	--	--	--	--
JAN													
07...	1700	--	366	--	--	--	--	--	--	--	570	--	0.0
FEB													
05...	1810	--	328	--	--	--	--	--	--	--	622	--	0.0
MAR													
14...	1105	--	300	--	--	--	--	--	--	--	600	--	5.0
APR													
07...	1325	--	394	--	--	--	--	--e	8.4	600	604	12.5	5.5
28...	1740	--	869	--	--	--	--	--	--	--	750	13.0	15.0
MAY													
08...	1330	773	--	78	736	9.7	98	8.3	--	--	694	19.0	14.0
22...	0920	--	1,310	--	--	--	--	--	--	--	889	12.5	16.0
29...	1345	1,070	--	75	731	8.4	95	8.2	--	--	947	30.0	19.3
JUN													
12...	1245	847	--	100	730	7.4	85	8.1	--	--	748	23.5	20.0
23...	1345	2,130	--	810	734	6.2	73	8.1	--	--	464	24.2	21.6
30...	1125	--	6,660	--	--	--	--	--	--	--	426	24.0	20.0
JUL													
01...	1215	6,500	--	300	739	5.0	58	7.6	7.8	442	447	29.5	21.0
15...	1200	2,900	--	--	744	6.6	81	7.8	--	--	890	24.0	24.2
29...	1145	1,070	--	79	739	7.6	95	8.1	--	--	645	29.5	25.0
AUG													
12...	0900	--	694	--	--	--	--	--	--	--	683	20.5	25.5
14...	1250	685	--	63	746	7.6	95	8.3	--	--	690	32.0	25.5
26...	1400	E165	--	--	742	4.7	60	8.0	--	--	717	30.5	26.0
27...	1345	--	142	--	--	--	--	--	--	--	739	26.0	25.5
SEP													
15...	1640	--	118	--	--	--	--	--	--	--	--	--	--
16...	1545	--	117	31	735	8.6	97	7.9	8.4	655	656	27.0	19.3
22...	1240	149	--	58	739	8.4	88	8.3	--	--	773	11.0	16.1

05054000 RED RIVER OF THE NORTH AT FARGO, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Organic nitro- gen, water, unfltrd mg/L (00605)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Phos- phorus, water, fltrd, mg/L (00666)	Phos- phorus, water, unfltrd mg/L (00665)	Total nitro- gen, water, fltrd, mg/L (00602)
NOV 19...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 05...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 14...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 07...	403	379	--	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 08...	--	--	--	0.65	--	0.056	--	0.280	0.60	--	--	0.080	--
22...	--	--	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	0.66	--	<0.010	--	0.030	--	--	--	0.081	--
JUN 12...	--	--	--	0.94	--	0.065	--	0.180	0.88	--	--	0.093	--
23...	--	--	--	0.53	--	0.142	--	0.420	0.39	--	--	0.521	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 01...	4,950	--	--	0.65	--	0.117	--	0.570	0.53	--	--	0.364	--
15...	--	--	--	0.69	--	<0.010	--	0.430	--	--	--	0.424	--
29...	--	--	--	0.60	--	<0.010	--	0.130	--	--	--	0.222	--
AUG 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	0.70	--	<0.010	--	0.050	--	--	--	0.219	--
26...	--	--	--	0.58	--	<0.010	--	<0.020	--	--	--	0.167	--
27...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 15...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	117	--	0.61	0.53	<0.010	<0.010	0.050	0.050	--	0.145	0.137	0.185	0.66
22...	--	--	--	0.55	--	<0.010	--	0.040	--	--	--	0.216	--

05054000 RED RIVER OF THE NORTH AT FARGO, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sus- pended sedi- ment concen- tration mg/L (80154)	Sus- pended sedi- ment load, tons/d (80155)
NOV		
19...	--	--
JAN		
07...	--	--
FEB		
05...	--	--
MAR		
14...	--	--
APR		
07...	--	--
28...	--	--
MAY		
08...	92	192
22...	--	--
29...	72	208
JUN		
12...	79	181
23...	364	2,090
30...	--	--
JUL		
01...	625	11,000
15...	231	1,810
29...	106	306
AUG		
12...	--	--
14...	73	135
26...	111	--
27...	--	--
SEP		
15...	--	--
16...	--	--
22...	46	19

Remark codes used in this table:

< -- Less than

E -- Estimated value

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

RED RIVER OF THE NORTH BASIN

05054000 RED RIVER OF THE NORTH AT FARGO, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Sam- pling depth, meters (00098)	Tur- bidity, water, unfltrd field, NTU (61028)	Dis- solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conduc- tance, wat un- f uS/cm 25 degC (00095)	Temper- ature, water, deg C (00010)	Loca- tion in X-sect. looking dwnstrm ft from l bank (00009)
MAY								
08...	1331	--	76	9.7	8.4	695	14.1	45.0
08...	1332	--	78	9.7	8.3	694	14.1	90.0
08...	1333	--	75	9.6	8.2	689	14.1	135
29...	1308	--	70	8.5	8.3	944	19.3	45.0
29...	1311	--	75	8.4	8.2	947	19.3	90.0
29...	1314	--	72	8.4	8.2	944	19.3	135
JUN								
12...	1308	1.0	89	7.5	8.1	745	20.0	55.0
12...	1311	1.0	100	7.4	8.1	748	20.0	100
12...	1314	1.0	79	7.4	8.1	749	20.0	145
23...	1350	--	820	6.2	8.1	464	21.6	35.0
23...	1351	--	810	6.2	8.1	464	21.6	70.0
23...	1352	--	790	6.1	8.1	463	21.6	105
JUL								
01...	1220	--	300	5.0	7.6	447	21.2	40.0
01...	1222	--	300	5.0	7.6	447	21.2	80.0
01...	1224	--	300	4.9	7.6	447	21.2	120
15...	1201	--	170	6.8	7.8	888	24.2	40.0
15...	1202	--	180	6.6	7.8	890	24.2	70.0
15...	1203	--	170	6.6	7.8	882	24.2	100
29...	1146	--	82	7.7	8.1	638	24.9	30.0
29...	1147	--	77	7.6	8.1	650	24.9	60.0
29...	1148	--	78	7.6	8.0	647	24.9	90.0
AUG								
14...	1251	--	64	7.7	8.3	690	25.5	24.0
14...	1252	--	63	7.6	8.3	690	25.5	54.0
14...	1253	--	63	7.5	8.3	690	25.5	84.0
26...	1405	--	75	4.8	7.9	716	26.2	31.0
26...	1406	--	77	4.7	8.0	717	26.2	61.0
26...	1407	--	80	4.7	8.0	716	26.2	91.0
SEP								
22...	1215	--	58	8.2	8.3	773	16.1	90.0
22...	1220	--	58	8.4	8.3	773	16.1	60.0
22...	1225	--	65	8.4	8.3	772	16.1	30.0

05054000 RED RIVER OF THE NORTH AT FARGO, ND—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	13.4	12.7	13.1	2.1	1.8	1.9	0.1	0.0	0.1	-0.1	-0.1	-0.1
2	12.7	12.3	12.4	1.8	1.5	1.7	0.1	0.0	0.1	-0.1	-0.1	-0.1
3	12.3	12.1	12.2	1.7	1.2	1.4	0.1	0.0	0.0	-0.1	-0.1	-0.1
4	12.2	11.8	12.0	1.3	1.1	1.2	0.0	0.0	0.0	-0.1	-0.1	-0.1
5	11.8	11.3	11.6	1.2	1.0	1.1	0.0	0.0	0.0	-0.1	-0.1	-0.1
6	11.6	11.1	11.3	1.0	0.7	0.8	0.0	0.0	0.0	-0.1	-0.1	-0.1
7	11.2	10.8	11.0	1.1	0.5	0.8	0.0	0.0	0.0	-0.1	-0.1	-0.1
8	11.1	10.7	10.8	1.2	0.9	1.1	0.0	0.0	0.0	0.0	-0.1	-0.1
9	10.7	9.9	10.2	1.4	1.0	1.2	0.0	0.0	0.0	-0.1	-0.1	-0.1
10	10.3	9.8	10.0	1.4	1.0	1.2	0.0	0.0	0.0	-0.1	-0.1	-0.1
11	10.8	10.1	10.5	1.1	0.9	1.0	0.0	0.0	0.0	-0.1	-0.1	-0.1
12	10.8	9.8	10.3	1.2	0.9	1.0	0.0	0.0	0.0	-0.1	-0.1	-0.1
13	9.8	9.1	9.5	1.1	0.6	0.8	0.0	0.0	0.0	-0.1	-0.1	-0.1
14	9.7	9.2	9.4	0.6	0.4	0.5	0.0	0.0	0.0	-0.1	-0.1	-0.1
15	9.6	8.7	9.1	0.5	0.3	0.4	0.0	0.0	0.0	-0.1	-0.1	-0.1
16	8.7	8.1	8.2	0.4	0.3	0.3	0.0	0.0	0.0	-0.1	-0.1	-0.1
17	8.2	7.8	7.9	0.4	0.2	0.3	0.0	0.0	0.0	-0.1	-0.1	-0.1
18	7.8	7.0	7.4	0.5	0.2	0.3	0.0	0.0	0.0	-0.1	-0.1	-0.1
19	7.0	6.3	6.6	0.4	0.2	0.3	0.0	0.0	0.0	-0.1	-0.1	-0.1
20	6.3	5.8	6.0	0.4	0.2	0.3	0.0	0.0	0.0	-0.1	-0.1	-0.1
21	5.8	5.5	5.7	0.5	0.4	0.4	0.0	-0.1	0.0	-0.1	-0.1	-0.1
22	5.5	5.0	5.2	0.4	0.3	0.4	0.0	-0.1	0.0	-0.1	-0.1	-0.1
23	5.0	4.6	4.8	0.4	0.0	0.2	0.0	-0.1	-0.1	-0.1	-0.1	-0.1
24	4.6	4.1	4.3	0.2	0.0	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1
25	4.1	3.8	3.9	0.1	0.0	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1
26	3.8	3.4	3.6	0.3	0.1	0.2	0.0	-0.1	-0.1	-0.1	-0.1	-0.1
27	3.5	3.3	3.4	0.3	0.1	0.2	0.0	-0.1	-0.1	-0.1	-0.1	-0.1
28	3.5	3.3	3.4	0.3	0.1	0.2	0.0	-0.1	-0.1	-0.1	-0.1	-0.1
29	3.6	3.2	3.5	0.3	0.2	0.2	0.0	-0.1	-0.1	-0.1	-0.1	-0.1
30	3.2	2.6	2.8	0.2	0.1	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1
31	2.6	2.1	2.3	---	---	---	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
MONTH	13.4	2.1	7.8	2.1	0.0	0.7	0.1	-0.1	0.0	0.0	-0.1	-0.1
DAY	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	---	---	0.1	15.4	14.9	15.1
2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.3	0.0	0.1	15.2	14.6	14.9
3	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.4	-0.2	-0.1	15.1	14.6	14.8
4	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	1.8	-0.2	0.3	14.9	14.2	14.7
5	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	3.7	1.8	3.0	14.2	13.3	13.9
6	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	4.7	3.5	4.0	13.3	12.9	13.0
7	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	5.1	4.3	4.7	14.2	12.7	13.4
8	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	5.7	4.2	5.0	14.5	13.7	14.1
9	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	6.6	4.9	5.8	14.3	13.2	13.7
10	-0.1	-0.2	-0.1	-0.1	-0.1	-0.1	7.7	5.9	6.7	13.2	12.4	12.9
11	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	8.8	7.0	7.7	12.6	11.7	12.2
12	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	9.9	8.2	8.9	13.5	12.2	12.8
13	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	11.3	9.4	10.2	13.5	12.9	13.3
14	-0.1	-0.1	-0.1	0.0	-0.1	-0.1	12.6	10.9	11.6	13.5	13.0	13.3
15	-0.1	-0.1	-0.1	0.1	-0.1	0.0	13.1	11.8	12.4	---	---	---
16	-0.1	-0.1	-0.1	0.1	-0.1	0.0	12.7	11.3	12.0	---	---	---
17	-0.1	-0.1	-0.1	0.2	-0.1	0.0	11.3	10.4	10.8	---	---	---
18	-0.1	-0.1	-0.1	0.0	-0.1	-0.1	10.8	10.1	10.6	---	---	---
19	-0.1	-0.1	-0.1	0.1	-0.1	-0.1	10.1	9.5	9.8	---	---	---
20	-0.1	-0.1	-0.1	0.0	-0.1	-0.1	9.5	8.2	8.9	---	---	---
21	-0.1	-0.1	-0.1	0.1	-0.1	0.0	8.2	7.4	7.8	---	---	---
22	-0.1	-0.1	-0.1	0.2	-0.1	0.0	9.1	7.2	8.1	---	---	---
23	-0.1	-0.1	-0.1	0.2	-0.1	0.0	9.9	8.4	9.1	---	---	---
24	-0.1	-0.1	-0.1	0.2	-0.1	0.0	11.4	9.7	10.4	---	---	---
25	-0.1	-0.1	-0.1	0.1	-0.1	-0.1	13.0	11.2	11.9	---	---	---
26	-0.1	-0.1	-0.1	0.1	-0.1	-0.1	14.3	12.6	13.3	---	---	---
27	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	14.9	14.3	14.5	---	---	---
28	-0.1	-0.1	-0.1	0.1	-0.2	-0.1	14.7	14.3	14.5	19.5	18.2	18.8
29	---	---	---	0.1	-0.2	-0.1	14.8	14.6	14.7	20.4	19.0	19.6
30	---	---	---	0.1	-0.2	-0.1	15.2	14.5	14.8	20.4	19.2	19.6
31	---	---	---	---	---	0.0	---	---	---	19.4	18.6	19.0
MONTH	-0.1	-0.2	-0.1	0.2	-0.2	-0.1	15.2	-0.2	8.4	20.4	11.7	14.9

05054000 RED RIVER OF THE NORTH AT FARGO, ND—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	600	552	574	613	584	596
2	---	---	---	---	---	---	552	546	549	586	564	571
3	---	---	---	---	---	---	572	550	561	565	554	562
4	---	---	---	---	---	---	639	572	619	555	544	549
5	---	---	---	---	---	---	645	595	612	544	539	542
6	---	---	---	---	---	---	601	567	575	580	539	544
7	---	---	---	572	548	561	571	566	568	560	540	546
8	---	---	---	572	556	568	571	563	565	584	557	568
9	---	---	---	578	567	574	575	559	567	619	568	596
10	---	---	---	606	565	584	676	565	624	568	544	552
11	---	---	---	577	564	573	669	574	612	544	538	541
12	---	---	---	581	575	579	604	566	579	549	544	547
13	---	---	---	580	575	578	607	579	594	545	543	544
14	---	---	---	587	580	584	593	579	587	550	543	544
15	---	---	---	593	584	587	583	548	562	594	550	579
16	---	---	---	596	592	594	549	545	547	596	583	592
17	---	---	---	593	589	590	561	546	552	583	567	574
18	---	---	---	631	592	602	570	561	565	587	557	566
19	---	---	---	636	617	625	595	554	564	692	570	628
20	---	---	---	626	619	622	595	548	556	691	630	653
21	---	---	---	653	623	636	555	549	551	630	580	596
22	---	---	---	654	646	651	550	542	545	580	568	571
23	---	---	---	659	651	653	543	537	539	569	566	567
24	---	---	---	720	654	672	545	537	541	566	559	563
25	---	---	---	726	586	660	552	545	549	568	559	566
26	---	---	---	605	566	579	546	533	538	585	568	579
27	---	---	---	606	566	583	545	534	540	606	581	590
28	---	---	---	586	536	557	546	537	540	628	606	619
29	---	---	---	588	540	557	556	546	550	616	567	592
30	---	---	---	610	588	603	573	555	563	573	566	568
31	---	---	---	---	---	---	590	554	569	574	570	573
MONTH	---	---	---	726	536	599	676	533	566	692	538	573
	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	576	569	573	---	---	---	---	---	---	617	606	611
2	574	564	570	---	---	---	611	592	600	637	613	624
3	603	564	583	---	---	---	593	578	585	647	637	644
4	616	602	605	---	---	---	580	554	566	647	640	644
5	619	600	609	---	---	---	575	556	568	640	632	635
6	600	584	594	---	---	---	564	525	543	634	632	633
7	584	556	563	---	---	---	617	526	574	645	634	639
8	556	550	552	---	---	---	642	617	633	668	645	650
9	550	545	547	---	---	---	660	642	652	682	638	659
10	561	548	552	---	---	---	643	576	604	698	679	690
11	552	549	550	---	---	---	578	521	554	679	654	665
12	568	550	556	---	---	---	521	479	501	718	669	690
13	629	567	604	---	---	---	567	482	532	747	718	726
14	605	585	598	---	---	---	590	567	584	803	747	782
15	604	584	594	---	---	---	584	555	570	---	---	---
16	584	576	579	---	---	---	556	521	537	---	---	---
17	595	579	589	---	---	---	580	533	548	---	---	---
18	599	593	598	---	---	---	578	552	561	---	---	---
19	595	586	589	---	---	---	557	511	539	---	---	---
20	600	595	599	643	550	601	545	494	509	---	---	---
21	597	582	589	550	466	501	573	545	556	---	---	---
22	582	578	580	466	446	457	661	567	604	---	---	---
23	578	576	577	756	449	554	708	661	694	---	---	---
24	---	---	---	769	650	711	818	705	764	---	---	---
25	---	---	---	791	764	780	848	818	836	---	---	---
26	---	---	---	764	696	740	826	776	804	---	---	---
27	---	---	---	696	586	637	776	712	740	---	---	---
28	---	---	---	586	563	572	712	677	694	915	887	896
29	---	---	---	655	560	591	677	653	662	916	890	900
30	---	---	---	667	625	651	653	617	639	942	916	933
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	629	545	580	791	446	618	848	479	612	942	606	707

05054500 SHEYENNE RIVER ABOVE HARVEY, ND

LOCATION.--Lat 47°42'10", long 99°56'55", in SW¹₄SE¹₄ sec.24, T.149 N., R.73 W., Wells County, Hydrologic Unit 09020202, on right bank just downstream from county road and 4.5 mi south of Harvey.

DRAINAGE AREA.--424 mi², of which about 270 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,547.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	3.8	e4.0	e0.00	e0.00	e0.00	25	17	17	23	6.9	e1.8
2	1.6	3.7	e3.7	e0.00	e0.00	e0.00	25	16	17	21	6.3	e1.5
3	1.8	3.8	e3.4	e0.00	e0.00	e0.00	30	16	17	20	6.0	e1.2
4	1.8	4.0	e3.2	e0.00	e0.00	e0.00	27	18	16	19	5.8	1.0
5	2.0	4.1	e3.1	e0.00	e0.00	e0.00	29	22	17	18	6.0	0.99
6	2.5	4.0	e3.0	e0.00	e0.00	e0.00	28	30	19	17	5.6	1.1
7	2.5	3.8	e3.0	e0.00	e0.00	e0.00	24	31	20	16	5.6	1.1
8	2.3	3.0	e3.1	e0.00	e0.00	e0.00	26	30	21	15	5.2	0.99
9	2.7	3.6	e3.2	e0.00	e0.00	e0.00	27	32	23	31	e5.6	1.0
10	2.4	4.0	e3.4	e0.00	e0.00	e0.00	26	32	30	32	e6.0	4.3
11	3.4	3.9	e3.6	e0.00	e0.00	e0.00	25	32	33	34	e6.2	4.2
12	3.9	e3.7	e3.7	e0.00	e0.00	e0.00	24	31	50	32	e5.7	2.4
13	3.6	e3.5	e3.8	e0.00	e0.00	e0.02	24	30	50	29	e5.1	2.9
14	3.5	e3.4	e3.8	e0.00	e0.00	e0.05	25	33	51	25	e4.5	2.9
15	3.4	e3.6	e3.7	e0.00	e0.00	e0.15	25	34	44	21	e4.2	2.6
16	2.9	e3.9	e3.5	e0.00	e0.00	e0.50	25	33	44	19	e3.8	2.2
17	3.1	e4.1	e3.3	e0.00	e0.00	e2.0	27	31	41	17	e3.5	2.1
18	3.4	4.2	e2.6	e0.00	e0.00	e10	26	31	37	16	e3.0	2.4
19	3.2	4.0	e2.1	e0.00	e0.00	e22	26	30	32	15	e2.5	1.8
20	3.3	4.3	e1.6	e0.00	e0.00	e56	25	26	30	15	e2.3	1.8
21	3.3	4.5	e1.2	e0.00	e0.00	e80	25	23	29	14	e2.4	2.1
22	3.2	4.6	e0.95	e0.00	e0.00	e90	24	20	27	13	e2.5	1.8
23	3.1	4.0	e0.75	e0.00	e0.00	103	22	20	26	12	e2.4	1.9
24	3.2	e3.3	e0.55	e0.00	e0.00	112	21	19	25	12	e2.3	1.9
25	3.2	e3.6	e0.35	e0.00	e0.00	76	21	18	27	11	e2.2	1.7
26	3.4	e3.8	e0.20	e0.00	e0.00	47	20	18	28	11	e2.1	2.0
27	3.4	e4.0	e0.12	e0.00	e0.00	38	20	27	27	10	e2.0	1.9
28	3.4	e4.3	e0.06	e0.00	e0.00	32	19	22	27	9.7	e1.9	1.6
29	3.4	e4.5	e0.03	e0.00	---	26	18	21	26	9.2	e1.8	1.5
30	3.6	e4.3	e0.01	e0.00	---	18	18	18	24	8.3	e1.6	1.5
31	3.8	---	e0.00	e0.00	---	20	---	18	---	7.7	e1.8	---
TOTAL	92.0	117.3	69.02	0.00	0.00	732.72	727	779	875	552.9	122.8	58.18
MEAN	2.97	3.91	2.23	0.000	0.000	23.6	24.2	25.1	29.2	17.8	3.96	1.94
MAX	3.9	4.6	4.0	0.00	0.00	112	30	34	51	34	6.9	4.3
MIN	1.6	3.0	0.00	0.00	0.00	0.00	18	16	16	7.7	1.6	0.99
AC-FT	182	233	137	0.00	0.00	1,450	1,440	1,550	1,740	1,100	244	115

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2003, BY WATER YEAR (WY)

MEAN	3.64	3.85	1.97	0.92	3.01	35.0	43.5	21.2	11.8	9.80	4.52	3.06
MAX	34.5	39.0	21.2	6.73	26.8	207	324	117	77.3	67.4	59.4	48.4
(WY)	(1995)	(1995)	(1995)	(2000)	(1983)	(2001)	(1997)	(1995)	(2000)	(2000)	(1999)	(1999)
MIN	0.43	0.26	0.034	0.000	0.000	0.000	2.13	1.59	0.30	0.071	0.000	0.061
(WY)	(1991)	(1977)	(1996)	(1959)	(1956)	(1969)	(1991)	(1977)	(1961)	(1961)	(1959)	(1976)

RED RIVER OF THE NORTH BASIN

05054500 SHEYENNE RIVER ABOVE HARVEY, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1956 - 2003	
ANNUAL TOTAL	2,095.71		4,125.92			
ANNUAL MEAN	5.74		11.3		11.9	
HIGHEST ANNUAL MEAN					44.3	2001
LOWEST ANNUAL MEAN					0.76	1961
HIGHEST DAILY MEAN	30	May 9	112	Mar 24	900	Mar 24, 2001
LOWEST DAILY MEAN	0.00	Jan 27	0.00	Dec 31	0.00	Jan 21, 1956
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 27	0.00	Dec 31	0.00	Jan 21, 1956
MAXIMUM PEAK FLOW			a126	Mar 24	1,000	Apr 20, 1979
MAXIMUM PEAK STAGE			b9.01	Mar 17	b10.76	Apr 6, 1997
INSTANTANEOUS LOW FLOW			0.00	Dec 31	0.00	Jan 21, 1956
ANNUAL RUNOFF (AC-FT)	4,160		8,180		8,610	
10 PERCENT EXCEEDS	17		30		28	
50 PERCENT EXCEEDS	3.2		3.7		1.9	
90 PERCENT EXCEEDS	0.14		0.00		0.00	

a Gage height, 8.38 ft

b Backwater from ice

c Estimated

05054500 SHEYENNE RIVER ABOVE HARVEY, ND—Continued

WATER-QUALITY RECORDS

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

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfl lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
OCT 09...	1445	3.2	--	--	--	--	--	--	--	1,450	11.0	6.3	--
NOV 06...	1115	4.7	--	--	--	--	--	--	--	1,630	0.0	0.3	--
DEC 17...	1215	3.3	--	--	--	--	--	--	--	1,810	-5.0	0.2	--
MAR 19...	1430	22	--	--	--	--	--	--	--	640	2.7	0.3	--
MAR 26...	1500	45	--	715	--	--	7.9	7.7	620	627	2.5	0.6	160
APR 15...	1145	25	--	--	--	--	--	--	--	1,180	9.6	9.4	--
MAY 27...	1335	35	--	--	--	--	--	--	--	1,370	23.8	17.3	--
JUL 07...	1405	15	--	--	--	--	--	--	--	1,840	18.1	21.5	--
JUL 30...	1415	8.5	--	--	--	--	8.1	8.5	1,820	1,860	27.5	23.6	530
SEP 03...	1300	1.2	--	--	--	--	--	--	--	1,260	21.0	16.8	--
SEP 15...	1200	2.6	12	717	8.7	87	8.1	8.4	1,580	1,620	26.8	12.4	280

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)
OCT 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 17...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 19...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 26...	31.0	21.0	20.0	2	62.0	42	170	12.0	0.10	--	140	388	52.6
APR 15...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 30...	58.0	92.6	14.9	5	287	53	480	18.8	0.26	24.6	473	1,230	28.9
SEP 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 15...	42.8	41.7	8.90	8	294	69	498	19.7	--	--	348	1,060	7.41

05054500 SHEYENNE RIVER ABOVE HARVEY, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, flt rd, mg/L as N (00623)	Ammonia + org-N, water, unflt rd, mg/L as N (00625)	Ammonia water, flt rd, mg/L as N (00608)	Ammonia water, unflt rd, mg/L as N (00610)	Nitrite + nitrate water flt rd, mg/L as N (00631)	Nitrite + nitrate water unflt rd, mg/L as N (00630)	Organic nitro- gen, water, unflt rd, mg/L (00605)	Ortho- phos- phate, water, flt rd, mg/L as P (00671)	Phos- phorus, water, flt rd, mg/L (00666)	Phos- phorus, water, unflt rd, mg/L (00665)	Total nitro- gen, water, flt rd, mg/L (00602)	Total nitro- gen, water, unflt rd, mg/L (00600)
OCT 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 17...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 19...	--	--	--	--	--	--	--	--	--	--	--	--	--
26...	436	--	--	--	--	--	--	--	--	--	--	--	--
APR 15...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
15...	--	1.1	1.1	<0.010	0.034	0.130	0.130	1.0	0.172	0.183	0.208	1.2	1.2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)	Arsenic water, flt rd, ug/L (01000)	Iron, water, flt rd, ug/L (01046)	Lead, water, flt rd, ug/L (01049)	Lithium water, flt rd, ug/L (01130)	Mangan- ese, water, flt rd, ug/L (01056)	Mercury water, flt rd, ug/L (71890)	Molyb- denum, water, flt rd, ug/L (01060)	Selen- ium, water, flt rd, ug/L (01145)	Stront- ium, water, flt rd, ug/L (01080)
OCT 09...	--	--	--	--	--	--	--	--	--	--	--
NOV 06...	--	--	--	--	--	--	--	--	--	--	--
DEC 17...	--	--	--	--	--	--	--	--	--	--	--
MAR 19...	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	2.0	180	<1	50	190	0.10	<1	<1	220
APR 15...	--	--	--	--	--	--	--	--	--	--	--
MAY 27...	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	7.3	30	<1	170	40	<0.20	<1	2	450
SEP 03...	--	--	--	--	--	--	--	--	--	--	--
15...	<4.0	<1.3	--	70	--	--	50	--	--	--	--

Remark codes used in this table:

< -- Less than

05056000 SHEYENNE RIVER NEAR WARWICK, ND

LOCATION.--Lat 47°48'20", long 98°42'57", on south quarter of line between secs.15 and 16, T.150 N., R.63 W., Eddy County, Hydrologic Unit 09020203, on left bank on downstream side of county highway bridge and 3.3 mi south of Warwick.

DRAINAGE AREA.--2,070 mi², approximately, of which about 1,310 mi² is probably noncontributing, including 227 mi² in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1949 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: 1952(M). WSP 1728: Drainage area.

GAGE.--Water-stage recorder and rubble masonry control. Datum of gage is 1,376.34 ft above National Geodetic Vertical Datum of 1929 (GPS survey by North Dakota State Water Commission).

REMARKS.--Records good except for periods where discharge is less than 40 ft³/s, which are fair and for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	29	22	16	11	9.3	309	94	110	49	54	18
2	13	29	22	16	11	e9.0	272	95	117	49	47	19
3	14	28	22	16	11	9.5	155	91	115	50	40	16
4	14	28	20	16	12	9.0	137	100	105	46	36	16
5	14	27	18	16	12	9.0	182	127	95	38	38	17
6	13	27	17	16	e12	9.0	160	145	90	34	39	18
7	13	29	17	16	e12	9.6	150	158	93	30	39	17
8	15	31	16	17	e11	9.8	152	152	113	31	36	13
9	18	33	16	17	e11	e9.6	167	156	101	199	33	12
10	16	33	16	e17	e10	e9.3	174	196	98	480	30	13
11	16	34	16	e16	e10	e9.0	175	227	103	462	29	13
12	15	33	16	e16	e10	9.0	176	237	160	376	27	13
13	16	27	16	e15	10	9.1	170	226	196	285	26	15
14	18	24	17	e15	10	10	165	217	173	286	24	14
15	18	29	18	e14	10	13	156	213	162	339	23	15
16	16	27	18	e14	10	20	140	197	175	396	22	15
17	16	27	18	e13	10	35	132	186	193	346	21	17
18	16	27	19	e12	10	67	156	204	194	284	20	18
19	15	27	19	e11	10	122	157	243	175	247	20	16
20	15	29	19	e11	11	185	154	250	148	217	18	18
21	23	30	19	e11	11	257	153	224	129	190	16	20
22	23	29	19	e11	e11	354	147	203	121	170	16	19
23	20	33	19	e10	e10	421	136	193	125	148	18	17
24	19	21	19	10	10	441	127	185	105	128	19	16
25	19	33	18	9.6	10	453	121	175	90	112	18	16
26	20	29	17	9.5	9.7	455	115	161	82	102	18	16
27	22	24	16	9.1	9.2	483	112	148	83	98	18	16
28	25	23	16	9.1	9.0	416	123	141	75	88	19	16
29	27	23	16	9.2	---	327	114	134	66	76	19	16
30	27	23	16	10	---	332	91	117	59	68	17	15
31	25	---	16	10	---	323	---	116	---	60	18	---
TOTAL	555	846	553	408.5	293.9	4,834.2	4,678	5,311	3,651	5,484	818	480
MEAN	17.9	28.2	17.8	13.2	10.5	156	156	171	122	177	26.4	16.0
MAX	27	34	22	17	12	483	309	250	196	480	54	20
MIN	13	21	16	9.1	9.0	9.0	91	91	59	30	16	12
AC-FT	1,100	1,680	1,100	810	583	9,590	9,280	10,530	7,240	10,880	1,620	952

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 2003, BY WATER YEAR (WY)

MEAN	17.4	18.7	10.7	7.04	11.9	134	342	124	70.2	58.7	32.0	17.4
MAX	136	233	93.4	55.2	154	793	1,794	854	326	441	423	154
(WY)	(2001)	(2001)	(2001)	(2001)	(1981)	(1983)	(1997)	(1950)	(1954)	(2000)	(1993)	(2000)
MIN	1.16	1.28	0.76	0.47	0.75	1.46	15.8	10.4	1.75	0.36	0.090	0.71
(WY)	(1953)	(1961)	(1961)	(1990)	(1990)	(1964)	(1977)	(1990)	(1961)	(1989)	(1961)	(1961)

RED RIVER OF THE NORTH BASIN

05056000 SHEYENNE RIVER NEAR WARWICK, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1950 - 2003	
ANNUAL TOTAL	21,549.6		27,912.6		70.3	
ANNUAL MEAN	59.0		76.5		226	
HIGHEST ANNUAL MEAN					5.31	
LOWEST ANNUAL MEAN					1977	
HIGHEST DAILY MEAN	431	Jun 29	483	Mar 27	4,370	Apr 14, 1969
LOWEST DAILY MEAN	7.4	Aug 9	9.0	Feb 28	0.00	Aug 7, 1961
ANNUAL SEVEN-DAY MINIMUM	9.4	Aug 6	9.1	Feb 28	0.00	Aug 7, 1961
MAXIMUM PEAK FLOW			495	Mar 27	a4,660	Apr 14, 1969
MAXIMUM PEAK STAGE			3.72	Mar 27	8.08	Apr 21, 1997
INSTANTANEOUS LOW FLOW					0.00	Aug 7, 1961
ANNUAL RUNOFF (AC-FT)	42,740		55,360		50,920	
10 PERCENT EXCEEDS	155		196		144	
50 PERCENT EXCEEDS	28		23		12	
90 PERCENT EXCEEDS	15		10		1.7	

a Gage height, 7.51 ft

e Estimated

05056000 SHEYENNE RIVER NEAR WARWICK, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951, 1953, 1958 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm 25 degC (90095)	Specif. conductance, wat unflab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
OCT 09...	1650	19	--	--	--	--	--	--	--	877	13.5	8.5	--
JAN 06...	1435	17	--	--	--	--	--	--	--	1,420	1.5	0.5	--
FEB 20...	1450	11	--	--	--	--	--	--	--	1,400	0.5	0.5	--
MAR 25...	1400	425	--	--	--	--	7.7	6.8	540	552	14.5	2.0	160
MAY 28...	0930	140	--	--	--	--	--	--	--	1,470	--	18.5	--
JUL 07...	1530	29	--	--	--	--	8.3	8.5	1,320	1,330	20.0	22.5	410
JUL 10...	1320	508	--	--	--	--	--	--	--	564	--	17.0	--
AUG 11...	1230	29	--	--	--	--	--	--	--	1,130	--	23.5	--
AUG 25...	1350	--	--	--	--	--	--	8.4	1,190	--	--	--	380
SEP 15...	1430	15	8.4	723	7.5	83	8.3	8.5	1,260	1,270	24.8	17.5	410

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)
OCT 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 20...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 25...	32.0	19.0	19.0	2	43.0	34	108	15.0	0.10	--	130	323	423
MAY 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	68.8	58.2	10.9	4	184	48	438	17.7	0.28	26.7	307	911	74.1
JUL 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 25...	65.8	53.0	11.3	3	132	42	449	19.4	0.3	31.2	236	820	--
SEP 15...	67.8	57.4	11.3	3	155	44	441	24.1	--	--	240	821	33.3

05056000 SHEYENNE RIVER NEAR WARWICK, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd, mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd, mg/L as N (00610)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite + nitrate water unfltrd, mg/L as N (00630)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro- gen, water, unfltrd mg/L (00605)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Phos- phorus, water, fltrd, mg/L (00666)	Phos- phorus, water, unfltrd mg/L (00665)	Total nitro- gen, water, fltrd, mg/L (00602)
OCT 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 20...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 25...	369	--	--	--	--	--	--	--	--	--	--	--	--
MAY 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 25...	866	--	1.5	<0.04	--	<0.06	--	<0.008	--	0.32	--	0.41	--
SEP 15...	--	1.3	1.2	<0.010	0.027	0.020	0.030	--	1.1	0.329	0.333	0.350	1.3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Total nitro- gen, water, unfltrd mg/L (00600)	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb- denum, water, fltrd, ug/L (01060)	Selen- ium, water, fltrd, ug/L (01145)	Stront- ium, water, fltrd, ug/L (01080)
OCT 09...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 06...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 20...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 25...	--	--	--	4.0	110	2	40	140	<0.10	<1	<1	250
MAY 28...	--	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	--	--	--	10.8	20	<1	100	320	<0.20	2	2	350
JUL 10...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 11...	--	--	--	--	--	--	--	--	--	--	--	--
AUG 25...	--	E5.3*d	0.2	--	E5n	--	--	458	--	--	--	--
SEP 15...	1.2	15.5	2.6	--	20	--	--	240	--	--	--	--

Remark codes used in this table:

< -- Less than

E -- Estimated value

Value qualifier codes used in this table:

* -- Sample was warm when received

d -- Diluted sample; method hi range exceeded

n -- Below the NDV

05056060 MAUVAIS COULEE TRIBUTARY NO. 3 NEAR CANDU, ND

LOCATION.--Lat 48°27'27", long 99°13'26", in NE¹₄NW¹₄ sec.6, T.157 N., R.66 W., Towner County, Hydrologic Unit 09020201, at bridge 2.1 mi southwest of Cando.

DRAINAGE AREA.--60.2 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1955-73 (annual maximum discharges only), 1986-88 (discharge measurements only), March 1989 to current year (seasonal records only).

GAGE.--Water-stage recorder. Datum of gage is 1,460 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to 1986 gage was at different datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,300 ft³/s, Apr. 14, 1969, gage height, 9.35 ft, datum then in use.

EXTREMES FOR CURRENT PERIOD.--Maximum discharge, 70 ft³/s, Apr. 12, gage height, unknown, estimated based on plot of mean daily discharges; maximum gage height observed, 4.90 ft, Mar. 26, backwater from ice; may have been higher during period of no record, Mar. 23-26 and Apr. 10-15; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e0.00	e4.3	7.4	3.2	0.26	0.00	0.00
2	---	---	---	---	---	e0.00	e3.0	6.9	2.8	0.22	0.00	0.00
3	---	---	---	---	---	e0.00	e2.1	5.7	2.6	0.68	0.00	0.00
4	---	---	---	---	---	e0.00	e1.0	6.9	2.4	0.57	0.00	0.00
5	---	---	---	---	---	e0.00	e3.2	6.3	2.0	0.65	0.00	0.00
6	---	---	---	---	---	e0.00	e7.4	6.0	1.9	0.59	0.00	0.00
7	---	---	---	---	---	e0.00	e13	6.2	2.2	0.46	0.00	0.00
8	---	---	---	---	---	e0.00	e27	6.9	2.5	0.49	0.00	0.00
9	---	---	---	---	---	e0.00	e40	8.1	3.4	0.44	0.00	0.00
10	---	---	---	---	---	e0.00	e60	8.8	3.1	0.39	0.00	0.00
11	---	---	---	---	---	e0.00	e65	9.0	3.1	0.32	0.00	0.00
12	---	---	---	---	---	e0.00	e68	7.8	4.8	0.19	0.00	0.00
13	---	---	---	---	---	e0.00	e68	6.9	4.9	0.11	0.00	0.00
14	---	---	---	---	---	e0.00	e65	6.2	3.6	0.37	0.00	0.00
15	---	---	---	---	---	e0.00	e60	5.6	2.8	0.36	0.00	0.00
16	---	---	---	---	---	e0.05	e55	5.1	2.2	0.33	0.00	0.00
17	---	---	---	---	---	e0.10	47	6.4	1.9	0.32	0.00	0.00
18	---	---	---	---	---	e0.24	40	8.4	1.7	0.26	0.00	0.00
19	---	---	---	---	---	e0.50	33	11	1.4	0.10	0.00	0.00
20	---	---	---	---	---	e1.1	27	11	1.2	0.17	0.00	0.00
21	---	---	---	---	---	e1.7	22	9.7	1.0	0.10	0.00	0.00
22	---	---	---	---	---	e3.9	e19	8.3	0.88	0.01	0.00	0.00
23	---	---	---	---	---	e8.8	e17	7.4	0.81	0.00	0.00	0.00
24	---	---	---	---	---	e36	15	7.5	0.67	0.00	0.00	0.00
25	---	---	---	---	---	e28	13	6.8	0.55	0.00	0.00	0.00
26	---	---	---	---	---	e23	12	6.0	0.48	0.00	0.00	0.00
27	---	---	---	---	---	e19	11	5.4	0.46	0.00	0.00	0.00
28	---	---	---	---	---	e14	10	4.8	0.67	0.00	0.00	0.00
29	---	---	---	---	---	e10	9.0	4.3	0.55	0.00	0.00	0.00
30	---	---	---	---	---	e7.0	8.3	4.0	0.43	0.00	0.00	0.00
31	---	---	---	---	---	e5.5	---	3.5	---	0.00	0.00	---
TOTAL	---	---	---	---	---	158.89	825.3	214.3	60.20	7.39	0.00	0.00
MEAN	---	---	---	---	---	5.13	27.5	6.91	2.01	0.24	0.000	0.000
MAX	---	---	---	---	---	36	68	11	4.9	0.68	0.00	0.00
MIN	---	---	---	---	---	0.00	1.0	3.5	0.43	0.00	0.00	0.00
AC-FT	---	---	---	---	---	315	1,640	425	119	15	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 2003, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	20.9	79.1	14.6	5.32	11.8	8.48	1.28
MAX	---	---	---	---	---	141	252	94.5	40.0	93.6	59.7	13.9
(WY)	(---	(---	(---	(---	(---	(1992)	(1999)	(1999)	(1996)	(1997)	(1996)	(1993)
MIN	---	---	---	---	---	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	(---	(---	(---	(---	(---	(1989)	(1990)	(1988)	(1988)	(1988)	(1988)	(1988)

SUMMARY STATISTICS

WATER YEARS 1986 - 2003

HIGHEST DAILY MEAN	780	Apr 11, 1999
LOWEST DAILY MEAN	a0.00	Mar 1, 1986
ANNUAL SEVEN-DAY MINIMUM	0.00	Mar 1, 1986
MAXIMUM PEAK FLOW	2,300	Apr 14, 1969
MAXIMUM PEAK STAGE	b9.35	Apr 14, 1969

- a Many days in most years
- b Datum then in use
- e Estimated

05056060 MAUVAIS COULEE TRIBUTARY NO. 3 NEAR CANDO, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1986 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 09...	1310	0.78	--	--	--	1,660	7.5	5.0	--	--	--	--	--
MAR 26...	1445	23	7.4	--e	722	747	0.5	0.5	240	46.0	30.0	21.0	1
APR 18...	0935	40	--	--	--	856	7.0	4.5	--	--	--	--	--
MAY 29...	1355	4.2	--	--	--	1,920	--	22.0	--	--	--	--	--
JUL 09...	1135	0.50	8.6	8.5	1,980	1,980	15.5	16.8	810	137	113	17.8	3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 26...	48.0	28	101	42.0	0.10	--	200	448	31.1	497	4.0	50	1
APR 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 09...	181	32	344	123	0.17	7.92	680	1,460	1.98	--	11.0	30	<1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
OCT 09...	--	--	--	--	--	--
MAR 26...	40	270	<0.10	<1	<1	250
APR 18...	--	--	--	--	--	--
MAY 29...	--	--	--	--	--	--
JUL 09...	110	110	<0.20	1	3	590

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

05056100 MAUVAIS COULEE NEAR CANDO, ND

LOCATION.--Lat 48°26'53", long 99°06'08", in SE¹₄NE¹₄SE¹₄ sec.1, T.157 N., R.66 W., Towner County, Hydrologic Unit 09020201, on left bank 0.3 mi upstream from highway bridge, about 4 mi upstream from west fork of Mauvais Coulee, and 5.5 mi southeast of Cando.

DRAINAGE AREA.--387 mi², of which about 10 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1956 to current year (seasonal records only since 1982).

GAGE.--Water-stage recorder. Elevation of gage is 1,445 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 2, 1957, nonrecording gage at present site and datum.

REMARKS.--Records good except for estimated daily discharges, which are poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 16, 1954, reached a stage of 9.83 ft, and flood of Apr. 20, 1956, reached a stage of 10.71 ft, from floodmarks set by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 137 ft³/s, Apr. 9, gage height, 4.67 ft; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e0.00	e9.0	26	11	3.9	0.26	0.01
2	---	---	---	---	---	e0.00	e10	24	9.1	4.3	0.21	0.01
3	---	---	---	---	---	e0.00	e6.0	19	7.8	5.1	0.18	0.01
4	---	---	---	---	---	e0.00	e4.2	17	6.7	4.6	0.16	0.01
5	---	---	---	---	---	e0.00	23	18	5.6	4.0	0.17	0.01
6	---	---	---	---	---	e0.00	40	21	4.9	3.7	0.17	0.01
7	---	---	---	---	---	e0.00	49	24	5.4	3.7	0.15	0.01
8	---	---	---	---	---	e0.00	68	26	5.3	3.5	0.14	e0.01
9	---	---	---	---	---	e0.00	105	28	5.1	3.8	0.14	e0.01
10	---	---	---	---	---	e0.00	93	33	6.0	4.3	0.13	e0.05
11	---	---	---	---	---	e0.00	93	36	7.8	3.8	0.12	e0.17
12	---	---	---	---	---	e0.00	96	38	17	3.4	0.12	e0.15
13	---	---	---	---	---	e0.00	99	37	24	3.1	0.15	e0.13
14	---	---	---	---	---	e0.00	95	32	31	3.1	0.21	e0.12
15	---	---	---	---	---	e0.01	90	27	33	3.0	0.11	e0.12
16	---	---	---	---	---	e0.04	85	24	32	2.5	0.07	e0.12
17	---	---	---	---	---	e0.07	82	23	30	2.0	0.06	e0.11
18	---	---	---	---	---	e0.06	76	30	26	1.9	0.05	e0.11
19	---	---	---	---	---	e0.06	70	37	22	1.8	0.04	e0.10
20	---	---	---	---	---	e0.20	64	44	20	1.5	0.03	e0.09
21	---	---	---	---	---	e0.80	58	47	14	1.2	0.03	e0.06
22	---	---	---	---	---	e3.0	52	46	11	1.1	0.03	e0.05
23	---	---	---	---	---	e11	48	43	8.1	0.97	0.03	e0.04
24	---	---	---	---	---	e45	44	40	6.3	0.96	0.03	e0.05
25	---	---	---	---	---	e36	41	36	6.1	0.80	0.03	e0.05
26	---	---	---	---	---	e29	36	33	5.8	0.66	0.02	e0.05
27	---	---	---	---	---	e24	34	28	5.5	0.53	0.02	e0.05
28	---	---	---	---	---	e19	31	23	5.9	0.46	0.02	e0.05
29	---	---	---	---	---	e15	30	19	4.9	0.41	0.02	e0.04
30	---	---	---	---	---	e12	27	17	4.2	0.34	0.02	e0.04
31	---	---	---	---	---	e8.5	---	12	---	0.30	0.02	---
TOTAL	---	---	---	---	---	203.74	1,658.2	908	381.5	74.73	2.94	1.84
MEAN	---	---	---	---	---	6.57	55.3	29.3	12.7	2.41	0.095	0.061
MAX	---	---	---	---	---	45	105	47	33	5.1	0.26	0.17
MIN	---	---	---	---	---	0.00	4.2	12	4.2	0.30	0.02	0.01
AC-FT	---	---	---	---	---	404	3,290	1,800	757	148	5.8	3.6

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2003, BY WATER YEAR (WY)

	2.41	1.18	0.28	0.020	0.18	21.9	194	57.9	13.0	15.7	14.0	4.46
MEAN	27.1	10.4	3.86	0.34	5.01	198	946	527	87.6	226	274	62.3
MAX (WY)	(1966)	(1981)	(1981)	(1981)	(1981)	(1992)	(1997)	(1999)	(1999)	(1997)	(1993)	(1965)
MIN (WY)	(1959)	(1960)	(1957)	(1957)	(1957)	(1958)	(1991)	(1961)	(1961)	(1959)	(1959)	(1959)

05056100 MAUVAIS COULEE NEAR CANDO, ND—Continued

SUMMARY STATISTICS

WATER YEARS 1956 - 2003

ANNUAL MEAN	a19.7	
HIGHEST ANNUAL MEAN	a71.7	1974
LOWEST ANNUAL MEAN	a0.004	1961
HIGHEST DAILY MEAN	2,980	Apr 21, 1997
LOWEST DAILY MEAN	0.00	Aug 21, 1956
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 21, 1956
MAXIMUM PEAK FLOW	3,000	Apr 21, 1997
MAXIMUM PEAK STAGE	11.68	Apr 21, 1997
ANNUAL RUNOFF (AC-FT)	a14,260	
10 PERCENT EXCEEDS	25	
50 PERCENT EXCEEDS	0.06	
90 PERCENT EXCEEDS	0.00	

a Based on complete water years only (1957-82)

e Estimated

05056100 MAUVAIS COULEE NEAR CANDO, ND—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 09...	1200	3.2	--	--	--	1,490	8.0	6.0	--	--	--	--	--
MAR 26...	1730	28	7.5	--e	591	613	-1.0	0.0	200	40.0	24.0	23.0	1
APR 16...	1625	83	--	--	--	921	6.5	6.0	--	--	--	--	--
MAY 29...	1045	19	--	--	--	1,810	--	19.5	--	--	--	--	--
JUL 09...	1535	4.2	8.8	8.7	1,460	1,440	18.0	19.0	640	112	86.2	12.6	2
AUG 12...	0930	0.12	--	--	--	1,310	--	23.0	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Residue sum of constituents mg/L (70301)	Residue water, fltrd, mg/L (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 26...	33.0	24	108	29.0	0.10	--	150	365	30.8	408	4.0	100	2
APR 16...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 09...	127	30	326	33.9	0.19	12.1	504	1,070	12.3	--	8.6	30	<1
AUG 12...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
OCT 09...	--	--	--	--	--	--
MAR 26...	30	440	<0.10	<1	<1	260
APR 16...	--	--	--	--	--	--
MAY 29...	--	--	--	--	--	--
JUL 09...	80	260	<0.20	1	2	450
AUG 12...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

RED RIVER OF THE NORTH BASIN

05056200 EDMORE COULEE NEAR EDMORE, ND

LOCATION.--Lat 48°20'12", long 98°39'36", in NW¹₄NW¹₄ sec.17, T.156 N., R.62 W., Ramsey County, Hydrologic Unit 09020201, on right bank 50 ft upstream from bridge on county highway, 11 mi southwest of Edmore, and about 13 mi upstream from Sweetwater Lake.

DRAINAGE AREA.--382 mi², of which about 100 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to June 1956, July 1957 to current year (seasonal records only since 1982).

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft above National Geodetic Vertical Datum of 1929. June 26, 1957, to Sept. 30, 1985, water-stage recorder at same site at a datum of 1,479.79 ft above National Geodetic Vertical Datum of 1929. Prior to June 26, 1957, nonrecording gage at same site and datum.

REMARKS.--Records good except for estimated daily discharges, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 308 ft³/s, Apr. 13, gage height, 84.26 ft; maximum gage height, 84.36, Mar. 27, backwater from ice; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e0.00	110	9.6	7.2	4.8	0.54	0.03
2	---	---	---	---	---	e0.00	118	8.0	6.3	4.8	0.43	0.02
3	---	---	---	---	---	e0.00	61	6.6	6.2	5.5	0.34	0.01
4	---	---	---	---	---	e0.00	56	6.2	5.5	4.8	0.27	0.00
5	---	---	---	---	---	e0.00	67	8.8	4.7	4.4	0.33	0.00
6	---	---	---	---	---	e0.00	107	9.3	4.6	3.8	0.34	0.00
7	---	---	---	---	---	e0.00	137	8.5	5.3	3.6	0.27	0.00
8	---	---	---	---	---	e0.00	188	7.8	5.1	3.2	0.19	0.00
9	---	---	---	---	---	e0.00	210	8.7	5.1	3.3	0.90	0.00
10	---	---	---	---	---	e0.00	193	9.7	7.2	3.9	2.1	0.00
11	---	---	---	---	---	e0.00	219	9.1	7.3	3.7	1.1	0.00
12	---	---	---	---	---	e0.00	280	8.9	11	3.8	0.84	0.00
13	---	---	---	---	---	e0.00	306	7.8	11	3.5	0.65	0.00
14	---	---	---	---	---	e0.00	288	e7.3	12	4.2	0.50	0.00
15	---	---	---	---	---	e0.00	256	e5.8	14	4.7	0.40	0.00
16	---	---	---	---	---	e0.12	213	5.8	27	3.9	0.31	0.00
17	---	---	---	---	---	e0.28	176	7.8	36	3.2	0.23	0.00
18	---	---	---	---	---	e0.50	141	8.8	34	3.0	0.17	0.00
19	---	---	---	---	---	e1.0	120	16	27	2.9	0.12	0.01
20	---	---	---	---	---	e2.0	104	29	21	2.7	0.09	0.01
21	---	---	---	---	---	e4.0	88	25	16	2.5	0.07	0.01
22	---	---	---	---	---	e7.0	72	20	12	2.4	0.06	0.01
23	---	---	---	---	---	e12	56	17	9.1	2.1	0.06	0.00
24	---	---	---	---	---	e20	43	16	7.0	1.9	0.05	0.00
25	---	---	---	---	---	e40	33	15	5.8	1.6	0.05	0.00
26	---	---	---	---	---	e70	26	13	5.7	1.6	0.04	0.00
27	---	---	---	---	---	e113	21	12	5.7	1.3	0.04	0.00
28	---	---	---	---	---	137	16	10	5.5	1.1	0.04	0.00
29	---	---	---	---	---	150	14	8.9	5.4	0.88	0.04	0.00
30	---	---	---	---	---	131	11	8.4	5.0	0.77	0.04	0.00
31	---	---	---	---	---	102	---	8.2	---	0.65	0.03	---
TOTAL	---	---	---	---	---	789.90	3,730	343.0	334.7	94.50	10.64	0.10
MEAN	---	---	---	---	---	25.5	124	11.1	11.2	3.05	0.34	0.003
MAX	---	---	---	---	---	150	306	29	36	5.5	2.1	0.03
MIN	---	---	---	---	---	0.00	11	5.8	4.6	0.65	0.03	0.00
AC-FT	---	---	---	---	---	1,570	7,400	680	664	187	21	0.2

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2003, BY WATER YEAR (WY)

MEAN	0.97	0.32	0.055	0.000	0.44	26.3	121	35.3	15.1	20.4	15.0	2.19
MAX	9.79	5.73	0.98	0.000	11.6	232	529	309	188	306	437	45.4
(WY)	(1986)	(1981)	(1981)	(1958)	(1981)	(1995)	(1997)	(1997)	(2002)	(1993)	(1993)	(1993)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	(1959)	(1959)	(1958)	(1958)	(1959)	(1960)	(1991)	(1958)	(1958)	(1958)	(1958)	(1958)

05056200 EDMORE COULEE NEAR EDMORE, ND—Continued

SUMMARY STATISTICS

WATER YEARS 1957 - 2003

ANNUAL MEAN	a14.2	
HIGHEST ANNUAL MEAN	a47.7	1974
LOWEST ANNUAL MEAN	0.028	1958
HIGHEST DAILY MEAN	1,770	Apr 24, 1997
LOWEST DAILY MEAN	0.00	Jul 1, 1957
ANNUAL SEVEN-DAY MINIMUM	0.00	Jul 1, 1957
MAXIMUM PEAK FLOW	1,830	Apr 24, 1997
MAXIMUM PEAK STAGE	87.95	Apr 24, 1997
ANNUAL RUNOFF (AC-FT)	a10,280	
10 PERCENT EXCEEDS	18	
50 PERCENT EXCEEDS	0.00	
90 PERCENT EXCEEDS	0.00	

a Based on complete water years only (1953-82, 1994)

e Estimated

RED RIVER OF THE NORTH BASIN
05056200 EDMORE COULEE NEAR EDMORE, ND—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 08...	1240	0.02	7.0	--	--	1,110	4.0	7.0	--	--	--	--	--
APR 17...	1625	166	8.4	7.8	880	894	3.5	5.5	300	68.0	31.0	20.0	2
MAY 30...	1515	8.8	--	--	--	1,930	--	16.5	--	--	--	--	--
JUL 11...	1320	3.6	8.9	8.8	1,590	1,600	21.5	19.5	490	99.2	59.9	11.4	4
AUG 13...	1250	0.60	--	--	--	1,510	--	23.5	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 08...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 17...	67.0	31	173	27.0	0.10	--	260	577	290	646	5.0	60	17
MAY 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 11...	230	49	325	53.8	0.24	8.59	534	1,180	11.7	--	9.3	20	<1
AUG 13...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
OCT 08...	--	--	--	--	--	--
APR 17...	40	50	<0.10	2	3	260
MAY 30...	--	--	--	--	--	--
JUL 11...	80	70	<0.20	2	2	370
AUG 13...	--	--	--	--	--	--

Remark codes used in this table:
< -- Less than

05056215 EDMORE COULEE TRIBUTARY NEAR WEBSTER, ND

LOCATION.--Lat 48°15'59", long 98°40'50", in NW¹₄NW¹₄ sec.7, T.155 N., R.62 W., Ramsey County, Hydrologic Unit 09020201, on upstream side of bridge on county road, 9 mi east and 1.1 mi south of Webster.

DRAINAGE AREA.--148 mi², approximately, of which about 44 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1986 to current year (seasonal records only). Discharge record available for 1986 water year in files of the District office.

GAGE.--Water-stage recorder. Datum of gage is 1,400 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to October 1986 nonrecording gage at present site and datum.

REMARKS.--Records fair except for periods where discharge is less than 5.0 ft³/s and for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,390 ft³/s, Apr. 25, 1997, gage height, 74.41 ft; maximum gage height, 75.06 ft, Aug. 2, 1993.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in spring of 1959 reached a stage of about 75.00 ft, from conversation with local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 160 ft³/s, Apr. 8, gage height, 71.24 ft; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e0.00	e47	42	37	10	e6.3	20
2	---	---	---	---	---	e0.00	e45	36	33	16	e6.0	20
3	---	---	---	---	---	e0.00	e40	33	29	20	e5.7	19
4	---	---	---	---	---	e0.00	e33	33	25	15	e5.3	18
5	---	---	---	---	---	e0.00	e28	34	22	12	e5.5	17
6	---	---	---	---	---	e0.00	24	31	26	11	e7.0	16
7	---	---	---	---	---	e0.00	56	30	49	11	e10	16
8	---	---	---	---	---	e0.00	100	28	55	10	15	15
9	---	---	---	---	---	e0.00	140	28	29	11	21	13
10	---	---	---	---	---	e0.00	102	29	27	11	32	14
11	---	---	---	---	---	e0.00	94	28	20	11	25	15
12	---	---	---	---	---	e0.00	105	26	42	10	24	15
13	---	---	---	---	---	e0.00	115	26	27	10	21	14
14	---	---	---	---	---	e0.00	126	26	15	66	19	13
15	---	---	---	---	---	e0.00	132	23	11	49	18	12
16	---	---	---	---	---	e0.00	133	24	10	36	18	11
17	---	---	---	---	---	e0.20	133	26	19	19	18	9.8
18	---	---	---	---	---	e0.40	132	31	9.8	14	18	11
19	---	---	---	---	---	e1.0	131	41	9.5	13	18	11
20	---	---	---	---	---	e2.0	119	39	8.9	13	19	11
21	---	---	---	---	---	e4.0	115	38	9.3	12	20	9.8
22	---	---	---	---	---	e9.5	107	40	12	e11	20	9.7
23	---	---	---	---	---	e17	91	42	13	e10	21	9.2
24	---	---	---	---	---	e30	87	47	10	e9.8	21	8.4
25	---	---	---	---	---	e44	76	47	11	e9.2	22	7.9
26	---	---	---	---	---	e50	70	47	11	e8.7	22	7.7
27	---	---	---	---	---	e60	64	48	12	e8.2	23	6.8
28	---	---	---	---	---	e70	56	47	12	e7.8	23	6.8
29	---	---	---	---	---	e70	53	46	11	e7.3	23	6.4
30	---	---	---	---	---	e60	47	45	11	e6.9	22	6.1
31	---	---	---	---	---	e50	---	39	---	e6.6	21	---
TOTAL	---	---	---	---	---	468.10	2,601	1,100	616.5	465.5	549.8	369.6
MEAN	---	---	---	---	---	15.1	86.7	35.5	20.6	15.0	17.7	12.3
MAX	---	---	---	---	---	70	140	48	55	66	32	20
MIN	---	---	---	---	---	0.00	24	23	8.9	6.6	5.3	6.1
AC-FT	---	---	---	---	---	928	5,160	2,180	1,220	923	1,090	733

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 2003, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	29.8	139	44.1	16.5	28.4	53.6	10.1
MAX	---	---	---	---	---	233	493	303	99.1	226	858	134
(WY)	(---	(---	(---	(---	(---	(1995)	(1997)	(1997)	(2002)	(1993)	(1993)	(1993)
MIN	---	---	---	---	---	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	(---	(---	(---	(---	(---	(1989)	(1990)	(1990)	(1988)	(1988)	(1988)	(1987)

SUMMARY STATISTICS

WATER YEARS 1986 - 2003

HIGHEST DAILY MEAN	1,390	Apr 25, 1997
LOWEST DAILY MEAN	0.00	Mar 1, 1986
ANNUAL SEVEN-DAY MINIMUM	0.00	Mar 1, 1986
MAXIMUM PEAK FLOW	1,390	Apr 25, 1997
MAXIMUM PEAK STAGE	75.06	Aug 2, 1993

e Estimated

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1986 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 08...	1345	9.7	--	--	--	1,060	6.1	7.0	--	--	--	--	--
MAR 25...	1910	46	7.4	--e	576	604	0.5	1.0	190	43.0	20.0	20.0	1
APR 17...	1155	130	--	--	--	896	0.5	3.5	--	--	--	--	--
MAY 30...	1220	47	--	--	--	1,620	--	15.0	--	--	--	--	--
JUL 11...	1045	11	7.9	8.0	1,650	1,660	18.0	18.0	540	95.9	72.2	12.6	4
AUG 13...	1110	20	--	--	--	1,430	--	21.5	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 08...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 25...	35.0	26	95	30.0	0.10	--	140	346	47.4	380	4.0	60	1
APR 17...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 11...	198	44	306	63.5	0.14	7.72	552	1,180	35.9	--	6.3	30	<1
AUG 13...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
OCT 08...	--	--	--	--	--	--
MAR 25...	20	360	<0.10	<1	<1	230
APR 17...	--	--	--	--	--	--
MAY 30...	--	--	--	--	--	--
JUL 11...	80	130	<0.20	<1	2	420
AUG 13...	--	--	--	--	--	--

Remark codes used in this table:
 < -- Less than

Null value qualifier codes used in this table:
 e -- Required equipment not functional/avail

05056220 SWEETWATER LAKE AT SWEETWATER, ND

LOCATION.--Lat 48°12'37", long 98°52'15", in NE¹₄SW¹₄ sec.27, T.155 N., R.64 W., Ramsey County, Hydrologic Unit 09020201, at southwest arm of lake 6 mi north of Devils Lake.

DRAINAGE AREA.--670 mi² of which about 290 mi² is probably noncontributing.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960, 1962-87, 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth to bottom of sampling intrval meters (82048)	Depth to top of sampling intrval meters (82047)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfl lab, uS/cm 25 degC (90095)	Hard-ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-ium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)
OCT 02...	1035	1.9	0.00	8.0	937	330	73.0	36.0	15.0	2	78.0	33	266
FEB 03...	1630	1.7	0.70	8.3	1,570	580	120	69.0	23.0	2	140	33	464
MAY 05...	1550	1.9	0.00	8.1	906	310	67.0	34.0	18.0	2	74.0	33	202
AUG 05...	1640	1.9	0.00	8.8	1,100	380	73.2	46.9	18.5	3	115	38	207

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti-tuents mg/L (70301)	Residue on evap. at wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro-gen, water, unfltrd mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, unfltrd mg/L (00665)
OCT 02...	23.0	0.20	--	230	615	646	2.0	0.07	0.07	<0.008	2.0	0.39	0.56
FEB 03...	45.0	0.30	--	420	1,100	1,160	2.6	0.37	E.05	E.004	2.2	0.31	0.35
MAY 05...	28.0	0.10	--	260	602	637	2.0	<0.04	<0.06	<0.008	--	0.09	0.21
AUG 05...	41.1	0.17	27.8	373	793	--	1.9	E.03n	<0.06	<0.008	--	0.35	0.46

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Total nitro-gen, water, unfltrd mg/L (00600)	Chloro-phyll a phyto-plank- ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank- ton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Mangan-ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb-denum, water, fltrd, ug/L (01060)	Selen-ium, water, fltrd, ug/L (01145)	Stront-ium, water, fltrd, ug/L (01080)
OCT 02...	2.1	11.0	<0.1	7.0	40	<1.0	40	20	0.10	<1	<1	250
FEB 03...	--	E1.0	0.3	7.0	50	1	80	240	<0.10	1	1	490
MAY 05...	--	E1.0	<0.1	5.0	20	<1	40	20	<0.10	2	1	270
AUG 05...	--	E20.9d	<1.0d	7.8	10	<1	50	20	<0.20	2	1	290

Remark codes used in this table:

< -- Less than

E -- Estimated value

Value qualifier codes used in this table:

d -- Diluted sample; method hi range exceeded

n -- Below the NDV

RED RIVER OF THE NORTH BASIN

05056220 SWEETWATER LAKE AT SWEETWATER, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth of lake, maximum meters (85310)	Ice thickness, meters (82131)	Sampling depth, meters (00098)	Transparency Secchi disc, inches (00077)	Wind direction, clkwise from north, degrees (00036)	Wind speed, mph (00035)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT													
02...	1030	1.9	--	0.00	8.00	--	0.0	739	11.0	98	8.7	901	5.5
02...	1031	--	--	0.50	--	--	--	--	10.2	--	8.7	901	--
02...	1032	--	--	1.0	--	--	--	--	10.0	--	8.7	902	--
02...	1033	--	--	1.5	--	--	--	--	9.7	--	8.7	903	--
02...	1034	--	--	1.9	--	--	--	--	9.6	--	8.7	902	--
FEB													
03...	1625	1.7	0.60	0.70	27.0	23	10	--	4.2	--	7.7	1,680	<-5.0
03...	1626	--	--	1.2	--	--	--	--	4.1	--	7.8	1,720	--
03...	1627	--	--	1.7	--	--	--	--	2.6	--	7.8	1,700	--
MAY													
05...	1545	1.9	--	0.00	8.40	45	10	726	9.8	93	8.4	945	10.0
05...	1546	--	--	1.0	--	--	--	--	9.7	--	8.4	945	--
05...	1547	--	--	1.9	--	--	--	--	9.7	--	8.4	945	--
AUG													
05...	1635	1.9	--	0.00	21.6	20	<5.0	734	7.2	85	8.8	1,120	23.0
05...	1636	--	--	0.80	--	--	--	--	5.7	--	8.8	1,130	--
05...	1637	--	--	1.5	--	--	--	--	3.6	--	8.7	1,140	--
05...	1638	--	--	1.9	--	--	--	--	2.4	--	8.6	1,140	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, water, deg C (00010)
OCT	
02...	8.9
02...	8.6
02...	8.5
02...	8.5
02...	8.5
FEB	
03...	0.0
03...	0.9
03...	1.8
MAY	
05...	10.9
05...	10.9
05...	10.9
AUG	
05...	21.8
05...	21.5
05...	21.3
05...	21.3

Remark codes used in this table:
< -- Less than

05056222 MORRISON LAKE NEAR WEBSTER, ND

LOCATION.--Lat 48°15'35", long 98°50'48", in NW¹₄ sec.11, T.155 N., R.64 W., Ramsey County, Hydrologic Unit 09020201, on northwest shoreline of Morrison Lake and 2 mi southeast of Webster.

DRAINAGE AREA.--501 mi², approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--March 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Stage frequently affected by wind. Gage height for Mar. 4 from once daily observation of gage height.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height recorded, 62.60 ft, Apr. 27-28, 1997; minimum recorded, 53.35 ft, Sept. 17, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 60.70 ft, May 8, wind affected; minimum recorded, 58.03 ft, Nov. 29, may have been lower during period of no record, Jan. 19 to Feb. 3 and Feb. 23 to Mar. 16.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59.17	58.43	58.07	58.21	---	---	58.63	59.98	59.79	59.71	59.54	59.35
2	59.20	58.48	58.13	58.21	---	---	58.75	60.01	59.79	59.73	59.54	59.27
3	59.16	58.48	58.18	58.22	---	---	58.78	59.97	59.80	59.74	59.55	59.23
4	59.08	58.49	58.23	58.21	58.08	58.06	58.79	59.95	59.79	59.72	59.55	59.30
5	59.09	---	58.23	58.20	58.08	---	58.79	60.00	59.76	59.71	59.58	59.29
6	59.05	58.40	58.24	58.20	58.09	---	58.78	59.97	59.73	59.68	59.58	59.29
7	59.03	58.44	58.25	58.20	58.09	---	58.78	59.99	59.73	59.64	59.58	59.29
8	58.98	---	58.28	58.20	58.09	---	58.79	60.04	59.74	59.64	59.58	59.27
9	58.98	58.50	58.30	58.19	58.09	---	58.79	59.96	59.78	59.67	59.56	59.25
10	58.96	58.47	58.29	58.19	58.09	---	58.81	59.89	59.80	59.70	59.56	59.27
11	58.93	58.46	58.28	58.20	58.09	---	58.88	59.89	59.81	59.69	59.57	59.30
12	58.86	58.42	58.25	58.23	58.09	---	58.99	59.98	59.83	59.71	59.58	59.31
13	58.88	58.34	58.23	58.26	58.09	---	59.13	59.99	59.85	59.71	59.55	59.26
14	58.80	58.33	58.22	58.26	58.09	---	59.26	59.97	59.85	59.77	59.54	59.26
15	58.85	58.33	58.20	58.22	58.08	---	59.40	59.96	59.83	59.81	59.51	59.30
16	58.84	58.26	58.21	58.19	58.08	---	59.53	59.94	59.80	59.80	59.50	59.28
17	---	58.23	58.22	58.18	58.09	58.16	59.67	59.95	59.78	59.78	59.49	59.26
18	58.71	58.25	58.25	58.16	58.09	58.14	59.74	59.96	59.78	59.77	59.48	59.24
19	58.70	58.23	58.25	---	58.09	58.14	59.79	59.90	59.78	59.75	59.46	59.29
20	58.69	58.21	58.25	---	58.09	58.20	59.83	59.93	59.69	59.70	59.44	59.30
21	58.64	58.22	58.24	---	58.08	58.12	59.90	59.94	59.72	59.68	59.37	59.28
22	58.60	58.18	58.24	---	58.08	58.10	59.93	59.92	59.74	59.67	59.41	59.25
23	58.59	58.13	58.25	---	---	58.13	59.95	59.92	59.73	59.68	59.39	59.27
24	58.56	58.11	58.24	---	---	58.34	59.97	59.93	59.70	59.66	59.39	59.14
25	58.56	58.10	58.24	---	---	58.32	59.97	59.92	59.69	59.64	59.40	59.23
26	---	58.10	58.24	---	---	58.38	59.97	59.87	59.68	59.60	59.39	59.16
27	---	58.10	58.24	---	---	58.44	59.86	59.85	59.73	59.61	59.36	59.16
28	---	58.06	58.23	---	---	58.48	59.92	59.82	59.70	59.61	59.34	59.18
29	58.42	58.05	58.23	---	---	58.52	59.94	59.83	59.70	59.59	59.33	59.15
30	58.45	58.07	58.23	---	---	58.57	59.97	59.67	59.71	59.57	59.34	59.14
31	58.43	---	---	---	---	58.58	---	59.78	---	59.56	59.35	---
MEAN	---	---	---	---	---	---	59.38	59.93	59.76	59.69	59.48	59.25
MAX	---	---	---	---	---	---	59.97	60.04	59.85	59.81	59.58	59.35
MIN	---	---	---	---	---	---	58.63	59.67	59.68	59.56	59.33	59.14

RED RIVER OF THE NORTH BASIN
05056222 MORRISON LAKE NEAR WEBSTER, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth to bottom of sampling intrval meters (82048)	Depth to top of sampling intrval meters (82047)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfltrd lab, uS/cm 25 degC (90095)	Hard-ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)
OCT 01...	1635	2.2	0.00	8.4	892	280	52.0	37.0	16.0	2	83.0	37	202
FEB 03...	1705	2.1	0.80	8.0	1,330	470	94.0	57.0	22.0	2	120	34	357
MAY 05...	1535	2.3	0.00	8.1	877	290	59.0	34.0	16.0	2	74.0	34	213
AUG 05...	1605	2.6	0.00	9.4	882	290	54.4	38.3	18.0	2	90.5	38	197

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti-tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro-gen, water, unfltrd mg/L (00605)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, unfltrd mg/L (00665)
OCT 01...	16.0	0.20	--	260	585	609	2.2	E.04	<0.06	<0.008	--	0.14	0.37
FEB 03...	34.0	0.30	--	370	912	946	2.4	0.40	<0.06	<0.008	2.0	0.17	0.21
MAY 05...	28.0	0.10	--	230	569	601	2.0	0.26	<0.06	E.004	1.8	0.20	0.34
AUG 05...	31.0	0.16	17.0	253	604	--	3.2	0.08	<0.06	<0.008	3.1	0.41	0.62

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chloro-phyll a phyto-plank- ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank- ton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Mangan-ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb-denum, water, fltrd, ug/L (01060)	Selen-ium, water, fltrd, ug/L (01145)	Stront-ium, water, fltrd, ug/L (01080)
OCT 01...	12.2	<0.1	7.0	40	<1.0	40	20	0.10	1	<1	230
FEB 03...	<0.1	<0.1	7.0	40	1	70	540	<0.10	5	1	400
MAY 05...	E.9	<0.1	5.0	20	<1	50	40	<0.10	2	1	260
AUG 05...	59.1d	<0.1d	7.7	40	<1	50	240	<0.20	1	1	250

Remark codes used in this table:

< -- Less than
E -- Estimated value

Value qualifier codes used in this table:

d -- Diluted sample: method hi range exceeded

05056222 MORRISON LAKE NEAR WEBSTER, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth of lake, maximum meters (85310)	Ice thickness, meters (82131)	Sampling depth, meters (00098)	Transparency Secchi disc, inches (00077)	Wind direction, clkwise from north, degrees (00036)	Wind speed, mph (00035)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unfiltered, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT													
01...	1630	2.2	--	0.00	13.0	310	10	732	11.1	102	9.0	864	7.5
01...	1631	--	--	0.90	--	--	--	--	10.9	--	9.0	866	--
01...	1632	--	--	1.7	--	--	--	--	10.8	--	9.0	867	--
01...	1633	--	--	2.2	--	--	--	--	10.8	--	9.0	867	--
FEB													
03...	1700	2.1	0.57	0.80	34.0	0.0	8.0	733	4.7	34	8.1	1,410	<-5.0
03...	1701	--	--	1.5	--	--	--	--	5.1	--	8.1	1,420	--
03...	1702	--	--	2.1	--	--	--	--	4.5	--	8.1	1,420	--
MAY													
05...	1530	2.3	--	0.00	36.0	60	9.0	724	9.2	89	8.4	908	10.0
05...	1531	--	--	1.0	--	--	--	--	9.1	--	8.4	909	--
05...	1532	--	--	2.0	--	--	--	--	9.0	--	8.4	909	--
05...	1533	--	--	2.3	--	--	--	--	8.9	--	8.4	910	--
AUG													
05...	1600	2.6	--	0.00	16.8	60	<5.0	733	9.5	114	9.0	876	22.5
05...	1601	--	--	0.80	--	--	--	--	6.3	--	9.0	887	--
05...	1602	--	--	1.6	--	--	--	--	5.8	--	9.0	895	--
05...	1603	--	--	2.6	--	--	--	--	5.1	--	9.1	898	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, water, deg C (00010)
OCT	
01...	9.6
01...	9.6
01...	9.6
01...	9.6
FEB	
03...	0.0
03...	1.3
03...	2.1
MAY	
05...	11.3
05...	11.3
05...	11.3
05...	11.3
AUG	
05...	22.2
05...	21.8
05...	21.7
05...	21.6

Remark codes used in this table:
 < -- Less than

RED RIVER OF THE NORTH BASIN

05056239 STARKWEATHER COULEE NEAR WEBSTER, ND

LOCATION.--Lat 48°19'14", long 98°56'25", in NW¹₄SW¹₄NW¹₄ sec.19, T.156 N., R.64 W., Ramsey County, Hydrologic Unit 09020201, on right bank 100 ft upstream from bridge on township road and 3.8 mi northwest of Webster.

DRAINAGE AREA.--About 310 mi², of which about 100 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1979 to current year (seasonal records only since 1987).

GAGE.--Water-stage recorder. Elevation of gage is 1,448 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 23, 1986, nonrecording gage 100 ft downstream at same datum.

REMARKS.--Records good except for estimated daily discharges, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 336 ft³/s, Apr. 9, gage height, 5.38 ft; maximum gage height, 7.17 ft, May 26, backwater from ice; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e0.00	209	21	1.4	2.9	0.00	0.00
2	---	---	---	---	---	e0.00	186	18	0.66	2.9	0.00	0.00
3	---	---	---	---	---	e0.00	175	14	0.43	1.9	0.00	0.00
4	---	---	---	---	---	e0.00	167	13	0.29	1.8	0.00	0.00
5	---	---	---	---	---	e0.00	e149	15	0.19	1.5	0.00	0.00
6	---	---	---	---	---	e0.00	e170	16	0.09	4.6	0.00	0.00
7	---	---	---	---	---	e0.00	e195	15	1.2	3.8	0.00	0.00
8	---	---	---	---	---	e0.00	e213	15	54	2.4	0.00	0.00
9	---	---	---	---	---	e0.00	309	15	50	2.8	0.00	0.00
10	---	---	---	---	---	e0.00	277	17	39	2.0	0.00	0.00
11	---	---	---	---	---	e0.00	266	17	32	e1.3	0.00	0.00
12	---	---	---	---	---	e0.00	257	16	31	e0.98	0.00	0.00
13	---	---	---	---	---	e0.00	206	13	41	e0.64	0.00	0.00
14	---	---	---	---	---	e0.01	150	9.7	34	e0.67	0.00	0.00
15	---	---	---	---	---	e0.04	127	4.8	26	e1.0	0.00	0.00
16	---	---	---	---	---	e0.12	112	4.1	19	e0.85	0.00	0.00
17	---	---	---	---	---	e0.50	100	4.5	15	e0.60	0.00	0.00
18	---	---	---	---	---	e1.2	98	7.3	12	e0.45	0.00	0.00
19	---	---	---	---	---	e2.4	87	11	8.9	e0.35	0.00	0.00
20	---	---	---	---	---	e4.0	78	15	7.0	e0.26	0.00	0.00
21	---	---	---	---	---	e9.0	70	13	5.7	e0.19	0.00	0.00
22	---	---	---	---	---	e15	69	11	5.3	e0.14	0.00	0.00
23	---	---	---	---	---	e25	58	8.6	4.9	0.08	0.00	0.00
24	---	---	---	---	---	e41	48	8.8	4.1	e0.06	0.00	0.00
25	---	---	---	---	---	e70	42	9.5	3.8	e0.04	0.00	0.00
26	---	---	---	---	---	e120	38	8.4	3.7	e0.02	0.00	0.00
27	---	---	---	---	---	e140	33	6.8	4.0	e0.01	0.00	0.00
28	---	---	---	---	---	e120	29	5.8	3.6	0.00	0.00	0.00
29	---	---	---	---	---	102	25	3.9	2.9	0.00	0.00	0.00
30	---	---	---	---	---	85	22	2.2	2.8	0.00	0.00	0.00
31	---	---	---	---	---	110	---	2.2	---	0.00	0.00	---
TOTAL	---	---	---	---	---	845.27	3,965	341.6	413.96	34.24	0.00	0.00
MEAN	---	---	---	---	---	27.3	132	11.0	13.8	1.10	0.000	0.000
MAX	---	---	---	---	---	140	309	21	54	4.6	0.00	0.00
MIN	---	---	---	---	---	0.00	22	2.2	0.09	0.00	0.00	0.00
AC-FT	---	---	---	---	---	1,680	7,860	678	821	68	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2003, BY WATER YEAR (WY)

MEAN	1.30	0.12	0.010	0.000	0.69	23.8	118	31.8	17.1	22.2	15.7	2.82
MAX	5.53	1.09	0.092	0.000	6.61	180	357	284	162	119	138	22.0
(WY)	(1983)	(1981)	(1983)	(1980)	(1981)	(1992)	(2001)	(1997)	(2002)	(1993)	(1993)	(1993)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.92	0.000	0.000	0.000	0.000	0.000
(WY)	(1980)	(1980)	(1980)	(1980)	(1980)	(1980)	(2000)	(1980)	(1980)	(1980)	(1980)	(1981)

05056239 STARKWEATHER COULEE NEAR WEBSTER, ND—Continued

SUMMARY STATISTICS	WATER YEARS 1980 - 2003	
ANNUAL MEAN	a12.1	
HIGHEST ANNUAL MEAN	a24.5	1987
LOWEST ANNUAL MEAN	a0.88	1980
HIGHEST DAILY MEAN	779	Apr 27, 1997
LOWEST DAILY MEAN	0.00	Oct 1, 1979
ANNUAL SEVEN-DAY MINIMUM	0.00	Oct 1, 1979
MAXIMUM PEAK FLOW	782	Apr 27, 1997
MAXIMUM PEAK STAGE	b10.05	Apr 6, 1989
ANNUAL RUNOFF (AC-FT)	a8,790	
10 PERCENT EXCEEDS	27	
50 PERCENT EXCEEDS	0.00	
90 PERCENT EXCEEDS	0.00	

a Based on complete water years only (1980-87, 1994)

b Backwater from ice

e Estimated

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1980 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 08...	1527	0.09	--	--	--	862	5.0	8.0	--	--	--	--	--
APR 16...	1203	106	8.1	7.7	782	791	5.5	5.5	320	72.0	33.0	23.0	0.8
MAY 28...	1615	5.7	--	--	--	1,550	--	24.5	--	--	--	--	--
JUL 10...	1000	2.4	9.0	8.6	1,140	1,140	16.5	16.0	440	59.5	71.7	14.8	2
AUG 12...	1525	0.00	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 08...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 16...	31.0	16	175	25.0	0.10	--	210	499	161	562	7.0	70	<1
MAY 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 10...	97.4	31	85	45.8	0.16	<2.00	472	813	5.27	--	6.1	10	<1
AUG 12...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
OCT 08...	--	--	--	--	--	--
APR 16...	30	30	<0.10	3	2	260
MAY 28...	--	--	--	--	--	--
JUL 10...	70	10	<0.20	5	2	290
AUG 12...	--	--	--	--	--	--

Remark codes used in this table:
 < -- Less than

05056241 DRY LAKE NEAR PENN, ND

LOCATION.--Lat 48°13'52", long 98°58'59", in NW¹₄NW¹₄SW¹₄ sec.23, T.155 N., R.65 W., Ramsey County, Hydrologic Unit 09020201, on west shoreline of Dry Lake and 6 mi east of Penn.

DRAINAGE AREA.--920 mi², approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--October 1983 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Stage is affected by wind at times.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height recorded, 52.02 ft, May 2, 1997; minimum recorded, 41.80 ft, Sept. 14 and Oct. 1-20, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 47.94 ft, May 18, affected by wind; minimum, 46.78 ft, Dec. 17.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47.16	46.90	46.81	46.86	46.93	46.95	47.40	47.36	47.47	47.48	47.60	47.21
2	47.11	46.90	46.80	46.86	46.93	46.94	47.44	47.33	47.46	47.55	47.57	47.24
3	47.10	46.89	46.80	46.87	46.93	46.95	47.43	47.36	47.47	47.57	47.55	47.22
4	47.19	46.88	46.81	46.86	46.93	46.94	47.41	47.44	47.53	47.55	47.54	47.16
5	47.12	46.88	46.81	---	46.93	46.94	47.39	47.47	47.50	47.55	47.59	47.15
6	47.12	46.87	46.81	46.86	46.93	46.94	47.36	47.44	47.50	47.52	47.59	47.15
7	47.11	46.89	46.81	46.88	46.94	46.94	47.34	47.44	47.51	47.53	47.56	47.14
8	47.14	46.87	46.80	46.88	46.94	46.94	47.36	47.51	---	47.52	47.53	47.08
9	47.05	46.87	46.81	46.88	46.94	46.93	47.44	47.55	---	47.57	47.55	47.04
10	47.10	46.84	46.80	46.87	46.94	46.91	47.50	47.56	---	47.57	47.57	47.09
11	47.16	46.82	46.80	46.87	46.94	46.91	47.51	47.41	---	47.59	47.55	47.16
12	47.08	46.83	46.80	46.87	46.94	46.91	47.51	47.38	---	47.57	47.49	47.14
13	47.01	46.85	46.80	46.87	46.94	46.90	47.50	47.45	---	47.52	47.44	47.14
14	47.07	46.86	46.80	46.87	46.96	46.90	47.47	47.48	---	47.62	47.42	47.16
15	47.01	46.85	46.80	46.87	46.95	46.91	47.44	47.47	---	47.64	47.48	47.12
16	46.98	46.85	46.79	46.87	46.95	46.91	---	47.50	47.64	47.66	47.46	47.16
17	46.97	46.85	46.79	46.87	46.96	46.92	---	47.57	47.62	47.65	47.41	47.15
18	47.03	46.85	46.82	46.87	46.97	46.92	---	47.64	47.58	47.65	47.44	47.16
19	46.99	46.85	46.84	46.87	46.97	46.93	---	47.61	47.52	47.68	47.40	47.13
20	47.00	46.85	46.85	46.87	46.97	46.94	---	47.53	47.47	47.71	47.38	47.11
21	47.00	46.84	46.86	46.87	46.97	46.95	47.37	47.59	47.61	47.70	47.38	47.14
22	46.98	46.85	46.86	46.87	46.97	46.96	47.38	47.61	47.73	47.69	47.34	47.13
23	46.94	46.85	46.86	46.87	46.96	46.99	47.41	47.58	47.65	47.64	47.25	47.09
24	46.95	46.81	46.86	46.87	46.96	47.02	47.46	47.67	47.63	47.61	47.32	47.13
25	46.96	46.82	46.86	46.88	46.96	47.05	47.44	47.63	47.55	47.66	47.31	47.02
26	46.95	46.81	46.86	46.88	46.96	47.12	47.41	47.59	47.52	47.67	47.33	47.11
27	46.95	46.82	46.87	46.89	46.95	47.22	47.45	47.67	47.50	47.63	47.30	47.10
28	46.95	46.83	46.87	46.90	46.95	47.26	47.40	47.63	47.54	47.61	47.32	47.08
29	46.93	46.83	46.87	46.90	---	47.28	47.36	47.57	47.53	47.61	47.29	47.09
30	46.88	46.80	46.87	46.91	---	47.29	47.36	47.64	47.51	47.61	47.25	47.07
31	46.89	---	46.86	46.92	---	47.31	---	47.45	---	47.60	47.23	---
MEAN	47.03	46.85	46.83	---	46.95	47.00	---	47.52	---	47.60	47.43	47.13
MAX	47.19	46.90	46.87	---	46.97	47.31	---	47.67	---	47.71	47.60	47.24
MIN	46.88	46.80	46.79	---	46.93	46.90	---	47.33	---	47.48	47.23	47.02

RED RIVER OF THE NORTH BASIN
05056241 DRY LAKE NEAR PENN, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth to bottom of samplng intrval meters (82048)	Depth to top of samplng intrval meters (82047)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfltrd lab, uS/cm 25 degC (90095)	Hard-ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-ium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)
OCT 02...	1150	1.2	0.00	7.8	1,020	350	68.0	44.0	21.0	2	83.0	32	226
FEB 03...	1515	1.1	0.70	8.2	1,780	670	130	84.0	36.0	3	160	33	437
MAY 06...	0805	1.0	0.00	7.8	760	250	48.0	32.0	17.0	2	58.0	32	153
AUG 05...	1405	1.2	0.00	9.2	936	360	73.7	42.3	21.1	2	80.9	31	234

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti-tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro-gen, water, unfltrd mg/L (00605)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, unfltrd mg/L (00665)
OCT 02...	16.0	0.20	--	300	668	725	1.9	0.20	0.97	<0.008	1.7	0.22	0.33
FEB 03...	48.0	0.30	--	570	1,290	1,360	2.5	0.23	0.51	E.006	2.3	0.20	0.24
MAY 06...	24.0	0.10	--	220	491	503	1.4	E.03	E.03	<0.008	--	0.03	0.10
AUG 05...	30.2	0.19	21.2	265	655	--	2.8	0.11	<0.06	<0.008	2.7	0.29	0.44

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Total nitrogen, water, unfltrd mg/L (00600)	Chloro-phyll a phyto-plank- ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank- ton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Mangan-ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb-denum, water, fltrd, ug/L (01060)	Selen-ium, water, fltrd, ug/L (01145)	Stront-ium, water, fltrd, ug/L (01080)
OCT 02...	2.9	17.7	<0.1	4.0	50	<1	50	20	<0.10	1	<1	260
FEB 03...	3.0	E.3	<0.1	8.0	60	2	110	200	<0.10	3	<1	540
MAY 06...	--	E1.1	<0.1	3.0	30	<1	40	40	<0.10	2	1	230
AUG 05...	--	E73.3d	<0.1d	12.4	10	<1	50	160	<0.20	2	1	300

Remark codes used in this table:

< -- Less than

E -- Estimated value

Value qualifier codes used in this table:

d -- Diluted sample: method hi range exceeded

05056241 DRY LAKE NEAR PENN, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth of lake, maximum meters (85310)	Ice thickness, meters (82131)	Sampling depth, meters (00098)	Transparency Secchi disc, inches (00077)	Wind direction, clkwise from north, degrees (00036)	Wind speed, mph (00035)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT													
02...	1145	1.2	--	0.00	9.00	--	0.0	740	10.0	89	8.3	991	9.0
02...	1146	--	--	0.50	--	--	--	--	9.8	--	8.3	997	--
02...	1147	--	--	1.0	--	--	--	--	9.3	--	8.3	997	--
02...	1148	--	--	1.2	--	--	--	--	9.0	--	8.3	999	--
FEB													
03...	1510	1.1	0.58	0.70	25.0	10	7.0	732	2.1	15	7.2	1,950	<-5.0
03...	1511	--	--	1.1	--	--	--	--	2.1	--	7.2	1,970	--
MAY													
06...	0800	1.0	--	0.00	12.0	90	6.0	727	10.1	94	7.9	795	9.5
06...	0801	--	--	0.50	--	--	--	--	9.5	--	8.0	795	--
06...	0802	--	--	1.0	--	--	--	--	9.4	--	7.9	795	--
AUG													
05...	1400	1.2	--	0.00	31.2	30	<5.0	733	7.7	92	9.1	944	21.5
05...	1401	--	--	0.50	--	--	--	--	7.6	--	9.1	944	--
05...	1402	--	--	1.0	--	--	--	--	7.6	--	9.1	944	--
05...	1403	--	--	1.2	--	--	--	--	7.6	--	9.1	944	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, water, deg C (00010)
OCT	
02...	8.8
02...	8.2
02...	7.9
02...	7.9
FEB	
03...	0.0
03...	0.3
MAY	
06...	10.3
06...	10.3
06...	10.3
AUG	
05...	21.9
05...	21.9
05...	21.9
05...	21.9

Remark codes used in this table:

< -- Less than

RED RIVER OF THE NORTH BASIN

05056250 LAKE ALICE NEAR CHURCHS FERRY, ND

LOCATION.--Lat 48°19'33", long 99°07'16", in SE¹₄NE¹₄NE¹₄ sec.11, T.156 N., R.66 W., Ramsey County, Hydrologic Unit 09020201, at northwest corner of lake 7.5 mi northwest of Churchs Ferry.

DRAINAGE AREA.--2,100 mi², approximately, of which about 500 mi² is probably noncontributing.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960, 1962-64, 1966-87, 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth to bottom of sampling intrval meters (82048)	Depth to top of sampling intrval meters (82047)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfl lab, uS/cm 25 degC (90095)	Hard-ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-ium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)
OCT 02...	1325	2.3	0.00	8.1	1,270	520	100	65.0	21.0	2	89.0	26	348
FEB 03...	1225	2.2	0.90	8.2	1,630	720	140	91.0	28.0	2	130	27	487
MAY 05...	1225	7.5	0.00	8.3	1,170	470	89.0	61.0	19.0	2	81.0	26	302
AUG 05...	1205	2.2	0.00	8.6	1,340	560	106	70.8	22.2	2	104	28	338

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti-tuents mg/L (70301)	Residue on evap. at wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro-gen, water, unfltrd mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, unfltrd mg/L (00665)
OCT 02...	42.0	0.20	--	370	896	940	2.4	0.07	E.05	<0.008	2.4	0.24	0.42
FEB 03...	47.0	0.30	--	500	1,230	1,320	3.0	0.52	<0.06	<0.008	2.5	0.54	0.65
MAY 05...	19.0	0.10	--	320	770	859	2.4	0.07	<0.06	<0.008	2.4	0.18	0.33
AUG 05...	43.1	0.20	35.1	393	943	--	2.6	0.04	E.04n	<0.008	2.6	0.37	0.50

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank-ton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Mangan-ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb-denum, water, fltrd, ug/L (01060)	Selen-ium, water, fltrd, ug/L (01145)	Stront-ium, water, fltrd, ug/L (01080)
OCT 02...	36.4	<0.1	7.0	50	<1.0	80	20	<0.10	1	<1	370
FEB 03...	4.0	<0.1	8.0	30	1	120	990	<0.10	3	<1	500
MAY 05...	E2.5	<0.1	6.0	80	<1	80	30	<0.10	2	1	390
AUG 05...	1.7	<0.1	11.9	20	<1	80	60	<0.20	2	2	400

Remark codes used in this table:

- < -- Less than
- E -- Estimated value

Value qualifier codes used in this table:

- n -- Below the NDV

05056250 LAKE ALICE NEAR CHURCHS FERRY, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth of lake, maximum meters (85310)	Ice thickness, meters (82131)	Sampling depth, meters (00098)	Transparency Secchi disc, inches (00077)	Wind direction, clkwise from north, degrees (00036)	Wind speed, mph (00035)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unfiltered, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT													
02...	1320	2.3	--	0.00	9.00	240	<5.0	737	10.9	100	8.4	1,250	10.5
02...	1322	--	--	1.3	--	--	--	--	9.6	--	8.4	1,250	--
02...	1323	--	--	2.3	--	--	--	--	8.8	--	8.4	1,250	--
FEB													
03...	1220	2.2	0.64	0.80	42.0	345	10	731	5.5	41	7.7	1,690	<-5.0
03...	1221	--	--	1.4	--	--	--	--	5.2	--	7.7	1,670	--
03...	1222	--	--	1.9	--	--	--	--	4.6	--	7.7	1,670	--
03...	1223	--	--	2.2	--	--	--	--	4.5	--	7.7	1,670	--
MAY													
05...	1215	7.5	--	0.10	12.0	45	15	725	9.5	91	8.1	1,230	10.5
05...	1216	--	--	0.70	--	--	--	--	9.3	--	8.1	1,230	--
05...	1217	--	--	1.6	--	--	--	--	9.3	--	8.1	1,230	--
05...	1218	--	--	2.6	--	--	--	--	9.2	--	8.1	1,230	--
05...	1219	--	--	3.3	--	--	--	--	9.2	--	8.1	1,230	--
05...	1220	--	--	4.3	--	--	--	--	9.1	--	8.1	1,230	--
05...	1221	--	--	5.2	--	--	--	--	9.1	--	8.1	1,230	--
05...	1222	--	--	6.2	--	--	--	--	9.0	--	8.1	1,230	--
05...	1223	--	--	7.5	--	--	--	--	9.0	--	8.1	1,230	--
AUG													
05...	1155	2.2	--	0.00	16.8	30	6.0	732	4.2	51	8.4	1,330	19.0
05...	1156	--	--	0.50	--	--	--	--	4.1	--	8.4	1,330	--
05...	1157	--	--	1.0	--	--	--	--	4.1	--	8.4	1,330	--
05...	1158	--	--	1.5	--	--	--	--	4.1	--	8.4	1,330	--
05...	1159	--	--	2.0	--	--	--	--	4.1	--	8.4	1,330	--
05...	1200	--	--	2.0	--	--	--	--	4.0	--	8.4	1,330	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, water, deg C (00010)
OCT	
02...	9.6
02...	8.8
02...	8.6
FEB	
03...	1.1
03...	2.0
03...	2.7
03...	3.1
MAY	
05...	11.0
05...	11.0
05...	11.0
05...	11.0
05...	11.0
05...	11.0
05...	11.0
05...	11.0
05...	11.0
AUG	
05...	22.0
05...	22.0
05...	22.0
05...	22.0
05...	22.0
05...	22.0

Remark codes used in this table:
 < -- Less than

RED RIVER OF THE NORTH BASIN

05056255 LAKE ALICE-IRVINE CHANNEL NEAR CHURCHS FERRY, ND

LOCATION.--Lat 48°19'25", long 99°08'43", in NW¹₄NE¹₄ sec.21, T.156 N., R.66 W., Ramsey County, Hydrologic Unit 09020201, on downstream side of control structure between Lake Alice and Lake Irvine, 5 mi northwest of Churchs Ferry.

DRAINAGE AREA.--999 mi², approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--March 1985 to September 1987 (seasonal records only) and April 1998 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Elevation at gage frequently affected by wind.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 48.63 ft, Apr. 25-27, 2001; minimum recorded, 39.51 ft, Oct. 7, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 47.77 ft, June 11; minimum, 46.68 ft, Sept. 29.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47.19	46.95	46.94	47.00	---	47.06	47.29	47.50	47.60	47.65	47.39	47.13
2	47.19	46.95	46.93	47.01	---	47.05	47.31	47.51	47.61	47.67	47.38	47.07
3	47.20	46.96	46.93	47.01	47.05	47.06	47.30	47.55	47.64	47.67	47.38	47.02
4	47.18	46.96	46.94	47.01	47.05	47.06	47.30	47.60	47.65	47.64	47.39	47.03
5	47.15	46.97	46.94	47.01	47.05	47.07	47.30	47.59	47.63	47.63	47.45	47.03
6	47.14	46.97	46.95	47.01	47.05	47.07	47.31	47.57	47.60	47.61	47.45	47.02
7	47.16	46.98	46.94	47.02	47.07	47.07	47.32	47.60	47.60	47.57	47.45	47.01
8	47.12	46.97	46.94	47.02	47.06	47.07	47.34	47.63	47.58	47.55	47.46	47.02
9	47.14	46.97	46.95	47.01	47.07	47.07	47.38	47.61	47.60	47.58	47.47	47.04
10	47.17	46.95	46.94	47.00	47.06	47.07	47.41	47.54	47.61	47.60	47.47	47.06
11	47.16	46.96	46.94	47.00	47.06	47.06	47.44	47.49	47.65	47.59	47.46	47.09
12	47.09	46.96	46.94	47.00	47.06	47.06	47.46	47.52	47.72	47.59	47.48	47.07
13	47.09	46.96	46.94	47.00	47.06	47.07	47.47	47.55	47.71	47.62	47.49	47.03
14	47.09	46.97	46.94	47.01	47.05	47.07	47.48	47.57	47.72	47.65	47.49	47.01
15	47.07	46.97	46.93	47.01	47.04	47.07	47.47	47.59	47.74	47.66	47.47	47.01
16	47.05	46.97	46.93	47.01	47.05	47.07	47.45	47.62	47.74	47.66	47.43	46.99
17	47.05	46.98	46.93	47.01	47.06	47.07	47.50	47.64	47.71	47.64	47.42	46.96
18	47.05	46.98	46.96	47.01	47.06	47.07	47.52	47.67	47.69	47.64	47.40	46.92
19	47.03	46.97	46.98	47.01	47.06	47.08	47.51	47.62	47.69	47.64	47.36	46.93
20	47.02	46.97	46.99	47.00	47.05	47.10	47.50	47.62	47.73	47.60	47.33	46.94
21	47.00	46.97	46.99	47.00	47.05	47.10	47.50	47.65	47.75	47.56	47.28	46.92
22	46.97	46.98	46.99	47.00	47.05	47.12	47.53	47.66	47.74	47.55	47.28	46.87
23	46.97	46.98	47.00	---	47.05	47.14	47.56	47.69	47.71	47.55	47.32	46.87
24	46.98	46.95	47.00	---	47.06	47.17	47.56	47.73	47.66	47.58	47.28	46.78
25	47.01	46.95	47.00	---	47.06	47.17	47.55	47.72	47.64	47.57	47.29	46.81
26	47.01	46.95	47.00	---	47.06	47.21	47.57	47.74	47.61	47.53	47.25	46.78
27	47.02	46.96	47.01	---	47.06	47.26	47.51	47.73	47.64	47.51	47.26	46.74
28	47.02	46.96	47.00	---	47.06	47.27	47.51	47.69	47.65	47.50	47.22	46.73
29	46.99	46.96	47.00	---	---	47.27	47.51	47.68	47.63	47.49	47.16	46.70
30	46.96	46.94	47.00	---	---	47.26	47.52	47.59	47.63	47.45	47.13	46.68
31	46.95	---	46.99	---	---	47.27	---	47.59	---	47.43	47.12	---
TOTAL	1,459.22	1,408.92	1,455.86	---	---	1,460.61	1,423.38	1,476.06	1,429.88	1,475.18	1,468.21	1,408.26
MEAN	47.07	46.96	46.96	---	---	47.12	47.45	47.61	47.66	47.59	47.36	46.94
MAX	47.20	46.98	47.01	---	---	47.27	47.57	47.74	47.75	47.67	47.49	47.13
MIN	46.95	46.94	46.93	---	---	47.05	47.29	47.49	47.58	47.43	47.12	46.68

05056260 LAKE IRVINE NEAR CHURCHS FERRY, ND

LOCATION.--Lat 48°16'57", long 99°10'25", in SE¹₄SW¹₄SW¹₄ sec.32, T.156 N., R.66 W., Ramsey County, Hydrologic Unit 09020201, at south end of lake 1¹₄ mi northwest of Churchs Ferry.

DRAINAGE AREA.--2,120 mi², approximately, of which about 500 mi² is probably noncontributing.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1966-87, 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth to bottom of sampling intrval meters (82048)	Depth to top of sampling intrval meters (82047)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfltrd, uS/cm 25 degC (90095)	Hard-ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-ium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)
OCT 02...	1350	2.7	0.00	8.3	1,210	490	94.0	63.0	22.0	2	87.0	27	328
FEB 03...	1325	2.5	0.70	8.3	1,620	650	120	86.0	28.0	2	120	27	428
MAY 05...	1305	3.0	0.00	8.2	1,240	500	93.0	64.0	20.0	2	85.0	26	326
AUG 05...	1225	2.7	0.00	8.7	1,320	540	101	70.8	22.8	2	109	29	334

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti-tuents mg/L (70301)	Residue on evap. at wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro-gen, water, unfltrd mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, unfltrd mg/L (00665)
OCT 02...	44.0	0.20	--	350	858	900	1.9	0.06	0.08	<0.008	1.8	0.24	0.33
FEB 03...	45.0	0.20	--	470	1,130	1,190	2.3	0.22	E.04	<0.008	2.1	0.20	0.24
MAY 05...	40.0	0.20	--	350	848	918	2.0	0.17	E.04	<0.008	1.8	0.21	0.29
AUG 05...	42.7	0.18	31.2	376	924	--	2.1	E.02n	<0.06	<0.008	--	0.37	0.48

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Total nitro-gen, water, unfltrd mg/L (00600)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank-ton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Mangan-ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb-denum, water, fltrd, ug/L (01060)	Selen-ium, water, fltrd, ug/L (01145)	Stront-ium, water, fltrd, ug/L (01080)
OCT 02...	1.9	17.1	1.8	6.0	30	<1.0	80	20	0.10	1	<1	330
FEB 03...	--	1.4	E.1	7.0	20	1	110	220	<0.10	8	<1	550
MAY 05...	--	E.2	<0.1	6.0	80	<1	80	50	<0.10	2	1	410
AUG 05...	--	3.3	<0.1	13.7	20	<1	80	210	<0.20	3	2	420

Remark codes used in this table:

< -- Less than

E -- Estimated value

Value qualifier codes used in this table:

n -- Below the NDV

RED RIVER OF THE NORTH BASIN

05056260 LAKE IRVINE NEAR CHURCHS FERRY, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth of lake, maximum meters (85310)	Ice thickness, meters (82131)	Sampling depth, meters (00098)	Transparency Secchi disc, inches (00077)	Wind direction, clockwise from north, degrees (00036)	Wind speed, mph (00035)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfiltered, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT													
02...	1340	2.7	--	0.00	12.0	220	<5.0	738	10.6	98	8.4	1,190	10.5
02...	1341	--	--	0.60	--	--	--	--	10.3	--	8.4	1,190	--
02...	1342	--	--	1.2	--	--	--	--	10.0	--	8.4	1,190	--
02...	1343	--	--	1.8	--	--	--	--	9.6	--	8.4	1,190	--
02...	1344	--	--	2.4	--	--	--	--	9.4	--	8.4	1,190	--
02...	1345	--	--	2.7	--	--	--	--	9.4	--	8.4	1,190	--
FEB													
03...	1315	2.6	0.64	0.80	30.0	330	8.0	732	8.8	63	7.6	1,740	<-5.0
03...	1316	--	--	1.3	--	--	--	--	8.6	--	7.6	1,710	--
03...	1317	--	--	1.8	--	--	--	--	7.9	--	7.7	1,700	--
03...	1318	--	--	2.3	--	--	--	--	7.9	--	7.7	1,690	--
03...	1319	--	--	2.6	--	--	--	--	7.8	--	7.7	1,700	--
MAY													
05...	1300	3.0	--	0.00	43.0	60	12	725	9.2	89	8.1	1,300	10.5
05...	1301	--	--	1.0	--	--	--	--	9.2	--	8.1	1,300	--
05...	1302	--	--	2.0	--	--	--	--	9.0	--	8.1	1,300	--
05...	1303	--	--	3.0	--	--	--	--	9.0	--	8.1	1,300	--
AUG													
05...	1215	2.7	--	0.00	30.0	30	10	734	7.2	85	8.7	1,310	19.0
05...	1216	--	--	0.50	--	--	--	--	7.1	--	8.7	1,310	--
05...	1217	--	--	1.0	--	--	--	--	7.1	--	8.6	1,320	--
05...	1218	--	--	1.5	--	--	--	--	7.1	--	8.6	1,320	--
05...	1219	--	--	2.0	--	--	--	--	7.1	--	8.6	1,320	--
05...	1220	--	--	2.5	--	--	--	--	7.0	--	8.6	1,310	--
05...	1221	--	--	2.7	--	--	--	--	7.0	--	8.6	1,310	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, water, deg C (00010)
OCT	
02...	10.2
02...	9.9
02...	9.0
02...	8.9
02...	8.9
02...	8.9
FEB	
03...	0.0
03...	0.7
03...	1.4
03...	1.7
03...	1.0
MAY	
05...	11.3
05...	11.3
05...	11.3
05...	11.3
AUG	
05...	21.9
05...	21.9
05...	21.9
05...	21.9
05...	21.9
05...	21.9
05...	21.9

Remark codes used in this table:
 < -- Less than

05056270 BIG COULEE BELOW CHURCHS FERRY, ND

LOCATION.--Lat 48°15'33", long 99°12'00", in NE¹₄SE¹₄ sec.12, T. 155 N., R.67 W., Benson County, Hydrologic Unit 09020201, on downstream side of bridge 1 mi south of Churchs Ferry.

DRAINAGE AREA.--1,260 mi², approximately, of which about 140 mi² is probably noncontributing, drainage area reduced from approximately 2,510 mi² with the completion of Channel A in March 1979.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1998 to current year. (Discharge measurements only since water year 2000 because of backwater conditions from Devils Lake.)

Miscellaneous discharge measurements for Big Coulee below Churchs Ferry

Date	Discharge
October 9, 2002	0
March 26, 2003	0
April 15, 2003	517
June 6, 2003	246
July 8, 2003	¹ 57.0
August 12, 2003	^{1,2} -475

¹Wind aided

²Reverse flow

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958, 1961-99, 2001 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
APR 15...	1540	517	8.3	8.1	899	914	7.5	6.2	340	64.0	45.0	15.0	1
JUN 06...	1110	246	8.5	8.3	1,300	1,290	16.5	17.0	500	89.9	67.8	23.0	2
JUL 08...	1430	57	--	--	--	1,350	--	22.0	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
APR 15...	61.0	27	224	22.0	0.10	--	240	581	899	644	5.0	50	3
JUN 06...	121	33	304	47.3	0.18	15.3	373	906	611	--	8.4	20	<1
JUL 08...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
APR 15...	60	170	<0.10	2	1	290
JUN 06...	90	300	<0.20	2	2	380
JUL 08...	--	--	--	--	--	--

Remark codes used in this table:
 < -- Less than

05056340 LITTLE COULEE NEAR LEEDS, ND

LOCATION.--Lat 48°14'36", long 99°22'21", in NE¹₄NE¹₄SE¹₄ sec.15, T.155 N., R.68 W., Benson County, Hydrologic Unit 09020201, at bridge 3.5 miles southeast of Leeds.

DRAINAGE AREA.--320 mi², of which about 150 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.-- March 1998 to current year.

GAGE.--Water-stage recorder. This station was moved upstream from 05056390 Little Coulee near Brinsmade due to rising water from Devils Lake. Records may not be equivalent to prior locations due to change in drainage area. Datum of gage is 1,480 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed discharge, 269 ft³/s, Apr. 23, 1999, gage height, 66.30 ft; maximum gage height observed 66.41 ft, Apr. 13, 16, 18 and 19, 1999; no flow for many days in most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 29 ft³/s, Apr.14, gage height, 64.65 ft; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e0.00	e15	17	e5.2	0.16	0.00	0.00
2	---	---	---	---	---	e0.00	e16	17	e4.3	0.21	0.00	0.00
3	---	---	---	---	---	e0.00	e17	15	e3.6	0.33	0.00	0.00
4	---	---	---	---	---	e0.00	e18	14	e3.1	0.25	0.00	0.00
5	---	---	---	---	---	e0.00	e19	15	e2.7	0.15	0.00	0.00
6	---	---	---	---	---	e0.00	20	14	e2.5	0.10	0.00	0.00
7	---	---	---	---	---	e0.00	22	14	e2.8	0.04	0.00	0.00
8	---	---	---	---	---	e0.00	23	14	e2.6	0.00	0.00	0.00
9	---	---	---	---	---	e0.00	25	15	e2.0	0.08	0.00	0.00
10	---	---	---	---	---	e0.00	26	15	e2.0	0.14	0.00	0.00
11	---	---	---	---	---	e0.00	27	14	e2.1	0.18	0.00	0.00
12	---	---	---	---	---	e0.00	28	14	e1.9	0.14	0.00	0.00
13	---	---	---	---	---	e0.00	28	13	e1.5	0.09	0.00	0.00
14	---	---	---	---	---	e0.00	28	13	e1.2	0.19	0.00	0.00
15	---	---	---	---	---	e0.00	28	12	e1.0	0.20	0.00	0.00
16	---	---	---	---	---	e0.20	27	12	e0.80	0.12	0.00	0.00
17	---	---	---	---	---	e0.40	27	13	e0.65	0.05	0.00	0.00
18	---	---	---	---	---	e0.60	26	14	e0.52	0.01	0.00	0.00
19	---	---	---	---	---	e1.0	26	15	e0.40	0.00	0.00	0.00
20	---	---	---	---	---	e1.4	26	13	e0.32	0.00	0.00	0.00
21	---	---	---	---	---	e2.5	26	12	e0.26	0.00	0.00	0.00
22	---	---	---	---	---	e3.7	25	12	e0.22	0.00	0.00	0.00
23	---	---	---	---	---	e5.0	24	11	0.17	0.00	0.00	0.00
24	---	---	---	---	---	e6.4	24	11	0.13	0.00	0.00	0.00
25	---	---	---	---	---	e8.0	23	10	0.17	0.00	0.00	e0.00
26	---	---	---	---	---	e9.0	21	9.1	0.23	0.00	0.00	e0.00
27	---	---	---	---	---	e10	21	9.8	0.23	0.00	0.00	e0.00
28	---	---	---	---	---	e11	19	8.8	0.30	0.00	0.00	e0.00
29	---	---	---	---	---	e12	18	8.2	0.29	0.00	0.00	e0.00
30	---	---	---	---	---	e13	18	8.8	0.21	0.00	0.00	e0.00
31	---	---	---	---	---	e14	---	6.3	---	0.00	0.00	---
TOTAL	---	---	---	---	---	98.20	691	390.0	43.40	2.44	0.00	0.00
MEAN	---	---	---	---	---	3.17	23.0	12.6	1.45	0.079	0.000	0.000
MAX	---	---	---	---	---	14	28	17	5.2	0.33	0.00	0.00
MIN	---	---	---	---	---	0.00	15	6.3	0.13	0.00	0.00	0.00
AC-FT	---	---	---	---	---	195	1,370	774	86	4.8	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 2003, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	6.12	83.9	60.4	27.5	9.44	1.22	2.19
MAX	---	---	---	---	---	24.8	217	207	110	28.2	6.51	8.38
(WY)	(---	(---	(---	(---	(---	(1998)	(1999)	(1999)	(1999)	(1999)	(1999)	(2002)
MIN	---	---	---	---	---	0.000	0.003	0.041	0.040	0.079	0.000	0.000
(WY)	(---	(---	(---	(---	(---	(2001)	(2002)	(2000)	(2000)	(2003)	(2003)	(1998)

SUMMARY STATISTICS

WATER YEARS 1998 - 2003

HIGHEST DAILY MEAN	267	Apr 23, 1999
LOWEST DAILY MEAN	0.00	Jul 31, 1998
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 6, 1998
MAXIMUM PEAK FLOW	a269	Apr 23, 1999
MAXIMUM PEAK STAGE	66.41	Apr 13, 1999

a Observed gage height, 66.30 ft
e Estimated

RED RIVER OF THE NORTH BASIN
05056340 LITTLE COULEE NEAR LEEDS, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1998 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
MAR 26...	1050	9.4	8.2	7.1	1,130	1,170	3.0	1.0	330	49.0	50.0	21.0	3
APR 18...	1525	26	--	--	--	1,310	10.0	5.5	--	--	--	--	--
MAY 29...	1730	7.6	--	--	--	1,130	--	21.5	--	--	--	--	--
JUL 08...	0950	0.00	--	--	--	--	19.0	--	--	--	--	--	--
AUG 12...	1100	0.00	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat fltrd mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)
MAR 26...	120	42	201	45.0	0.10	330	736	20.5	811	9.0	30	2	80
APR 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 08...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 12...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
MAR 26...	260	<0.10	<1	1	370
APR 18...	--	--	--	--	--
MAY 29...	--	--	--	--	--
JUL 08...	--	--	--	--	--
AUG 12...	--	--	--	--	--

Remark codes used in this table:

< -- Less than

05056410 CHANNEL A NEAR PENN, ND

LOCATION.--Lat 48°10'00", long 98°58'47", in SE¹₄SW¹₄ sec.11, T.154 N., R.65 W., Ramsey County, Hydrologic Unit 09020201, on right bank 200 ft upstream from U.S. Highway 2, 9 mi northwest of Devils Lake, and 7 mi southeast of Penn.

DRAINAGE AREA.--930 mi², approximately, of which about 140 mi² is probably noncontributing. Drainage area reduced from approximately 2,510 mi² with the completion of Channel A in March 1979.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Water year 1983 to current year. (Discharge measurements only since water year 2000 because of backwater conditions from Devils Lake.)

Miscellaneous discharge measurements for Channel A near Penn

Date	Discharge
October 8, 2002	226
March 27, 2003	0
April 15, 2003	354
June 6, 2003	¹ 18.5
July 8, 2003	² -21.0
July 31, 2003	0
August 11, 2003	0

¹Wind aided

²Reverse flow

RED RIVER OF THE NORTH BASIN
05056410 CHANNEL A NEAR PENN, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1984-99, 2001 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 08...	1715	226	--	--	--	1,050	5.0	7.0	--	--	--	--	--
APR 15...	1930	354	8.4	7.8	789	784	2.5	7.5	260	53.0	32.0	15.0	2
JUN 06...	1510	18	--	--	--	938	--	18.0	--	--	--	--	--
JUL 08...	1630	21	8.4	8.0	1,080	1,080	22.0	22.0	370	74.2	45.7	21.7	2
AUG 11...	1510	0.00	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 08...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 15...	60.0	32	183	19.0	0.10	--	210	499	507	530	4.0	70	1
JUN 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 08...	99.6	35	238	37.5	0.19	17.7	312	736	42.6	--	9.2	20	<1
AUG 11...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
OCT 08...	--	--	--	--	--	--
APR 15...	40	100	<0.10	2	1	240
JUN 06...	--	--	--	--	--	--
JUL 08...	50	230	<0.20	2	1	300
AUG 11...	--	--	--	--	--	--

Remark codes used in this table:
< -- Less than

05056500 DEVILS LAKE NEAR DEVILS LAKE, ND

LOCATION.--Lat 48°03'59", long 98°56'03", in SW¹₄ sec.18, T.153 N., R.64 W., Ramsey County, Hydrologic Unit 09020201, at Lakewood on east bank of Creel Bay, and 4.5 mi southwest of city of Devils Lake. Creel Bay, which is 0.5 mi wide, is an arm of Devils Lake, and extends 2 mi to the north of the lake.

DRAINAGE AREA.--3,130 mi², approximately, of which about 1,000 mi² is probably noncontributing.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--1867, 1879, 1883, 1887, 1890, 1896 (one gage height for each year), 1901-63 (fragmentary), 1964 to current year.

REVISED RECORDS.--WSP 1913: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft above National Geodetic Vertical Datum of 1929. June 23, 1950, to June 6, 1963, nonrecording gage at present site and datum. See WSP 1913 for history of changes prior to June 23, 1950. Prior to October 1979 only monthend elevations were published.

REMARKS.--Elevation at gage frequently affected by wind.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 1,448.33 ft, July 21, 2001, affected by wind, present datum; minimum observed, 1,400.87 ft, Oct. 24, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--The lake level was at an elevation of about 1,441 ft around 1830 and lower thereafter. Reference is Geological Survey monograph, volume XXV, the Glacial History of Lake Agassiz by Warren Upham.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 1,447.55 ft, May 19, affected by wind, may have been higher during period of no record July 12-14; minimum elevation 1,446.48 ft, Sept. 30.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47.04	46.83	46.74	46.71	46.72	46.73	46.92	47.20	47.39	47.37	47.20	46.81
2	46.98	46.79	46.74	46.71	46.73	46.72	46.96	47.18	47.38	47.38	47.18	46.85
3	46.96	46.80	46.74	46.71	46.73	46.73	46.96	47.14	47.36	47.40	47.16	46.78
4	46.97	46.77	46.74	46.71	46.72	46.73	46.98	47.17	47.36	47.38	47.15	46.75
5	46.95	46.79	46.74	46.71	46.73	46.72	46.98	47.23	47.38	47.35	47.25	46.74
6	46.97	46.77	46.74	46.70	46.73	46.73	46.99	47.24	47.39	47.36	47.24	46.73
7	46.95	46.78	46.74	46.70	46.73	46.73	47.00	47.26	47.39	47.34	47.22	46.72
8	46.97	46.76	46.73	46.70	46.73	---	47.00	---	47.40	47.29	47.20	46.69
9	46.93	46.78	46.73	46.71	46.73	---	47.00	47.38	47.39	47.38	47.19	46.67
10	46.88	46.80	46.73	46.70	46.72	---	47.02	47.45	47.43	47.45	47.20	46.69
11	46.92	46.79	46.73	46.70	46.73	46.78	47.03	47.46	47.43	47.46	47.18	46.75
12	46.92	46.78	46.73	46.70	46.72	46.77	47.04	47.43	47.50	---	47.15	46.73
13	46.85	46.78	46.73	46.70	46.72	46.77	47.05	47.41	47.49	---	47.12	46.74
14	46.88	46.78	46.73	46.71	46.72	46.77	47.07	47.41	47.47	---	47.11	46.70
15	46.85	46.77	46.73	46.71	46.72	46.77	47.08	47.39	47.46	47.43	47.09	46.68
16	46.85	46.77	46.73	46.70	46.72	46.78	47.11	47.38	47.47	47.42	47.08	46.65
17	46.84	46.77	46.73	46.71	46.72	46.78	47.14	47.41	47.47	47.40	47.05	46.70
18	46.88	46.78	46.75	46.71	46.73	46.79	47.15	47.46	47.45	47.39	47.05	46.72
19	46.86	46.77	46.74	46.71	46.72	46.79	47.18	47.52	47.41	47.39	47.05	46.66
20	46.84	46.77	46.75	46.71	46.73	46.80	47.21	47.47	47.35	47.38	47.06	46.65
21	46.84	46.77	46.74	46.70	46.73	46.81	47.21	47.44	47.34	47.36	47.02	46.67
22	46.85	46.78	46.74	46.70	46.73	46.81	47.19	47.44	47.39	47.35	46.97	46.66
23	46.84	46.77	46.74	46.69	46.73	46.82	47.18	47.42	47.40	47.32	46.94	46.64
24	46.83	46.76	46.74	46.70	46.72	46.82	47.19	47.43	47.40	47.28	46.96	46.66
25	46.81	46.75	46.73	46.71	46.72	46.83	47.19	47.43	47.44	47.28	46.95	46.58
26	46.81	46.75	46.73	46.69	46.73	46.86	47.19	47.41	47.42	47.29	46.94	46.59
27	46.81	46.75	46.72	46.72	46.73	46.89	47.22	47.42	47.40	47.26	46.87	46.57
28	46.82	46.75	46.73	46.73	46.73	46.89	47.20	47.42	47.42	47.24	46.91	46.55
29	46.84	46.76	46.72	46.72	---	46.90	47.19	47.42	47.40	47.23	46.89	46.55
30	46.85	46.75	46.72	46.71	---	46.90	47.19	47.43	47.38	47.22	46.87	46.53
31	46.84	---	46.71	46.72	---	46.91	---	47.40	---	47.21	46.84	---
MEAN	46.88	46.77	46.73	46.71	46.73	---	47.09	---	47.41	---	47.07	46.68
MAX	47.04	46.83	46.75	46.73	46.73	---	47.22	---	47.50	---	47.25	46.85
MIN	46.81	46.75	46.71	46.69	46.72	---	46.92	---	47.34	---	46.84	46.53

05056636 DEVILS LAKE OUTLET TO STUMP LAKE NEAR LAKOTA, ND

LOCATION.--Lat 47°57'29", long 98°29'00", in NE¹₄SE¹₄NE¹₄ sec.29, T.152 N., R.61 W., Nelson County, Hydrologic Unit 09020201, on right bank, 3 mi upstream of Stump Lake.

DRAINAGE AREA.--Not determined.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1999 to current year.

GAGE.--Water stage recorder. Datum of gage is 1,400.00 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1999, at datum 37.73 ft higher.

REMARKS.--Records poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	13	e6.5	e0.90	e0.00	e0.00	e4.9	17	19	19	19	8.8
2	18	17	e6.2	e0.85	e0.00	e0.00	e5.6	17	20	20	20	8.6
3	17	18	e6.2	e0.82	e0.00	e0.00	e6.5	17	21	20	19	8.2
4	17	17	e5.9	e0.77	e0.00	e0.00	e7.5	e18	22	20	19	7.2
5	17	17	e5.8	e0.73	e0.00	e0.00	e8.9	e18	22	19	21	6.3
6	17	16	e5.6	e0.68	e0.00	e0.00	e10	e17	25	19	20	6.1
7	17	15	e5.3	e0.64	e0.00	e0.00	e12	e17	27	19	20	5.6
8	16	14	e4.9	e0.61	e0.00	e0.00	14	17	27	19	20	5.0
9	16	13	e4.7	e0.56	e0.00	e0.00	14	17	29	29	20	4.0
10	15	13	e4.5	e0.51	e0.00	e0.00	16	18	29	24	22	3.7
11	16	e13	e4.3	e0.45	e0.00	e0.00	16	18	30	23	22	3.6
12	16	e13	e4.1	e0.39	e0.00	e0.00	16	18	48	21	21	3.5
13	16	e12	e3.8	e0.33	e0.00	e0.00	16	17	31	23	20	3.7
14	15	e12	e3.5	e0.30	e0.00	e0.00	16	17	29	26	21	3.9
15	15	e13	e3.0	e0.26	e0.00	e0.00	15	17	27	25	21	3.5
16	15	14	e2.7	e0.23	e0.00	e0.00	12	17	25	23	20	3.0
17	15	16	e2.5	e0.15	e0.00	e0.00	15	18	24	22	19	2.9
18	15	17	e2.2	e0.10	e0.00	e0.00	16	20	24	22	19	3.6
19	15	e15	e2.0	e0.00	e0.00	e0.12	17	19	24	22	19	3.4
20	14	e13	e1.9	e0.00	e0.00	e0.20	18	19	24	21	19	2.9
21	14	e12	e1.7	e0.00	e0.00	e0.30	17	19	25	20	18	3.1
22	13	e11	e1.6	e0.00	e0.00	e0.48	17	19	27	19	17	3.4
23	13	e11	e1.5	e0.00	e0.00	e0.66	17	19	24	20	15	3.1
24	12	e9.5	e1.4	e0.00	e0.00	e1.2	18	19	23	21	14	4.4
25	14	e8.6	e1.3	e0.00	e0.00	e1.8	17	18	22	21	13	4.0
26	13	e7.4	e1.3	e0.00	e0.00	e2.3	17	18	22	21	13	4.6
27	13	e6.6	e1.2	e0.00	e0.00	e2.5	19	18	21	20	11	4.3
28	13	e6.9	e1.1	e0.00	e0.00	e2.8	19	19	21	20	11	4.2
29	12	e7.4	e1.1	e0.00	---	e3.3	18	19	21	20	11	3.9
30	14	e7.0	e0.98	e0.00	---	e3.7	18	19	20	19	11	3.6
31	13	---	e0.95	e0.00	---	e4.2	---	18	---	19	10	---
TOTAL	464	378.4	99.73	9.28	0.00	23.56	433.4	558	753	656	545	136.1
MEAN	15.0	12.6	3.22	0.30	0.000	0.76	14.4	18.0	25.1	21.2	17.6	4.54
MAX	18	18	6.5	0.90	0.00	4.2	19	20	48	29	22	8.8
MIN	12	6.6	0.95	0.00	0.00	0.00	4.9	17	19	19	10	2.9
AC-FT	920	751	198	18	0.00	47	860	1,110	1,490	1,300	1,080	270

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2003, BY WATER YEAR (WY)

	7.42	8.59	2.57	0.15	0.001	0.88	11.6	15.1	22.5	23.3	22.0	14.5
MEAN	7.42	8.59	2.57	0.15	0.001	0.88	11.6	15.1	22.5	23.3	22.0	14.5
MAX	15.0	12.6	4.49	0.30	0.004	1.88	14.4	18.3	25.1	25.9	29.2	19.9
(WY)	(2003)	(2003)	(2002)	(2003)	(2002)	(2001)	(2003)	(2002)	(2003)	(2001)	(2001)	(2002)
MIN	0.28	1.41	0.000	0.000	0.000	0.004	6.21	9.00	18.9	21.2	17.6	4.54
(WY)	(2001)	(2001)	(2001)	(2001)	(2001)	(2002)	(2001)	(2001)	(2002)	(2003)	(2003)	(2003)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 2000 - 2003

ANNUAL TOTAL	4,403.90	4,056.47	
ANNUAL MEAN	12.1	11.1	10.8
HIGHEST ANNUAL MEAN			11.4
LOWEST ANNUAL MEAN			9.76
HIGHEST DAILY MEAN	31	48	48
LOWEST DAILY MEAN	0.00	0.00	a0.00
ANNUAL SEVEN-DAY MINIMUM	0.00	0.00	0.00
MAXIMUM PEAK FLOW		82	82
MAXIMUM PEAK STAGE		39.96	b40.44
ANNUAL RUNOFF (AC-FT)	8,740	8,050	7,800
10 PERCENT EXCEEDS	23	21	24
50 PERCENT EXCEEDS	15	13	10
90 PERCENT EXCEEDS	0.00	0.00	0.00

a Many days each year
b Backwater from ice
c Estimated

05056636 DEVILS LAKE OUTLET TO STUMP LAKE NEAR LAKOTA, ND—Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.--Water year 1999 to current year.

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Dis-charge, cfs (00060)	Instan-taneous dis-charge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfl lab, uS/cm 25 degC (90095)	Specif. conduc-tance, wat unfl lab, uS/cm 25 degC (00095)	Temper-ature, air, deg C (00020)	Temper-ature, water, deg C (00010)	Hard-ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)
OCT 08...	0950	--	17	--	--	--	6,850	7.0	6.0	--	--	--	--
JAN 06...	1300	--	0.62	--	--	--	9,360	-3.0	0.0	--	--	--	--
MAR 25...	0955	--	2.0	--	--	--	1,080	--	0.0	--	--	--	--
APR 14...	1300	--	17	8.7	8.0	1,890	1,910	10.5	8.0	350	35.0	64.0	37.0
JUN 04...	1050	22	--	--	--	--	5,600	--	16.0	--	--	--	--
JUL 07...	1130	19	--	8.3	8.2	5,470	5,570	20.0	19.4	1,200	103	227	112
JUL 22...	1200	--	20	--	--	--	5,080	--	23.5	--	--	--	--
AUG 11...	1000	--	23	--	--	--	6,080	--	23.0	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti-tuents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)
OCT 08...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 14...	6	270	60	167	120	0.10	--	670	1,300	61.0	1,330	6.0	70
JUN 04...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	13	1,040	63	508	441	0.14	19.5	2,220	4,450	229	--	28.3	60
JUL 22...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 11...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Mangan-ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb-denum, water, fltrd, ug/L (01060)	Selen-ium, water, fltrd, ug/L (01145)	Stront-ium, water, fltrd, ug/L (01080)
OCT 08...	--	--	--	--	--	--	--
JAN 06...	--	--	--	--	--	--	--
MAR 25...	--	--	--	--	--	--	--
APR 14...	<1	130	150	<0.10	1	3	220
JUN 04...	--	--	--	--	--	--	--
JUL 07...	1	360	320	<0.20	2	14	550
JUL 22...	--	--	--	--	--	--	--
AUG 11...	--	--	--	--	--	--	--

Remark codes used in this table:
< -- Less than

RED RIVER OF THE NORTH BASIN

05056665 EASTERN STUMP LAKE NEAR LAKOTA, ND

LOCATION.--Lat 47°52'07", long 98°21'27", in SW¹₄SE¹₄NE¹₄ sec.29, T.151 N., R.60 W., Nelson County, Hydrologic Unit 09020201, on north shore in southwest corner of Nelson County Old Settlers Park.

DRAINAGE AREA.--Not determined.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--June 1999 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,400 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Gage heights are frequently affected by wind. Gage height for Jan. 6 and Feb. 4 are based on once daily observation of gage height.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 15.28 ft, Aug. 9; minimum gage height, 13.14 ft, Nov. 9.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.30	13.22	13.20	---	---	13.27	13.45	13.69	14.22	14.74	15.18	15.01
2	13.25	13.21	13.19	---	---	13.27	13.48	13.69	14.21	14.77	15.17	15.03
3	13.24	13.21	13.20	---	---	13.28	13.48	13.69	14.21	14.80	15.16	14.99
4	13.26	13.18	13.20	---	13.24	13.27	13.50	13.74	14.22	14.80	15.16	14.94
5	13.23	13.19	13.20	---	---	13.27	13.50	13.83	14.23	14.79	15.23	14.93
6	13.24	13.18	13.20	13.26	---	13.27	13.50	13.84	14.27	14.80	15.24	14.93
7	13.23	13.19	---	13.27	---	13.28	13.51	13.86	14.29	14.80	15.23	14.92
8	13.27	13.19	13.18	13.28	---	13.30	13.51	13.88	14.33	14.78	15.23	14.90
9	13.23	13.20	13.19	13.24	---	13.29	13.51	13.93	14.33	14.89	15.23	14.88
10	13.23	13.23	13.19	13.26	---	13.28	13.52	14.00	14.38	15.02	15.26	14.87
11	13.26	13.21	13.19	13.27	---	13.29	13.54	14.01	14.38	15.05	15.25	14.89
12	13.27	13.21	13.19	13.28	---	13.29	13.54	13.98	14.52	15.06	15.24	14.88
13	13.22	13.21	13.19	13.28	---	13.29	13.55	13.98	14.54	15.06	15.22	14.88
14	13.25	13.21	13.19	13.27	---	13.29	13.56	13.99	14.55	15.15	15.21	14.86
15	13.22	13.21	13.20	13.27	---	13.30	13.56	13.99	14.56	15.18	15.21	14.83
16	13.21	13.21	---	13.27	---	13.31	13.56	13.99	14.58	15.19	15.20	14.82
17	13.21	13.21	---	13.29	---	13.31	13.61	14.03	14.59	15.19	15.19	14.84
18	13.24	13.21	---	13.28	---	13.32	13.61	14.11	14.59	15.19	15.19	14.88
19	13.23	13.21	---	13.28	---	13.34	13.64	14.19	14.57	15.21	15.18	14.83
20	13.22	13.21	---	13.27	13.27	13.35	13.68	14.16	14.53	15.23	15.19	14.81
21	13.22	---	---	---	13.27	13.36	13.67	14.15	14.55	15.22	15.18	14.83
22	13.22	---	---	13.27	13.27	13.38	13.66	14.16	14.65	15.21	15.14	14.83
23	13.20	---	---	13.27	13.27	13.38	13.66	14.17	14.68	15.20	15.11	14.80
24	13.19	---	---	13.27	13.27	13.39	13.67	14.20	14.69	15.18	15.13	14.82
25	13.19	---	---	---	13.27	13.39	13.68	14.21	14.72	15.19	15.12	14.74
26	13.20	---	---	---	13.27	13.41	13.67	14.20	14.73	15.21	15.12	14.76
27	13.19	---	---	---	13.27	13.44	13.74	14.22	14.72	15.19	15.09	14.73
28	13.21	13.21	---	---	13.26	13.44	13.70	14.22	14.74	15.19	15.10	14.71
29	13.23	13.22	---	---	---	13.44	13.69	14.22	14.74	15.19	15.07	14.71
30	13.25	13.20	---	---	---	13.44	13.69	14.26	14.73	15.19	15.05	14.68
31	13.25	---	---	---	---	13.44	---	14.22	---	15.18	15.03	---
MEAN	13.23	---	---	---	---	13.33	13.59	14.03	14.50	15.06	15.17	14.85
MAX	13.30	---	---	---	---	13.44	13.74	14.26	14.74	15.23	15.26	15.03
MIN	13.19	---	---	---	---	13.27	13.45	13.69	14.21	14.74	15.03	14.68

05056665 EASTERN STUMP LAKE NEAR LAKOTA, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--1958-79, 1993 to present.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth to bottom of sampling intrval meters (82048)	Depth to top of sampling intrval meters (82047)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfltrd lab, uS/cm 25 degC (90095)	Hard-ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-ium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)
OCT 02...	0910	10.3	0.00	8.6	10,300	2,100	150	420	132	19	2,000	66	416
FEB 04...	1550	10.5	0.80	8.4	11,000	2,300	160	470	154	20	2,200	65	457
MAY 06...	1350	10.0	0.00	8.5	10,400	2,100	150	420	141	19	2,000	66	424
AUG 06...	1220	10.8	0.00	8.7	9,890	2,000	138	406	108	20	2,020	67	408

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti-tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, unfltrd mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, unfltrd mg/L (00665)
OCT 02...	1,000	--	--	5,200	9,150	9,100	2.0	0.11	<0.06	<0.008	1.9	0.19	0.23
FEB 04...	1,000	0.20	--	5,500	9,760	9,800	2.4	0.58	0.07	E.007	1.8	0.28	0.28
MAY 06...	920	0.10	--	5,200	9,090	9,080	2.2	0.07	<0.06	<0.008	2.1	0.15	0.21
AUG 06...	820	0.19	9.01	5,200	8,940	--	1.6	0.27	E.06n	0.022	1.4	0.24	0.28

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Total nitrogen, water, unfltrd mg/L (00600)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank-ton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Mangan-ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb-denum, water, fltrd, ug/L (01060)	Selen-ium, water, fltrd, ug/L (01145)	Stront-ium, water, fltrd, ug/L (01080)
OCT 02...	--	6.1	<0.1	14.0	90	1	630	60	0.10	<1	3	360
FEB 04...	2.4	E.1	<0.1	28.0	80	8	800	300	<0.10	<1	13	490
MAY 06...	--	E5.4	E1.1	24.0	70	1	710	60	<0.10	3	21	800
AUG 06...	--	E1.8	<0.1	27.5	50	<1	590	10	<0.20	3	24	710

Remark codes used in this table:

- < -- Less than
- E -- Estimated value

Value qualifier codes used in this table:

- n -- Below the NDV

05056665 EASTERN STUMP LAKE NEAR LAKOTA, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth of lake, maximum meters (85310)	Ice thickness, meters (82131)	Sampling depth, meters (00098)	Transparency Secchi disc, inches (00077)	Wind direction, clkwise from north, degrees (00036)	Wind speed, mph (00035)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unfiltered, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT													
02...	0900	10	--	0.00	50.0	300	<5.0	740	9.3	96	8.7	10,200	2.0
02...	0901	--	--	2.0	--	--	--	--	9.2	--	8.8	10,200	--
02...	0902	--	--	4.0	--	--	--	--	9.2	--	8.8	10,200	--
02...	0903	--	--	6.0	--	--	--	--	9.1	--	8.8	10,200	--
02...	0904	--	--	8.0	--	--	--	--	9.1	--	8.8	10,200	--
02...	0905	--	--	10.0	--	--	--	--	9.0	--	8.8	10,200	--
02...	0906	--	--	10.3	--	--	--	--	8.9	--	8.8	10,200	--
FEB													
04...	1535	10	0.47	0.80	77.0	315	<5.0	738	9.9	72	8.5	11,600	<5.0
04...	1536	--	--	2.0	--	--	--	--	9.9	--	8.5	11,600	--
04...	1537	--	--	3.0	--	--	--	--	9.8	--	8.5	11,600	--
04...	1538	--	--	4.0	--	--	--	--	9.8	--	8.5	11,600	--
04...	1539	--	--	5.0	--	--	--	--	9.9	--	8.5	11,600	--
04...	1540	--	--	6.0	--	--	--	--	9.9	--	8.5	11,600	--
04...	1541	--	--	7.0	--	--	--	--	9.8	--	8.5	11,600	--
04...	1542	--	--	8.0	--	--	--	--	9.7	--	8.5	11,600	--
04...	1543	--	--	9.0	--	--	--	--	9.7	--	8.5	11,700	--
04...	1544	--	--	10.0	--	--	--	--	1.7	--	8.4	11,600	--
04...	1545	--	--	10.5	--	--	--	--	0.4	--	8.2	11,800	--
MAY													
06...	1335	10	--	0.00	60.0	130	10	728	12.2	111	8.4	10,900	8.0
06...	1336	--	--	1.0	--	--	--	--	12.1	--	8.3	10,900	--
06...	1337	--	--	2.0	--	--	--	--	12.0	--	8.3	10,900	--
06...	1338	--	--	3.0	--	--	--	--	12.0	--	8.3	10,900	--
06...	1339	--	--	4.0	--	--	--	--	12.0	--	8.4	10,900	--
06...	1340	--	--	5.0	--	--	--	--	11.9	--	8.4	10,900	--
06...	1341	--	--	6.0	--	--	--	--	11.8	--	8.4	10,900	--
06...	1342	--	--	7.0	--	--	--	--	11.7	--	8.3	11,000	--
06...	1343	--	--	8.0	--	--	--	--	11.5	--	8.3	11,000	--
06...	1344	--	--	9.0	--	--	--	--	11.4	--	8.3	11,000	--
06...	1345	--	--	10.0	--	--	--	--	11.3	--	8.3	11,000	--
AUG													
06...	1205	11	--	0.00	62.4	0.0	<5.0	738	7.9	98	8.6	10,100	23.5
06...	1206	--	--	1.0	--	--	--	--	7.8	--	8.6	10,100	--
06...	1207	--	--	2.0	--	--	--	--	7.5	--	8.6	10,100	--
06...	1208	--	--	3.0	--	--	--	--	7.7	--	8.6	10,100	--
06...	1209	--	--	4.0	--	--	--	--	7.6	--	8.6	10,100	--
06...	1210	--	--	5.0	--	--	--	--	7.4	--	8.6	10,100	--
06...	1211	--	--	6.0	--	--	--	--	7.3	--	8.6	10,100	--
06...	1212	--	--	7.0	--	--	--	--	7.2	--	8.6	10,100	--
06...	1213	--	--	8.0	--	--	--	--	7.1	--	8.6	10,100	--
06...	1214	--	--	9.0	--	--	--	--	4.5	--	8.6	10,200	--
06...	1215	--	--	10.0	--	--	--	--	0.3	--	8.4	10,300	--
06...	1216	--	--	10.8	--	--	--	--	0.1	--	8.4	10,300	--

05056665 EASTERN STUMP LAKE NEAR LAKOTA, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, water, deg C (00010)
OCT	
02...	13.5
02...	13.5
02...	13.6
02...	13.5
02...	13.5
02...	13.4
02...	13.4
FEB	
04...	-0.6
04...	-0.6
04...	-0.6
04...	-0.6
04...	-0.6
04...	-0.6
04...	-0.2
04...	-0.2
04...	1.9
04...	2.3
MAY	
06...	7.7
06...	7.7
06...	7.7
06...	7.7
06...	7.7
06...	7.7
06...	7.7
06...	7.6
06...	7.5
06...	7.4
06...	7.4
AUG	
06...	22.8
06...	22.8
06...	22.7
06...	22.5
06...	22.4
06...	22.4
06...	22.4
06...	22.3
06...	22.3
06...	22.2
06...	21.0
06...	20.8

Remark codes used in
this table:

< -- Less than

05056670 WESTERN STUMP LAKE NEAR LAKOTA, ND

LOCATION.--Lat 47°54'48", long 98°23'26", in SE¹₄NE¹₄NW¹₄ sec.7, T.151 N., R.60 W., Nelson County, Hydrologic Unit 09020201, at southeast arm of lake.

DRAINAGE AREA.--Not determined.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1958-79, 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth to bottom of sampling intrval meters (82048)	Depth to top of sampling intrval meters (82047)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfltrd, uS/cm 25 degC (90095)	Hard-ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-ium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)
OCT 02...	0850	5.8	0.00	8.6	10,200	2,100	150	420	132	19	2,000	66	432
FEB 04...	1410	6.0	0.80	8.4	11,100	2,300	150	460	153	20	2,200	66	457
MAY 06...	1320	5.9	0.00	8.6	9,970	2,100	150	420	140	18	1,900	67	407
AUG 06...	1155	6.2	0.00	8.7	9,810	2,000	138	402	103	19	2,000	67	408

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti-tuents mg/L (70301)	Residue on evap. at wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro-gen, water, unfltrd mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)
OCT 02...	1,000	0.10	--	5,100	9,060	9,000	2.6	0.09	--	<0.06	<0.008	2.5	0.18
FEB 04...	990	0.20	--	5,600	9,830	9,640	2.3	0.38	0.08	0.09	0.011	1.9	0.23
MAY 06...	900	0.10	--	5,000	8,760	8,630	2.4	<0.04	--	<0.06	<0.008	--	0.13
AUG 06...	786	0.19	10.3	5,000	8,670	--	1.4	0.18	--	E.04n	0.016	1.2	0.28

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Phos-phorus, water, unfltrd mg/L (00665)	Total nitro-gen, water, unfltrd mg/L (00600)	Chloro-phyll a phyto-plank- ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank- ton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Mangan-ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb-denum, water, fltrd, ug/L (01060)	Selen-ium, water, fltrd, ug/L (01145)	Stront-ium, water, fltrd, ug/L (01080)
OCT 02...	0.25	--	7.1	<0.1	20.0	90	1	620	80	0.10	<1	3	390
FEB 04...	0.24	2.4	E.1	<0.1	22.0	80	3	840	100	<0.10	<1	5	440
MAY 06...	0.20	--	E3.5	E.4	23.0	70	<1	670	60	<0.10	3	20	770
AUG 06...	0.30	--	E2.0	<0.1	28.9	50	<1	610	40	<0.20	3	23	760

Remark codes used in this table:

< -- Less than

E -- Estimated value

Value qualifier codes used in this table:

n -- Below the NDV

05056670 WESTERN STUMP LAKE NEAR LAKOTA, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth of lake, maximum meters (85310)	Ice thickness, meters (82131)	Sampling depth, meters (00098)	Transparency Secchi disc, inches (00077)	Wind direction, clkwise from north, degrees (00036)	Wind speed, mph (00035)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unfiltered, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT													
02...	0840	5.8	--	0.00	50.0	--	<5.0	740	9.5	94	8.7	10,100	1.0
02...	0841	--	--	1.0	--	--	--	--	9.4	--	8.8	10,100	--
02...	0842	--	--	2.0	--	--	--	--	9.3	--	8.8	10,200	--
02...	0843	--	--	3.0	--	--	--	--	9.3	--	8.8	10,200	--
02...	0844	--	--	4.1	--	--	--	--	9.2	--	8.8	10,200	--
02...	0845	--	--	5.0	--	--	--	--	9.2	--	8.8	10,200	--
02...	0846	--	--	5.8	--	--	--	--	9.2	--	8.8	10,200	--
FEB													
04...	1400	6.0	0.70	0.80	58.0	0.0	0.0	737	10.9	80	8.5	11,800	<-5.0
04...	1401	--	--	2.0	--	--	--	--	10.8	--	8.5	11,800	--
04...	1402	--	--	3.0	--	--	--	--	9.1	--	8.4	12,000	--
04...	1403	--	--	4.0	--	--	--	--	9.0	--	8.4	12,000	--
04...	1404	--	--	5.0	--	--	--	--	9.0	--	8.4	12,100	--
04...	1405	--	--	6.0	--	--	--	--	8.5	--	8.4	12,000	--
MAY													
06...	1310	5.9	--	0.00	58.8	120	10	729	11.2	106	8.4	10,400	8.5
06...	1311	--	--	1.0	--	--	--	--	11.1	--	8.4	10,500	--
06...	1312	--	--	2.0	--	--	--	--	11.1	--	8.4	10,500	--
06...	1313	--	--	3.0	--	--	--	--	11.1	--	8.4	10,500	--
06...	1314	--	--	4.0	--	--	--	--	11.1	--	8.4	10,500	--
06...	1315	--	--	5.0	--	--	--	--	11.1	--	8.4	10,500	--
06...	1316	--	--	5.9	--	--	--	--	11.0	--	8.4	10,500	--
AUG													
06...	1145	6.2	--	0.00	51.6	10	<5.0	736	7.9	98	8.6	9,960	23.5
06...	1146	--	--	1.0	--	--	--	--	7.8	--	8.6	9,960	--
06...	1147	--	--	2.0	--	--	--	--	7.5	--	8.6	9,990	--
06...	1148	--	--	3.0	--	--	--	--	7.4	--	8.6	10,000	--
06...	1149	--	--	4.0	--	--	--	--	7.4	--	8.6	10,000	--
06...	1150	--	--	5.0	--	--	--	--	7.4	--	8.6	10,100	--
06...	1151	--	--	6.0	--	--	--	--	0.9	--	8.5	10,200	--
06...	1152	--	--	6.2	--	--	--	--	0.5	--	8.5	10,200	--

RED RIVER OF THE NORTH BASIN

05056670 WESTERN STUMP LAKE NEAR LAKOTA, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, water, deg C (00010)
OCT	
02...	12.1
02...	12.1
02...	12.1
02...	--
02...	12.2
02...	12.2
02...	12.2
FEB	
04...	-0.6
04...	-0.6
04...	-0.3
04...	-0.4
04...	-0.3
04...	0.0
MAY	
06...	9.3
06...	9.3
06...	9.3
06...	9.3
06...	9.2
06...	9.2
06...	9.2
AUG	
06...	22.6
06...	22.6
06...	22.3
06...	22.2
06...	22.3
06...	22.4
06...	21.7
06...	21.6

Remark codes used in
this table:
< -- Less than

05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND

LOCATION.--Lat 47°25'58", long 98°01'38", in NW¹₄NW¹₄SW¹₄ sec.26, T.146 N., R.58 W., Griggs County, Hydrologic Unit 09020203, on right bank at Ueland Dam 0.7 mi downstream from State Highway 200 and 5 mi east of Cooperstown.

DRAINAGE AREA.--6,470 mi², approximately, of which about 5,200 mi² is probably noncontributing, includes 3,800 mi² in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1944 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1728: Drainage area. WRD ND-80-1: Gage datum.

GAGE.--Water-stage recorder and artificial control. Datum of gage is 1,271.76 ft above National Geodetic Vertical Datum of 1929 (Coast and Geodetic Survey benchmark). Aug. 3, 1950, to Oct. 22, 1985, gage located on right bank 300 ft downstream of present site and datum. Prior to Aug. 3, 1950, nonrecording gage at site 150 ft downstream of present site at same datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	30	36	e24	e16	e14	654	178	225	157	128	30
2	41	39	32	e24	e16	e14	590	171	211	152	119	29
3	36	39	27	e24	e16	e14	517	169	181	134	113	30
4	35	44	26	e24	e16	e14	446	192	171	130	95	30
5	33	40	30	e24	e16	e14	335	286	178	136	92	30
6	35	47	25	e24	e17	e14	317	312	180	142	98	28
7	35	41	18	e24	e17	e14	302	306	189	120	97	27
8	36	43	18	e24	e17	e14	291	301	198	100	95	26
9	36	44	19	e24	e17	e13	273	305	189	111	93	24
10	36	45	19	e24	e16	e13	254	321	191	149	90	22
11	37	25	18	e23	e16	e13	242	341	188	201	86	e20
12	38	40	18	e23	e16	e13	238	349	194	269	93	e21
13	37	30	19	e23	e16	e13	241	345	201	378	102	19
14	36	28	19	e23	e16	e13	245	354	201	522	89	20
15	38	36	21	e22	e16	e13	246	366	202	610	73	20
16	40	38	22	e22	e16	e15	243	369	217	649	67	20
17	41	41	23	e21	e16	e22	242	367	234	657	62	22
18	41	45	24	e20	e16	e30	222	364	226	651	54	27
19	41	45	24	e19	e16	e50	225	416	215	632	49	27
20	43	45	23	e19	e16	e80	227	447	206	606	44	27
21	44	46	23	e18	e16	e200	224	439	205	579	41	27
22	46	42	25	e17	e15	e260	228	422	210	533	38	28
23	45	48	e24	e16	e15	308	233	422	207	467	46	28
24	39	15	e24	e15	e15	365	229	418	200	394	42	28
25	42	37	e24	e15	e15	425	223	388	193	328	39	27
26	36	36	e24	e15	e15	461	211	351	185	274	37	27
27	36	32	e24	e15	e15	542	204	327	182	232	33	30
28	40	30	e24	e15	e15	603	194	296	180	197	33	30
29	44	33	e24	e15	---	667	187	271	173	175	34	31
30	30	33	e24	e15	---	702	183	256	158	155	32	31
31	29	---	e24	e15	---	677	---	241	---	141	32	---
TOTAL	1,191	1,137	725	626	445	5,610	8,466	10,090	5,890	9,981	2,146	786
MEAN	38.4	37.9	23.4	20.2	15.9	181	282	325	196	322	69.2	26.2
MAX	46	48	36	24	17	702	654	447	234	657	128	31
MIN	29	15	18	15	15	13	183	169	158	100	32	19
AC-FT	2,360	2,260	1,440	1,240	883	11,130	16,790	20,010	11,680	19,800	4,260	1,560

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2003, BY WATER YEAR (WY)

MEAN	39.4	39.7	23.0	14.7	16.5	185	660	255	147	116	64.9	40.6
MAX	392	375	144	68.2	112	1,381	2,623	1,953	873	722	1,033	321
(WY)	(1995)	(2001)	(2001)	(1995)	(1998)	(1995)	(1996)	(1950)	(2000)	(2000)	(1993)	(1994)
MIN	0.83	2.83	3.14	1.94	0.000	2.14	42.4	37.3	6.66	3.84	0.68	0.000
(WY)	(1964)	(1977)	(1977)	(1964)	(1963)	(1964)	(1991)	(1961)	(1961)	(1961)	(1961)	(1959)

RED RIVER OF THE NORTH BASIN

05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1945 - 2003	
ANNUAL TOTAL	36,860		47,093		133	
ANNUAL MEAN	101		129		399	1950
HIGHEST ANNUAL MEAN					13.2	1977
LOWEST ANNUAL MEAN					7,410	Apr 17, 1950
HIGHEST DAILY MEAN	410	Jun 20	702	Mar 30	0.00	Aug 29, 1959
LOWEST DAILY MEAN	15	Nov 24	13	Mar 9	0.00	Aug 29, 1959
ANNUAL SEVEN-DAY MINIMUM	18	Dec 7	13	Mar 9	0.00	Aug 29, 1959
MAXIMUM PEAK FLOW			712	Mar 30	a7,830	Apr 17, 1950
MAXIMUM PEAK STAGE			11.77	Mar 30	19.13	Apr 18, 1996
ANNUAL RUNOFF (AC-FT)	73,110		93,410		96,640	
10 PERCENT EXCEEDS	289		352		298	
50 PERCENT EXCEEDS	45		40		29	
90 PERCENT EXCEEDS	26		16		4.5	

a Gage height, 18.69 ft

e Estimated

05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1960 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1997 to current year.

SPECIFIC CONDUCTANCE: June 1997 to current year.

INSTRUMENTATION.--Water-quality sensors since June 1997.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 30.2°C, Aug. 19, 2003; minimum recorded, -0.3°C, on many days in December 2002, January 2003, and February 2003.

SPECIFIC CONDUCTANCE: Maximum recorded, 2,230 microsiemens, Feb. 15-17, 2002; minimum recorded, 522 microsiemens, Mar. 22, 2003.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 30.2°C, Aug. 19; minimum recorded, -0.3°C, on many days in December through February.

SPECIFIC CONDUCTANCE: Maximum recorded, 1,700 microsiemens, Oct. 4-5; minimum recorded, 522 microsiemens, Mar. 22.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specific conductance, wat unfl lab, uS/cm 25 degC (90095)	Specific conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
OCT 29...	1150	45	--	--	--	--	--	--	--	999	-2.0	2.0	--
JAN 02...	1355	24	--	--	--	--	--	--	--	1,180	-4.0	0.0	--
FEB 07...	1205	17	--	--	--	--	--	--	--	1,150	-16.5	0.0	--
MAR 31...	1325	654	--	--	--	--	8.2	7.7	568	582	21.0	2.5	180
MAY 13...	1110	317	--	--	--	--	--	--	--	1,240	17.5	12.0	--
JUL 07...	1425	110	--	--	--	--	--	--	--	1,220	24.0	21.0	--
AUG 12...	1415	88	--	--	--	--	8.4	8.3	1,010	1,030	30.0	25.5	370
SEP 15...	1620	20	22	723	8.4	93	8.2	8.4	1,050	1,060	23.4	17.5	380

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)
OCT 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 02...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 31...	36.0	21.0	16.0	2	46.0	34	147	16.0	0.20	--	130	354	676
MAY 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 12...	67.9	48.9	9.90	2	101	36	364	14.2	0.22	37.7	183	644	162
SEP 15...	75.7	46.6	8.90	2	104	36	376	20.8	--	--	187	672	36.2

05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd, mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd, mg/L as N (00610)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite + nitrate water unfltrd, mg/L as N (00630)	Organic nitrogen, water, unfltrd, mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd, mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd, mg/L (00600)
OCT 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 02...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 31...	383	--	--	--	--	--	--	--	--	--	--	--	--
MAY 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 15...	--	0.81	0.70	<0.010	0.034	0.240	0.240	0.67	0.200	0.202	0.222	1.1	0.94

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
OCT 29...	--	--	--	--	--	--	--	--	--	--	--
JAN 02...	--	--	--	--	--	--	--	--	--	--	--
FEB 07...	--	--	--	--	--	--	--	--	--	--	--
MAR 31...	--	--	2.0	130	1	40	370	<0.10	<1	1	200
MAY 13...	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--	--	--	--	--	--
AUG 12...	--	--	9.2	<10	<1	70	50	<0.20	2	4	340
SEP 15...	<6.0	<2.0	--	20	--	--	150	--	--	--	--

Remark codes used in this table:

< -- Less than

05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	12.3	11.6	11.9	0.8	0.0	0.3	0.0	-0.2	-0.1	-0.1	-0.2	-0.2
2	11.7	10.2	11.0	0.7	0.0	0.3	0.1	-0.2	-0.1	-0.1	-0.2	-0.2
3	10.2	8.9	9.5	0.2	-0.1	0.0	-0.1	-0.2	-0.1	-0.1	-0.2	-0.2
4	8.9	7.8	8.5	0.3	-0.1	0.0	-0.1	-0.2	-0.2	-0.1	-0.2	-0.1
5	9.0	7.5	8.0	0.1	-0.1	0.0	-0.1	-0.2	-0.2	-0.1	-0.2	-0.1
6	8.1	7.2	7.6	0.2	-0.1	0.0	-0.1	-0.2	-0.2	-0.1	-0.2	-0.1
7	8.6	7.1	7.9	0.5	-0.1	0.1	-0.1	-0.2	-0.2	-0.1	-0.2	-0.1
8	7.8	7.0	7.5	0.5	0.0	0.2	-0.1	-0.2	-0.2	0.0	-0.1	-0.1
9	---	---	---	0.5	0.0	0.2	0.0	-0.2	-0.1	0.0	-0.1	-0.1
10	---	---	7.4	0.4	-0.1	0.1	0.0	-0.2	-0.1	-0.1	-0.2	-0.1
11	8.9	8.2	8.5	0.3	-0.1	0.1	0.1	-0.2	-0.1	-0.1	-0.2	-0.2
12	9.4	8.7	9.0	0.3	-0.1	0.0	0.1	-0.2	-0.1	-0.2	-0.3	-0.2
13	8.7	6.8	7.7	0.0	-0.1	-0.1	0.1	-0.3	-0.1	-0.2	-0.3	-0.2
14	8.0	5.6	6.5	0.1	-0.2	-0.1	0.0	-0.3	-0.1	-0.2	-0.3	-0.2
15	6.7	5.5	6.1	0.1	-0.2	-0.1	0.0	-0.2	-0.1	-0.2	-0.3	-0.2
16	---	---	6.0	0.0	-0.2	-0.1	0.0	-0.2	-0.1	-0.2	-0.3	-0.2
17	5.3	4.3	5.0	-0.1	-0.2	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.2
18	4.4	3.7	4.2	0.1	-0.2	-0.1	-0.2	-0.2	-0.2	-0.2	-0.3	-0.2
19	3.7	2.8	3.2	0.2	-0.2	0.0	-0.2	-0.2	-0.2	-0.2	-0.3	-0.2
20	3.4	2.3	2.8	0.3	-0.2	0.0	-0.1	-0.2	-0.2	-0.2	-0.3	-0.2
21	2.5	1.7	2.1	0.0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.3	-0.2
22	2.7	1.3	1.7	0.2	-0.2	0.0	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
23	1.4	0.8	1.1	0.2	-0.1	0.0	-0.2	-0.3	-0.2	-0.1	-0.2	-0.2
24	1.4	0.4	0.8	0.3	-0.2	0.0	-0.2	-0.3	-0.2	-0.1	-0.2	-0.2
25	0.6	0.3	0.5	0.2	-0.1	0.0	-0.2	-0.3	-0.2	-0.1	-0.2	-0.2
26	0.8	0.2	0.4	0.1	-0.2	-0.1	-0.1	-0.2	-0.2	-0.1	-0.2	-0.2
27	1.3	0.5	0.9	0.2	-0.2	0.0	-0.1	-0.2	-0.2	-0.1	-0.3	-0.2
28	1.8	1.1	1.5	0.2	-0.2	0.0	-0.1	-0.2	-0.2	-0.2	-0.3	-0.2
29	1.8	0.7	1.4	0.2	-0.1	0.0	-0.1	-0.2	-0.1	-0.2	-0.3	-0.2
30	1.1	0.3	0.7	0.1	-0.2	-0.1	-0.1	-0.1	-0.1	-0.2	-0.3	-0.3
31	1.1	0.1	0.5	---	---	---	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3
MONTH	12.3	0.1	5.0	0.8	-0.2	0.0	0.1	-0.3	-0.2	0.0	-0.3	-0.2
	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	-0.2	-0.3	-0.3	---	---	---	3.7	2.7	3.3	15.0	13.3	14.1
2	-0.3	-0.3	-0.3	---	---	---	2.7	1.5	1.9	15.3	13.8	14.6
3	-0.3	-0.3	-0.3	---	---	---	1.5	0.2	0.8	15.3	12.9	13.7
4	-0.3	-0.3	-0.3	---	---	---	0.5	-0.2	0.1	13.1	11.7	12.5
5	-0.3	-0.3	-0.3	---	---	---	0.8	-0.1	0.3	11.7	10.2	10.7
6	-0.3	-0.3	-0.3	---	---	---	2.5	-0.1	1.1	10.5	8.7	9.2
7	---	---	---	---	---	---	3.6	1.4	2.5	11.3	8.7	10.1
8	---	---	---	---	---	---	5.3	2.1	3.6	13.2	10.8	11.5
9	---	---	---	---	---	---	7.9	3.7	5.5	13.3	10.6	11.4
10	---	---	---	---	---	---	9.5	5.9	7.8	11.5	9.8	10.7
11	---	---	---	---	---	---	9.3	7.1	8.2	11.5	8.6	10.0
12	---	---	---	---	---	---	11.1	8.7	9.5	13.7	10.1	11.8
13	---	---	---	---	---	---	11.5	8.9	10.2	13.3	10.4	12.2
14	---	---	---	---	---	---	12.1	10.1	11.2	14.5	12.3	13.3
15	---	---	---	---	---	---	11.8	10.5	11.4	15.8	13.0	14.3
16	---	---	---	---	---	---	11.3	6.7	9.1	16.6	14.4	15.6
17	---	---	---	---	---	---	7.3	5.3	6.1	16.2	14.0	15.2
18	---	---	---	---	---	---	8.0	6.1	7.1	14.0	13.2	13.6
19	---	---	---	---	---	---	8.0	6.9	7.2	13.2	11.9	12.4
20	---	---	---	---	---	---	8.5	6.4	7.3	14.5	11.3	13.0
21	---	---	---	---	---	-0.1	10.9	7.5	9.0	14.8	13.0	13.8
22	---	---	---	0.1	-0.2	-0.1	12.4	8.5	10.6	16.2	13.1	14.6
23	---	---	---	0.2	-0.2	-0.1	13.8	10.9	12.2	16.0	13.8	14.8
24	---	---	---	0.3	-0.2	-0.1	15.0	12.1	13.5	14.8	13.2	13.5
25	---	---	---	0.0	-0.2	-0.1	15.4	13.5	14.3	16.8	12.3	14.3
26	---	---	---	-0.1	-0.2	-0.2	15.8	12.7	14.4	18.3	15.3	16.7
27	---	---	---	0.1	-0.2	-0.1	15.8	14.4	15.1	20.4	16.4	17.4
28	---	---	---	0.0	-0.2	-0.2	15.0	11.7	12.6	19.7	16.5	18.0
29	---	---	---	0.0	-0.2	-0.1	13.8	12.1	12.9	19.4	16.3	17.3
30	---	---	---	1.1	-0.1	0.4	14.7	12.4	13.5	20.1	17.7	18.5
31	---	---	---	3.4	1.0	2.2	---	---	---	17.7	15.9	16.9
MONTH	-0.2	-0.3	-0.3	3.4	-0.2	0.1	15.8	-0.2	8.1	20.4	8.6	13.7

05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	1,550	1,400	1,470	1,030	1,010	1,020	1,130	1,110	1,120	1,180	1,170	1,170
2	1,630	1,550	1,600	1,050	1,020	1,040	1,170	1,130	1,150	1,170	1,160	1,170
3	1,670	1,630	1,640	1,040	1,030	1,040	1,200	1,170	1,180	1,160	1,150	1,150
4	1,700	1,670	1,690	1,040	1,040	1,040	1,210	1,190	1,190	1,150	1,130	1,140
5	1,700	1,680	1,690	1,050	1,030	1,040	1,220	1,210	1,220	1,130	1,130	1,130
6	1,680	1,590	1,650	1,040	1,030	1,040	1,240	1,220	1,230	1,130	1,130	1,130
7	1,590	1,440	1,490	1,040	1,000	1,020	1,230	1,220	1,220	1,130	1,130	1,130
8	1,490	1,450	1,470	1,010	968	993	1,220	1,200	1,210	1,140	1,130	1,130
9	---	---	---	973	940	957	1,230	1,210	1,210	1,150	1,140	1,140
10	---	---	1,150	946	925	935	1,270	1,230	1,260	1,160	1,150	1,160
11	1,050	927	983	938	927	934	1,280	1,270	1,280	1,180	1,160	1,170
12	993	988	991	955	932	942	1,290	1,280	1,280	1,210	1,180	1,200
13	1,000	991	997	960	955	957	1,300	1,290	1,300	1,250	1,210	1,230
14	1,010	997	1,000	989	960	979	1,300	1,280	1,290	1,260	1,250	1,260
15	1,010	1,000	1,000	1,000	988	994	1,280	1,270	1,270	1,260	1,260	1,260
16	1,040	1,010	1,030	1,000	991	996	1,270	1,260	1,260	1,260	1,260	1,260
17	1,060	1,040	1,050	1,010	999	1,010	1,270	1,260	1,260	1,260	1,260	1,260
18	1,070	1,060	1,060	1,020	1,010	1,010	1,280	1,270	1,270	1,260	1,250	1,260
19	1,070	1,070	1,070	1,020	1,010	1,010	1,280	1,270	1,280	1,260	1,250	1,250
20	1,080	1,070	1,070	1,010	1,000	1,010	1,270	1,260	1,270	1,250	1,250	1,250
21	1,070	1,070	1,070	1,000	979	993	1,260	1,240	1,250	1,250	1,240	1,250
22	1,070	1,050	1,060	986	966	977	1,240	1,210	1,230	1,250	1,240	1,240
23	1,050	1,040	1,050	976	963	971	1,210	1,200	1,210	1,240	1,230	1,240
24	1,050	1,020	1,040	996	975	985	---	---	---	1,240	1,240	1,240
25	1,020	1,020	1,020	1,040	996	1,020	1,210	1,200	1,210	1,240	1,240	1,240
26	1,020	996	1,010	1,080	1,040	1,060	1,220	1,210	1,220	1,260	1,240	1,250
27	996	977	983	1,090	1,070	1,080	1,230	1,220	1,220	1,270	1,250	1,260
28	978	969	973	1,100	1,090	1,100	1,220	1,210	1,220	1,250	1,240	1,240
29	983	971	974	1,110	1,100	1,100	1,210	1,210	1,210	1,250	1,240	1,250
30	1,000	971	980	1,120	1,100	1,110	1,210	1,190	1,200	1,260	1,250	1,250
31	1,010	989	999	---	---	---	1,190	1,180	1,180	1,260	1,250	1,260
MONTH	1,700	927	1,180	1,120	925	1,010	1,300	1,110	1,230	1,270	1,130	1,210
DAY	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	1,270	1,260	1,270	---	---	---	641	588	617	988	983	985
2	1,280	1,270	1,280	---	---	---	672	641	658	997	985	992
3	1,280	1,280	1,280	---	---	---	682	672	679	1,000	996	998
4	1,330	1,280	1,300	---	---	---	688	681	685	1,070	993	1,010
5	1,360	1,330	1,350	---	---	---	691	683	687	1,070	999	1,030
6	1,380	1,360	1,370	---	---	---	714	690	698	1,050	987	1,000
7	---	---	---	---	---	---	746	714	725	1,020	982	995
8	---	---	---	---	---	---	771	746	760	1,040	1,000	1,020
9	---	---	---	---	---	---	787	771	780	1,010	973	994
10	---	---	---	---	---	---	800	787	795	994	970	980
11	---	---	---	---	---	---	801	792	797	1,010	994	1,000
12	---	---	---	---	---	---	803	794	799	1,020	1,000	1,010
13	---	---	---	---	---	---	799	793	796	1,040	1,020	1,030
14	---	---	---	---	---	---	803	792	798	1,040	1,030	1,040
15	---	---	---	---	---	---	---	---	817	1,070	1,040	1,050
16	---	---	---	---	---	---	---	---	---	1,130	1,070	1,100
17	---	---	---	---	---	---	872	856	867	1,160	1,130	1,150
18	---	---	---	---	---	---	884	868	875	1,190	1,160	1,180
19	---	---	---	---	---	---	895	881	887	1,210	1,190	1,200
20	---	---	---	---	---	---	903	893	900	1,230	1,210	1,220
21	---	---	---	---	---	---	909	903	906	1,240	1,230	1,230
22	---	---	---	556	522	539	923	906	911	1,250	1,240	1,240
23	---	---	---	586	553	576	940	923	935	1,260	1,250	1,250
24	---	---	---	582	537	558	944	937	940	1,260	1,260	1,260
25	---	---	---	550	533	542	955	942	948	1,260	1,250	1,260
26	---	---	---	659	543	601	966	954	961	1,260	1,250	1,260
27	---	---	---	660	618	640	968	955	960	1,260	1,240	1,260
28	---	---	---	692	623	667	982	967	974	1,240	1,240	1,240
29	---	---	---	654	587	620	988	982	985	1,250	1,230	1,240
30	---	---	---	587	556	570	988	983	985	1,270	1,250	1,260
31	---	---	---	590	556	570	---	---	---	1,280	1,270	1,270
MONTH	1,380	1,260	1,310	692	522	588	988	588	832	1,280	970	1,120

05057200 BALDHILL CREEK NEAR DAZEY, ND

LOCATION.--Lat 47°13'45", long 98°07'28", in NW¹₄SE¹₄SW¹₄ sec.2, T.143 N., R.59 W., Barnes County, Hydrologic Unit 09020203, on left bank 500 ft upstream from bridge on county highway, 4.5 mi northeast of Dazey, and 14 mi upstream from mouth.

DRAINAGE AREA.--691 mi², of which about 340 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1956 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,330 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 9, 1956, nonrecording gage 500 ft downstream at same datum.

REMARKS.--Records good except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	6.8	e3.3	e2.6	1.1	0.72	33	10	17	14	13	1.0
2	1.9	6.7	e3.0	e2.7	1.6	0.64	26	9.5	16	12	11	0.94
3	1.6	6.7	e2.8	e2.7	1.8	0.56	13	9.0	17	13	11	0.81
4	1.8	6.7	e2.5	e2.9	1.8	0.60	15	15	17	14	10	0.67
5	1.8	6.5	e2.4	e3.1	1.8	0.52	14	28	17	12	11	0.58
6	3.1	6.5	e2.3	e3.3	1.8	0.46	17	46	19	11	10	0.56
7	3.4	6.2	e2.2	e3.4	1.6	0.40	16	52	20	9.9	9.6	0.64
8	3.2	6.0	e2.1	e3.4	1.6	0.38	15	54	21	9.1	8.5	0.80
9	2.4	6.2	2.0	e3.4	1.6	0.37	14	54	21	14	8.3	0.77
10	2.3	7.6	2.0	e3.2	1.2	0.30	13	55	26	25	8.1	0.81
11	2.3	7.3	2.0	e2.6	1.1	0.28	12	57	23	35	7.4	0.88
12	3.0	7.2	2.0	e1.6	1.0	0.28	11	57	30	41	6.7	0.89
13	3.2	6.8	1.9	1.4	0.89	0.32	10	55	28	45	5.5	1.7
14	3.2	6.5	1.7	1.3	0.81	e0.40	10	53	25	49	4.5	10
15	2.6	6.7	1.7	1.2	0.77	e1.0	10	48	21	56	4.3	6.2
16	2.4	6.1	1.6	1.0	0.72	e9.0	9.7	44	20	65	3.9	2.9
17	2.3	6.0	1.4	0.99	0.74	e20	11	46	25	63	3.1	2.0
18	2.3	6.2	1.4	0.90	0.82	30	12	48	17	59	2.4	2.6
19	2.3	6.4	e1.5	0.85	0.82	41	15	54	12	54	1.8	2.2
20	2.2	6.3	e1.5	0.92	0.82	65	17	70	9.8	49	1.6	1.8
21	2.2	5.6	e1.5	0.99	0.82	65	16	63	9.2	44	1.5	2.3
22	2.2	5.3	e1.7	0.90	0.82	77	15	56	13	39	1.2	2.8
23	4.1	5.0	e1.9	0.55	0.82	91	13	49	15	33	1.6	3.1
24	4.4	4.3	e2.1	0.39	0.82	110	12	48	15	27	1.9	5.0
25	4.0	e5.4	e2.3	0.38	0.82	99	12	45	16	23	1.8	2.7
26	3.8	e5.1	e2.3	0.31	0.77	87	12	40	18	21	2.4	2.1
27	4.4	e4.8	e2.3	0.34	0.74	67	13	37	20	18	3.1	1.7
28	5.4	e4.3	e2.5	0.44	0.72	40	12	32	22	17	3.2	1.6
29	6.9	e3.8	e2.6	0.46	---	41	11	27	19	15	1.9	1.5
30	7.2	e3.6	e2.6	0.62	---	42	11	24	15	14	1.3	1.4
31	7.6	---	e2.6	0.93	---	37	---	20	---	14	1.1	---
TOTAL	101.9	178.6	65.7	49.77	30.72	928.23	420.7	1,305.5	564.0	915.0	162.7	62.95
MEAN	3.29	5.95	2.12	1.61	1.10	29.9	14.0	42.1	18.8	29.5	5.25	2.10
MAX	7.6	7.6	3.3	3.4	1.8	110	33	70	30	65	13	10
MIN	1.6	3.6	1.4	0.31	0.72	0.28	9.7	9.0	9.2	9.1	1.1	0.56
AC-FT	202	354	130	99	61	1,840	834	2,590	1,120	1,810	323	125

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2003, BY WATER YEAR (WY)

MEAN	7.63	7.18	3.27	1.56	2.77	61.9	130	32.1	20.0	19.3	8.78	7.07
MAX	106	54.9	16.1	7.31	34.2	475	1,040	220	180	273	133	58.5
(WY)	(1995)	(2001)	(1995)	(1995)	(1998)	(1995)	(1997)	(1997)	(1999)	(1993)	(1993)	(1957)
MIN	0.47	0.38	0.15	0.000	0.000	0.59	2.44	1.71	0.91	0.021	0.076	0.094
(WY)	(1992)	(1960)	(1959)	(1959)	(1957)	(1964)	(1981)	(1981)	(1961)	(1989)	(1984)	(1984)

RED RIVER OF THE NORTH BASIN

05057200 BALDHILL CREEK NEAR DAZEY, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1956 - 2003	
ANNUAL TOTAL	4,523.0		4,785.77		25.2	
ANNUAL MEAN	12.4		13.1		115	
HIGHEST ANNUAL MEAN					1997	
LOWEST ANNUAL MEAN					1981	
HIGHEST DAILY MEAN	58	May 12	110	Mar 24	4,500	Apr 19, 1979
LOWEST DAILY MEAN	1.2	Sep 21	0.28	Mar 11	0.00	Jan 25, 1957
ANNUAL SEVEN-DAY MINIMUM	1.5	Dec 15	0.33	Mar 7	0.00	Jan 25, 1957
MAXIMUM PEAK FLOW			146	Mar 24	a9,000	Apr 19, 1979
MAXIMUM PEAK STAGE			7.42	Mar 24	b17.78	Apr 19, 1979
ANNUAL RUNOFF (AC-FT)	8,970		9,490		18,270	
10 PERCENT EXCEEDS	35		44		42	
50 PERCENT EXCEEDS	6.1		5.0		3.7	
90 PERCENT EXCEEDS	2.2		0.81		0.30	

a About
b From floodmark
c Estimated

05057200 BALDHILL CREEK NEAR DAZEY, ND—Continued

WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 1997 to Sept. 30, 2001.

SPECIFIC CONDUCTANCE: April 1997 Sept. 30, 2001.

INSTRUMENTATION.--Water-quality sensors April 1997 to Sept. 30, 2001.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 31.0°C, July 10, 1998; minimum recorded, -0.2°C, on many days in November and December 2000.

SPECIFIC CONDUCTANCE: Maximum recorded, 2,210 microsiemens, May 7-8, 1997; minimum recorded, 291 microsiemens, Mar. 31, 1999.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfl lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 30...	1010	7.7	--	--	--	--	-10.0	2.0	--	--	--	--	--
JAN 03...	1000	2.8	--	--	--	1,180	--	0.5	--	--	--	--	--
FEB 06...	1400	1.9	--	--	--	1,160	-19.0	0.0	--	--	--	--	--
MAR 18...	1405	31	--	--	--	407	4.0	0.0	--	--	--	--	--
MAR 31...	1710	39	7.5	7.0	639	680	18.0	1.5	250	54.0	29.0	17.0	0.9
MAY 12...	1145	57	--	--	--	1,220	18.0	10.5	--	--	--	--	--
JUL 07...	0950	10	--	--	--	1,240	16.0	23.5	--	--	--	--	--
AUG 12...	0835	7.2	8.2	8.1	976	995	19.0	22.0	440	78.3	58.1	7.90	1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 31...	33.0	21	163	<0.1	0.10	--	150	382	--	447	3.0	70	1
MAY 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 12...	68.6	25	341	10.9	0.24	27.6	196	627	12.7	--	5.9	10	<1

RED RIVER OF THE NORTH BASIN

05057200 BALDHILL CREEK NEAR DAZEY, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 30...	--	--	--	--	--	--
JAN 03...	--	--	--	--	--	--
FEB 06...	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--
31...	40	480	<0.10	<1	<1	330
MAY 12...	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--
AUG 12...	70	110	<0.20	1	6	460

Remark codes used in this table:

< -- Less than

05057500 LAKE ASHTABULA AT BALDHILL DAM, ND

LOCATION.--Lat 47°02'00", long 98°05'00", in NW $\frac{1}{4}$ sec.18, T.141 N., R.58 W., Barnes County, Hydrologic Unit 09020203, at Baldhill Dam on Sheyenne River and 8 mi northwest of Valley City.

DRAINAGE AREA.--7,470 mi², approximately, of which about 5,560 mi² is probably noncontributing, including 3,800 mi² in closed basins.

MONTH-END-ELEVATION AND CONTENTS RECORDS

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

REVISED RECORDS.--WSP 1238: 1950(M). WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,200 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by an earth-filled dam, 1,650 ft long; storage began on July 30, 1949; dam completed September 1949. Usable capacity, 69,100 acre-ft between invert of outlet conduit, elevation, 1,238.0 ft, and normal pool level, elevation, 1,266.0 ft. Dead storage below elevation 1,238.0 ft, 1,500 acre-ft. Maximum pool elevation, 1,273.2 ft, capacity, 116,500 acre-ft. Low flows are controlled by 2 sluice gates 3 ft in diameter. The spillway crest is 120 ft long at elevation 1,252.0 ft, surmounted by 3 tainter gates, each 15 ft high and 40 ft long. The reservoir is operated for flood control and to increase low-water flow. Figures given for storage capacity (in acre-ft) based on capacity table dated 1978 (provided by U.S. Army Corps of Engineers).

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 91,400 acre-ft, May 14, 1950, elevation, 1,269.46 ft; minimum since reservoir first reached spillway level, 6,660 acre-ft, Aug. 11-14, 1950, elevation, 1,245.13 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 73,510 acre-ft, May 18, elevation, 1,266.51 ft; minimum, 56,200 acre-ft, Mar. 9, elevation, 1,263.34 ft.

MONTH-END ELEVATION AND CONTENTS, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 -----	1,265.93	70,210	--
Oct. 31 -----	1,265.32	66,790	-3,420
Nov. 30 -----	1,264.73	63,520	-3,270
Dec. 31 -----	1,263.91	59,050	-4,470
CAL YR 2002	--	--	+6,210
Jan. 31 -----	1,263.47	56,850	-2,200
Feb. 28 -----	1,263.39	56,450	-400
Mar. 31 -----	1,265.70	68,920	+12,470
Apr. 30 -----	1,266.03	70,770	+1,850
May 31 -----	1,265.98	70,490	-280
June 30 -----	1,266.11	71,230	+740
July 31 -----	1,265.87	69,870	-1,360
Aug. 31 -----	1,265.82	69,590	-280
Sept. 30 -----	1,265.67	68,750	-840
WTR YR 2003	--	--	-1,460

05058000 SHEYENNE RIVER BELOW BALDHILL DAM, ND

LOCATION.--Lat 47°02'02", long 98°05'00", in NW¹₄NW¹₄ sec.18, T.141 N., R.58 W., Barnes County, Hydrologic Unit 09020204, on right bank 0.1 mi downstream from Baldhill Dam, 8 mi northwest of Valley City, and at mile 270.5.

DRAINAGE AREA.--7,470 mi², approximately, of which about 5,560 mi² is probably noncontributing, including 3,800 mi² in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1949 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,200.00 ft above National Geodetic Vertical Datum of 1929. From Dec. 29, 1994, to Sept. 18, 2000, at site 0.7 mi downstream at same datum.

REMARKS.--Records good. Flow completely regulated by Lake Ashtabula (station 05057500). Records 1955 to 1972 include releases at Baldhill Dam to the fish-rearing ponds of the Fish and Wildlife Service. Daily discharges from Dec. 29, 1994, to current water year include releases through fish hatchery siphon.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	88	95	124	111	27	25	507	169	245	263	86	34
2	94	95	124	111	26	26	510	125	245	272	86	35
3	94	95	124	111	26	26	423	99	246	278	86	36
4	94	95	124	110	25	26	375	98	247	276	86	36
5	94	95	124	111	25	26	374	241	247	270	86	36
6	94	95	124	100	24	26	372	463	247	269	88	36
7	94	94	124	95	24	26	372	556	246	213	93	36
8	94	94	124	95	24	26	316	443	246	130	94	36
9	95	94	123	95	24	26	265	480	246	83	92	37
10	97	94	122	85	24	26	266	550	250	73	90	36
11	98	93	122	79	24	26	270	548	249	73	89	36
12	98	93	122	80	24	26	268	466	249	73	88	37
13	99	93	117	79	24	26	266	419	251	75	88	37
14	98	103	109	80	24	26	269	420	250	271	85	36
15	97	120	109	79	25	26	270	352	249	475	73	37
16	98	125	110	80	25	27	269	313	250	525	65	37
17	97	123	110	75	25	26	267	373	249	779	64	40
18	98	123	110	66	25	26	266	426	251	899	59	38
19	98	123	110	66	25	26	266	559	252	894	48	38
20	97	123	110	66	25	26	264	666	252	881	47	37
21	97	123	111	55	25	25	261	663	253	834	47	37
22	96	123	111	39	25	25	259	665	256	848	48	37
23	96	123	111	32	25	25	258	588	255	735	48	37
24	97	124	111	31	25	24	258	536	255	590	48	37
25	96	124	111	31	25	24	253	534	258	521	48	37
26	96	124	111	30	25	24	242	533	256	527	48	36
27	95	123	110	30	25	24	242	468	259	458	48	36
28	95	123	111	29	25	83	173	359	258	267	40	35
29	95	123	110	28	---	234	167	265	258	78	33	35
30	95	124	111	28	---	261	170	246	260	57	34	35
31	95	---	111	27	---	386	---	245	---	86	34	---
TOTAL	2,969	3,299	3,585	2,134	695	1,655	8,738	12,868	7,535	12,073	2,069	1,093
MEAN	95.8	110	116	68.8	24.8	53.4	291	415	251	389	66.7	36.4
MAX	99	125	124	111	27	386	510	666	260	899	94	40
MIN	88	93	109	27	24	24	167	98	245	57	33	34
AC-FT	5,890	6,540	7,110	4,230	1,380	3,280	17,330	25,520	14,950	23,950	4,100	2,170

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 2003, BY WATER YEAR (WY)

MEAN	60.5	85.5	78.9	66.2	75.2	215	638	324	190	151	89.5	61.4
MAX	622	587	375	227	300	1,567	3,329	2,906	1,154	1,272	1,555	577
(WY)	(1995)	(2001)	(2001)	(2001)	(1996)	(1995)	(1997)	(1950)	(1950)	(1993)	(1993)	(1994)
MIN	1.92	5.27	4.32	3.64	7.66	7.81	2.07	6.86	5.88	7.28	6.72	0.81
(WY)	(1956)	(1956)	(1980)	(1956)	(1956)	(1955)	(1953)	(1959)	(1958)	(1959)	(1977)	(1955)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1950 - 2003

ANNUAL TOTAL	39,472	58,713	
ANNUAL MEAN	108	161	169
HIGHEST ANNUAL MEAN			574
LOWEST ANNUAL MEAN			12.8
HIGHEST DAILY MEAN	519	May 14	899
LOWEST DAILY MEAN	19	Aug 28	24
ANNUAL SEVEN-DAY MINIMUM	19	Aug 28	24
MAXIMUM PEAK FLOW			913
MAXIMUM PEAK STAGE			26.13
ANNUAL RUNOFF (AC-FT)	78,290	116,500	122,800
10 PERCENT EXCEEDS	257	379	349
50 PERCENT EXCEEDS	87	97	49
90 PERCENT EXCEEDS	22	26	9.6

05058000 SHEYENNE RIVER BELOW BALDHILL DAM, ND—Continued

WATER-QUALITY RECORDS

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

REMARKS.--Quality assurance sample also collected at this location.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 1997 to current year.

SPECIFIC CONDUCTANCE: April 1997 to current year.

INSTRUMENTATION.--Water-quality sensors since April 1997.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 28.3°C, July 20, 1998; minimum recorded, 0.2°C, Feb. 21, 2003.

SPECIFIC CONDUCTANCE: Maximum recorded, 1,640 microsiemens, Feb. 27-28, 2001; minimum recorded, 401 microsiemens, Apr. 14, 1999.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 26.6°C, Aug. 25; minimum recorded, 0.2°C, Feb. 21.

SPECIFIC CONDUCTANCE: Maximum recorded, 1,370 microsiemens, Mar. 27-28; minimum recorded, 853 microsiemens, June 27.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Dis-charge, cfs (00060)	Instan- taneous dis- charge, cfs (00061)	Tur- bidity, water, unfltrd field, NTU (61028)	Baro- metric pres- sure, mm Hg (00025)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conduc- tance, wat unfl- lab, uS/cm (90095)	Specif. conduc- tance, wat unfl- lab, uS/cm (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)
OCT													
10...	0930	--	95	--	--	--	--	--	--	--	1,080	9.0	11.0
30...	1220	--	96	--	--	--	--	--	--	--	1,100	1.5	7.5
JAN													
03...	1245	--	109	--	--	--	--	--	--	--	1,230	2.0	3.0
FEB													
06...	1640	--	20	--	--	--	--	--	--	--	1,340	--	4.5
MAR													
18...	1105	--	32	--	--	--	--	--	--	--	1,400	3.0	3.0
APR													
01...	1045	--	516	--	--	--	--	8.2	8.1	1,190	1,240	0.0	4.5
MAY													
09...	1425	--	560	--	--	--	--	--	--	--	1,040	9.0	11.5
10...	1220	550	--	--	--	--	--	--	--	--	1,070	--	11.5
30...	1430	246	--	--	--	--	--	--	--	--	960	19.5	16.5
JUN													
24...	1325	--	256	--	--	--	--	--	--	--	938	--	21.5
JUL													
30...	0945	--	13	--	--	--	--	8.0	8.3	991	1,000	26.0	22.0
SEP													
03...	1405	36	--	--	--	--	--	--	--	--	1,090	24.0	22.5
16...	1000	--	37	0.0	725	7.1	77	8.1	8.3	1,110	1,120	19.7	16.9

05058000 SHEYENNE RIVER BELOW BALDHILL DAM, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Hardness, water, unfltrd mg/L as CaCO ₃ (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfiltered end pt, lab, mg/L as CaCO ₃ (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)
OCT 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
OCT 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 01...	390	65.0	56.0	14.0	3	130	41	364	28.0	0.20	--	290	803
MAY 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 24...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 30...	340	59.3	45.9	12.1	3	108	40	278	19.4	0.23	15.4	259	672
SEP 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 16...	360	61.6	49.4	12.1	3	123	42	315	18.8	--	--	255	713

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC mg/L (70300)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd, mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd, mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd, mg/L as N (00630)	Organic nitrogen, water, fltrd, mg/L (00607)	Organic nitrogen, water, unfltrd, mg/L (00605)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd, mg/L (00665)
OCT 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
OCT 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 01...	1,170	840	--	--	--	--	--	--	--	--	--	--	--
MAY 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 24...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 30...	24.7	--	--	--	--	--	--	--	--	--	--	--	--
SEP 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 16...	71.2	--	1.3	1.3	0.087	0.129	0.600	0.600	1.2	1.2	0.209	0.213	0.232

05058000 SHEYENNE RIVER BELOW BALDHILL DAM, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
OCT 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
OCT 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 01...	--	--	--	--	6.0	60	1	90	510	<0.10	<1	2	400
MAY 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 24...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 30...	--	--	--	--	5.4	10	<1	70	380	<0.20	2	1	300
SEP 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 16...	1.9	1.9	<3.0	<1.0	--	20	--	--	70	--	--	--	--

Remark codes used in this table:
 < -- Less than

TEMPERATURE, WATER, DEGREES CELSIUS
 WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	15.1	13.7	14.2	4.3	2.7	3.1	1.9	1.3	1.6	3.3	2.5	2.8
2	14.3	13.2	13.6	4.2	2.5	3.1	1.6	1.2	1.4	3.4	2.5	2.8
3	13.3	13.0	13.1	3.1	2.7	2.9	1.6	1.4	1.5	3.6	2.6	2.9
4	14.0	12.1	12.9	3.3	2.2	2.8	1.9	1.4	1.5	3.2	2.9	3.0
5	13.6	11.9	12.4	2.8	2.2	2.5	2.0	1.5	1.6	3.2	2.8	3.0
6	13.1	10.5	11.8	2.8	2.0	2.4	2.2	1.5	1.7	3.5	2.7	3.0
7	13.0	11.3	11.8	3.4	1.9	2.4	2.1	1.8	1.9	4.1	2.8	3.1
8	12.4	11.0	11.5	3.2	1.9	2.3	2.1	1.6	1.8	4.2	2.7	3.1
9	12.2	10.1	11.1	3.4	2.0	2.4	2.6	1.8	2.1	3.4	2.4	2.8
10	12.7	10.7	11.4	2.5	1.7	2.1	2.6	1.9	2.1	3.4	2.1	2.5
11	12.2	11.0	11.4	2.5	1.7	2.0	2.7	1.9	2.2	3.2	2.1	2.4
12	11.5	10.0	10.8	2.2	1.5	1.9	2.8	2.1	2.3	2.8	1.9	2.3
13	11.3	9.6	10.2	2.0	1.4	1.7	2.9	2.1	2.4	3.0	2.3	2.6
14	11.2	9.6	10.1	1.8	1.2	1.5	3.1	2.3	2.5	3.1	2.2	2.5
15	10.6	9.1	9.7	1.8	1.2	1.4	3.0	2.4	2.6	3.3	2.3	2.7
16	10.0	8.9	9.3	2.2	1.3	1.8	2.5	2.1	2.4	3.2	2.3	2.6
17	10.0	8.7	9.2	2.0	1.8	1.9	3.0	2.4	2.7	3.2	2.3	2.6
18	9.0	8.4	8.7	2.5	1.8	2.0	3.4	2.6	2.9	3.2	2.3	2.6
19	8.4	7.7	8.0	2.3	1.8	2.0	3.3	2.6	2.9	3.6	2.3	2.8
20	7.8	6.9	7.4	2.4	2.0	2.1	3.2	2.6	2.8	3.5	2.3	2.8
21	7.7	6.4	6.9	2.2	1.7	2.0	3.4	2.7	2.9	3.3	2.2	2.7
22	6.7	6.0	6.3	2.2	1.7	1.9	3.3	2.4	2.9	2.8	1.9	2.3
23	6.2	5.5	5.9	1.8	1.3	1.6	3.1	2.2	2.5	2.1	1.5	1.8
24	5.9	5.2	5.5	1.3	0.6	0.9	3.2	2.2	2.5	2.8	1.7	2.1
25	5.9	5.2	5.5	1.0	0.6	0.7	3.3	2.3	2.6	2.3	1.7	2.0
26	6.2	5.4	5.6	1.0	0.5	0.8	3.4	2.4	2.6	2.1	1.3	1.7
27	6.0	5.2	5.5	1.8	0.8	1.3	3.4	2.4	2.7	2.3	1.4	1.8
28	5.5	5.1	5.3	2.3	1.3	1.7	3.5	2.7	2.9	2.3	1.6	2.0
29	5.1	3.7	4.5	2.0	1.3	1.6	3.2	2.7	2.9	1.9	1.3	1.6
30	4.3	3.3	3.6	2.0	1.3	1.6	3.2	2.4	2.7	2.5	1.6	2.0
31	4.5	2.9	3.5	---	---	---	3.1	2.3	2.6	2.6	2.1	2.3
MONTH	15.1	2.9	8.9	4.3	0.5	1.9	3.5	1.2	2.3	4.2	1.3	2.5

05058000 SHEYENNE RIVER BELOW BALDHILL DAM, ND—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	1,100	1,090	1,100	1,130	1,120	1,130	1,210	1,200	1,200
2	---	---	---	1,100	1,100	1,100	1,140	1,130	1,130	1,210	1,200	1,200
3	---	---	---	1,100	1,100	1,100	1,140	1,130	1,140	1,210	1,200	1,210
4	---	---	---	1,100	1,100	1,100	1,140	1,130	1,140	1,220	1,210	1,220
5	---	---	---	1,110	1,100	1,100	1,140	1,130	1,140	1,220	1,210	1,220
6	---	---	---	1,110	1,100	1,110	1,140	1,130	1,140	1,220	1,210	1,220
7	---	---	---	1,110	1,100	1,110	1,140	1,130	1,140	1,220	1,210	1,220
8	---	---	---	1,110	1,100	1,110	1,140	1,130	1,140	1,220	1,210	1,220
9	---	---	---	1,110	1,100	1,110	1,140	1,130	1,140	1,220	1,220	1,220
10	---	---	---	1,110	1,100	1,110	1,140	1,140	1,140	1,230	1,220	1,220
11	1,060	1,060	1,060	1,110	1,110	1,110	1,140	1,140	1,140	1,230	1,220	1,220
12	1,070	1,060	1,060	1,110	1,110	1,110	1,140	1,140	1,140	1,230	1,220	1,220
13	1,070	1,060	1,060	1,110	1,110	1,110	1,150	1,140	1,140	1,230	1,220	1,230
14	1,070	1,060	1,070	1,120	1,110	1,110	1,150	1,140	1,150	1,240	1,230	1,230
15	1,070	1,060	1,070	1,120	1,110	1,120	1,150	1,140	1,150	1,240	1,230	1,230
16	1,070	1,060	1,070	1,120	1,110	1,120	1,150	1,140	1,150	1,240	1,230	1,240
17	1,070	1,060	1,070	1,120	1,110	1,120	1,150	1,140	1,150	1,240	1,240	1,240
18	1,070	1,060	1,070	1,120	1,110	1,120	1,150	1,140	1,150	1,240	1,240	1,240
19	1,070	1,070	1,070	1,120	1,110	1,120	1,160	1,150	1,160	1,250	1,240	1,250
20	1,080	1,070	1,070	1,120	1,110	1,110	1,160	1,160	1,160	1,260	1,250	1,250
21	1,080	1,070	1,080	1,110	1,100	1,110	1,170	1,160	1,160	1,260	1,250	1,260
22	1,080	1,080	1,080	1,120	1,110	1,110	1,180	1,160	1,170	1,280	1,250	1,260
23	1,080	1,080	1,080	1,120	1,110	1,110	1,180	1,170	1,180	1,300	1,270	1,280
24	1,080	1,080	1,080	1,120	1,120	1,120	1,180	1,170	1,180	1,270	1,220	1,240
25	1,080	1,080	1,080	1,120	1,120	1,120	1,180	1,180	1,180	1,230	1,220	1,220
26	1,080	1,080	1,080	1,130	1,120	1,120	1,190	1,180	1,180	1,260	1,230	1,250
27	1,080	1,080	1,080	1,130	1,120	1,120	1,190	1,180	1,190	1,250	1,240	1,240
28	1,080	1,080	1,080	1,130	1,120	1,120	1,190	1,190	1,190	1,250	1,230	1,240
29	1,090	1,080	1,090	1,130	1,120	1,120	1,200	1,190	1,190	1,260	1,240	1,250
30	1,100	1,090	1,100	1,130	1,120	1,130	1,200	1,190	1,200	1,260	1,250	1,260
31	1,100	1,100	1,100	---	---	---	1,200	1,200	1,200	1,270	1,250	1,260
MONTH	1,100	1,060	1,080	1,130	1,090	1,110	1,200	1,120	1,160	1,300	1,200	1,230
DAY	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	1,270	1,250	1,270	1,320	1,310	1,310	---	---	1,250	1,140	1,140	1,140
2	1,270	1,270	1,270	1,320	1,310	1,320	1,260	1,250	1,250	1,140	1,120	1,130
3	1,280	1,260	1,270	1,320	1,310	1,320	1,260	1,260	1,260	1,120	1,100	1,110
4	1,300	1,280	1,290	1,320	1,310	1,320	1,260	1,260	1,260	1,100	1,100	1,100
5	1,290	1,280	1,280	1,330	1,320	1,320	1,270	1,260	1,260	1,100	1,090	1,100
6	1,300	1,250	1,280	1,330	1,320	1,320	1,260	1,260	1,260	1,090	1,090	1,090
7	1,260	1,240	1,250	1,330	1,320	1,320	1,260	1,260	1,260	1,090	1,030	1,070
8	1,270	1,260	1,260	1,330	1,320	1,330	1,260	1,250	1,250	1,040	1,030	1,040
9	1,280	1,270	1,270	1,340	1,330	1,340	1,250	1,240	1,250	1,040	1,020	1,030
10	1,280	1,270	1,280	1,340	1,330	1,340	1,250	1,240	1,240	1,040	1,030	1,040
11	1,280	1,280	1,280	1,340	1,330	1,330	1,240	1,240	1,240	1,060	1,040	1,050
12	1,280	1,280	1,280	1,340	1,330	1,340	1,240	1,230	1,240	1,070	1,060	1,060
13	1,280	1,280	1,280	1,340	1,320	1,330	1,240	1,240	1,240	1,080	1,070	1,070
14	1,290	1,280	1,280	1,330	1,320	1,330	1,240	1,230	1,230	1,090	1,080	1,080
15	1,290	1,280	1,290	1,330	1,310	1,320	1,230	1,220	1,220	1,100	1,090	1,100
16	1,290	1,270	1,280	1,330	1,310	1,320	1,220	1,210	1,210	1,120	1,100	1,110
17	1,280	1,270	1,280	1,340	1,320	1,330	1,210	1,200	1,200	1,130	1,120	1,120
18	1,280	1,270	1,280	1,340	1,290	1,310	1,200	1,190	1,190	1,140	1,130	1,130
19	1,280	1,270	1,280	1,290	1,280	1,280	1,190	1,180	1,180	1,140	1,140	1,140
20	1,290	1,280	1,280	1,280	1,270	1,280	1,190	1,180	1,180	1,140	1,140	1,140
21	1,300	1,290	1,290	1,280	1,270	1,280	1,190	1,180	1,190	1,140	1,140	1,140
22	1,300	1,290	1,300	1,290	1,280	1,280	1,180	1,170	1,180	1,140	1,140	1,140
23	1,300	1,290	1,300	1,300	1,290	1,290	1,170	1,150	1,160	1,140	1,140	1,140
24	1,310	1,300	1,310	1,330	1,300	1,310	1,160	1,150	1,150	1,140	1,130	1,130
25	1,320	1,300	1,310	1,340	1,330	1,330	1,150	1,140	1,150	1,130	1,130	1,130
26	1,310	1,300	1,310	1,350	1,340	1,350	1,140	1,130	1,140	1,130	1,120	1,130
27	1,310	1,300	1,310	1,370	1,350	1,360	1,130	1,120	1,120	1,120	1,110	1,120
28	1,310	1,300	1,310	1,370	1,350	1,360	1,130	1,120	1,120	1,110	1,090	1,100
29	---	---	---	1,350	1,330	1,340	1,140	1,130	1,130	1,090	1,070	1,080
30	---	---	---	1,330	1,320	1,320	1,140	1,130	1,140	---	---	---
31	---	---	---	---	---	1,310	---	---	---	---	---	---
MONTH	1,320	1,240	1,280	1,370	1,270	1,320	1,270	1,120	1,200	1,140	1,020	1,100

05058500 SHEYENNE RIVER AT VALLEY CITY, ND

LOCATION.--Lat 46°54'50", long 98°00'30", in SE¹₄NW¹₄ sec.28, T.140 N., R.58 W., Barnes County, Hydrologic Unit 09020204, on left bank 100 ft downstream from College Dam in Valley City and at mile 253.0.

DRAINAGE AREA.--7,810 mi², approximately, of which about 5,700 mi² is probably noncontributing, includes 3,800 mi² in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March to August 1919, March 1938 to September 1975; October 1979 to current year (gage heights and annual maximum discharge); seasonal discharge record for March to September 1995, 1996, and 2002. Records for July 1938, published in WSP 855, have been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 1388: 1939 (M). WSP 1728: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,199.27 ft above National Geodetic Vertical Datum of 1929. March to August 1919, nonrecording gage at site 0.5 mi upstream at different datum. March 18, 1938, to Oct. 13, 1938, nonrecording gage at present site and datum.

REMARKS.--Flow regulated by Lake Ashtabula 13 mi upstream (see station 05057500). Small diversions above station for municipal supply.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,250 ft³/s, Apr. 21, 1996, gage height, 18.78 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 920 ft³/s, July 17, gage height, 6.81 ft.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.86	4.07	4.28	4.16	3.62	3.66	5.73	4.31	4.71	4.65	3.79	3.58
2	4.01	4.07	4.25	4.15	3.61	3.68	5.75	4.26	4.73	4.64	3.79	3.59
3	4.04	4.08	4.27	4.14	3.60	3.75	5.65	4.01	4.76	4.66	3.79	3.58
4	4.05	4.08	4.27	4.14	3.55	3.71	5.26	4.19	4.78	4.66	3.80	3.58
5	4.04	4.08	4.28	4.13	3.60	3.76	5.21	4.47	4.75	4.64	3.79	3.58
6	4.11	4.08	4.29	4.11	3.61	3.75	5.21	5.71	4.73	4.65	3.76	3.58
7	4.07	4.08	4.29	4.04	3.64	3.69	5.21	6.08	4.75	4.60	3.76	3.58
8	4.06	4.08	4.27	4.04	3.65	3.67	5.18	5.90	4.74	4.28	3.74	3.58
9	4.04	4.09	4.30	4.02	3.65	3.70	4.67	5.25	4.72	4.07	3.78	3.58
10	4.06	4.10	4.30	3.99	3.70	3.80	4.75	5.92	4.74	3.78	3.77	3.59
11	4.07	4.08	4.28	3.98	3.72	3.77	4.78	5.99	4.73	3.78	3.76	3.59
12	4.07	4.08	4.22	4.09	3.71	3.74	4.77	5.85	4.74	3.77	3.77	3.59
13	4.06	4.09	4.16	4.06	3.73	3.73	4.78	5.52	4.69	3.76	3.77	3.67
14	4.06	4.09	4.10	4.04	3.70	3.76	4.79	5.60	4.66	3.93	3.78	3.60
15	4.05	4.16	4.08	4.06	3.69	3.98	4.80	5.46	4.65	5.12	3.80	3.58
16	4.06	4.23	4.08	4.03	3.69	4.49	4.81	5.11	4.64	5.48	3.72	3.58
17	4.06	4.22	4.09	4.06	3.65	4.35	4.82	5.30	4.67	6.02	3.69	3.78
18	4.08	4.22	4.11	4.00	3.64	4.01	4.80	5.94	4.62	6.59	3.70	3.71
19	4.07	4.22	4.09	3.99	3.63	3.87	4.84	6.40	4.61	6.59	3.67	3.60
20	4.08	4.23	4.08	3.97	3.63	3.84	4.82	6.62	4.59	6.59	3.66	3.58
21	4.08	4.25	4.08	3.97	3.61	3.78	4.79	6.53	4.61	6.58	3.65	3.57
22	4.06	4.26	4.09	3.86	3.62	3.75	4.77	6.47	4.64	6.39	3.65	3.57
23	4.06	4.26	4.10	3.73	3.65	3.76	4.77	6.37	4.66	6.42	3.67	3.56
24	4.06	4.24	4.09	3.82	3.69	3.73	4.77	6.07	4.67	5.95	3.68	3.56
25	4.07	4.26	4.13	3.71	3.69	3.63	4.76	6.02	5.04	5.36	3.68	3.54
26	4.07	4.26	4.17	3.72	3.71	3.60	4.70	6.00	4.82	5.50	3.68	3.57
27	4.07	4.25	4.18	3.78	3.69	3.60	4.71	5.93	4.76	5.43	3.69	3.56
28	4.09	4.26	4.19	3.69	3.66	3.60	4.60	5.07	4.82	4.77	3.73	3.56
29	4.09	4.25	4.17	3.65	---	4.24	4.23	4.95	4.73	4.06	3.63	3.57
30	4.07	4.25	4.14	3.64	---	4.69	4.30	4.73	4.68	3.63	3.58	3.57
31	4.07	---	4.12	3.62	---	4.95	---	4.71	---	3.71	3.58	---
MEAN	4.06	4.17	4.18	3.95	3.65	3.87	4.90	5.51	4.71	4.97	3.72	3.59
MAX	4.11	4.26	4.30	4.16	3.73	4.95	5.75	6.62	5.04	6.59	3.80	3.78
MIN	3.86	4.07	4.08	3.62	3.55	3.60	4.23	4.01	4.59	3.63	3.58	3.54

RED RIVER OF THE NORTH BASIN
05058500 SHEYENNE RIVER AT VALLEY CITY, ND—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
APR 01...	1500	475	8.1	7.7	1,230	1,310	1.5	4.0	400	68.0	56.0	14.0	3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat fltrd mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)
APR 01...	130	40	380	28.0	0.20	300	826	1,140	886	8.0	10	1	90

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
APR 01...	440	<0.10	<1	2	500

Remark codes used in this table:

< -- Less than

05058700 SHEYENNE RIVER AT LISBON, ND

LOCATION.--Lat 46°26'49", long 97°40'44", on line between secs.1 and 2, T.134 N., R.56 W., Ransom County, Hydrologic Unit 09020204, on left bank 150 ft downstream from dam at State Fish Hatchery at north edge of city of Lisbon, 3 mi upstream from Timber Coulee, and at mile 162.1.

DRAINAGE AREA.--8,190 mi², approximately, of which about 5,700 mi² is probably noncontributing, including 3,800 mi² in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1956 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,066.46 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated by Lake Ashtabula (station 05057500), 108.5 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	78	118	124	e38	e36	193	182	273	264	138	49
2	21	85	111	121	e36	e36	285	165	249	248	103	43
3	19	94	113	121	e35	e35	433	170	246	238	100	37
4	33	101	107	122	e35	e35	455	187	243	235	105	36
5	78	97	108	120	e35	e35	431	190	248	235	104	36
6	91	91	114	118	e35	e35	350	203	252	232	103	37
7	92	98	118	116	e35	e35	328	257	249	224	100	35
8	92	97	121	115	e35	e35	326	465	243	222	95	33
9	93	96	120	111	e34	e36	329	572	240	229	93	34
10	90	97	120	109	e35	e36	322	537	246	199	95	35
11	90	95	120	108	e35	e37	246	437	241	168	91	35
12	88	99	125	100	e35	e37	223	509	260	142	88	36
13	89	93	123	96	e36	e37	241	558	244	117	83	43
14	91	89	123	96	e35	e39	242	556	250	113	78	43
15	90	89	123	e96	e35	e40	248	506	255	109	76	42
16	89	89	123	e96	e35	e39	263	498	247	107	74	46
17	91	107	120	e94	e36	e38	262	477	249	265	73	46
18	92	118	119	e91	e36	e40	263	430	245	440	73	49
19	92	122	118	e91	e37	e39	272	482	241	e574	66	56
20	95	122	116	e90	e36	e37	269	622	231	e707	61	67
21	96	119	116	e85	e36	e37	271	739	224	e758	59	63
22	93	119	115	e76	e35	e36	266	747	222	e783	58	49
23	92	120	119	e68	e35	e37	261	714	246	763	54	43
24	91	82	123	e60	e35	e37	257	687	317	712	53	40
25	91	93	123	e50	e36	e36	257	646	332	692	52	38
26	91	100	119	e45	e36	e37	258	564	298	575	52	38
27	92	124	115	e42	e37	e36	253	535	358	432	52	36
28	93	121	117	e41	e35	e58	242	521	345	394	53	37
29	93	126	122	e40	---	78	238	500	300	387	52	36
30	93	120	123	e39	---	82	230	377	292	296	51	36
31	90	---	127	e37	---	90	---	311	---	186	52	---
TOTAL	2,558	3,081	3,679	2,718	994	1,301	8,514	14,344	7,886	11,046	2,387	1,254
MEAN	82.5	103	119	87.7	35.5	42.0	284	463	263	356	77.0	41.8
MAX	96	126	127	124	38	90	455	747	358	783	138	67
MIN	19	78	107	37	34	35	193	165	222	107	51	33
AC-FT	5,070	6,110	7,300	5,390	1,970	2,580	16,890	28,450	15,640	21,910	4,730	2,490

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2003, BY WATER YEAR (WY)

MEAN	75.0	98.9	91.8	76.4	92.1	340	818	385	212	200	118	78.2
MAX	716	480	393	217	413	1,525	4,181	2,394	970	1,424	1,945	561
(WY)	(1995)	(2001)	(2001)	(2001)	(1996)	(1995)	(1997)	(1997)	(2000)	(1993)	(1993)	(1994)
MIN	7.66	12.2	8.69	8.15	10.7	19.8	20.3	17.5	14.8	6.07	6.54	5.25
(WY)	(1957)	(1991)	(1991)	(1991)	(1991)	(1964)	(1991)	(1959)	(1961)	(1973)	(1961)	(1959)

RED RIVER OF THE NORTH BASIN
05058700 SHEYENNE RIVER AT LISBON, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1957 - 2003	
ANNUAL TOTAL	42,514		59,762		215	
ANNUAL MEAN	116		164		719	
HIGHEST ANNUAL MEAN					1997	
LOWEST ANNUAL MEAN					25.9	
HIGHEST DAILY MEAN	521	May 17	783	Jul 22	5,650	Apr 23, 1997
LOWEST DAILY MEAN	19	Oct 3	19	Oct 3	0.00	Oct 23, 1956
ANNUAL SEVEN-DAY MINIMUM	31	Sep 18	35	Feb 3	0.87	Oct 1, 1956
MAXIMUM PEAK FLOW			e800	Jul 22	5,670	Apr 23, 1997
MAXIMUM PEAK STAGE			(a)		b19.29	Apr 5, 1997
ANNUAL RUNOFF (AC-FT)	84,330		118,500		156,100	
10 PERCENT EXCEEDS	223		390		466	
50 PERCENT EXCEEDS	92		100		68	
90 PERCENT EXCEEDS	40		36		16	

a Unknown
b Backwater from ice
e Estimated

05058700 SHEYENNE RIVER AT LISBON, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1956 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
OCT 31...	1005	78	--	--	--	--	--	--	--	1,250	-2.0	1.5	--
DEC 18...	1400	118	--	--	--	--	--	--	--	1,330	2.0	0.0	--
JAN 29...	1555	39	--	--	--	--	--	--	--	1,860	-5.0	0.0	--
MAR 12...	1725	36	--	--	--	--	--	--	--	1,650	--	0.5	--
MAR 31...	1520	82	--	--	--	--	7.9	8.1	844	839	22.0	1.5	270
APR 29...	1820	239	--	--	--	--	--	--	--	1,180	10.5	13.5	--
JUN 23...	1430	200	--	--	--	--	--	--	--	1,060	20.0	20.5	--
JUL 22...	1315	784	--	--	--	--	8.0	7.9	971	966	25.0	24.5	340
AUG 01...	1435	133	--	--	--	--	--	--	--	1,020	24.5	24.5	--
AUG 20...	1635	60	--	--	--	--	--	--	--	1,080	28.5	30.0	--
SEP 16...	1245	46	28	728	10.2	112	8.3	8.5	1,240	1,230	25.5	17.5	390

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)
OCT 31...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 31...	55.0	32.0	13.0	2	75.0	36	187	33.0	0.20	--	210	530	125
APR 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 23...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 22...	62.5	45.1	13.2	3	108	40	266	19.3	0.22	14.2	239	649	1,400
AUG 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 20...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 16...	69.8	51.5	12.8	3	136	42	290	40.3	--	--	306	792	98.2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd, mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd, mg/L as N (00610)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite + nitrate water unfltrd, mg/L as N (00630)	Organic nitro- gen, water, unfltrd, mg/L (00605)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Phos- phorus, water, fltrd, mg/L (00666)	Phos- phorus, water, unfltrd, mg/L (00665)	Total nitro- gen, water, fltrd, mg/L (00602)	Total nitro- gen, water, unfltrd, mg/L (00600)
OCT 31...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
31...	562	--	--	--	--	--	--	--	--	--	--	--	--
APR 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 23...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 22...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 16...	--	0.83	0.75	<0.010	0.025	<0.020	<0.020	0.72	0.046	0.044	0.081	0.85	0.77

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb- denum, water, fltrd, ug/L (01060)	Selen- ium, water, fltrd, ug/L (01145)	Stront- ium, water, fltrd, ug/L (01080)
OCT 31...	--	--	--	--	--	--	--	--	--	--	--
DEC 18...	--	--	--	--	--	--	--	--	--	--	--
JAN 29...	--	--	--	--	--	--	--	--	--	--	--
MAR 12...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	3.0	70	1	60	130	<0.10	<1	<1	370
APR 29...	--	--	--	--	--	--	--	--	--	--	--
JUN 23...	--	--	--	--	--	--	--	--	--	--	--
JUL 22...	--	--	6.6	<10	<1	70	20	<0.20	2	1	320
AUG 01...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
SEP 16...	40.1	1.5	--	20	--	--	340	--	--	--	--

Remark codes used in this table:

< -- Less than

05058850 DITCH 10 ABOVE IRON SPRINGS CREEK NEAR McLEOD, ND

LOCATION.--Lat 46°29'07", long 97°16'03", in NW¹₄NE¹₄ sec.30, T.135 N., R.52 W., Richland County, Hydrologic Unit 09020204, in Sheyenne River Grasslands, 6.2 mi northeast of McLeod.

DRAINAGE AREA.--Not determined.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 2001 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,055 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6.2 ft³/s, July 19, 2001, gage height, 7.24 ft.

EXTREMES FOR CURRENT YEAR.--Maximum recorded discharge, 2.1 ft³/s, June 25, gage height, 6.44 ft; no flow on many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e0.00	0.00	e0.00	0.02	1.2	0.00	0.00
2	---	---	---	---	---	e0.00	0.00	e0.00	0.00	1.1	0.00	0.00
3	---	---	---	---	---	e0.00	0.00	e0.00	0.00	0.77	0.00	0.00
4	---	---	---	---	---	e0.00	0.00	e0.00	0.00	0.73	0.00	0.00
5	---	---	---	---	---	e0.00	0.00	0.00	0.00	0.56	0.00	0.00
6	---	---	---	---	---	0.00	0.00	0.00	0.00	0.39	0.00	0.00
7	---	---	---	---	---	0.00	0.00	0.00	0.00	0.34	0.00	0.00
8	---	---	---	---	---	0.00	0.00	0.00	0.00	0.11	0.00	0.00
9	---	---	---	---	---	0.00	0.00	0.00	0.00	0.18	0.00	0.00
10	---	---	---	---	---	0.00	0.00	0.00	0.01	0.19	0.00	0.00
11	---	---	---	---	---	0.00	0.00	0.00	0.00	0.13	0.00	0.00
12	---	---	---	---	---	0.00	0.00	0.00	0.03	0.04	0.00	0.00
13	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	---	---	---	---	---	0.00	0.00	0.32	0.00	0.00	0.00	0.00
19	---	---	---	---	---	0.00	0.00	0.45	0.00	0.00	0.00	0.00
20	---	---	---	---	---	0.00	0.00	0.68	0.00	0.00	0.00	0.00
21	---	---	---	---	---	0.00	0.00	0.51	0.00	0.00	0.00	0.00
22	---	---	---	---	---	0.00	0.00	0.39	0.00	0.00	0.00	0.00
23	---	---	---	---	---	0.00	0.00	0.22	0.00	0.00	0.00	0.00
24	---	---	---	---	---	0.00	0.00	0.35	1.1	0.00	0.00	0.00
25	---	---	---	---	---	0.00	0.00	0.46	1.9	0.00	0.00	0.00
26	---	---	---	---	---	0.00	0.00	0.35	2.1	0.00	0.00	0.00
27	---	---	---	---	---	0.00	0.00	0.35	1.9	0.00	0.00	0.00
28	---	---	---	---	---	0.00	0.00	0.29	1.8	0.00	0.00	0.00
29	---	---	---	---	---	0.00	0.00	0.22	1.6	0.00	0.00	0.00
30	---	---	---	---	---	0.00	e0.00	0.09	1.4	0.00	0.00	0.00
31	---	---	---	---	---	0.00	---	0.08	---	0.00	0.00	---
TOTAL	---	---	---	---	---	0.00	0.00	4.76	11.86	5.74	0.00	0.00
MEAN	---	---	---	---	---	0.000	0.000	0.15	0.40	0.19	0.000	0.000
MAX	---	---	---	---	---	0.00	0.00	0.68	2.1	1.2	0.00	0.00
MIN	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	---	---	---	---	---	0.00	0.00	9.4	24	11	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2003, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	0.000	0.16	0.79	0.24	0.60	0.076	0.000
MAX	---	---	---	---	---	0.000	0.32	1.42	0.40	1.63	0.23	0.000
(WY)	---	---	---	---	---	(2002)	(2002)	(2002)	(2003)	(2001)	(2001)	(2001)
MIN	---	---	---	---	---	0.000	0.000	0.15	0.077	0.000	0.000	0.000
(WY)	---	---	---	---	---	(2002)	(2003)	(2003)	(2002)	(2002)	(2002)	(2001)

SUMMARY STATISTICS

WATER YEARS 2001 - 2003

HIGHEST DAILY MEAN	5.3	Jul 19 2001
LOWEST DAILY MEAN	0.00	Aug 21 2001
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 21 2001
MAXIMUM PEAK FLOW	6.2	Jul 19 2001
MAXIMUM PEAK STAGE	7.24	Jul 19 2001

e Estimated

Miscellaneous discharge measurements on Iron Springs Creek, 1.1 mile below gage

Date	Discharge
April 29, 2003	0.92
August 20, 2003	1.26

RED RIVER OF THE NORTH BASIN

05058850 DITCH 10 ABOVE IRON SPRINGS CREEK NEAR McLEOD, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 2003 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Specific conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)
APR 29...	1120	0.90	741	9.5	8.5
MAY 19...	1220	0.30	1,170	16.0	13.0
JUN 12...	1145	0.09	--	21.0	21.5
25...	1605	2.0	702	18.0	16.5
AUG 20...	1255	1.3	766	28.5	20.0

05059000 SHEYENNE RIVER NEAR KINDRED, ND

LOCATION.--Lat 46°37'54", long 97°00'01", in SE¹₄SE¹₄SW¹₄ sec.33, T.137 N., R.50 W., Cass County, Hydrologic Unit 09020204, on left bank 100 ft downstream from North Dakota State Highway 46 bridge crossing, 1.5 mi southeast of Kindred, and at mile 67.9.

DRAINAGE AREA.--8,800 mi², approximately, of which about 5,780 mi² is probably noncontributing, including 3,800 mi² in closed basins.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 925.55 ft above National Geodetic Vertical Datum of 1929. From Oct. 1, 1962, to Sept. 30, 1989, gage was located at site 1,500 ft upstream. July 1949 to Sept. 30, 1962, nonrecording gage at same site and datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated to a large degree by Lake Ashtabula (station 05057500), 202 mi upstream, and several small reservoirs.

EXTREMES OUTSIDE PERIOD OF RECORD.--Spring flood in 1947 or 1948 reached a stage of 22.1 ft from floodmarks, discharge about 3,600 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	112	168	e142	e67	e55	186	274	487	334	386	72
2	83	108	154	e144	e63	e55	164	268	375	306	298	71
3	73	119	164	e143	e63	e55	156	256	332	288	231	72
4	70	143	154	e142	e61	e55	265	232	299	275	187	74
5	65	141	149	e142	e62	e52	379	251	287	268	158	71
6	68	139	151	e139	e60	e53	438	283	283	e267	145	67
7	69	150	147	e137	e56	e52	459	289	281	e270	145	62
8	73	163	144	e134	e59	e52	414	267	292	e268	142	59
9	113	145	e146	e134	e60	e53	379	288	283	e268	141	59
10	125	142	e145	e130	e60	e52	372	407	282	e262	146	65
11	128	141	e143	e130	e60	e53	368	568	276	e254	143	66
12	131	137	e143	e127	e59	e53	367	591	283	e240	140	66
13	129	131	e142	e123	e59	e53	343	525	277	229	132	73
14	127	124	e138	e117	e59	e54	292	541	275	197	128	73
15	126	100	e135	e114	e58	e55	285	638	269	183	122	75
16	125	93	e133	e112	e57	e56	308	633	261	164	115	74
17	127	113	e134	e110	e58	e57	329	597	259	146	111	76
18	131	147	e134	e108	e59	e56	347	614	256	136	105	82
19	130	170	e132	e104	e59	e57	337	608	248	136	99	81
20	131	159	e132	e103	e59	e55	336	549	e258	287	97	83
21	133	176	e131	e103	e57	e55	335	520	e254	395	99	86
22	134	177	e131	e96	e56	e54	324	610	e256	536	95	85
23	137	163	e137	e89	e56	e55	316	713	e271	607	87	92
24	138	135	e143	e86	e53	e53	309	745	e342	628	82	100
25	137	90	e142	e87	e55	e54	301	743	416	641	81	94
26	135	66	e138	e83	e54	e53	294	718	477	632	82	82
27	134	93	e138	e78	e56	e53	295	691	458	625	75	75
28	134	144	e139	e77	e55	e63	291	641	457	587	72	72
29	134	175	e139	e71	---	e94	287	594	399	492	69	68
30	135	169	e140	e70	---	e115	280	572	380	427	71	68
31	128	---	e142	e67	---	e137	---	554	---	424	70	---
TOTAL	3,603	4,065	4,408	3,442	1,640	1,870	9,556	15,780	9,573	10,772	4,054	2,243
MEAN	116	136	142	111	58.6	60.3	319	509	319	347	131	74.8
MAX	138	177	168	144	67	137	459	745	487	641	386	100
MIN	65	66	131	67	53	52	156	232	248	136	69	59
AC-FT	7,150	8,060	8,740	6,830	3,250	3,710	18,950	31,300	18,990	21,370	8,040	4,450

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2003, BY WATER YEAR (WY)

MEAN	97.3	117	103	86.0	95.5	333	865	537	306	270	151	102
MAX	693	589	400	242	317	1,256	3,957	3,053	1,938	1,466	2,231	528
(WY)	(1995)	(1995)	(2001)	(2001)	(1996)	(1987)	(1997)	(1950)	(1950)	(1975)	(1993)	(1999)
MIN	24.6	22.7	17.6	17.5	21.7	35.1	71.7	53.6	48.4	26.7	17.5	25.1
(WY)	(1957)	(1956)	(1956)	(1991)	(1956)	(1956)	(1991)	(1990)	(1961)	(1988)	(1988)	(1959)

RED RIVER OF THE NORTH BASIN

05059000 SHEYENNE RIVER NEAR KINDRED, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1949 - 2003	
ANNUAL TOTAL	58,711		71,006			
ANNUAL MEAN	161		195		256	
HIGHEST ANNUAL MEAN					770	1997
LOWEST ANNUAL MEAN					48.0	1991
HIGHEST DAILY MEAN	546	May 19	745	May 24	5,610	Apr 29, 1997
LOWEST DAILY MEAN	48	Sep 14	52	Mar 5	9.2	Aug 16, 1990
ANNUAL SEVEN-DAY MINIMUM	50	Sep 12	53	Mar 5	11	Dec 26, 1990
MAXIMUM PEAK FLOW			760	May 25	5,970	Apr 27, 1997
MAXIMUM PEAK STAGE			6.62	May 25	a22.33	Apr 8, 1997
ANNUAL RUNOFF (AC-FT)	116,500		140,800		185,200	
10 PERCENT EXCEEDS	308		425		542	
50 PERCENT EXCEEDS	137		137		99	
90 PERCENT EXCEEDS	68		57		35	

a Backwater from ice

e Estimated

05059000 SHEYENNE RIVER NEAR KINDRED, ND—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specific conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specific conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
OCT 30...	1035	132	--	--	--	--	--	--	--	1,770	--	1.5	--
DEC 17...	1445	133	--	--	--	--	--	--	--	1,350	1.5	0.0	--
JAN 27...	1340	79	--	--	--	--	--	--	--	1,370	-0.5	0.0	--
MAR 11...	1150	53	--	--	--	--	--	--	--	1,390	6.0	0.0	--
MAR 28...	0955	63	--	--	--	--	--	--	--	861	5.0	0.5	--
APR 02...	1005	171	--	--	--	--	8.1	7.9	797	808	3.5	5.0	280
MAY 02...	1445	282	--	--	--	--	--	--	--	1,130	22.0	15.0	--
JUN 24...	1125	335	--	--	--	--	--	--	--	1,110	18.0	19.0	--
AUG 04...	1500	193	--	--	--	--	8.3	8.2	1,000	980	26.5	25.5	360
AUG 21...	1535	98	--	--	--	--	--	--	--	1,000	25.5	25.0	--
AUG 27...	1500	78	--	--	--	--	--	--	--	1,010	38.5	23.0	--
SEP 16...	1445	74	0.0	730	9.8	106	8.2	8.5	1,030	1,040	27.4	16.7	390

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)
OCT 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 17...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 02...	61.0	30.0	11.0	2	61.0	31	207	29.0	0.20	--	190	507	243
MAY 02...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 24...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 04...	69.0	44.8	11.4	2	98.8	36	294	19.9	0.22	19.0	223	646	346
AUG 21...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 16...	84.0	42.9	9.40	2	89.6	33	290	29.7	--	--	225	656	131

05059000 SHEYENNE RIVER NEAR KINDRED, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd, mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd, mg/L as N (00610)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite + nitrate water unfltrd, mg/L as N (00630)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Phos- phorus, water, fltrd, mg/L (00666)	Phos- phorus, water, unfltrd, mg/L (00665)	Total nitro- gen, water, fltrd, mg/L (00602)	Total nitro- gen, water, unfltrd, mg/L (00600)	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)
OCT 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 17...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 02...	526	--	--	--	--	--	--	--	--	--	--	--	--
MAY 02...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 24...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 04...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 21...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 16...	--	0.51	0.51	<0.010	<0.010	<0.020	<0.020	0.037	0.037	0.089	0.53	0.53	14.4

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb- denum, water, fltrd, ug/L (01060)	Selen- ium, water, fltrd, ug/L (01145)	Stront- ium, water, fltrd, ug/L (01080)
OCT 30...	--	--	--	--	--	--	--	--	--	--
DEC 17...	--	--	--	--	--	--	--	--	--	--
JAN 27...	--	--	--	--	--	--	--	--	--	--
MAR 11...	--	--	--	--	--	--	--	--	--	--
MAR 28...	--	--	--	--	--	--	--	--	--	--
APR 02...	--	3.0	30	1	50	60	<0.10	<1	1	340
MAY 02...	--	--	--	--	--	--	--	--	--	--
JUN 24...	--	--	--	--	--	--	--	--	--	--
AUG 04...	--	9.7	<10	<1	70	<10	<0.20	3	5	360
AUG 21...	--	--	--	--	--	--	--	--	--	--
AUG 27...	--	--	--	--	--	--	--	--	--	--
SEP 16...	1.5	--	20	--	--	60	--	--	--	--

Remark codes used in this table:

< -- Less than

05059300 SHEYENNE RIVER ABOVE SHEYENNE RIVER DIVERSION NEAR HORACE, ND

LOCATION.--Lat 46°45'01", long 96°55'35", in NE¹₄SE¹₄ sec.24, T.138 N., R.50 W., Cass County, Hydrologic Unit 09020204, on right bank 300 ft upstream from diversion structure 1 mi southwest of Horace.

DRAINAGE AREA.--8,840 mi², approximately, of which about 7,580 mi² is probably noncontributing, including 3,800 mi² in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder. Datum of gage is 890 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated to a large degree by Lake Ashtabula (station 05057500), 230 mi upstream. These records represent the total Sheyenne River flow immediately upstream from the Horace flood diversion.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	101	212	e150	e70	e58	e152	317	607	462	454	72
2	88	109	205	e149	e66	e57	213	310	521	409	396	73
3	78	110	180	e149	e66	e57	188	305	433	379	306	71
4	73	117	189	e148	e65	e56	191	289	388	358	244	72
5	70	139	173	e148	e64	e54	323	274	356	335	201	74
6	70	155	159	e145	e64	e55	445	302	341	320	171	72
7	70	153	e155	e143	e60	e55	489	329	335	308	157	68
8	70	157	e154	e141	e62	e55	495	329	338	296	155	62
9	71	168	e154	e137	e62	e56	447	315	344	298	151	59
10	104	143	e153	e135	e62	e54	420	354	345	302	152	59
11	127	129	e152	e136	e61	e53	416	517	339	302	154	59
12	130	138	e150	e133	e61	e54	413	635	341	302	151	62
13	134	155	e147	e129	e61	e56	409	632	342	285	146	66
14	133	158	e147	e125	e60	e57	372	582	335	251	138	68
15	129	108	e143	e119	e60	e58	327	635	334	218	133	70
16	129	105	e141	e116	e59	e59	331	696	326	192	126	72
17	130	117	e140	e115	e60	e59	359	682	318	171	119	71
18	133	137	e140	e113	e61	e60	377	664	319	153	115	76
19	136	166	e138	e111	e61	e59	394	679	316	143	110	80
20	136	202	e138	e109	e60	e58	381	657	309	158	102	80
21	138	189	e137	e110	e61	e57	378	594	303	330	98	81
22	140	208	e137	e105	e60	e56	376	605	306	465	106	85
23	142	213	e143	e95	e58	e56	366	705	389	596	104	84
24	145	196	e149	e91	e57	e56	358	783	452	649	93	89
25	148	162	e148	e91	e57	e56	351	802	509	670	88	102
26	146	112	e144	e87	e57	e55	342	795	565	680	87	99
27	144	76	e143	e83	e58	e56	335	771	580	668	87	87
28	144	98	e145	e81	e57	e60	334	736	596	656	78	78
29	143	167	e146	e77	---	e77	330	685	560	599	74	76
30	143	222	e148	e73	---	e105	324	649	500	505	71	72
31	142	---	e150	e70	---	e132	---	631	---	464	72	---
TOTAL	3,699	4,410	4,760	3,614	1,710	1,896	10,636	17,259	12,047	11,924	4,639	2,239
MEAN	119	147	154	117	61.1	61.2	355	557	402	385	150	74.6
MAX	148	222	212	150	70	132	495	802	607	680	454	102
MIN	70	76	137	70	57	53	152	274	303	143	71	59
AC-FT	7,340	8,750	9,440	7,170	3,390	3,760	21,100	34,230	23,900	23,650	9,200	4,440

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2003, BY WATER YEAR (WY)

	223	278	240	174	186	590	1,569	1,034	558	608	454	270
MEAN	223	278	240	174	186	590	1,569	1,034	558	608	454	270
MAX	673	617	429	268	302	1,214	2,964	2,737	946	1,157	2,221	582
(WY)	(1995)	(1995)	(2001)	(1997)	(2001)	(1995)	(1997)	(1997)	(1999)	(1993)	(1993)	(1999)
MIN	52.9	54.8	31.7	73.0	61.1	61.2	156	232	252	289	91.5	62.1
(WY)	(1993)	(1993)	(1993)	(1993)	(2003)	(2003)	(2002)	(1993)	(2002)	(2002)	(2002)	(2002)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1993 - 2003

ANNUAL TOTAL	60,926	78,833	
ANNUAL MEAN	167	216	516
HIGHEST ANNUAL MEAN			749
LOWEST ANNUAL MEAN			182
HIGHEST DAILY MEAN	561	May 20	4,480
LOWEST DAILY MEAN	51	Sep 15	13
ANNUAL SEVEN-DAY MINIMUM	55	Sep 12	16
MAXIMUM PEAK FLOW			5,210
MAXIMUM PEAK STAGE			26.66
ANNUAL RUNOFF (AC-FT)	120,800	156,400	374,100
10 PERCENT EXCEEDS	311	502	1,200
50 PERCENT EXCEEDS	142	143	280
90 PERCENT EXCEEDS	70	60	96

e Estimated

05059300 SHEYENNE RIVER ABOVE SHEYENNE RIVER DIVERSION NEAR HORACE, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1993 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1997 to current year.

SPECIFIC CONDUCTANCE: June 1997 to current year.

INSTRUMENTATION.--Water-quality sensors since June 1997.

REMARKS.--Records good. Missing data is result of sensor probe malfunction and probe being out of the water. Quality assurance sample also collected at this location.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 29.8°C, Aug. 6, 2001; minimum recorded, -0.2°C, on many days in 2002.

SPECIFIC CONDUCTANCE: Maximum recorded, 1,610 microsiemens, May 7-8, 2000; minimum recorded, 658 microsiemens, Apr. 17, 1999.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum recorded, 29.1°C, Aug. 19; minimum recorded, 0.0°C, on many days.

SPECIFIC CONDUCTANCE: Maximum recorded, 1,480 microsiemens, Oct. 21; minimum recorded, 714 microsiemens, Mar. 25.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfl lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
NOV 01...	1255	94	--	--	--	--	--	--	--	1,180	1.5	0.5	--
DEC 17...	1125	148	--	--	--	--	--	--	--	1,240	-1.5	0.0	--
JAN 27...	1715	82	--	--	--	--	--	--	--	574	-1.5	0.0	--
MAR 11...	1705	53	--	--	--	--	--	--	--	1,390	--	0.0	--
APR 02...	1515	207	--	--	--	--	8.0	8.0	809	818	5.0	6.0	280
MAY 07...	1420	336	--	--	--	--	--	--	--	955	19.0	15.5	--
JUN 25...	0950	398	--	--	--	--	--	--	--	810	14.0	21.0	--
AUG 05...	1220	208	--	--	--	--	8.0	8.3	997	987	27.0	25.3	350
AUG 22...	1225	103	--	--	--	--	--	--	--	1,020	27.0	24.0	--
SEP 16...	1600	72	61	729	10.3	113	8.1	8.4	1,020	1,030	28.3	17.5	380

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)
NOV 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 17...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 02...	62.0	31.0	12.0	2	67.0	33	213	32.0	0.20	--	190	522	305
MAY 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 05...	67.5	44.3	11.4	2	99.5	37	289	20.3	0.23	18.7	227	644	372
AUG 22...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 16...	82.7	42.5	9.30	2	86.0	32	296	29.3	--	--	219	647	126

05059300 SHEYENNE RIVER ABOVE SHEYENNE RIVER DIVERSION NEAR HORACE, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd, mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd, mg/L as N (00610)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite + nitrate water unfltrd, mg/L as N (00630)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd, mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd, mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)
NOV 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 17...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 02...	545	--	--	--	--	--	--	--	--	--	--	--	--
MAY 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 05...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 22...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 16...	--	0.46	0.46	<0.010	<0.010	<0.020	0.040	0.031	0.039	0.109	0.48	0.50	18.2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
NOV 01...	--	--	--	--	--	--	--	--	--	--
DEC 17...	--	--	--	--	--	--	--	--	--	--
JAN 27...	--	--	--	--	--	--	--	--	--	--
MAR 11...	--	--	--	--	--	--	--	--	--	--
APR 02...	--	5.0	20	1	50	60	<0.10	<1	<1	360
MAY 07...	--	--	--	--	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--	--	--	--	--
AUG 05...	--	10.5	<10	<1	70	<10	<0.20	3	6	360
AUG 22...	--	--	--	--	--	--	--	--	--	--
SEP 16...	1.9	--	10	--	--	20	--	--	--	--

Remark codes used in this table:
 < -- Less than

RED RIVER OF THE NORTH BASIN

05059300 SHEYENNE RIVER ABOVE SHEYENNE RIVER DIVERSION NEAR HORACE, ND—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	13.7	12.0	12.8	0.4	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
2	12.0	10.9	11.3	0.5	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1
3	11.1	10.5	10.6	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
4	10.5	9.9	10.3	0.4	0.1	0.2	0.1	0.1	0.1	---	---	---
5	10.0	9.1	9.7	0.2	0.1	0.1	0.1	0.1	0.1	---	---	---
6	10.0	9.0	9.5	0.4	0.1	0.2	0.1	0.1	0.1	---	---	---
7	9.9	8.4	9.1	0.7	0.1	0.4	0.1	0.1	0.1	0.1	0.1	0.1
8	9.8	9.1	9.5	0.9	0.2	0.6	0.1	0.1	0.1	0.1	0.1	0.1
9	9.4	8.2	8.7	1.9	0.6	1.3	0.1	0.1	0.1	0.1	0.1	0.1
10	9.8	8.5	9.0	1.9	0.7	1.3	0.1	0.1	0.1	0.1	0.1	0.1
11	11.4	9.8	10.5	0.7	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1
12	11.1	8.8	10.0	0.4	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
13	8.8	7.3	8.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
14	8.2	7.0	7.6	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1
15	8.0	7.0	7.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
16	7.2	6.2	6.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
17	6.5	5.9	6.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
18	6.2	5.6	5.8	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
19	5.6	4.9	5.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
20	5.0	4.5	4.7	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
21	4.5	3.6	4.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
22	3.8	3.3	3.6	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
23	3.3	2.8	3.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
24	2.9	2.3	2.6	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
25	2.5	2.0	2.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
26	2.7	2.3	2.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
27	3.4	2.4	2.9	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
28	3.9	3.4	3.6	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
29	4.0	3.0	3.7	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
30	3.0	1.6	2.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
31	1.6	0.1	0.7	---	---	---	0.1	0.1	0.1	0.1	0.1	0.1
MONTH	13.7	0.1	6.6	1.9	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1
DAY	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	0.1	0.1	0.1	0.1	0.0	0.1	---	---	---	14.9	13.5	14.2
2	0.1	0.1	0.1	0.1	0.0	0.1	5.3	4.7	5.0	15.7	13.5	14.5
3	0.1	0.1	0.1	0.1	0.0	0.1	4.7	2.8	3.7	15.5	14.0	14.8
4	0.1	0.1	0.1	0.1	0.0	0.1	2.9	2.1	2.5	15.0	13.7	14.6
5	0.1	0.1	0.1	0.1	0.0	0.1	2.6	1.6	2.1	13.7	12.6	13.0
6	0.1	0.1	0.1	0.1	0.0	0.1	3.1	1.9	2.4	12.6	12.0	12.2
7	0.1	0.1	0.1	0.1	0.0	0.1	3.1	1.8	2.4	13.8	11.2	12.4
8	0.1	0.1	0.1	0.1	0.0	0.1	4.3	2.4	3.3	14.5	13.1	13.7
9	0.1	0.1	0.1	0.1	0.0	0.1	6.3	3.9	4.9	14.1	13.1	13.6
10	0.1	0.0	0.1	0.1	0.0	0.1	8.3	6.1	7.1	13.1	11.4	12.4
11	0.1	0.1	0.1	0.1	0.0	0.1	9.5	7.6	8.5	12.0	10.6	11.2
12	0.1	0.1	0.1	0.1	0.0	0.1	10.8	8.9	9.8	12.8	11.0	11.9
13	0.1	0.1	0.1	0.1	0.0	0.1	12.2	10.1	11.0	12.9	12.3	12.7
14	0.1	0.1	0.1	0.1	0.0	0.1	13.6	11.7	12.6	13.5	12.6	13.0
15	0.1	0.1	0.1	0.1	0.0	0.1	13.6	12.4	13.0	15.0	12.9	13.9
16	0.1	0.0	0.1	0.1	0.1	0.1	13.1	10.2	11.9	16.0	14.4	15.1
17	0.1	0.0	0.1	0.2	0.0	0.1	10.2	9.2	9.7	16.0	15.5	15.8
18	0.1	0.0	0.1	0.1	0.1	0.1	9.3	8.0	8.4	16.7	15.8	16.2
19	0.1	0.1	0.1	0.2	0.1	0.1	8.0	7.2	7.5	16.6	15.7	16.0
20	0.1	0.1	0.1	0.1	0.0	0.1	7.3	6.9	7.1	16.2	14.8	15.6
21	0.1	0.0	0.1	0.2	0.0	0.1	9.1	6.5	7.7	16.1	15.3	15.8
22	0.1	0.0	0.1	0.2	0.0	0.1	10.7	8.2	9.4	17.1	15.6	16.3
23	0.1	0.1	0.1	0.2	0.0	0.1	12.1	10.1	11.0	16.9	16.3	16.7
24	0.1	0.0	0.1	0.3	0.0	0.1	13.7	11.4	12.4	16.9	16.2	16.5
25	0.1	0.0	0.1	0.2	0.0	0.1	14.8	12.9	13.8	17.5	15.8	16.6
26	0.1	0.0	0.1	0.2	0.0	0.1	15.6	13.7	14.6	17.9	16.5	17.2
27	0.1	0.0	0.1	0.1	0.0	0.1	16.4	14.8	15.4	17.6	17.0	17.4
28	0.1	0.0	0.1	0.3	0.0	0.1	15.5	14.1	14.8	18.8	17.0	17.8
29	---	---	---	0.4	0.0	0.1	15.4	14.2	14.7	19.5	18.2	18.7
30	---	---	---	0.6	0.0	0.3	15.5	13.6	14.5	19.5	18.1	18.6
31	---	---	---	---	---	4.3	---	---	---	18.3	17.1	17.8
MONTH	0.1	0.0	0.1	0.6	0.0	0.2	16.4	1.6	9.0	19.5	10.6	15.0

RED RIVER OF THE NORTH BASIN

05059300 SHEYENNE RIVER ABOVE SHEYENNE RIVER DIVERSION NEAR HORACE, ND—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	1,270	1,060	1,150	1,140	1,130	1,140	1,310	1,260	1,290	1,200	1,190	1,190
2	1,270	1,250	1,260	1,140	1,130	1,140	1,310	1,270	1,290	1,190	1,180	1,180
3	1,250	1,200	1,230	1,150	1,140	1,140	1,340	1,310	1,330	---	---	1,180
4	1,200	1,140	1,170	1,150	1,130	1,140	1,320	1,290	1,300	---	---	1,190
5	1,140	1,110	1,130	1,130	1,110	1,120	1,330	1,290	1,310	1,190	1,190	1,190
6	1,110	1,070	1,090	1,160	1,130	1,150	1,340	1,330	1,340	1,190	1,180	1,190
7	1,070	1,060	1,060	1,160	1,140	1,150	1,340	1,330	1,330	1,180	1,180	1,180
8	1,060	1,040	1,050	1,140	1,130	1,140	1,370	1,340	1,360	1,180	1,180	1,180
9	1,040	992	1,020	1,140	1,130	1,140	1,370	1,350	1,360	1,190	1,180	1,190
10	992	951	976	1,160	1,140	1,150	1,350	1,340	1,340	1,190	1,190	1,190
11	1,050	947	987	1,160	1,140	1,150	1,360	1,340	1,360	1,210	1,190	1,200
12	1,140	1,050	1,110	1,150	1,130	1,140	1,360	1,350	1,360	1,240	1,210	1,220
13	1,160	1,140	1,150	1,160	1,150	1,160	1,350	1,340	1,350	1,270	1,240	1,260
14	1,170	1,140	1,160	1,170	1,160	1,170	1,360	1,340	1,350	1,280	1,270	1,280
15	1,210	1,170	1,180	1,190	1,170	1,180	1,340	1,320	1,340	1,290	1,280	1,280
16	1,220	1,210	1,220	1,200	1,180	1,200	1,330	1,310	1,320	1,310	1,290	1,300
17	1,210	1,190	1,200	1,200	1,180	1,190	1,310	1,300	1,300	1,310	1,300	1,310
18	1,240	1,190	1,200	1,180	1,160	1,180	1,300	1,290	1,300	1,310	1,300	1,300
19	1,330	1,240	1,290	1,180	1,160	1,170	1,290	1,270	1,280	1,300	1,290	1,300
20	1,420	1,330	1,380	1,160	1,140	1,150	1,270	1,240	1,250	1,290	1,280	1,290
21	1,480	1,420	1,450	1,180	1,160	1,170	1,240	1,210	1,220	1,280	1,280	1,280
22	1,450	1,360	1,400	1,160	1,110	1,120	1,210	1,200	1,200	1,280	1,270	1,280
23	1,360	1,310	1,350	1,120	1,100	1,100	1,200	1,200	1,200	1,280	1,280	1,280
24	1,310	1,210	1,260	1,140	1,120	1,130	1,200	1,190	1,190	1,300	1,280	1,290
25	1,210	1,150	1,170	1,160	1,140	1,150	1,190	1,190	1,190	1,320	1,300	1,310
26	1,150	1,130	1,140	1,210	1,160	1,190	1,200	1,190	1,200	1,350	1,320	1,340
27	1,130	1,120	1,130	1,250	1,210	1,230	1,210	1,200	1,200	1,350	1,350	1,350
28	1,120	1,100	1,110	1,260	1,250	1,260	1,210	1,200	1,200	1,350	1,320	1,340
29	1,110	1,100	1,110	1,250	1,200	1,230	1,200	1,190	1,200	1,320	1,310	1,320
30	1,120	1,110	1,120	1,260	1,190	1,220	1,200	1,190	1,190	1,320	1,310	1,310
31	1,140	1,120	1,130	---	---	---	1,200	1,190	1,190	1,310	1,300	1,310
MONTH	1,480	947	1,170	1,260	1,100	1,160	1,370	1,190	1,280	1,350	1,180	1,260
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	1,300	1,280	1,290	1,320	1,310	1,320	---	---	---	1,150	1,140	1,140
2	1,280	1,270	1,280	1,320	1,320	1,320	828	804	814	1,170	1,150	1,160
3	1,270	1,250	1,260	1,330	1,310	1,320	832	821	826	1,170	1,160	1,160
4	1,250	1,240	1,240	1,320	1,310	1,320	838	821	828	1,170	1,150	1,160
5	1,240	1,220	1,230	1,310	1,300	1,310	916	838	876	1,150	1,110	1,140
6	1,230	1,220	1,220	1,310	1,300	1,310	916	847	885	1,110	1,060	1,080
7	1,240	1,230	1,230	1,320	1,300	1,310	847	810	828	1,060	995	1,020
8	1,250	1,240	1,240	1,310	1,300	1,300	925	814	883	1,040	1,000	1,020
9	1,250	1,250	1,250	1,300	1,290	1,300	1,180	925	1,030	1,070	1,020	1,040
10	1,260	1,250	1,260	1,300	1,280	1,290	1,180	1,170	1,180	1,090	1,070	1,080
11	1,270	1,260	1,260	1,290	1,270	1,280	1,200	1,140	1,180	1,130	1,070	1,090
12	1,280	1,270	1,270	1,280	1,270	1,280	1,160	1,140	1,160	1,160	1,130	1,140
13	1,290	1,280	1,290	1,290	1,280	1,280	1,150	1,130	1,140	1,270	1,160	1,210
14	1,300	1,290	1,300	1,290	1,280	1,290	1,130	1,090	1,110	1,340	1,270	1,320
15	1,310	1,290	1,300	1,300	1,220	1,280	1,090	1,080	1,080	1,330	1,210	1,270
16	1,310	1,300	1,300	1,240	1,160	1,210	1,080	1,070	1,070	1,210	1,160	1,170
17	1,310	1,300	1,300	1,180	1,090	1,150	1,070	1,040	1,060	1,210	1,160	1,190
18	1,300	1,290	1,300	1,110	951	1,040	1,050	1,040	1,050	1,210	1,200	1,210
19	1,290	1,290	1,290	962	930	947	1,090	1,050	1,060	1,200	1,160	1,180
20	1,300	1,290	1,290	967	934	947	1,100	1,060	1,080	1,160	1,150	1,150
21	1,290	1,280	1,290	940	895	925	1,100	1,040	1,080	1,190	1,160	1,170
22	1,280	1,280	1,280	992	925	951	1,110	1,100	1,100	1,220	1,190	1,200
23	1,280	1,270	1,280	1,030	986	1,010	1,150	1,110	1,140	1,240	1,220	1,230
24	1,270	1,270	1,270	1,010	892	968	1,170	1,150	1,160	1,260	1,240	1,260
25	1,280	1,270	1,280	892	714	787	1,150	1,120	1,130	1,270	1,250	1,250
26	1,300	1,280	1,290	876	776	824	1,120	1,120	1,120	1,280	1,270	1,270
27	1,300	1,290	1,300	849	785	822	1,210	1,120	1,150	1,280	1,260	1,270
28	1,310	1,300	1,310	849	817	838	1,220	1,140	1,190	1,260	1,220	1,250
29	---	---	---	817	806	811	1,160	1,140	1,150	1,220	1,200	1,210
30	---	---	---	807	757	785	1,160	1,150	1,160	1,200	1,190	1,190
31	---	---	---	---	---	---	---	---	---	1,190	1,160	1,180
MONTH	1,310	1,220	1,280	1,330	714	1,120	1,220	804	1,050	1,340	995	1,170

RED RIVER OF THE NORTH BASIN

05059310 SHEYENNE RIVER DIVERSION NEAR HORACE, ND

LOCATION.--Lat 46°45'06", long 96°55'33", in NE¹₄SE¹₄ sec.24, T.138 N., R.50 W., Cass County, Hydrologic Unit 09020204, at diversion structure 1 mi southwest of Horace.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder for Sheyenne River above Sheyenne River Diversion near Horace (station 05059300) is used to obtain stage record for this station. Datum of gage is 890 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. The records are for the flow that is diverted from the Sheyenne River at this location. When flows are greater than about 1,000 ft³/s at Sheyenne River above Sheyenne River Diversion near Horace (05059300), diversions are made in order to control flood discharges downstream. The diverted flow returns to the Sheyenne River main channel at a location about 13 mi downstream, below the city of West Fargo. See Sheyenne River Diversion at West Fargo (station 05059480) for return flows.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.00	---	0.00	0.00	---	0.00	---	0.00	---	0.00	0.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEAN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MAX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2003, BY WATER YEAR (WY)

MEAN	0.059	0.59	0.000	0.000	0.000	73.0	518	200	30.6	44.0	79.3	0.000
MAX	0.65	6.50	0.000	0.000	0.000	471	1,507	1,181	139	281	872	0.000
(WY)	(1995)	(1995)	(1993)	(1993)	(1993)	(1995)	(1997)	(1997)	(2000)	(1993)	(1993)	(1993)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	(1993)	(1993)	(1993)	(1993)	(1993)	(1997)	(2000)	(1993)	(1993)	(1996)	(1994)	(1993)

05059310 SHEYENNE RIVER DIVERSION NEAR HORACE, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1993 - 2003	
ANNUAL TOTAL	0.00		0.00			
ANNUAL MEAN	0.000		0.000		78.8	
HIGHEST ANNUAL MEAN					226	1997
LOWEST ANNUAL MEAN					0.000	2002
HIGHEST DAILY MEAN	0.00	Jan 1	0.00	Oct 1	2,390	Apr 26, 1997
LOWEST DAILY MEAN	0.00	Jan 1	0.00	Oct 1	0.00	Oct 1, 1992
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	0.00	Oct 1	0.00	Oct 1, 1992
MAXIMUM PEAK FLOW			(a)		b2,760	Apr 10, 2001
MAXIMUM PEAK STAGE			(a)		c26.66	Mar 25, 1999
ANNUAL RUNOFF (AC-FT)	0.00		0.00		57,050	
10 PERCENT EXCEEDS	0.00		0.00		51	
50 PERCENT EXCEEDS	0.00		0.00		0.00	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

- a No flow routed through diversion channel
- b Gage height, 25.01 ft
- c From high-water mark, backwater from closure of diversion channel

RED RIVER OF THE NORTH BASIN

05059480 SHEYENNE RIVER DIVERSION AT WEST FARGO, ND

LOCATION.--Lat 46°53'28", long 96°54'59", in NE¹₄NE¹₄NW¹₄ sec.6, T.139 N., R.50 W., Cass County, Hydrologic Unit 09020204, on right bank, 50 ft upstream from 12th Ave N bridge in West Fargo, and 0.5 mi upstream from confluence with the Sheyenne River.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder. Datum of gage is 876.78 ft above National Geodetic Vertical Datum of 1929. Datum incorrectly set 13.56 ft lower from Oct. 1, 1996, to Sept. 30, 1999. Prior to Oct. 1, 1996, at datum 6.78 ft lower.

REMARKS.--Records poor. These records are for the flood flows that are diverted around West Fargo.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	102	56	1.6	75
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75	50	0.00	76
3	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	25	38	0.00	78
4	0.00	1.8	0.00	0.00	0.00	0.00	0.00	0.00	6.8	28	0.00	78
5	0.00	3.4	0.00	0.00	0.00	0.00	0.00	0.00	3.0	22	0.00	76
6	0.00	3.3	0.00	0.00	0.00	0.00	0.00	0.00	1.2	16	0.00	66
7	0.00	2.9	0.00	0.00	0.00	0.00	0.00	0.11	0.06	13	0.00	64
8	0.00	1.6	0.00	0.00	0.00	0.00	27	0.00	0.00	6.2	0.00	59
9	0.00	0.00	0.00	0.00	0.00	0.00	20	0.01	0.00	e2.2	0.00	57
10	0.00	0.00	0.00	0.00	0.00	0.00	0.28	8.9	0.00	e4.3	0.00	61
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10	0.00	8.7	0.00	62
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	54	0.00	5.8	0.00	60
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73	0.00	1.4	0.00	39
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65	0.00	0.00	0.00	28
15	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	59	0.00	0.00	0.00	12
16	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	94	0.00	0.00	0.00	3.1
17	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	105	0.00	0.00	0.00	0.37
18	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	95	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	91	0.00	0.23	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	70	0.00	1.0	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	48	0.00	0.74	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28	0.00	0.75	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72	0.00	44	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	133	4.3	103	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	154	80	121	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	156	113	135	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	e0.00	0.00	156	115	133	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	149	156	118	0.00	0.00
29	0.00	0.00	0.00	0.00	---	0.00	0.00	131	133	100	e5.0	0.00
30	0.00	0.00	0.00	0.00	---	0.00	0.00	114	81	59	70	0.00
31	0.00	---	0.00	0.00	---	0.00	---	109	---	19	73	---
TOTAL	0.00	13.24	0.00	0.00	0.00	0.00	47.28	1,975.02	895.36	1,086.32	149.60	894.47
MEAN	0.000	0.44	0.000	0.000	0.000	0.000	1.58	63.7	29.8	35.0	4.83	29.8
MAX	0.00	3.4	0.00	0.00	0.00	0.00	27	156	156	135	73	78
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	0.00	26	0.00	0.00	0.00	0.00	94	3,920	1,780	2,150	297	1,770

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2003, BY WATER YEAR (WY)

	15.9	27.8	1.06	0.000	13.5	375	1,384	744	238	307	244	50.6
MEAN	15.9	27.8	1.06	0.000	13.5	375	1,384	744	238	307	244	50.6
MAX	127	138	11.6	0.000	90.2	1,111	3,288	2,937	834	1,000	2,144	292
(WY)	(1995)	(2001)	(1999)	(1993)	(1996)	(1995)	(1997)	(1997)	(2000)	(1993)	(1993)	(1995)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.97	0.000	0.000
(WY)	(1993)	(1993)	(1993)	(1993)	(1993)	(2002)	(2000)	(1993)	(1993)	(1996)	(1994)	(1996)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1993 - 2003

ANNUAL TOTAL	1,628.02		5,061.29		284	
ANNUAL MEAN	4.46		13.9		549	
HIGHEST ANNUAL MEAN					1995	
LOWEST ANNUAL MEAN					2002	
HIGHEST DAILY MEAN	176	Jun 10	156	May 26	4,800	Apr 19, 1997
LOWEST DAILY MEAN	0.00	Jan 1	0.00	Oct 1	0.00	Oct 1, 1992
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	0.00	Oct 1	0.00	Oct 1, 1992
MAXIMUM PEAK FLOW			a168	Jun 28	4,810	Apr 19, 1997
MAXIMUM PEAK STAGE			9.96	May 27	b22.90	Apr 9, 1997
ANNUAL RUNOFF (AC-FT)	3,230		10,040		205,700	
10 PERCENT EXCEEDS	6.6		68		850	
50 PERCENT EXCEEDS	0.00		0.00		0.00	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

a Gage height, 9.88 ft
b Backwater from ice
c Estimated

05059480 SHEYENNE RIVER DIVERSION AT WEST FARGO, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1993 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unfiltered uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)
JUL 30...	1325	59	7.8	525	27.0	25.0

RED RIVER OF THE NORTH BASIN

05059500 SHEYENNE RIVER AT WEST FARGO, ND

LOCATION.--Lat 46°53'28", long 96°54'24", in SE¹₄SE¹₄ sec.31, T.140 N., R.49 W., Cass County, Hydrologic Unit 09020204, on right bank at downstream side of county highway bridge, 1 mi north of West Fargo, 3 mi upstream from Maple River, and at mile 24.5.

DRAINAGE AREA.--8,870 mi², approximately, of which about 5,780 mi² is probably noncontributing, including 3,800 mi² in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March to November 1902 (gage heights only), April 1903 to October 1905, March to August 1919, September 1929 to current year. Published as "at or near Haggart" 1902-7, 1919. Records for March to November 1902 and November 1905 to June 1907, published in WSP 100, 171, 207, and 245, have been found to be unreliable and should not be used. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1388: 1904(M). WSP 1728: Drainage area. See also "PERIOD OF RECORD."

GAGE.--Water-stage recorder. Datum of gage is 877.19 ft above National Geodetic Vertical Datum of 1929. June 27, 1933, to September 1969 on left bank about 600 ft downstream on unimproved channel at same datum. See WSP 1728 or 1913 for history of changes prior to June 27, 1933.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated to a large degree by Lake Ashtabula (station 05057500), 246 mi upstream. Since March 1993, flood flows that are diverted from the Sheyenne River just downstream from gaging station Sheyenne River above Sheyenne River Diversion near Horace (station 05059300) bypass this station. These flows are measured at streamflow station Sheyenne River Diversion at West Fargo (station 05059480). Figures of discharge given here include flow of the bypass. During some years, flow is diverted from just above the station into the Red River of the North in order to maintain adequate supply for municipal uses. Figures of daily discharge do not include this diversion.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	126	142	234	e162	e75	e59	e157	329	664	539	475	e76
2	113	146	224	e159	e71	e59	264	321	598	490	443	e77
3	96	143	205	e157	e70	e58	226	316	488	438	366	e79
4	90	136	202	e157	e69	e57	204	313	422	405	289	e79
5	82	142	199	e155	e68	e55	271	312	384	378	240	e77
6	104	157	185	e152	e67	e55	393	334	367	358	203	e67
7	91	168	e179	e151	e63	e55	463	336	353	345	179	e64
8	81	175	e173	e147	e64	e56	502	341	348	334	171	e60
9	79	180	e172	e146	e65	e54	482	365	354	352	168	e58
10	93	177	e169	e144	e65	e53	437	356	360	346	172	e62
11	128	157	e167	e146	e65	e54	424	448	353	354	166	e64
12	136	158	e164	e143	e65	e55	419	619	364	340	165	e61
13	139	166	e161	e139	e64	e56	418	663	351	330	160	e69
14	142	172	e157	e134	e64	e58	403	659	346	309	153	e75
15	139	192	e152	e129	e64	e59	357	627	340	275	146	e75
16	138	185	e147	e123	e62	e59	351	697	338	248	140	e72
17	141	179	e146	e123	e63	e61	366	714	327	229	133	e68
18	144	158	e146	e121	e64	e61	379	691	322	210	126	e73
19	143	163	e146	e120	e65	e60	407	712	319	193	e118	e79
20	144	185	e143	e116	e63	e59	396	687	310	185	e108	e82
21	144	189	e143	e117	e64	e58	388	625	306	275	e94	e86
22	146	187	e145	e116	e62	e57	387	584	330	429	e87	e83
23	148	220	e154	e107	e61	e57	378	665	363	576	e92	e88
24	150	e206	e157	e103	e59	e57	370	798	441	677	e97	e96
25	152	e197	e157	e98	e59	e56	362	847	604	714	e97	e113
26	153	e173	e151	e98	e60	e56	354	857	667	734	e89	e106
27	151	e124	e150	e93	e59	e57	346	850	686	739	e88	e98
28	152	e149	e154	e90	e59	e61	343	828	789	728	e83	e82
29	151	198	e153	e85	---	e79	341	764	738	684	e86	e78
30	151	240	e155	e82	---	e107	337	711	604	589	e71	e74
31	151	---	e160	e75	---	e136	---	683	---	503	e74	---
TOTAL	3,998	5,164	5,150	3,888	1,799	1,924	10,925	18,052	13,236	13,306	5,079	2,321
MEAN	129	172	166	125	64.2	62.1	364	582	441	429	164	77.4
MAX	153	240	234	162	75	136	502	857	789	739	475	113
MIN	79	124	143	75	59	53	157	312	306	185	71	58
AC-FT	7,930	10,240	10,220	7,710	3,570	3,820	21,670	35,810	26,250	26,390	10,070	4,600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 2003, BY WATER YEAR (WY)

MEAN	83.9	102	86.7	70.7	77.1	277	804	494	288	237	136	91.6
MAX	713	687	468	276	320	1,184	3,312	3,235	1,785	1,373	2,218	609
(WY)	(1995)	(2001)	(2001)	(2001)	(2001)	(1999)	(1997)	(1997)	(1950)	(2000)	(1993)	(1999)
MIN	9.88	12.4	7.48	6.37	5.47	6.76	65.2	54.0	25.2	14.7	7.46	7.43
(WY)	(1937)	(1937)	(1937)	(1940)	(1937)	(1940)	(1991)	(1959)	(1934)	(1934)	(1936)	(1976)

05059500 SHEYENNE RIVER AT WEST FARGO, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1903 - 2003	
ANNUAL TOTAL	65,217		84,842			
ANNUAL MEAN	179		232		229	
HIGHEST ANNUAL MEAN					804	1997
LOWEST ANNUAL MEAN					37.1	1934
HIGHEST DAILY MEAN	587	May 21	857	May 26	4,800	Apr 19, 1997
LOWEST DAILY MEAN	62	Sep 17	53	Mar 10	a1.0	Sep 23, 1976
ANNUAL SEVEN-DAY MINIMUM	65	Sep 23	55	Mar 5	2.0	Sep 17, 1976
MAXIMUM PEAK FLOW			b862	May 26	c4,810	Apr 19, 1997
MAXIMUM PEAK STAGE			d10.00	May 26	f22.90	Apr 9, 1997
ANNUAL RUNOFF (AC-FT)	129,400		168,300		165,700	
10 PERCENT EXCEEDS	342		554		510	
50 PERCENT EXCEEDS	151		154		84	
90 PERCENT EXCEEDS	83		61		22	

- a Caused by diversion to Red River of the North
- b Combined flows from diversion channel and Sheyenne River
- c All flow through diversion channel; gage height, 22.68 ft
- d Maximum gage height in Sheyenne River
- e Estimated
- f Maximum gage height in diversion channel; backwater from ice

05059500 SHEYENNE RIVER AT WEST FARGO, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb- denum, water, fltrd, ug/L (01060)	Selen- ium, water, fltrd, ug/L (01145)	Stront- ium, water, fltrd, ug/L (01080)
OCT 29...	--	--	--	--	--	--
DEC 16...	--	--	--	--	--	--
JAN 28...	--	--	--	--	--	--
MAR 10...	--	--	--	--	--	--
APR 03...	60	20	<0.10	<1	1	330
28...	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--
JUL 30...	70	<10	<0.20	3	2	340
AUG 07...	--	--	--	--	--	--
22...	--	--	--	--	--	--
SEP 17...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

RED RIVER OF THE NORTH BASIN

05059600 MAPLE RIVER NEAR HOPE, ND

LOCATION.--Lat 47°19'30", long 97°47'25", in NW¹₄NW¹₄ sec.4, T.144 N., R.56 W., Steele County, Hydrologic Unit 09020205, 100 ft downstream from box culvert on State Highway 38, 500 ft east of the intersection of State Highways 32 and 38, and 3 mi west of Hope.

DRAINAGE AREA.--20.2 mi², of which about 2.8 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1964 to current year (seasonal records only since 1983).

GAGE.--Water-stage recorder. Datum of gage is 1,296.62 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 25 ft³/s, Mar. 23, gage height, 4.28 ft; maximum gage height, 5.59 ft, Mar. 16, backwater from ice; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e0.00	1.9	0.30	1.0	2.1	0.00	0.00
2	---	---	---	---	---	e0.00	1.4	0.23	0.90	1.7	0.00	0.00
3	---	---	---	---	---	e0.00	1.0	0.15	0.96	1.6	0.00	0.00
4	---	---	---	---	---	e0.00	1.3	1.4	0.90	1.4	0.00	0.00
5	---	---	---	---	---	e0.00	1.3	7.8	0.88	1.2	0.00	0.00
6	---	---	---	---	---	e0.00	0.65	7.7	1.1	0.88	0.00	0.00
7	---	---	---	---	---	e0.00	e0.36	7.0	1.4	0.63	0.00	0.00
8	---	---	---	---	---	e0.00	e0.25	9.1	2.3	0.38	0.00	0.00
9	---	---	---	---	---	e0.00	e0.19	8.6	1.9	0.98	0.00	0.00
10	---	---	---	---	---	e0.00	e0.17	7.4	3.1	2.3	0.00	0.00
11	---	---	---	---	---	e0.00	e0.14	5.5	2.6	1.8	0.00	0.00
12	---	---	---	---	---	e0.00	e2.0	4.0	3.8	1.4	0.00	0.00
13	---	---	---	---	---	e0.00	e0.49	3.6	3.2	0.94	0.00	0.00
14	---	---	---	---	---	e0.00	e0.28	3.5	2.6	3.4	0.00	0.00
15	---	---	---	---	---	e0.20	e0.17	2.9	1.9	3.5	0.00	0.00
16	---	---	---	---	---	e2.0	e0.23	2.5	1.9	2.8	0.00	0.00
17	---	---	---	---	---	e4.0	0.29	2.7	2.1	2.3	0.00	0.00
18	---	---	---	---	---	e7.5	0.17	3.5	1.8	5.1	0.00	0.00
19	---	---	---	---	---	e10	0.43	5.3	1.2	4.5	0.00	0.00
20	---	---	---	---	---	e15	0.58	4.2	1.0	3.1	0.00	0.00
21	---	---	---	---	---	e18	0.33	3.2	0.81	2.3	0.00	0.00
22	---	---	---	---	---	e20	0.37	3.5	1.3	1.7	0.00	0.00
23	---	---	---	---	---	21	0.70	3.5	1.8	1.0	0.00	0.00
24	---	---	---	---	---	18	0.60	3.6	1.7	0.54	0.00	0.00
25	---	---	---	---	---	13	0.38	3.2	3.5	0.36	0.00	0.00
26	---	---	---	---	---	9.9	0.61	2.8	2.7	0.25	0.00	0.00
27	---	---	---	---	---	7.4	0.84	2.3	2.2	0.07	0.00	0.00
28	---	---	---	---	---	5.0	0.46	1.7	1.9	0.03	0.00	0.00
29	---	---	---	---	---	3.9	0.35	1.6	2.2	0.00	0.00	0.00
30	---	---	---	---	---	3.1	0.32	1.6	2.7	0.00	0.00	0.00
31	---	---	---	---	---	2.2	---	1.1	---	0.00	0.00	---
TOTAL	---	---	---	---	---	160.20	18.26	115.48	57.35	48.26	0.00	0.00
MEAN	---	---	---	---	---	5.17	0.61	3.73	1.91	1.56	0.000	0.000
MAX	---	---	---	---	---	21	2.0	9.1	3.8	5.1	0.00	0.00
MIN	---	---	---	---	---	0.00	0.14	0.15	0.81	0.00	0.00	0.00
AC-FT	---	---	---	---	---	318	36	229	114	96	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2003, BY WATER YEAR (WY)

MEAN	0.060	0.003	0.000	0.000	0.000	10.6	15.2	3.51	2.87	4.60	0.83	0.46
MAX	1.07	0.054	0.000	0.000	0.006	41.8	63.8	44.0	34.5	65.3	13.7	15.3
(WY)	(1966)	(1966)	(1965)	(1965)	(1981)	(1987)	(1997)	(1999)	(1968)	(1993)	(2001)	(1994)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.000	0.000	0.000	0.000
(WY)	(1965)	(1965)	(1965)	(1965)	(1965)	(1969)	(1991)	(1980)	(1973)	(1973)	(1967)	(1967)

05059600 MAPLE RIVER NEAR HOPE, ND—Continued

SUMMARY STATISTICS

WATER YEARS 1965 - 2003

ANNUAL MEAN	a2.82	
HIGHEST ANNUAL MEAN	a5.55	1969
LOWEST ANNUAL MEAN	a0.002	1981
HIGHEST DAILY MEAN	560	Mar 31, 1997
LOWEST DAILY MEAN	0.00	Oct 1, 1964
ANNUAL SEVEN-DAY MINIMUM	0.00	Oct 1, 1964
MAXIMUM PEAK FLOW	b900	Apr 18, 1979
MAXIMUM PEAK STAGE	c8.83	Mar 31, 1997
ANNUAL RUNOFF (AC-FT)	a2,040	
10 PERCENT EXCEEDS	2.5	
50 PERCENT EXCEEDS	0.00	
90 PERCENT EXCEEDS	0.00	

a Based on complete water years only (1965-82)

b Gage height, 5.86 ft; backwater from ice

c Backwater from ice

e Estimated

RED RIVER OF THE NORTH BASIN
05059600 MAPLE RIVER NEAR HOPE, ND—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
MAR 17...	1720	5.3	--	--	--	429	0.0	0.5	--	--	--	--	--
APR 02...	1305	1.5	8.0	7.2	1,450	1,530	-2.5	0.5	550	110	67.0	18.0	2
MAY 06...	1050	8.6	--	--	--	2,460	7.5	8.5	--	--	--	--	--
JUN 25...	1525	3.6	--	--	--	2,300	16.5	16.0	--	--	--	--	--
JUL 28...	1525	0.03	7.7	7.8	2,490	2,500	23.0	22.5	1,000	179	140	3.50	4
SEP 11...	1115	0.00	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
MAR 17...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 02...	120	31	185	53.0	0.20	--	560	1,040	4.51	1,120	5.0	20	1
MAY 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 28...	293	38	440	62.4	0.28	31.3	1,060	2,000	0.16	--	7.5	90	<1
SEP 11...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
MAR 17...	--	--	--	--	--	--
APR 02...	70	40	<0.10	<1	2	450
MAY 06...	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--
JUL 28...	170	940	<0.20	1	3	790
SEP 11...	--	--	--	--	--	--

Remark codes used in this table:
< -- Less than

05059700 MAPLE RIVER NEAR ENDERLIN, ND

LOCATION.--Lat 46°37'18", long 97°34'25", on west line sec.2, T.136 N., R.55 W., Ransom County, Hydrologic Unit 09020205, on left bank 25 ft downstream from county highway bridge, 1 mi downstream from South Branch, and 1.2 mi east of Enderlin.

DRAINAGE AREA.--843 mi², of which about 47 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1956 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,056.72 ft above National Geodetic Vertical Datum of 1929. Sept. 21, 1956, to June 9, 1969, recording gage on right bank at same datum. Prior to Sept. 20, 1956, nonrecording gage at site 25 ft upstream at same datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.9	e3.9	e4.0	e4.0	e2.8	e2.6	48	8.3	52	392	5.3	3.7
2	5.1	e3.9	e3.8	e4.0	e2.8	e2.6	42	8.0	42	354	4.8	5.0
3	6.3	e3.8	e3.6	e4.0	e2.8	e2.6	33	8.1	34	296	4.4	4.8
4	5.9	e4.0	e3.4	e4.0	e2.8	e2.6	28	13	29	247	4.2	3.3
5	5.5	e4.1	e3.4	e4.0	e2.8	e2.6	19	21	25	216	4.1	3.1
6	6.7	e4.1	e3.6	e4.2	e2.8	e2.6	22	39	23	192	3.9	3.1
7	5.8	e4.2	e4.0	e4.2	e2.8	e2.7	19	72	22	157	4.0	2.8
8	e6.0	e4.2	e4.0	e4.4	e2.8	e2.8	17	91	23	114	2.9	3.8
9	e5.6	e4.4	e3.6	e5.0	e2.8	e2.8	14	99	24	84	3.4	4.1
10	e5.0	e4.7	e4.0	e4.6	e2.8	e2.9	11	107	21	63	3.0	4.2
11	e4.8	e4.4	e3.4	e4.0	e2.8	e3.0	9.2	113	17	52	2.8	4.1
12	e4.7	e4.6	e3.3	e3.6	e2.8	e3.1	9.7	103	18	42	2.5	3.5
13	e4.5	e4.5	e3.4	e3.4	e2.8	e3.4	8.0	98	15	35	2.3	4.2
14	e4.2	e4.6	e3.3	e3.4	e2.8	e3.6	7.9	111	13	29	2.3	4.9
15	e4.0	e4.7	e3.7	e3.4	e2.8	e6.8	8.7	116	11	25	2.5	3.0
16	e3.6	e4.7	e4.2	e3.4	e2.8	e2.2	9.3	114	11	21	3.0	2.7
17	e3.2	e4.8	e4.3	e3.4	e2.8	25	9.1	117	10	19	4.0	2.0
18	e2.6	e6.0	e4.5	e3.4	e2.9	29	9.7	136	8.5	19	3.9	3.7
19	e2.6	e7.7	e4.0	e3.4	e2.9	21	12	194	6.5	19	3.8	3.2
20	e2.8	e7.2	e4.0	e3.2	e2.8	28	12	229	5.0	19	3.6	2.3
21	e2.8	e6.8	e3.8	e3.2	e2.8	37	12	219	4.7	17	2.7	3.2
22	e2.8	e6.0	e3.6	e3.2	e2.8	43	12	246	5.8	17	2.8	1.9
23	e2.9	e5.4	e3.6	e3.2	e2.8	46	12	290	22	16	3.0	1.8
24	e3.0	e4.6	e3.6	e3.2	e2.8	53	12	314	32	14	3.4	2.2
25	e3.1	e4.6	e3.8	e3.2	e2.8	79	10	301	51	13	2.9	3.4
26	e3.1	e4.8	e4.0	e3.1	e2.7	82	8.8	258	93	12	3.1	3.0
27	e3.2	e5.0	e4.2	e3.1	e2.7	77	9.5	207	171	11	3.0	3.8
28	e3.5	e5.2	e4.2	e3.1	e2.6	78	9.5	160	201	11	3.1	3.0
29	e3.7	e5.2	e4.2	e3.0	---	73	9.5	121	226	9.3	3.1	2.9
30	e4.0	e4.6	e4.0	e3.0	---	56	9.2	88	335	8.1	3.2	2.7
31	e4.0	---	e3.8	e2.9	---	53	---	67	---	6.8	3.5	---
TOTAL	129.9	146.7	118.3	111.2	78.2	848.7	453.1	4,068.4	1,551.5	2,530.2	104.5	99.4
MEAN	4.19	4.89	3.82	3.59	2.79	27.4	15.1	131	51.7	81.6	3.37	3.31
MAX	6.7	7.7	4.5	5.0	2.9	82	48	314	335	392	5.3	5.0
MIN	2.6	3.8	3.3	2.9	2.6	2.6	7.9	8.0	4.7	6.8	2.3	1.8
AC-FT	258	291	235	221	155	1,680	899	8,070	3,080	5,020	207	197

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2003, BY WATER YEAR (WY)

MEAN	10.3	7.68	4.70	2.70	5.84	143	280	71.8	45.4	64.7	21.7	12.8
MAX	211	63.6	50.4	7.78	123	622	2,162	669	424	875	506	122
(WY)	(1995)	(1995)	(1999)	(1999)	(1998)	(1966)	(1997)	(1999)	(1975)	(1993)	(1993)	(1999)
MIN	1.52	1.49	1.32	1.21	1.27	2.10	2.06	2.19	1.41	1.44	1.33	1.28
(WY)	(1993)	(1961)	(1961)	(1969)	(2002)	(1969)	(1991)	(1992)	(1961)	(1961)	(1961)	(1984)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1956 - 2003

ANNUAL TOTAL	4,244.19	10,240.1	
ANNUAL MEAN	11.6	28.1	56.1
HIGHEST ANNUAL MEAN			242
LOWEST ANNUAL MEAN			2.14
HIGHEST DAILY MEAN	126	Jul 20	392
LOWEST DAILY MEAN	0.60	Jun 22	1.8
ANNUAL SEVEN-DAY MINIMUM	0.84	Aug 24	2.5
MAXIMUM PEAK FLOW			402
MAXIMUM PEAK STAGE			5.86
ANNUAL RUNOFF (AC-FT)	8,420	20,310	40,670
10 PERCENT EXCEEDS	40	86	87
50 PERCENT EXCEEDS	4.2	4.4	3.9
90 PERCENT EXCEEDS	0.96	2.8	1.8

e Estimated

RED RIVER OF THE NORTH BASIN
05059700 MAPLE RIVER NEAR ENDERLIN, ND—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 30...	1620	4.0	--	--	--	1,940	-2.5	2.5	--	--	--	--	--
DEC 18...	1105	4.8	--	--	--	2,040	2.5	1.5	--	--	--	--	--
JAN 29...	1215	3.0	--	--	--	2,590	-1.0	0.0	--	--	--	--	--
MAR 12...	1205	3.0	--	--	--	2,100	--	0.5	--	--	--	--	--
MAR 18...	1630	31	--	--	--	1,300	--	1.5	--	--	--	--	--
APR 01...	1055	46	7.7	7.6	957	951	6.0	5.0	360	79.0	39.0	19.0	1
APR 29...	1545	9.4	--	--	--	1,650	14.5	14.5	--	--	--	--	--
JUN 23...	1230	14	--	--	--	1,790	19.5	20.5	--	--	--	--	--
AUG 21...	1045	3.8	7.6	7.8	1,850	1,840	23.5	19.2	790	197	73.3	13.2	2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat fltrd mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 01...	61.0	26	158	39.0	0.20	--	300	633	83.6	672	3.0	60	1
APR 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 23...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 21...	142	28	380	101	0.31	28.3	545	1,300	13.8	--	9.8	20	<1

05059700 MAPLE RIVER NEAR ENDERLIN, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb- denum, water, fltrd, ug/L (01060)	Selen- ium, water, fltrd, ug/L (01145)	Stront- ium, water, fltrd, ug/L (01080)
OCT 30...	--	--	--	--	--	--
DEC 18...	--	--	--	--	--	--
JAN 29...	--	--	--	--	--	--
MAR 12...	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--
APR 01...	50	280	<0.10	<1	1	350
APR 29...	--	--	--	--	--	--
JUN 23...	--	--	--	--	--	--
AUG 21...	120	1,570	<20.0	3	6	880

Remark codes used in this table:

< -- Less than

RED RIVER OF THE NORTH BASIN

05060000 MAPLE RIVER NEAR MAPLETON, ND

LOCATION.--Lat 46°51'58", long 97°06'22", in SW¹₄NE¹₄ sec.10, T.139 N., R.51 W., Cass County, Hydrologic Unit 09020204, on right bank upstream of county bridge and 3 mi southwest of Mapleton.

DRAINAGE AREA.--1,450 mi², approximately, of which 70 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1958 to September 1975, March 1, 2001, to current year (seasonal).

GAGE.--Water-stage recorder and rubble masonry dam. Datum of gage is 885.20 ft above National Geodetic Vertical Datum of 1929, revised. Prior to Oct. 1, 2001, at datum 8.33 ft higher.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 751 ft³/s, June 30, gage height, 13.55 ft; minimum daily discharge, 0.95 ft³/s, Mar. 8-11.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e1.1	105	19	175	694	29	e3.9
2	---	---	---	---	---	e1.1	100	20	150	611	26	e3.7
3	---	---	---	---	---	e1.1	90	e21	130	536	25	e3.3
4	---	---	---	---	---	e1.1	75	e28	112	473	22	e3.2
5	---	---	---	---	---	e1.0	45	e40	101	405	19	e3.1
6	---	---	---	---	---	e1.0	49	e60	92	339	17	e3.0
7	---	---	---	---	---	e1.0	66	e130	85	289	16	e3.0
8	---	---	---	---	---	e0.95	57	e210	84	252	16	e3.1
9	---	---	---	---	---	e0.95	47	e190	89	233	14	e4.3
10	---	---	---	---	---	e0.95	40	e220	88	219	15	e5.9
11	---	---	---	---	---	e0.95	37	e260	83	198	17	e7.9
12	---	---	---	---	---	e0.96	35	222	85	175	20	e9.0
13	---	---	---	---	---	e1.0	30	204	80	151	23	e9.7
14	---	---	---	---	---	e1.3	24	199	75	133	e20	e9.8
15	---	---	---	---	---	e3.0	25	205	69	118	e17	e13
16	---	---	---	---	---	e10	25	206	62	106	e14	e16
17	---	---	---	---	---	e32	29	202	55	95	e11	e15
18	---	---	---	---	---	e80	27	212	44	88	e9.5	e13
19	---	---	---	---	---	e105	30	329	39	79	e8.6	e11
20	---	---	---	---	---	e135	34	531	33	72	e8.0	e8.9
21	---	---	---	---	---	e140	34	477	29	65	e6.5	e8.3
22	---	---	---	---	---	e130	35	415	30	61	e5.0	e8.6
23	---	---	---	---	---	e118	31	361	49	59	e4.2	e8.4
24	---	---	---	---	---	e105	27	326	194	55	e4.1	e6.5
25	---	---	---	---	---	e98	25	328	289	51	e4.1	e5.9
26	---	---	---	---	---	e92	27	342	484	48	e3.9	e4.9
27	---	---	---	---	---	e84	24	340	465	45	e3.7	e4.2
28	---	---	---	---	---	e78	22	316	522	42	e3.7	e3.7
29	---	---	---	---	---	e78	22	277	722	47	e3.4	e3.2
30	---	---	---	---	---	e83	21	237	741	40	e3.5	e2.9
31	---	---	---	---	---	e90	---	208	---	33	e3.5	---
TOTAL	---	---	---	---	---	1,475.46	1,238	7,135	5,256	5,812	392.7	206.4
MEAN	---	---	---	---	---	47.6	41.3	230	175	187	12.7	6.88
MAX	---	---	---	---	---	140	105	531	741	694	29	16
MIN	---	---	---	---	---	0.95	21	19	29	33	3.4	2.9
AC-FT	---	---	---	---	---	2,930	2,460	14,150	10,430	11,530	779	409

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 2003, BY WATER YEAR (WY)

	12.3	11.0	4.22	1.24	0.72	134	491	143	109	213	33.2	18.2
MEAN	12.3	11.0	4.22	1.24	0.72	134	491	143	109	213	33.2	18.2
MAX	49.1	36.2	12.2	4.30	4.85	1,040	1,708	428	478	2,375	267	65.8
(WY)	(1972)	(1972)	(1963)	(1973)	(1973)	(1966)	(1969)	(1970)	(1970)	(1975)	(1962)	(1962)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	13.9	8.35	1.71	0.000	0.000	0.000
(WY)	(1961)	(1961)	(1961)	(1959)	(1959)	(1969)	(1959)	(1959)	(1961)	(1961)	(1960)	(1959)

SUMMARY STATISTICS

WATER YEARS 1958 - 2003

ANNUAL MEAN	a95.8
HIGHEST ANNUAL MEAN	a374 1975
LOWEST ANNUAL MEAN	a5.98 1961
HIGHEST DAILY MEAN	11,300 Jul 2, 1975
LOWEST DAILY MEAN	0.00 Dec 13, 1958
ANNUAL SEVEN-DAY MINIMUM	0.00 Dec 13, 1958
MAXIMUM PEAK FLOW	11,600 Jul 2, 1975
MAXIMUM PEAK STAGE	23.03 Jul 2, 1975
ANNUAL RUNOFF (AC-FT)	a69,430
10 PERCENT EXCEEDS	149
50 PERCENT EXCEEDS	7.4
90 PERCENT EXCEEDS	0.00

a Based on complete water years only (1959-75)

e Estimated

05060000 MAPLE RIVER NEAR MAPLETON, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 2001 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 28...	1605	11	--	--	--	1,380	3.5	4.0	--	--	--	--	--
MAR 18...	1325	69	--	--	--	--	4.0	--	--	--	--	--	--
APR 04...	0850	74	8.0	7.8	971	992	-0.5	2.0	330	74.0	36.0	17.0	2
MAY 02...	0930	20	--	--	--	1,490	12.5	12.0	--	--	--	--	--
JUN 25...	1250	294	--	--	--	667	13.5	18.5	--	--	--	--	--
JUN 30...	1330	761	--	--	--	--	25.5	--	--	--	--	--	--
AUG 19...	0900	8.9	7.9	8.0	1,480	1,460	24.5	27.5	590	120	70.5	12.5	2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 04...	78.0	32	172	45.0	0.20	--	290	643	136	680	5.0	40	<1
MAY 02...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 19...	125	31	268	61.9	0.27	25.4	471	1,020	25.3	--	15.3	<10	<1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
OCT 28...	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--
APR 04...	60	250	<0.10	1	1	330
MAY 02...	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--
JUN 30...	--	--	--	--	--	--
AUG 19...	110	270	<0.20	6	5	570

Remark codes used in this table:
 < -- Less than

RED RIVER OF THE NORTH BASIN

05060100 MAPLE RIVER BELOW MAPLETON, ND

LOCATION.--Lat 46°54'19", long 97°03'08", in NW¹₄NW¹₄ sec.31, T.140 N., R.50 W., Cass County, Hydrologic Unit 09020205, on left bank just downstream from bridge on county highway 1.0 mi north of Mapleton.

DRAINAGE AREA.-- 1,480 mi², approximately, of which 70 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1944 to September 1958, March 1995 to current year. April 1944 to September 1958 published as "at Mapleton". Record not equivalent at extreme high flows to station 05060000 (site 9 mi upstream), which was operated for water years 1959 to 1975, and operated as a seasonal gage beginning in March 2001.

GAGE.--Water-stage recorder. Datum of gage is 890.00 ft above National Geodetic Vertical Datum of 1929. Feb. 16, 1944, to Sept. 30, 1958, nonrecording gage at site 2 mi upstream at datum 3.33 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.6	e7.5	e13	e6.5	e2.6	e1.2	97	21	180	706	32	3.9
2	6.1	e8.4	e12	e6.0	e2.5	e1.1	109	20	155	636	29	3.8
3	5.7	e8.5	e11	e5.7	e2.3	e1.1	100	20	133	571	28	3.7
4	6.0	8.6	e10	e5.3	e2.2	e1.1	77	26	115	514	27	3.1
5	6.6	8.9	e9.5	e5.2	e2.1	e1.0	56	36	101	454	25	2.9
6	9.4	9.6	e8.5	e5.2	e1.9	e1.0	42	57	91	390	22	3.1
7	9.9	12	e8.3	e5.3	e1.8	e1.0	55	153	83	328	20	3.1
8	11	14	e8.0	e5.5	e1.7	e1.0	53	217	81	284	19	3.0
9	15	16	e7.4	e5.5	e1.7	e0.95	44	194	79	264	18	3.2
10	16	18	e7.4	e5.4	e1.6	e0.95	39	234	89	239	18	4.6
11	13	16	e7.4	e5.3	e1.6	e0.95	36	283	80	214	17	6.4
12	9.6	e15	e7.4	e5.0	e1.5	e0.96	35	255	80	187	18	8.1
13	8.7	e14	e7.6	e4.7	e1.5	e1.0	31	232	77	161	19	9.5
14	8.8	e13	e8.0	e4.5	e1.4	e1.1	30	235	72	138	18	9.4
15	12	e13	e8.8	e4.2	e1.4	e2.4	30	225	65	121	16	11
16	13	e13	e9.9	e3.9	e1.4	e6.0	34	227	59	107	14	13
17	12	e14	e9.8	e3.7	e1.3	e16	30	225	50	96	11	16
18	11	e15	e9.4	e3.4	e1.3	e40	29	234	44	85	9.6	16
19	11	e16	e9.0	e3.3	e1.3	e80	31	298	39	74	8.5	13
20	12	e17	e8.7	e3.1	e1.5	e110	33	492	34	67	7.2	9.2
21	12	e18	e8.2	e3.0	e1.5	e134	34	471	31	60	5.8	8.1
22	12	e18	e7.8	e2.9	e1.4	e135	33	415	33	56	5.1	8.4
23	11	e18	e7.3	e2.9	e1.4	e122	31	374	37	53	4.6	8.9
24	10	e17	e7.0	e2.8	e1.4	e110	29	335	124	51	4.1	6.9
25	10	e17	e6.7	e2.8	e1.3	e100	26	325	240	49	4.0	6.4
26	10	e16	e6.5	e2.7	e1.3	e95	25	339	413	45	4.1	5.4
27	11	e16	e6.2	e2.6	e1.3	e87	20	338	511	44	3.9	4.7
28	11	e15	e6.1	e2.5	e1.2	e80	21	322	553	41	3.5	3.9
29	11	e15	e6.2	e2.4	---	e78	23	286	699	40	3.7	3.4
30	9.5	e14	e6.7	e2.4	---	e82	22	249	743	41	3.4	3.0
31	e7.8	---	e6.8	e2.4	---	e90	---	213	---	36	3.5	---
TOTAL	318.7	421.5	256.6	126.1	45.4	1,381.81	1,255	7,351	5,091	6,152	422.0	205.1
MEAN	10.3	14.1	8.28	4.07	1.62	44.6	41.8	237	170	198	13.6	6.84
MAX	16	18	13	6.5	2.6	135	109	492	743	706	32	16
MIN	5.7	7.5	6.1	2.4	1.2	0.95	20	20	31	36	3.4	2.9
AC-FT	632	836	509	250	90	2,740	2,490	14,580	10,100	12,200	837	407

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2003, BY WATER YEAR (WY)

MEAN	15.8	25.6	12.5	4.58	17.6	217	547	183	140	84.9	18.1	32.3
MAX	96.5	256	125	20.7	288	1,376	2,956	1,035	867	373	57.0	401
(WY)	(1999)	(2001)	(1999)	(1999)	(1998)	(1998)	(1997)	(1999)	(2000)	(2000)	(2001)	(1999)
MIN	0.000	1.75	0.63	0.016	0.000	0.000	21.0	6.30	6.52	2.90	0.042	0.000
(WY)	(1953)	(1953)	(1956)	(1956)	(1945)	(1956)	(1953)	(1955)	(1954)	(1956)	(1946)	(1949)

05060100 MAPLE RIVER BELOW MAPLETON, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1944 - 2003	
ANNUAL TOTAL	20,261.7		23,026.21		107	
ANNUAL MEAN	55.5		63.1		343	
HIGHEST ANNUAL MEAN					1999	
LOWEST ANNUAL MEAN					11.1	
HIGHEST DAILY MEAN	710	Jun 11	743	Jun 30	6,620	Apr 16, 1997
LOWEST DAILY MEAN	5.7	Oct 3	0.95	Mar 9	0.00	Jan 16, 1945
ANNUAL SEVEN-DAY MINIMUM	6.5	Dec 25	0.97	Mar 6	0.00	Jan 16, 1945
MAXIMUM PEAK FLOW			751	Jun 30	a7,150	Apr 16, 1997
MAXIMUM PEAK STAGE			14.01	Jun 30	b24.96	Apr 8, 1997
INSTANTANEOUS LOW FLOW					0.00	Jan 16, 1945
ANNUAL RUNOFF (AC-FT)	40,190		45,670		77,490	
10 PERCENT EXCEEDS	154		225		172	
50 PERCENT EXCEEDS	19		13		11	
90 PERCENT EXCEEDS	8.7		1.9		0.10	

a Gage height, 23.76 ft

b Observed, backwater from ice; may have been higher during period of no gage-height record, April 6-9, 1997

c Estimated

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1995 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 1997 to September 30, 2001.

SPECIFIC CONDUCTANCE: April 1997 to September 30, 2001.

INSTRUMENTATION.--Water-quality sensors April 1997 to September 30, 2001.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 30.9°C, July 17, 2001; minimum recorded, less than 0.0°C, April 16, 1997.

SPECIFIC CONDUCTANCE: Maximum recorded, 2,180 microsiemens, Feb. 1-17, 2001; minimum recorded, 276 microsiemens, June 20, 2000.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfl lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
DEC 16...	1535	10	--	--	--	2,620	-3.0	1.0	--	--	--	--	--
JAN 28...	1600	2.5	--	--	--	3,280	-5.0	0.0	--	--	--	--	--
MAR 10...	1635	0.95	--	--	--	680	--	0.0	--	--	--	--	--
MAR 18...	1205	36	--	--	--	1,970	3.5	0.5	--	--	--	--	--
APR 04...	1310	74	7.9	7.9	986	1,050	4.0	2.5	340	75.0	36.0	17.0	2
APR 28...	1725	21	--	--	--	1,400	12.5	14.5	--	--	--	--	--
JUN 25...	1540	245	--	--	--	678	14.5	19.5	--	--	--	--	--
JUN 30...	1145	750	--	--	--	970	24.5	22.5	--	--	--	--	--
AUG 18...	1450	9.5	8.0	7.9	1,600	1,570	37.5	31.5	650	132	77.2	13.1	2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
DEC 16...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 04...	80.0	33	166	45.0	0.20	--	290	643	138	692	4.0	40	1
APR 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 18...	136	31	290	66.2	0.28	26.4	512	1,110	29.3	--	17.7	<10	<1

05060100 MAPLE RIVER BELOW MAPLETON, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb- denum, water, fltrd, ug/L (01060)	Selen- ium, water, fltrd, ug/L (01145)	Stront- ium, water, fltrd, ug/L (01080)
DEC 16...	--	--	--	--	--	--
JAN 28...	--	--	--	--	--	--
MAR 10...	--	--	--	--	--	--
18...	--	--	--	--	--	--
APR 04...	50	220	<0.10	1	1	330
28...	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--
30...	--	--	--	--	--	--
AUG 18...	110	510	<0.20	6	7	630

Remark codes used in this table:

< -- Less than

RED RIVER OF THE NORTH BASIN

05060400 SHEYENNE RIVER AT HARWOOD, ND

LOCATION.--Lat 46°58'39", long 96°53'29", in SW¹₄SE¹₄SW¹₄ sec.33, T.141 N., R.49 W., Cass County, Hydrologic Unit 09020204, at bridge crossing 0.5 mi west of Harwood.

DRAINAGE AREA.--Revised drainage area will be published when available.

GAGE HEIGHT RECORDS

PERIOD OF RECORD.--March 1995 to current year (gage heights and maximum discharge only).

GAGE.--Water stage recorder. Datum of gage is 800 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated to a large degree by Lake Ashtabula (station 05057500), 255 mi upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 11,000 ft³/s, Apr. 16, 1997, gage height, 92.02 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 1,700 ft³/s, June 29, gage height, 76.09 ft.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67.65	67.94	68.63	68.38	68.24	68.41	69.58	69.29	72.09	75.10	70.27	66.84
2	67.71	67.82	68.58	68.41	68.14	68.42	69.25	69.22	71.75	74.47	70.15	66.85
3	67.47	67.73	68.50	68.47	68.15	68.33	69.08	69.16	71.19	73.69	69.75	66.87
4	67.35	67.69	68.40	68.51	68.11	68.23	68.79	69.15	70.70	72.97	69.19	66.86
5	67.21	67.70	68.40	68.55	68.09	68.14	68.85	69.21	70.36	72.37	68.72	66.90
6	67.30	67.80	68.27	68.54	68.17	68.21	69.66	69.54	70.15	71.89	68.33	67.11
7	67.26	67.97	68.20	68.50	68.13	68.43	70.26	70.05	70.02	71.46	68.03	67.04
8	67.17	68.03	68.24	68.54	68.20	68.41	70.52	70.72	69.96	71.09	67.90	66.96
9	67.19	68.08	68.21	68.60	68.23	68.28	70.49	70.83	69.99	70.97	67.87	66.85
10	67.25	68.12	68.23	68.62	68.21	68.32	70.22	70.83	70.06	70.89	67.92	66.78
11	67.63	68.04	68.31	68.61	68.26	68.44	70.05	71.41	69.98	70.74	67.87	66.78
12	67.83	67.84	68.39	68.53	68.35	68.52	69.99	72.15	70.06	70.50	67.87	66.94
13	67.82	67.94	68.41	68.55	68.21	68.57	69.95	72.31	69.97	70.27	67.85	67.70
14	67.86	68.15	68.44	68.58	68.11	68.49	69.90	72.28	69.92	69.98	67.80	66.99
15	67.99	68.14	68.45	68.47	68.17	68.72	69.62	72.06	69.83	69.61	67.72	66.89
16	67.96	67.96	68.48	68.37	68.11	69.50	69.44	72.29	69.77	69.25	67.65	66.89
17	67.93	67.81	68.51	68.33	68.13	69.35	69.60	72.41	69.67	68.93	67.56	66.94
18	67.94	67.87	68.55	68.25	68.16	69.77	69.67	72.35	69.56	68.67	67.47	67.05
19	67.94	67.97	68.57	68.30	68.32	69.96	69.85	72.53	69.50	68.45	67.43	67.11
20	67.91	68.12	68.56	68.33	68.16	69.96	69.86	73.37	69.40	68.29	67.35	67.02
21	67.89	68.31	68.57	68.35	68.30	69.92	69.81	73.59	69.32	68.54	67.30	67.01
22	67.88	68.29	68.55	68.38	68.34	70.03	69.78	73.13	69.39	69.77	---	67.06
23	67.90	68.37	68.53	68.45	68.23	70.42	69.73	73.03	69.74	70.50	---	67.07
24	67.91	68.27	68.51	68.42	68.26	70.68	69.66	73.30	70.31	71.17	---	67.11
25	67.93	68.38	68.50	68.50	68.36	70.74	69.59	73.43	71.89	71.44	---	67.10
26	67.95	68.09	68.47	68.52	68.30	71.12	69.51	73.48	73.38	71.51	---	67.24
27	67.94	67.78	68.47	68.47	68.41	70.92	69.48	73.48	74.89	71.52	---	67.19
28	67.95	67.73	68.44	68.22	68.49	70.62	69.40	73.39	75.58	71.48	66.63	67.05
29	68.11	67.99	68.45	68.16	---	70.32	69.38	73.09	76.00	71.34	66.34	66.96
30	67.97	68.35	68.43	68.14	---	70.16	69.35	72.66	75.55	70.94	66.43	66.91
31	67.93	---	68.44	68.24	---	69.89	---	72.35	---	70.47	66.84	---
TOTAL	2,099.73	2,040.28	2,121.69	2,121.29	1,910.34	2,149.28	2,090.32	2,226.09	2,129.98	2,198.27	---	2,010.07
MEAN	67.73	68.01	68.44	68.43	68.23	69.33	69.68	71.81	71.00	70.91	---	67.00
MAX	68.11	68.38	68.63	68.62	68.49	71.12	70.52	73.59	76.00	75.10	---	67.70
MIN	67.17	67.69	68.20	68.14	68.09	68.14	68.79	69.15	69.32	68.29	---	66.78

Miscellaneous discharge measurement for Sheyenne River at Harwood

Date	Discharge
April 3, 2003	340

05060400 SHEYENNE RIVER AT HARWOOD, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD -- Water year 1997 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
APR 03...	1005	340	7.9	8.0	869	884	1.0	2.0	290	63.0	32.0	13.0	2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat fltrd mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)
APR 03...	70.0	33	191	33.0	0.20	220	546	533	581	4.0	50	1	60

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
APR 03...	80	<0.10	<1	<1	320

Remark codes used in this table:
 < -- Less than

RED RIVER OF THE NORTH BASIN

05060500 RUSH RIVER AT AMENIA, ND

LOCATION.--Lat 47°01'00", long 97°12'50", in SE¹₄NW¹₄ sec.24, T.141 N., R.52 W., Cass County, Hydrologic Unit 09020204, on left bank on downstream side of bridge on State Highway 18 and 0.6 mi north of Amenia.

DRAINAGE AREA.--116 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1946 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 943 ft above National Geodetic Vertical Datum of 1929, from topographic map. See WSP 1913 for history of changes prior to June 10, 1961.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.39	2.8	e1.7	e1.3	e0.44	e0.01	e0.20	5.2	1.0	70	3.9	0.00
2	0.38	2.7	e1.5	e1.3	e0.46	e0.00	e0.20	4.5	0.75	51	e3.0	0.00
3	0.37	2.4	e1.4	e1.3	e0.46	e0.00	e0.20	4.0	0.63	40	e2.0	0.00
4	0.37	2.2	e1.3	e1.3	e0.46	e0.00	e0.20	5.7	0.48	35	1.3	0.00
5	0.38	2.1	e1.2	e1.3	e0.46	e0.00	e0.50	28	0.50	26	1.1	0.00
6	0.48	2.2	e1.2	e1.3	e0.46	e0.00	e3.0	78	0.55	25	0.67	0.00
7	0.51	2.3	e1.2	e1.3	e0.41	e0.00	e6.0	74	0.76	20	0.47	0.00
8	0.45	2.4	e1.1	e1.2	e0.37	e0.00	e7.0	57	0.84	14	0.31	0.00
9	0.42	2.7	e1.1	e1.2	e0.34	e0.00	e5.4	42	0.94	14	0.21	0.00
10	0.42	3.3	e1.2	e1.2	e0.31	e0.00	4.2	42	0.95	18	0.28	0.00
11	0.45	3.4	1.3	e1.1	e0.28	e0.00	4.7	35	1.0	21	0.17	0.00
12	0.45	3.2	1.3	e0.94	e0.26	e0.00	6.1	29	1.1	24	0.08	e0.00
13	0.67	2.7	1.4	e0.86	e0.25	e0.00	6.9	25	1.3	19	0.03	e0.00
14	0.93	2.5	1.4	e0.80	e0.24	e0.00	6.5	19	1.4	14	0.02	0.00
15	1.2	2.5	1.4	e0.75	e0.23	e0.50	6.9	15	1.1	8.6	0.00	0.00
16	1.5	2.2	1.6	e0.72	e0.21	e1.0	7.4	12	0.82	6.7	0.00	e0.00
17	1.4	2.1	1.5	e0.68	e0.20	e2.0	7.6	11	0.62	14	0.00	0.00
18	1.4	2.1	1.6	e0.63	e0.19	26	8.2	14	0.55	35	0.00	0.00
19	1.3	2.0	1.7	e0.58	e0.18	24	9.8	29	0.48	e14	0.00	0.00
20	1.7	2.0	1.7	e0.52	e0.17	17	12	45	0.50	e9.0	0.00	1.3
21	2.9	e2.2	e1.7	e0.49	e0.15	15	12	35	0.59	e7.0	0.00	15
22	3.3	e2.4	e1.5	e0.46	e0.13	15	11	19	0.44	6.2	0.00	9.8
23	2.9	e2.8	e1.5	e0.44	e0.12	e12	8.7	9.7	0.56	5.9	0.00	6.0
24	3.4	e2.8	e1.4	e0.42	e0.11	e6.0	7.6	6.5	3.3	5.6	0.00	3.4
25	2.7	e2.6	e1.4	e0.40	e0.10	e4.0	6.6	7.6	210	5.0	0.00	1.8
26	2.3	e2.3	e1.4	e0.40	e0.08	e2.0	5.9	5.9	e540	4.8	0.00	1.00
27	2.1	e2.1	e1.4	e0.38	e0.05	e1.0	5.3	4.0	e300	4.7	0.00	0.75
28	2.1	e2.0	e1.4	e0.38	e0.02	e0.70	5.0	3.0	e180	4.4	0.00	0.65
29	2.5	e1.8	e1.4	e0.38	---	e0.50	5.4	2.2	e110	4.3	0.00	0.51
30	2.8	e1.7	e1.3	e0.40	---	e0.40	5.1	1.7	e90	4.6	0.00	0.30
31	3.0	---	e1.3	e0.42	---	e0.30	---	1.3	---	4.2	0.00	---
TOTAL	45.17	72.5	43.5	24.85	7.14	145.41	175.60	670.3	1,451.16	535.0	13.54	40.51
MEAN	1.46	2.42	1.40	0.80	0.26	4.69	5.85	21.6	48.4	17.3	0.44	1.35
MAX	3.4	3.4	1.7	1.3	0.46	26	12	78	540	70	3.9	15
MIN	0.37	1.7	1.1	0.38	0.02	0.00	0.20	1.3	0.44	4.2	0.00	0.00
AC-FT	90	144	86	49	14	288	348	1,330	2,880	1,060	27	80

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2003, BY WATER YEAR (WY)

MEAN	2.19	1.62	0.64	0.23	1.78	28.3	70.7	14.4	14.0	11.8	1.38	2.18
MAX	50.7	22.1	12.5	2.84	84.2	200	531	81.3	123	168	22.3	47.3
(WY)	(1995)	(2001)	(1999)	(1997)	(1998)	(1999)	(1997)	(1950)	(1998)	(1993)	(1993)	(1996)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	1.12	0.12	0.009	0.000	0.000	0.000
(WY)	(1949)	(1953)	(1950)	(1947)	(1947)	(1948)	(1981)	(1955)	(1988)	(1955)	(1946)	(1946)

05060500 RUSH RIVER AT AMENIA, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1946 - 2003	
ANNUAL TOTAL	1,392.25		3,224.68			
ANNUAL MEAN	3.81		8.83		12.4	
HIGHEST ANNUAL MEAN					62.9	1997
LOWEST ANNUAL MEAN					0.68	1977
HIGHEST DAILY MEAN	243	Jul 10	540	Jun 26	3,160	Apr 19, 1979
LOWEST DAILY MEAN	0.00	Jul 2	0.00	Mar 2	0.00	Aug 1, 1946
ANNUAL SEVEN-DAY MINIMUM	0.03	Jul 1	0.00	Mar 2	0.00	Aug 1, 1946
MAXIMUM PEAK FLOW			613	Jun 26	a3,490	Apr 19, 1979
MAXIMUM PEAK STAGE			8.24	Jun 26	b12.15	Mar 23, 1966
ANNUAL RUNOFF (AC-FT)	2,760		6,400		8,990	
10 PERCENT EXCEEDS	4.7		16		16	
50 PERCENT EXCEEDS	1.4		1.3		0.20	
90 PERCENT EXCEEDS	0.30		0.00		0.00	

a Gage height, 10.37 ft
b Backwater from ice
e Estimated

RED RIVER OF THE NORTH BASIN
05060500 RUSH RIVER AT AMENIA, ND—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
NOV 07...	1205	2.4	--	--	--	823	--	2.0	--	--	--	--	--
DEC 30...	1240	1.4	--	--	--	563	-6.5	--	--	--	--	--	--
JAN 30...	1205	0.39	--	--	--	1,920	0.0	0.0	--	--	--	--	--
MAR 21...	1545	14	--	--	--	652	8.0	1.0	--	--	--	--	--
APR 08...	1045	7.1	8.0	8.1	865	900	12.5	2.0	390	90.0	40.0	11.0	0.8
MAY 09...	0830	41	--	--	--	1,230	8.0	12.0	--	--	--	--	--
JUN 25...	1015	143	--	--	--	834	14.0	19.0	--	--	--	--	--
JUN 26...	1305	596	--	--	--	414	21.0	16.5	--	--	--	--	--
JUL 02...	0915	53	--	--	--	685	26.0	24.0	--	--	--	--	--
AUG 11...	1320	0.17	8.1	7.9	1,090	1,110	27.5	26.0	540	124	56.6	11.1	0.9

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
NOV 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 21...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 08...	37.0	18	244	16.0	0.20	--	240	580	11.6	604	5.0	30	<1
MAY 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 26...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 02...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 11...	49.1	16	315	14.7	0.29	24.6	292	739	0.35	--	21.9	<10	<1

05060500 RUSH RIVER AT AMENIA, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
NOV 07...	--	--	--	--	--	--
DEC 30...	--	--	--	--	--	--
JAN 30...	--	--	--	--	--	--
MAR 21...	--	--	--	--	--	--
APR 08...	70	170	<0.10	<1	<1	390
MAY 09...	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--
JUN 26...	--	--	--	--	--	--
JUL 02...	--	--	--	--	--	--
AUG 11...	90	830	<0.20	4	6	560

Remark codes used in this table:

< -- Less than

05064500 RED RIVER OF THE NORTH AT HALSTAD, MN

LOCATION.--Lat 47°21'10", long 96°50'50", sec.25, T.145 N., R.49 W., Traill County, Hydrologic Unit 09020107, on left bank on downstream side of highway bridge, 0.5 mi west of Halstad, MN, 2.5 mi downstream from Wild Rice River, and at mile 375.2.

DRAINAGE AREA.--21,800 mi², approximately, including 3,800 mi² in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1936 to June 1937 (no winter records), April 1942 to September 1960 (spring and summer months only), May 1961 to current year.

REVISED RECORDS.--WSP 1388: 1936, 1950. WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 826.65 ft above National Geodetic Vertical Datum of 1929. Prior to July 17, 1961, nonrecording gage at same site and datum.

REMARKS.--Records good except for estimated daily discharges, which are poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1897 reached a stage of about 38.5 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	953	899	e1,060	e785	e555	e495	2,320	1,940	2,640	11,200	1,900	254
2	905	875	e1,090	e780	e560	e490	2,130	1,880	2,480	10,700	1,740	281
3	926	851	e1,100	e775	e565	e490	1,880	1,820	2,330	10,200	1,690	291
4	933	885	e1,090	e760	e570	e490	1,700	1,770	2,170	9,490	1,630	290
5	924	906	e1,080	e750	e565	e490	1,600	1,780	2,020	8,260	1,530	275
6	967	949	e1,070	e755	e560	e475	1,500	1,970	1,900	6,720	1,430	266
7	975	948	e1,060	e760	e560	e465	1,430	2,280	1,870	5,480	1,340	261
8	967	937	e1,040	e765	e555	e460	1,520	2,380	2,260	4,670	1,240	261
9	910	947	e1,030	e765	e550	e455	1,640	2,530	2,220	4,190	1,180	252
10	889	953	e1,020	e765	e540	e455	1,700	3,270	2,020	4,080	1,140	242
11	923	962	e1,030	e750	e535	e450	1,680	3,740	2,050	4,070	1,120	228
12	909	948	e1,030	e750	e530	e450	1,610	3,820	2,250	4,100	1,090	225
13	928	923	e1,030	e745	e530	e450	1,560	3,800	2,420	4,420	1,050	244
14	937	844	e1,020	e735	e525	e445	1,530	3,770	2,470	4,540	1,020	261
15	920	e850	e1,020	e725	e520	e447	1,520	3,730	2,390	4,380	986	353
16	902	e865	e1,010	e705	e520	e478	1,490	3,610	2,180	4,140	956	307
17	897	e920	e1,000	e690	e525	e566	1,480	3,600	2,020	3,850	913	276
18	903	e980	e965	e665	e530	e896	1,590	3,640	1,930	3,560	830	284
19	920	e1,030	e920	e655	e530	e1,380	1,720	3,950	1,820	3,320	741	288
20	941	e1,060	e870	e640	e530	e1,950	2,000	4,230	1,740	3,130	682	329
21	932	e1,090	e825	e630	e530	e2,230	2,350	4,450	1,650	2,930	631	346
22	941	e1,070	e780	e600	e520	e2,250	2,630	4,520	1,560	2,710	556	349
23	941	e1,030	e740	e580	e520	e2,080	2,830	4,210	1,650	2,530	450	358
24	943	e1,020	e700	e565	e510	e1,930	2,800	3,860	3,820	2,430	357	359
25	955	e1,020	e695	e555	e505	e1,960	2,620	3,680	6,440	2,410	313	349
26	962	e990	e705	e555	e500	e2,610	2,440	3,480	8,720	2,390	321	330
27	960	e1,030	e730	e550	e500	e3,380	2,290	3,260	10,100	2,310	345	318
28	958	e1,060	e775	e550	e500	e4,160	2,150	3,140	11,100	2,240	337	307
29	959	e1,050	e800	e550	---	e4,150	2,040	3,050	11,800	2,210	312	297
30	981	e1,060	e800	e545	---	e3,540	1,980	2,930	11,700	2,150	291	281
31	967	---	e795	e545	---	2,780	---	2,790	---	2,050	267	---
TOTAL	29,028	28,952	28,880	20,945	14,940	43,347	57,730	98,880	111,720	140,860	28,388	8,762
MEAN	936	965	932	676	534	1,398	1,924	3,190	3,724	4,544	916	292
MAX	981	1,090	1,100	785	570	4,160	2,830	4,520	11,800	11,200	1,900	359
MIN	889	844	695	545	500	445	1,430	1,770	1,560	2,050	267	225
AC-FT	57,580	57,430	57,280	41,540	29,630	85,980	114,500	196,100	221,600	279,400	56,310	17,380

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2003, BY WATER YEAR (WY)

MEAN	891	908	677	532	569	2,588	7,992	4,045	3,152	3,083	1,232	877
MAX	2,875	5,707	2,413	1,240	1,952	9,444	38,460	15,570	10,480	20,060	11,700	4,705
(WY)	(1995)	(2001)	(2001)	(2001)	(1998)	(1995)	(1997)	(1997)	(2000)	(1975)	(1993)	(1999)
MIN	61.5	92.3	51.2	32.1	45.9	249	705	449	242	153	59.5	38.4
(WY)	(1977)	(1977)	(1977)	(1977)	(1977)	(1962)	(1981)	(1977)	(1977)	(1988)	(1977)	(1976)

05064500 RED RIVER OF THE NORTH AT HALSTAD, MN—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1961 - 2003	
ANNUAL TOTAL	882,503		612,432			
ANNUAL MEAN	2,418		1,678		2,227	
HIGHEST ANNUAL MEAN					6,028	1997
LOWEST ANNUAL MEAN					214	1977
HIGHEST DAILY MEAN	14,900	Jul 14	11,800	Jun 29	69,900	Apr 19, 1997
LOWEST DAILY MEAN	695	Dec 25	225	Sep 12	10	Sep 2, 1976
ANNUAL SEVEN-DAY MINIMUM	732	Dec 22	245	Sep 7	17	Aug 28, 1976
MAXIMUM PEAK FLOW			11,900	Jun 30	71,500	Apr 19, 1997
MAXIMUM PEAK STAGE			18.62	Jun 30	40.74	Apr 19, 1997
INSTANTANEOUS LOW FLOW					5.4	Oct 8, 1936
ANNUAL RUNOFF (AC-FT)	1,750,000		1,215,000		1,613,000	
10 PERCENT EXCEEDS	4,950		3,730		4,920	
50 PERCENT EXCEEDS	1,290		967		910	
90 PERCENT EXCEEDS	820		358		231	

e Estimated

05064500 RED RIVER OF THE NORTH AT HALSTAD, MN—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd, mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd, mg/L as N (00610)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite + nitrate water unfltrd, mg/L as N (00630)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd, mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd, mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)
NOV 05...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 05...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 14...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 03...	411	--	--	--	--	--	--	--	--	--	--	--	--
AUG 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 16...	--	0.59	0.48	<0.010	<0.010	0.610	0.590	0.201	0.195	0.263	1.2	1.1	12.7
SEP 30...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
NOV 05...	--	--	--	--	--	--	--	--	--	--
DEC 27...	--	--	--	--	--	--	--	--	--	--
FEB 05...	--	--	--	--	--	--	--	--	--	--
MAR 14...	--	--	--	--	--	--	--	--	--	--
APR 03...	--	3.0	20	1	30	30	<0.10	1	<1	190
AUG 11...	--	7.2	<10	<1	40	<10	<0.20	4	<1	280
AUG 28...	--	--	--	--	--	--	--	--	--	--
SEP 16...	1.3	--	10	--	--	<10	--	--	--	--
SEP 30...	--	--	--	--	--	--	--	--	--	--

Remark codes used in this table:
 < -- Less than

RED RIVER OF THE NORTH BASIN

05064500 RED RIVER OF THE NORTH AT HALSTAD, MN—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	13.2	13.1	13.2	2.4	1.6	2.0	0.4	0.3	0.3	---	---	---
2	13.2	12.7	13.0	1.7	1.3	1.5	0.3	0.3	0.3	---	---	---
3	12.8	12.2	12.5	1.3	1.0	1.2	0.3	0.2	0.2	---	---	---
4	12.3	11.9	12.1	1.2	1.0	1.0	0.2	0.1	0.2	---	---	---
5	11.9	11.2	11.5	1.2	1.1	1.2	0.2	0.1	0.1	---	---	---
6	11.3	10.8	11.0	1.2	1.2	1.2	---	---	---	---	---	---
7	10.9	10.3	10.6	---	---	---	---	---	---	---	---	---
8	10.4	10.3	10.4	---	---	---	---	---	---	---	---	---
9	10.3	10.0	10.2	2.0	1.7	1.8	---	---	---	---	---	---
10	10.1	9.8	9.9	2.1	2.0	2.1	---	---	---	---	---	---
11	10.4	9.9	10.2	2.1	1.7	1.9	---	---	---	---	---	---
12	10.7	10.4	10.6	1.7	1.4	1.5	---	---	---	---	---	---
13	10.7	10.2	10.4	1.4	0.9	1.2	---	---	---	---	---	---
14	10.2	9.6	9.9	1.1	0.8	0.9	---	---	---	---	---	---
15	9.8	9.3	9.5	0.8	0.5	0.6	---	---	---	---	---	---
16	9.3	8.8	9.0	1.0	0.4	0.5	---	---	---	---	---	---
17	8.8	8.1	8.4	0.8	0.5	0.7	---	---	---	---	---	---
18	8.1	7.6	7.8	0.7	0.5	0.6	---	---	---	---	---	---
19	7.6	6.8	7.3	0.6	0.5	0.5	---	---	---	---	---	---
20	6.8	6.2	6.5	0.5	0.5	0.5	---	---	---	---	---	---
21	6.2	5.7	6.0	0.6	0.5	0.6	---	---	---	---	---	---
22	5.7	5.3	5.5	0.6	0.5	0.6	---	---	---	---	---	---
23	5.3	4.9	5.1	0.5	0.4	0.4	---	---	---	---	---	---
24	4.9	4.5	4.7	0.6	0.4	0.5	---	---	---	---	---	---
25	4.5	4.1	4.3	0.5	0.5	0.5	---	---	---	---	---	---
26	4.1	3.7	3.9	0.5	0.5	0.5	---	---	---	---	---	---
27	3.8	3.6	3.8	0.5	0.4	0.4	---	---	---	---	---	---
28	3.6	3.6	3.6	0.6	0.4	0.6	---	---	---	---	---	---
29	3.7	3.6	3.7	0.6	0.5	0.6	---	---	---	---	---	---
30	3.7	3.2	3.5	0.5	0.4	0.5	---	---	---	---	---	---
31	3.2	2.4	2.8	---	---	---	---	---	---	---	---	---
MONTH	13.2	2.4	8.1	2.4	0.4	0.9	0.4	0.1	0.2	---	---	---
	FEBRUARY			MARCH			APRIL			MAY		
	1	---	---	---	---	---	---	---	---	12.8	12.3	12.6
2	---	---	---	---	---	---	---	---	---	13.2	12.8	13.0
3	---	---	---	---	---	---	---	---	---	13.5	13.2	13.4
4	---	---	---	---	---	---	---	---	---	13.7	13.4	13.6
5	---	---	---	---	---	---	---	---	---	13.7	13.6	13.7
6	---	---	---	---	---	---	---	---	---	13.7	13.3	13.5
7	---	---	---	---	---	---	---	---	---	13.3	12.1	12.6
8	---	---	---	---	---	---	---	---	---	12.1	12.0	12.1
9	---	---	---	---	---	---	---	---	---	12.2	12.1	12.2
10	---	---	---	---	---	---	7.1	5.8	6.4	12.2	11.8	12.0
11	---	---	---	---	---	---	8.7	6.1	6.9	11.9	11.8	11.9
12	---	---	---	---	---	---	10.0	8.3	9.2	11.8	11.6	11.7
13	---	---	---	---	---	---	10.0	9.3	9.7	11.6	11.5	11.6
14	---	---	---	---	---	---	10.7	9.9	10.2	11.9	11.6	11.7
15	---	---	---	---	---	---	11.4	10.5	10.9	12.0	11.6	11.8
16	---	---	---	---	---	---	11.3	11.0	11.2	12.5	11.9	12.1
17	---	---	---	---	---	---	11.0	10.3	10.5	13.4	12.5	13.1
18	---	---	---	---	---	---	10.3	9.7	9.9	13.5	12.9	13.2
19	---	---	---	---	---	---	9.7	9.0	9.4	13.6	13.3	13.5
20	---	---	---	---	---	---	9.0	8.5	8.7	13.5	12.9	13.0
21	---	---	---	---	---	---	8.5	8.3	8.4	13.1	12.9	13.0
22	---	---	---	---	---	---	8.3	8.2	8.3	13.7	12.9	13.3
23	---	---	---	---	---	---	8.7	8.3	8.5	14.0	13.3	13.6
24	---	---	---	---	---	---	9.2	8.7	8.9	14.6	14.0	14.4
25	---	---	---	---	---	---	9.8	9.2	9.5	14.6	14.2	14.5
26	---	---	---	---	---	---	10.6	9.8	10.2	15.0	14.3	14.7
27	---	---	---	---	---	---	11.4	10.6	11.0	15.4	14.9	15.1
28	---	---	---	---	---	---	12.0	11.4	11.7	15.6	15.2	15.5
29	---	---	---	---	---	---	12.4	12.0	12.2	16.2	15.6	15.9
30	---	---	---	---	---	---	12.6	12.3	12.4	16.4	15.5	15.9
31	---	---	---	---	---	---	---	---	---	16.8	15.9	16.4
MONTH	---	---	---	---	---	---	12.6	5.8	9.7	16.8	11.5	13.4

RED RIVER OF THE NORTH BASIN

05064500 RED RIVER OF THE NORTH AT HALSTAD, MN—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	672	656	667	777	742	757	913	882	898	---	---	---
2	687	671	680	778	767	773	893	861	876	---	---	---
3	681	675	678	768	725	751	861	857	859	---	---	---
4	711	674	693	738	714	728	877	860	867	---	---	---
5	730	711	723	722	705	713	914	877	896	---	---	---
6	726	711	721	714	699	708	---	---	---	---	---	---
7	730	712	719	730	713	721	---	---	---	---	---	---
8	726	714	719	728	719	724	---	---	---	---	---	---
9	715	687	706	728	721	725	---	---	---	---	---	---
10	707	687	696	734	727	731	---	---	---	---	---	---
11	709	688	701	735	728	731	---	---	---	---	---	---
12	706	691	703	738	733	736	---	---	---	---	---	---
13	716	706	711	742	728	739	---	---	---	---	---	---
14	733	716	725	743	720	733	---	---	---	---	---	---
15	741	733	738	827	743	777	---	---	---	---	---	---
16	746	722	740	937	827	889	---	---	---	---	---	---
17	723	708	713	928	822	869	---	---	---	---	---	---
18	721	709	713	833	808	816	---	---	---	---	---	---
19	741	721	730	817	800	808	---	---	---	---	---	---
20	759	741	748	801	763	786	---	---	---	---	---	---
21	785	759	774	763	689	729	---	---	---	---	---	---
22	786	782	784	691	672	681	---	---	---	---	---	---
23	786	776	783	713	690	705	---	---	---	---	---	---
24	779	769	776	722	712	718	---	---	---	---	---	---
25	769	766	767	718	707	713	---	---	---	---	---	---
26	767	765	766	769	718	742	---	---	---	---	---	---
27	774	766	769	854	769	811	---	---	---	---	---	---
28	775	765	772	858	810	834	---	---	---	---	---	---
29	765	758	763	896	856	870	---	---	---	---	---	---
30	758	738	750	910	891	901	---	---	---	---	---	---
31	742	729	734	---	---	---	---	---	---	---	---	---
MONTH	786	656	731	937	672	764	914	857	879	---	---	---
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	680	645	658	---	---	---
11	---	---	---	---	---	---	689	649	663	---	---	---
12	---	---	---	---	---	---	692	667	684	---	---	---
13	---	---	---	---	---	---	757	691	725	---	---	---
14	---	---	---	---	---	---	762	754	757	---	---	---
15	---	---	---	---	---	---	754	727	745	---	---	---
16	---	---	---	---	---	---	727	719	723	---	---	---
17	---	---	---	---	---	---	725	719	722	---	---	---
18	---	---	---	---	---	---	723	705	715	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	762	645	710	---	---	---

RED RIVER OF THE NORTH BASIN

05064900 BEAVER CREEK NEAR FINLEY, ND
(Hydrologic benchmark network station)LOCATION.--Lat 47°35'40", long 97°42'18", in NE¹/₄ sec.31, T.148 N., R.55 W., Steele County, Hydrologic Unit 09020109, on right bank 500 ft upstream from bridge on county highway and 7 mi northeast of Finley.DRAINAGE AREA.--160 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1964 to September 2003 (discontinued).

GAGE.--Water-stage recorder and concrete broad-crested weir. Datum of gage is 1,170.08 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those below 1.0 ft³/s and those for estimated daily discharges, which are poor. Since June 1987, some regulation by flood control dam 2.0 mi upstream.DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.87	0.02	e0.00	e0.00	e0.00	e0.00	e6.0	3.8	7.5	1.6	1.9	0.00
2	0.83	0.01	e0.00	e0.00	e0.00	e0.00	7.0	3.5	6.4	1.3	1.6	0.00
3	0.85	0.00	e0.00	e0.00	e0.00	e0.00	14	5.8	5.7	1.2	1.1	0.00
4	0.88	0.00	e0.00	e0.00	e0.00	e0.00	5.2	53	5.0	0.92	1.0	0.00
5	0.84	0.00	e0.00	e0.00	e0.00	e0.00	4.1	135	4.4	0.77	1.4	0.00
6	1.0	0.00	e0.00	e0.00	e0.00	e0.00	3.5	64	4.1	1.3	1.1	0.00
7	1.0	0.00	e0.00	e0.00	e0.00	e0.00	3.4	41	4.5	1.2	0.83	0.00
8	0.98	0.00	e0.00	e0.00	e0.00	e0.00	3.4	31	7.5	0.86	0.65	0.00
9	0.88	0.01	e0.00	e0.00	e0.00	e0.00	3.6	26	12	3.9	0.62	0.00
10	0.91	0.07	e0.00	e0.00	e0.00	e0.00	4.1	27	12	12	0.96	0.00
11	0.86	0.05	e0.00	e0.00	e0.00	e0.00	4.5	25	12	34	0.83	0.00
12	0.79	0.05	e0.00	e0.00	e0.00	e0.00	6.9	21	13	27	0.61	0.00
13	0.72	0.04	e0.00	e0.00	e0.00	e0.00	9.4	18	13	22	0.42	0.00
14	0.68	e0.03	e0.00	e0.00	e0.00	e0.20	11	16	12	27	0.24	0.00
15	0.56	e0.03	e0.00	e0.00	e0.00	e1.0	11	14	11	29	0.06	0.00
16	0.44	e0.02	e0.00	e0.00	e0.00	e10	9.7	13	9.8	27	0.00	0.00
17	0.42	0.01	e0.00	e0.00	e0.00	e35	8.3	13	9.0	22	0.00	0.00
18	0.51	0.03	e0.00	e0.00	e0.00	e28	7.1	14	5.6	15	0.00	0.00
19	0.52	0.03	e0.00	e0.00	e0.00	e23	6.8	18	3.8	13	0.00	0.00
20	0.46	0.05	e0.00	e0.00	e0.00	e19	6.4	25	7.7	12	0.00	0.00
21	0.40	0.09	e0.00	e0.00	e0.00	e16	6.0	24	14	11	0.00	0.00
22	0.33	0.08	e0.00	e0.00	e0.00	e13	6.2	22	12	11	0.00	0.00
23	0.27	0.08	e0.00	e0.00	e0.00	e11	6.0	20	11	9.9	0.00	0.00
24	0.23	e0.05	e0.00	e0.00	e0.00	e11	5.6	20	8.6	8.9	0.00	0.00
25	0.17	e0.00	e0.00	e0.00	e0.00	e10	5.6	18	7.2	7.7	0.00	0.00
26	0.15	e0.00	e0.00	e0.00	e0.00	e9.2	5.1	15	5.1	6.3	0.00	0.00
27	0.12	e0.00	e0.00	e0.00	e0.00	e8.5	5.0	13	4.6	5.2	0.00	0.00
28	0.14	e0.00	e0.00	e0.00	e0.00	e7.8	4.8	12	4.1	4.2	0.00	0.00
29	0.12	e0.00	e0.00	e0.00	---	e7.1	4.8	11	3.2	3.3	0.00	0.00
30	0.07	e0.00	e0.00	e0.00	---	e6.5	4.4	9.8	2.3	2.8	0.00	0.00
31	0.04	---	e0.00	e0.00	---	e6.2	---	8.4	---	2.1	0.00	---
TOTAL	17.04	0.75	0.00	0.00	0.00	222.50	188.9	740.3	238.1	325.45	13.32	0.00
MEAN	0.55	0.025	0.000	0.000	0.000	7.18	6.30	23.9	7.94	10.5	0.43	0.000
MAX	1.0	0.09	0.00	0.00	0.00	35	14	135	14	34	1.9	0.00
MIN	0.04	0.00	0.00	0.00	0.00	0.00	3.4	3.5	2.3	0.77	0.00	0.00
AC-FT	34	1.5	0.00	0.00	0.00	441	375	1,470	472	646	26	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2003, BY WATER YEAR (WY)

MEAN	1.80	1.63	0.30	0.087	0.56	25.7	58.8	15.6	11.7	13.1	3.97	2.12
MAX	30.3	25.4	4.33	1.06	7.90	151	252	89.1	150	116	43.4	21.2
(WY)	(1995)	(1995)	(1995)	(1995)	(1998)	(1995)	(1996)	(1999)	(2000)	(2000)	(1994)	(1993)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.19	0.042	0.001	0.000	0.000	0.000
(WY)	(1968)	(1968)	(1965)	(1965)	(1965)	(1965)	(1981)	(1977)	(1980)	(1972)	(1969)	(1967)

05064900 BEAVER CREEK NEAR FINLEY, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1965 - 2003	
ANNUAL TOTAL	1,483.32		1,746.36			
ANNUAL MEAN	4.06		4.78		11.3	
HIGHEST ANNUAL MEAN					36.2	1995
LOWEST ANNUAL MEAN					0.12	1977
HIGHEST DAILY MEAN	101	Jul 11	135	May 5	1,540	Apr 19, 1979
LOWEST DAILY MEAN	0.00	Jan 26	0.00	Nov 3	0.00	Nov 21, 1964
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 26	0.00	Nov 25	0.00	Nov 21, 1964
MAXIMUM PEAK FLOW			204	May 5	a1,900	Apr 19, 1979
MAXIMUM PEAK STAGE			4.20	May 5	b10.79	Apr 11, 1996
ANNUAL RUNOFF (AC-FT)	2,940		3,460		8,180	
10 PERCENT EXCEEDS	10		13		22	
50 PERCENT EXCEEDS	0.90		0.12		0.25	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

a Gage height, 8.35 ft; backwater from ice

b Backwater from ice

e Estimated

RED RIVER OF THE NORTH BASIN
05064900 BEAVER CREEK NEAR FINLEY, ND—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
MAR 17...	1110	19	--	--	--	583	0.0	0.0	--	--	--	--	--
APR 02...	1020	6.7	8.4	--e	902	962	-3.5	0.0	310	64.0	36.0	17.0	2
MAY 05...	1055	137	--	--	--	1,070	7.5	9.5	--	--	--	--	--
MAY 13...	1315	18	--	--	--	1,910	19.0	12.0	--	--	--	--	--
JUL 07...	1635	1.1	--	--	--	1,640	20.0	25.0	--	--	--	--	--
AUG 15...	1035	218	8.2	8.2	1,980	2,020	27.0	24.0	680	129	85.5	13.0	4

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat fltrd mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
MAR 17...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 02...	71.0	32	146	32.0	0.10	--	280	588	11.6	642	4.0	30	7
MAY 05...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 15...	243	43	401	36.5	0.26	15.4	683	1,430	852	--	18.5	20	<1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
MAR 17...	--	--	--	--	--	--
APR 02...	50	190	<0.10	<1	1	390
MAY 05...	--	--	--	--	--	--
MAY 13...	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--
AUG 15...	120	500	<0.20	4	8	660

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

05066500 GOOSE RIVER AT HILLSBORO, ND

LOCATION.--Lat 47°24'34", long 97°03'39", in NW¹₄ sec.5, T.145 N., R.50 W., Traill County, Hydrologic Unit 09020109, on right bank 600 ft upstream from Foogman Dam in Hillsboro and 27.5 mi upstream from mouth.

DRAINAGE AREA.--1,203 mi², of which about 110 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1931 to current year (no winter records 1932-34). Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder and masonry dam. Datum of gage is 879.52 ft above National Geodetic Vertical Datum of 1929. Sept. 26, 1941, to Oct. 27, 1965, at site 600 ft downstream at same datum. See WSP 1728 or 1913 for history of changes prior to Sept. 26, 1941.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	67	e30	e23	e13	e5.9	e130	50	144	168	66	e48
2	32	58	e29	e22	e13	e5.6	e114	44	135	159	56	e41
3	30	63	e27	e22	e13	e5.2	e87	44	125	172	54	e33
4	e30	75	e25	e22	e12	e4.9	44	63	113	126	56	e25
5	e31	75	e23	e23	e12	e4.6	68	180	106	107	59	e17
6	e32	77	e23	e23	e12	e4.2	57	726	104	102	52	15
7	33	74	e23	e23	e11	e4.2	65	1,080	147	98	53	16
8	34	74	e22	e23	e11	e3.9	58	983	196	89	56	15
9	35	76	e22	e24	e11	e3.2	59	676	269	101	46	14
10	37	78	e22	e25	e11	e2.9	52	676	275	139	e40	14
11	39	76	e22	e25	e11	e2.9	49	720	231	178	e33	13
12	40	83	e22	e23	e11	e2.9	48	526	219	249	26	13
13	41	65	e22	e21	e11	e2.9	48	384	238	271	26	15
14	45	e65	e22	e19	e11	e3.0	42	288	217	278	33	14
15	69	e60	e22	e19	e11	e5.7	39	245	175	317	24	16
16	69	e51	e23	e18	e10	e11	38	221	147	321	21	14
17	71	e49	e23	e17	e10	e17	39	203	152	315	18	28
18	76	e26	e24	e17	e10	e67	40	195	340	288	17	129
19	75	e20	e24	e15	e11	e186	50	222	359	269	21	258
20	78	e18	e24	e14	e11	e330	57	397	223	228	29	151
21	83	e25	e24	e14	e9.4	e384	64	382	157	194	39	101
22	83	e35	e24	e14	e8.3	e381	70	321	168	168	27	67
23	85	e47	e25	e13	e6.8	e393	68	288	353	137	14	45
24	84	e45	e25	e13	e5.8	e377	66	286	558	102	16	35
25	84	e43	e25	e12	e5.7	e343	63	253	735	88	42	31
26	84	e42	e24	e12	e5.7	e282	58	230	1,120	83	61	25
27	91	e41	e23	e12	e5.9	e247	58	206	797	76	77	21
28	84	e40	e23	e12	e5.9	e206	59	178	492	70	94	20
29	81	e36	e23	e12	---	e159	54	164	341	65	e85	18
30	82	e32	e24	e12	---	e118	50	158	235	65	e74	17
31	75	---	e24	e13	---	e127	---	155	---	64	e54	---
TOTAL	1,846	1,616	738	557	279.5	3,690.0	1,794	10,544	8,871	5,087	1,369	1,269
MEAN	59.5	53.9	23.8	18.0	9.98	119	59.8	340	296	164	44.2	42.3
MAX	91	83	30	25	13	393	130	1,080	1,120	321	94	258
MIN	30	18	22	12	5.7	2.9	38	44	104	64	14	13
AC-FT	3,660	3,210	1,460	1,100	554	7,320	3,560	20,910	17,600	10,090	2,720	2,520

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2003, BY WATER YEAR (WY)

	17.4	20.6	9.14	5.64	9.42	171	509	145	87.7	83.9	26.9	18.5
MEAN	436	469	79.9	47.1	217	1,220	3,412	2,275	954	821	515	326
(WY)	(1995)	(2001)	(1995)	(2001)	(1998)	(1995)	(1997)	(1950)	(2000)	(2002)	(1993)	(1994)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	6.51	1.12	1.35	0.000	0.000	0.000
(WY)	(1939)	(1939)	(1939)	(1939)	(1939)	(1940)	(1938)	(1939)	(1938)	(1940)	(1938)	(1938)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1931 - 2003

ANNUAL TOTAL	51,277		37,660.5	
ANNUAL MEAN	140		103	94.6
HIGHEST ANNUAL MEAN				400
LOWEST ANNUAL MEAN				3.47
HIGHEST DAILY MEAN	4,820	Jul 12	1,120	Jun 26
LOWEST DAILY MEAN	14	Sep 20	2.9	Mar 10
ANNUAL SEVEN-DAY MINIMUM	18	Feb 3	3.1	Mar 8
MAXIMUM PEAK FLOW			1,190	Jun 26
MAXIMUM PEAK STAGE			3.78	Jun 26
ANNUAL RUNOFF (AC-FT)	101,700		74,700	68,510
10 PERCENT EXCEEDS	195		273	152
50 PERCENT EXCEEDS	46		47	6.8
90 PERCENT EXCEEDS	20		11	0.18

e Estimated

05066500 GOOSE RIVER AT HILLSBORO, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd, mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd, mg/L as N (00610)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite + nitrate water unfltrd, mg/L as N (00630)	Organic nitrogen, water, unfltrd, mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd, mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd, mg/L (00600)
NOV 19...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 20...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 07...	596	--	--	--	--	--	--	--	--	--	--	--	--
APR 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 16...	--	0.79	0.85	<0.010	0.032	<0.020	0.020	0.82	0.031	0.029	0.073	0.81	0.87
SEP 30...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
NOV 19...	--	--	--	--	--	--	--	--	--	--	--
JAN 09...	--	--	--	--	--	--	--	--	--	--	--
FEB 27...	--	--	--	--	--	--	--	--	--	--	--
MAR 20...	--	--	--	--	--	--	--	--	--	--	--
APR 07...	--	--	3.0	60	<1	50	330	<0.10	1	1	350
APR 29...	--	--	--	--	--	--	--	--	--	--	--
MAY 27...	--	--	--	--	--	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--	--	--	--	--	--
AUG 11...	--	--	9.4	10	<1	120	680	<0.20	5	4	750
SEP 16...	57.7	5.4	--	30	--	--	400	--	--	--	--
SEP 30...	--	--	--	--	--	--	--	--	--	--	--

Remark codes used in this table:
 < -- Less than

05070000 RED RIVER OF THE NORTH NEAR THOMPSON, ND

LOCATION.--Lat 47°45'32", long 96°56'37", in NW¹₄NE¹₄ sec.5, T.149 N.,R.49 W., Grand Forks County, Hydrologic Unit 09020301, on left bank 50 ft upstream of county highway, 7.6 miles east of Thompson, and at river mile 317.7.

DRAINAGE AREA.--Not determined.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--March 1999 to current year; gage heights and maximum discharge only.

GAGE.--Water stage recorder. Datum of gage is 779.00 ft above National Geodetic Vertical Datum of 1929 (levels by Grand Forks County Highway Department).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 41,000 ft³/s, Apr. 14, 2001, gage height, 57.66 ft; minimum recorded gage height, 15.12 ft., Sept. 12, 2003.

EXTREMES OUTSIDE PERIOD OF RECORD.--A peak stage from floodmarks of 67.74 ft for spring 1997 and 63.66 ft for spring 1979, from U.S. Army Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 12,500 ft³/s, gage height, 32.92 ft on June 30; minimum gage height, 15.12 ft, Sept. 12.

REMARKS.--Gage height for Mar. 12 based on once daily reading by U.S. Geological Survey personnel.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.26	17.32	16.71	16.87	16.21	16.19	23.36	18.72	20.52	32.70	18.67	15.44
2	17.21	17.16	16.68	16.89	16.22	16.14	21.21	18.82	20.18	32.39	18.43	15.41
3	17.15	17.14	16.52	16.89	16.25	16.18	19.86	18.78	19.84	32.02	18.13	15.42
4	17.20	17.16	16.61	16.90	16.27	16.20	18.99	18.81	19.51	31.32	17.96	15.42
5	17.20	17.18	16.73	16.85	16.30	16.20	18.42	18.79	19.20	30.27	17.89	15.41
6	17.21	17.27	16.71	16.76	16.33	16.21	18.14	18.80	18.88	28.68	17.72	15.37
7	17.21	17.32	16.70	16.73	16.36	16.19	17.98	19.43	18.62	26.71	17.52	15.32
8	17.26	17.34	16.66	16.74	16.39	16.16	17.82	20.43	18.62	24.93	17.33	15.29
9	17.39	17.29	16.64	16.76	16.34	16.14	17.89	20.84	19.16	23.64	17.16	15.22
10	17.35	17.34	16.69	16.77	16.27	---	18.15	21.58	19.45	22.79	17.04	15.20
11	17.33	17.27	16.73	16.78	16.23	---	18.27	22.64	19.36	22.49	16.95	15.16
12	17.40	17.24	16.77	16.75	16.21	16.20	18.21	23.04	19.58	22.44	16.89	15.15
13	17.37	17.00	16.85	16.73	16.24	---	18.06	22.90	19.92	22.51	16.83	15.27
14	17.37	16.62	16.91	16.74	16.27	16.21	17.98	22.57	20.23	23.01	16.73	15.25
15	17.43	16.19	16.95	16.69	16.24	16.25	17.90	22.28	20.28	23.21	16.68	15.28
16	17.38	16.31	16.98	16.57	16.21	16.38	17.85	22.00	20.06	23.04	16.63	15.32
17	17.34	16.63	16.98	16.46	16.19	16.68	17.83	21.77	19.71	22.75	16.55	15.68
18	17.36	16.92	16.98	16.43	16.23	17.15	17.78	21.69	19.27	22.33	16.48	16.21
19	17.37	17.06	16.98	16.43	16.22	18.35	18.00	21.86	19.04	21.85	16.36	16.04
20	17.37	17.32	16.99	16.44	16.26	20.11	18.29	22.42	19.03	21.43	16.21	16.06
21	17.40	17.48	16.95	16.41	16.27	21.59	18.75	22.93	18.72	21.04	16.13	16.20
22	17.40	17.49	16.88	16.36	16.27	22.70	19.35	23.37	18.52	20.64	16.01	16.15
23	17.40	17.56	16.84	16.28	16.29	23.54	19.84	23.42	18.94	20.20	15.94	15.96
24	17.40	17.50	16.90	16.23	16.29	24.13	20.16	23.10	19.83	19.82	15.80	15.92
25	17.43	17.23	16.90	16.20	16.28	24.29	20.13	22.61	23.18	19.59	15.63	15.80
26	17.45	16.81	16.85	16.14	16.27	24.06	19.84	22.29	26.69	19.49	15.52	15.73
27	17.42	16.48	16.87	16.13	16.25	24.08	19.54	21.98	30.04	19.41	15.50	15.75
28	17.42	16.44	16.88	16.16	16.21	24.11	19.26	21.74	31.97	19.24	15.59	15.68
29	17.49	16.74	16.86	16.13	---	24.18	18.99	21.46	32.72	19.08	15.64	15.63
30	17.50	16.77	16.86	16.15	---	24.18	18.78	21.17	32.89	18.98	15.58	15.57
31	17.46	---	16.85	16.19	---	23.98	---	20.82	---	18.85	15.51	---
MEAN	17.35	17.05	16.82	16.53	16.26	---	18.89	21.39	21.47	23.45	16.68	15.58
MAX	17.50	17.56	16.99	16.90	16.39	---	23.36	23.42	32.89	32.70	18.67	16.21
MIN	17.15	16.19	16.52	16.13	16.19	---	17.78	18.72	18.52	18.85	15.50	15.15

Miscellaneous discharge measurements for Red River of the North near Thompson

Date	Discharge	Gage height
September 15, 2003	251	15.29

RED RIVER OF THE NORTH BASIN

05080000 RED LAKE RIVER AT FISHER, MN—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 2000 - 2003	
ANNUAL TOTAL	825,907		245,166		1,861	
ANNUAL MEAN	2,263		672		2,591	2001
HIGHEST ANNUAL MEAN					672	2003
LOWEST ANNUAL MEAN					22,200	Apr 10, 2001
HIGHEST DAILY MEAN	14,200	Jun 12	4,060	Jun 27	101	Sep 9, 2003
LOWEST DAILY MEAN	400	Dec 31	101	Sep 9	126	Sep 5, 2003
ANNUAL SEVEN-DAY MINIMUM	433	Dec 25	126	Sep 5	24,500	Apr 10, 2001
MAXIMUM PEAK FLOW			4,210	Jun 27	38.00	Apr 10, 2001
MAXIMUM PEAK STAGE			19.79	Jun 27	1,348,000	
ANNUAL RUNOFF (AC-FT)	1,638,000		486,300		0.33	
ANNUAL RUNOFF (CFSM)	0.40		0.12		4.45	
ANNUAL RUNOFF (INCHES)	5.41		1.61		3,610	
10 PERCENT EXCEEDS	5,580		1,210		1,280	
50 PERCENT EXCEEDS	1,360		520		406	
90 PERCENT EXCEEDS	580		189			

e Estimated.

05082500 RED RIVER OF THE NORTH AT GRAND FORKS, ND

LOCATION.--Lat 47°55'39", long 97°01'40", in sec.2, T.151 N., R.50 W., Polk County, MN, Hydrologic Unit 09020301, on right bank 30 ft downstream from the DeMers Avenue bridge, 0.4 mi downstream from Red Lake River, and at mile 297.6.

DRAINAGE AREA.--30,100 mi², approximately, including 3,800 mi² in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1882 to current year. Prior to January 1904 monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 855: 1936(M). WSP 1115: 1942. WSP 1175: 1897(M). WSP 1388: 1904, 1914-15, 1917-19, 1921-22, 1927, 1950. WSP 1728: Drainage area. WRD-ND-81-1: 1882, 1897 (M).

GAGE.--Acoustic doppler velocity meter and water stage recorder. Datum of gage is 779.00 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1983, to Sept. 30, 1986, datum of gage was 780.00 ft at same site. Apr. 14, 1965, to Sept. 30, 1983, water-stage recorder 1.9 mi downstream at a datum of 778.35 ft. Nov. 3, 1933, to Apr. 13, 1965, water-stage recorder 0.3 mi upstream at 778.35 ft datum. See WSP 1728 or 1913 for history of changes prior to Nov. 3, 1933.

REMARKS.--Records good except those for Nov. 29 to Apr. 3, which are fair and for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,190	2,330	1,590	1,280	e880	628	4,890	2,770	3,550	15,200	2,730	485
2	2,150	2,040	e1,500	1,250	858	615	4,230	3,180	3,340	14,700	2,620	447
3	2,100	2,060	e1,350	1,200	843	628	3,620	3,170	3,140	14,100	2,410	414
4	2,130	2,110	e1,280	1,200	806	e640	3,040	3,180	2,980	13,400	2,190	469
5	2,140	2,140	e1,250	1,170	813	e650	2,610	3,040	2,830	12,400	2,240	456
6	2,150	2,200	e1,250	1,140	e810	e660	2,320	2,800	2,650	10,900	2,130	425
7	2,170	2,340	e1,250	1,180	e800	671	2,230	3,110	2,500	9,150	1,960	400
8	2,240	2,250	e1,280	1,070	e780	661	2,160	3,670	2,530	7,420	1,840	400
9	2,330	2,270	1,300	1,110	e780	633	2,200	3,840	2,800	6,210	1,730	339
10	2,240	2,340	1,340	1,170	e770	650	2,390	e4,200	3,070	5,700	1,680	318
11	2,160	e2,290	1,360	1,100	e760	658	2,510	e5,000	3,030	5,370	1,550	339
12	2,340	e2,200	1,400	1,010	e760	663	2,460	5,710	3,540	5,290	1,500	336
13	2,290	1,980	1,460	e1,020	742	665	2,370	5,450	3,880	5,110	1,460	445
14	2,240	1,370	1,480	e1,000	748	682	2,240	5,320	4,080	5,720	1,420	425
15	2,360	1,240	1,500	e980	656	764	2,110	5,060	4,120	5,850	1,390	389
16	2,300	1,340	1,510	e960	628	805	2,040	4,760	3,900	5,680	1,330	432
17	2,210	1,420	1,500	e940	623	874	2,080	4,550	3,590	5,420	1,250	624
18	2,260	1,550	1,490	e930	722	1,150	2,020	4,430	3,150	5,080	1,210	1,060
19	2,180	1,780	1,480	e920	663	2,450	2,160	e4,400	2,860	4,830	1,130	901
20	2,100	2,060	1,480	e910	643	3,990	2,350	e4,800	2,800	4,610	1,010	812
21	2,180	2,180	1,460	e910	665	4,900	2,630	e5,400	2,730	4,340	939	909
22	2,230	2,190	1,440	e910	655	5,330	3,000	5,850	2,690	4,030	852	906
23	2,260	2,250	1,420	e900	689	5,380	3,350	5,850	2,930	3,620	810	777
24	e2,200	2,240	1,420	e890	690	5,850	3,560	5,590	5,200	3,320	761	587
25	e2,400	e2,000	1,390	e860	682	5,840	3,540	5,180	7,940	3,180	616	546
26	e2,500	e1,600	1,350	e860	640	5,620	3,310	4,820	10,100	3,240	551	625
27	e2,600	1,480	1,340	e860	646	5,250	3,110	4,610	13,400	3,200	481	611
28	2,730	1,500	1,280	e830	701	5,120	2,960	4,460	15,800	3,100	541	620
29	2,720	1,590	1,280	e800	---	5,510	2,750	4,210	16,200	2,930	626	549
30	2,640	1,650	e1,270	e720	---	5,830	2,610	4,020	15,700	2,940	605	528
31	2,480	---	1,270	e780	---	5,800	---	3,810	---	2,860	573	---
TOTAL	71,220	57,990	42,970	30,860	20,453	79,567	82,850	136,240	157,030	198,900	42,135	16,574
MEAN	2,297	1,933	1,386	995	730	2,567	2,762	4,395	5,234	6,416	1,359	552
MAX	2,730	2,340	1,590	1,280	880	5,850	4,890	5,850	16,200	15,200	2,730	1,060
MIN	2,100	1,240	1,250	720	623	615	2,020	2,770	2,500	2,860	481	318
AC-FT	141,300	115,000	85,230	61,210	40,570	157,800	164,300	270,200	311,500	394,500	83,570	32,870

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904 - 2003, BY WATER YEAR (WY)

MEAN	1,504	1,383	1,083	895	874	2,787	10,220	5,583	4,316	3,779	1,893	1,605
MAX	5,127	9,971	3,832	2,656	3,520	15,370	56,210	36,510	19,340	25,270	17,050	11,340
(WY)	(1995)	(2001)	(2001)	(2001)	(1998)	(1995)	(1997)	(1950)	(1962)	(1975)	(1993)	(1999)
MIN	12.1	30.5	17.8	18.8	2.87	42.1	954	373	151	88.8	30.6	20.3
(WY)	(1937)	(1937)	(1937)	(1937)	(1937)	(1937)	(1938)	(1934)	(1934)	(1936)	(1934)	(1936)

RED RIVER OF THE NORTH BASIN

05082500 RED RIVER OF THE NORTH AT GRAND FORKS, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1904 - 2003	
ANNUAL TOTAL	1,990,110		936,789			
ANNUAL MEAN	5,452		2,567		2,979	
HIGHEST ANNUAL MEAN					10,070	1997
LOWEST ANNUAL MEAN					244	1934
HIGHEST DAILY MEAN	37,400	Jul 14	16,200	Jun 29	127,000	Apr 18, 1997
LOWEST DAILY MEAN	1,240	Nov 15	318	Sep 10	1.80	Sep 2, 1977
ANNUAL SEVEN-DAY MINIMUM	1,280	Dec 4	365	Sep 6	2.5	Feb 12, 1937
MAXIMUM PEAK FLOW			17,000	Jun 28	a137,000	Apr 18, 1997
MAXIMUM PEAK STAGE			24.35	Jun 29	b54.35	Apr 22, 1997
ANNUAL RUNOFF (AC-FT)	3,947,000		1,858,000		2,158,000	
10 PERCENT EXCEEDS	14,200		5,300		6,480	
50 PERCENT EXCEEDS	2,720		2,100		1,440	
90 PERCENT EXCEEDS	1,530		631		288	

a Maximum observed, affected by breakout from Red River of the North about 20 mi upstream of gage that entered Red Lake River about 2 mi upstream of confluence with the Red River of the North

b From floodmark

c Estimated

05082500 RED RIVER OF THE NORTH AT GRAND FORKS, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949, 1956 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm 25 degC (90095)	Specif. conductance, wat unflab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)
OCT													
01...	1335	2,170	--	--	--	--	--	--	498	9.0	12.0	--	--
NOV													
05...	1520	2,250	--	--	--	--	--	--	564	--	1.0	--	--
JAN													
06...	1255	1,200	--	--	--	--	--	--	683	--	0.0	--	--
FEB													
13...	1110	746	--	--	--	--	--	--	662	--	0.0	--	--
MAR													
13...	1110	2,790	--	--	--	--	--	--	715	--	0.0	--	--
APR													
04...	1035	3,170	--	--	--	8.0	7.9	566	572	-4.5	0.5	240	52.0
25...	1350	3,690	--	--	--	--	--	--	687	23.5	13.0	--	--
MAY													
23...	0925	6,050	--	--	--	--	--	--	943	13.0	15.5	--	--
JUN													
27...	1210	13,200	--	--	--	--	--	--	949	17.0	19.0	--	--
JUL													
02...	1525	14,700	--	--	--	--	--	--	530	20.0	22.0	--	--
AUG													
08...	1150	1,790	--	--	--	7.6	8.3	792	787	30.0	26.0	310	60.6
28...	1530	584	--	--	--	--	--	--	749	22.5	23.5	--	--
SEP													
15...	1820	389	740	8.5	95	8.4	8.5	802	792	22.5	19.2	360	72.0

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)
OCT													
01...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV													
05...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN													
06...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
13...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR													
13...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
04...	28.0	7.60	0.6	23.0	16	182	16.0	0.10	--	100	336	3,160	369
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN													
27...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
02...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG													
08...	37.5	9.00	1	45.5	24	243	21.3	0.21	17.0	149	471	2,350	--
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP													
15...	43.2	8.40	1	43.2	20	249	22.9	--	--	148	488	512	--

05082500 RED RIVER OF THE NORTH AT GRAND FORKS, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd, mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd, mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd, mg/L as N (00630)	Organic nitrogen, water, unfltrd, mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd, mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd, mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)
OCT 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 05...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 04...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 23...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 02...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 08...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 15...	0.67	0.62	<0.010	0.011	0.030	0.040	0.61	0.079	0.078	0.124	0.69	0.67	14.5

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
OCT 01...	--	--	--	--	--	--	--	--	--	--
NOV 05...	--	--	--	--	--	--	--	--	--	--
JAN 06...	--	--	--	--	--	--	--	--	--	--
FEB 13...	--	--	--	--	--	--	--	--	--	--
MAR 13...	--	--	--	--	--	--	--	--	--	--
APR 04...	--	1.0	60	1	30	30	<0.10	2	1	210
APR 25...	--	--	--	--	--	--	--	--	--	--
MAY 23...	--	--	--	--	--	--	--	--	--	--
JUN 27...	--	--	--	--	--	--	--	--	--	--
JUL 02...	--	--	--	--	--	--	--	--	--	--
AUG 08...	--	6.8	<10	<1	50	<10	<0.20	3	<1	290
AUG 28...	--	--	--	--	--	--	--	--	--	--
SEP 15...	1.2	--	20	--	--	<10	--	--	--	--

Remark codes used in this table:

< -- Less than

05082625 TURTLE RIVER AT TURTLE RIVER STATE PARK NEAR ARVILLA, ND

LOCATION.--Lat 47°55'55", long 97°30'51", in NE¹₄NW¹₄NW¹₄ sec.1, T.151 N., R.54 W., Grand Forks County, Hydrologic Unit 09020307, on right bank 200 ft upstream from U.S. Highway 2, 0.25 mi upstream from Turtle River State Park, 1 mi northwest of Arvilla, and 65 mi above mouth.

DRAINAGE AREA.--311 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 980 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Some regulation by Larimore Dam located 4 mi upstream on the south branch of the Turtle River.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.7	11	12	e9.6	e6.8	e6.5	e38	15	21	13	7.0	2.7
2	9.5	11	12	e9.5	e6.8	e6.4	e35	14	20	13	7.4	2.8
3	9.8	11	e11	e9.5	e6.8	e6.4	e32	15	19	13	7.3	2.3
4	9.8	11	e11	e9.5	e6.7	e6.4	e29	17	18	12	6.6	2.2
5	10	12	e11	e9.5	e6.6	e6.4	e27	22	18	11	6.9	2.3
6	10	11	e11	e9.3	e6.5	e6.3	e26	26	18	11	6.8	2.3
7	10	11	e11	e9.3	e6.4	e6.3	e25	26	19	11	6.3	2.2
8	10	11	e11	e9.3	e6.4	e6.3	e25	26	20	11	5.9	2.1
9	10	11	e11	e9.3	e6.3	e6.3	26	26	20	12	5.8	2.2
10	10	11	e11	e9.0	e6.3	e6.3	28	31	22	13	5.6	3.4
11	11	11	e11	e8.8	e6.2	e6.3	31	35	25	13	5.6	4.6
12	11	10	e11	e8.6	e6.2	e6.2	31	35	27	13	5.3	5.5
13	11	11	e11	e8.4	e6.2	e6.2	29	34	29	13	5.3	6.6
14	11	11	e11	e8.2	e6.2	e6.6	26	31	40	15	5.1	6.4
15	11	11	e10	e8.0	e6.4	e7.0	24	29	43	16	5.2	6.5
16	11	12	e10	e7.8	e6.5	e7.7	22	27	33	15	10	6.3
17	11	11	e10	e7.6	e6.9	e9.0	21	26	29	16	15	6.7
18	11	12	e10	e7.4	e7.0	e12	20	28	25	17	13	7.3
19	11	12	e10	e7.2	e7.2	e7.0	21	34	21	18	4.2	7.2
20	12	12	e10	e7.0	e7.2	e13.0	21	35	19	18	3.4	7.1
21	11	13	e10	e6.9	e7.2	e11.0	22	36	16	17	3.2	7.0
22	11	13	e10	e6.8	e7.1	e9.4	21	35	16	15	2.9	7.3
23	11	12	e10	e6.7	e6.9	e8.3	19	33	15	14	3.4	7.3
24	11	12	e10	e6.6	e6.8	e7.4	19	34	15	12	3.8	6.9
25	11	14	e10	e6.4	e6.8	e6.6	18	32	15	11	3.2	6.6
26	10	13	e9.6	e6.3	e6.8	e6.0	17	29	15	9.5	3.1	6.7
27	11	14	e9.6	e6.2	e6.7	e5.6	17	27	14	8.5	3.3	6.7
28	11	14	e9.6	e6.2	e6.6	e5.1	17	25	14	7.7	3.6	7.0
29	11	13	e9.6	e6.3	---	e4.7	16	24	14	7.1	3.1	6.7
30	11	13	e9.6	e6.5	---	e4.4	15	23	13	6.9	2.9	6.6
31	11	---	e9.6	e6.8	---	e4.2	---	22	---	7.1	2.7	---
TOTAL	329.8	355	323.6	244.5	186.5	1,051.6	718	852	633	389.8	172.9	157.5
MEAN	10.6	11.8	10.4	7.89	6.66	33.9	23.9	27.5	21.1	12.6	5.58	5.25
MAX	12	14	12	9.6	7.2	130	38	36	43	18	15	7.3
MIN	9.5	10	9.6	6.2	6.2	6.2	15	14	13	6.9	2.7	2.1
AC-FT	654	704	642	485	370	2,090	1,420	1,690	1,260	773	343	312

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2003, BY WATER YEAR (WY)

MEAN	16.5	19.2	11.7	9.43	12.2	87.3	160	56.3	123	51.5	25.5	20.6
MAX	70.0	58.3	18.2	13.5	32.3	250	525	192	923	168	84.4	74.7
(WY)	(1995)	(2001)	(2001)	(2001)	(1998)	(1995)	(1997)	(1999)	(2000)	(1997)	(1993)	(1993)
MIN	5.47	7.71	5.59	3.97	4.59	11.5	18.3	12.5	13.8	12.6	5.47	2.80
(WY)	(1993)	(1993)	(1993)	(1993)	(1993)	(1996)	(2000)	(1993)	(1993)	(2003)	(1998)	(1998)

05082625 TURTLE RIVER AT TURTLE RIVER STATE PARK NEAR ARVILLA, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1993 - 2003	
ANNUAL TOTAL	11,058.5		5,414.2			
ANNUAL MEAN	30.3		14.8		49.4	
HIGHEST ANNUAL MEAN					94.7	
LOWEST ANNUAL MEAN					14.8	
HIGHEST DAILY MEAN	696	Jun 11	130	Mar 20	5,000	Jun 13, 2000
LOWEST DAILY MEAN	9.3	Sep 17	2.1	Sep 8	2.1	Sep 8, 2003
ANNUAL SEVEN-DAY MINIMUM	9.6	Sep 12	2.2	Sep 3	2.2	Sep 3, 2003
MAXIMUM PEAK FLOW			a150	bMar 20	12,400	Jun 13, 2000
MAXIMUM PEAK STAGE			c,d5.27	Mar 20	c18.74	Jun 13, 2000
ANNUAL RUNOFF (AC-FT)	21,930		10,740		35,800	
10 PERCENT EXCEEDS	30		29		99	
50 PERCENT EXCEEDS	14		11		14	
90 PERCENT EXCEEDS	10		6.2		7.3	

a About

b On or about

c From floodmark

d Backwater from ice

e Estimated

05082625 TURTLE RIVER AT TURTLE RIVER STATE PARK NEAR ARVILLA, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 07...	--	--	--	--	--	--
NOV 21...	--	--	--	--	--	--
JAN 09...	--	--	--	--	--	--
FEB 12...	--	--	--	--	--	--
FEB 26...	--	--	--	--	--	--
MAR 21...	--	--	--	--	--	--
APR 07...	40	320	<0.10	3	1	310
JUN 04...	--	--	--	--	--	--
JUL 22...	60	160	<0.20	3	2	410
SEP 09...	--	--	--	--	--	--
SEP 30...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

05083500 RED RIVER OF THE NORTH AT OSLO, MN

LOCATION.--Lat 48°11'38", long 97°08'25", in SW¹₄SW¹₄ sec.36, T.154 N., R.50 W., Marshall County, MN, Hydrologic Unit 09020306, on bridge crossing the Red River of the North, 0.5 mi west of Oslo, and at mile 271.2.

DRAINAGE AREA.--31,200 mi², approximately, including 3,800 mi² in closed basins.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--1936-37, 1941-47 (high-water periods only), 1948 to March 1973 (spring and summer months only), October 1984 to September 2001 (peak gage height and discharge only), April 2002 to current year (gage height and maximum discharge only).

GAGE.--Water stage recorder. Datum of gage is 772.79 ft above National Geodetic Vertical Datum of 1929. Prior to September 1959 at datum 5.00 ft higher.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 120,000 ft³/s, Apr. 23, 1997, gage height, 38.00 ft (observed).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 16,500 ft³/s, gage height, 22.08 ft, June 30; minimum gage height, 3.77 ft, Sept. 12.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.49	7.85	7.60	7.45	6.27	6.41	15.67	8.11	10.04	21.70	7.84	4.17
2	7.42	7.47	7.67	7.44	6.32	6.38	14.03	8.66	9.75	21.37	7.67	4.08
3	7.35	7.21	7.60	7.42	6.34	6.36	12.42	9.02	9.45	20.95	7.40	3.94
4	7.22	7.26	7.45	7.40	6.37	6.38	11.87	9.16	9.12	20.40	7.10	3.96
5	7.22	7.37	7.48	7.35	6.42	6.43	10.88	9.13	8.80	19.66	6.94	4.06
6	7.21	7.51	7.55	7.25	6.45	6.44	9.27	8.75	8.52	18.64	6.81	4.04
7	7.24	7.69	7.55	7.11	6.49	6.45	8.27	8.74	8.23	17.14	6.61	3.97
8	7.25	7.71	7.63	7.03	6.53	6.44	7.92	9.41	8.01	15.34	6.41	3.94
9	7.37	7.67	7.73	6.98	6.55	6.42	7.83	10.17	8.16	13.77	6.19	3.90
10	7.45	7.57	7.70	6.98	6.51	6.39	7.99	10.70	8.74	12.62	5.99	3.85
11	7.36	7.57	7.70	7.01	6.44	6.42	8.18	11.57	8.92	11.82	5.84	3.83
12	7.34	7.44	7.72	6.98	6.38	6.46	8.21	12.39	9.35	11.50	5.73	3.80
13	7.37	7.24	7.77	6.90	6.37	6.50	8.04	12.71	10.15	11.39	5.63	3.86
14	7.35	7.01	7.81	6.85	6.39	6.50	7.78	12.57	10.55	11.62	5.53	3.95
15	7.35	7.16	7.82	6.83	6.42	6.61	7.54	12.20	10.76	12.01	5.43	3.96
16	7.35	6.87	7.85	6.73	6.43	6.89	7.36	11.83	10.62	12.07	5.33	3.99
17	7.25	6.78	7.86	6.59	6.41	7.17	7.31	11.46	10.39	12.00	5.28	4.16
18	7.20	6.91	7.82	6.48	6.41	7.63	7.26	11.22	9.78	11.74	5.21	4.94
19	7.20	7.01	7.79	6.42	6.44	9.27	7.30	11.37	9.10	11.36	5.13	5.25
20	7.21	7.43	7.83	6.43	6.44	12.25	7.57	11.57	8.73	10.93	4.99	4.94
21	7.18	7.97	7.86	6.44	6.44	13.92	7.93	12.06	8.56	10.47	4.79	4.97
22	7.20	8.20	7.79	6.40	6.45	15.57	8.48	12.65	8.46	10.05	4.71	5.05
23	7.31	8.18	7.76	6.36	6.47	16.26	9.10	13.01	8.39	9.62	4.70	4.96
24	7.36	8.20	7.75	6.27	6.50	16.66	9.56	12.94	9.66	9.21	4.59	4.77
25	7.47	8.13	7.77	6.18	6.51	16.85	9.72	12.50	13.04	8.86	4.40	4.67
26	7.80	7.75	7.71	6.14	6.51	16.76	9.59	12.03	15.73	8.61	4.19	4.58
27	7.96	7.42	7.61	6.11	6.48	16.58	9.22	11.63	18.30	8.52	4.07	4.45
28	8.03	7.00	7.53	6.12	6.45	16.58	8.86	11.27	20.63	8.42	4.09	4.42
29	8.06	6.76	7.48	6.18	---	16.52	8.55	10.97	21.74	8.26	4.20	4.38
30	8.08	7.23	7.48	6.20	---	16.37	8.27	10.67	21.90	8.11	4.29	4.34
31	8.04	---	7.47	6.21	---	16.41	---	10.42	---	8.00	4.24	---
MEAN	7.44	7.45	7.68	6.72	6.44	10.27	9.07	11.00	11.12	12.78	5.53	4.31
MAX	8.08	8.20	7.86	7.45	6.55	16.85	15.67	13.01	21.90	21.70	7.84	5.25
MIN	7.18	6.76	7.45	6.11	6.27	6.36	7.26	8.11	8.01	8.00	4.07	3.80

Miscellaneous discharge measurements for Red River of the North at Oslo, MN

Date	Discharge
July 3, 2003	13,700
September 15, 2003	435

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1973-77, 1986-96, 1998 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfl lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
JUL 03...	0915	13,700	--	--	--	--	7.6	7.9	537	545	23.5	22.0	250
SEP 15...	1400	435	70	742	9.1	99	8.5	8.6	832	836	16.0	18.0	350

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)
JUL 03...	53.3	27.6	6.80	0.6	20.9	15	158	13.4	0.20	18.9	108	327	12,800
SEP 15...	68.5	44.0	9.20	1	50.8	23	236	28.4	--	--	174	519	608

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd mg/L as N (00630)	Organic nitrogen, water, unfltrd mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)
JUL 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 15...	0.69	0.59	<0.010	0.010	0.160	0.170	0.58	0.066	0.064	0.180	0.85	0.76	29.4

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
JUL 03...	--	4.8	20	<1	30	<10	<0.20	2	1	200
SEP 15...	1.7	--	10	--	--	<10	--	--	--	--

Remark codes used in this table:

< -- Less than

05084000 FOREST RIVER NEAR FORDVILLE, ND

LOCATION.--Lat 48°11'50", long 97°43'49", on line between secs.32 and 33, T.155 N., R.55 W., Walsh County, Hydrologic Unit 09020308, on right bank 50 ft upstream from highway bridge, 0.5 mi downstream from South Branch, and 3 mi southeast of Fordville.

DRAINAGE AREA.--456 mi², of which about 120 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 1,035 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 21, 1951, nonrecording gage at site 50 ft downstream at same datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. Some regulation of high flows by temporary retention in several retarding basins above station. Retarding basins have a combined capacity of about 14,000 acre-ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	16	e15	e14	e8.6	e8.2	77	e52	82	33	32	8.4
2	14	16	e14	e14	e8.5	e8.3	173	e50	78	32	35	8.2
3	14	16	e15	e14	e8.5	e8.2	100	e46	73	35	32	7.7
4	14	15	e15	e14	e8.5	e8.2	83	e47	68	34	31	7.6
5	14	15	e16	e15	e8.5	e8.2	76	e53	65	33	31	7.4
6	14	15	e16	e16	e8.5	e8.2	69	e58	62	29	37	8.0
7	14	15	e16	e16	e8.5	e8.2	60	e59	79	27	37	9.6
8	14	14	e16	e16	e8.5	e8.2	54	59	81	24	30	9.1
9	14	15	e16	e16	e8.4	e8.2	294	59	72	25	28	8.3
10	14	16	e16	e15	e8.4	e8.2	353	98	81	28	26	9.1
11	16	16	e16	e14	e8.4	e8.7	269	117	114	28	26	11
12	17	14	e16	e13	e8.4	e8.5	217	119	129	28	24	10
13	17	16	e16	e12	e8.4	e8.7	184	104	217	29	23	12
14	20	16	e15	e12	e8.4	e9.3	159	95	159	34	21	12
15	21	15	e15	e11	e8.4	e15	140	89	109	37	20	11
16	18	15	e15	e11	e8.4	e51	122	85	97	58	19	10
17	17	15	e15	e10	e8.4	e253	105	82	89	52	19	11
18	18	16	e15	e10	e8.3	e143	92	92	78	49	18	16
19	17	16	e15	e9.8	e8.3	e106	81	189	67	49	17	13
20	17	15	e15	e9.5	e8.3	e96	74	206	61	53	16	12
21	16	14	e15	e9.4	e8.3	e113	74	159	55	54	15	13
22	16	15	e15	e9.2	e8.3	e130	e71	139	54	76	13	14
23	16	13	e14	e9.0	e8.3	e132	e73	126	50	79	14	13
24	16	14	e14	e8.9	e8.3	e102	e72	123	47	72	13	12
25	16	14	e14	e8.8	e8.3	92	e70	122	45	66	12	12
26	16	14	e14	e8.6	e8.3	79	e68	117	45	61	12	11
27	16	14	e14	e8.7	e8.3	76	e65	111	43	55	11	12
28	17	e14	e14	e8.6	e8.2	73	e63	104	41	49	12	12
29	17	e14	e14	e8.5	---	71	e59	97	38	42	11	12
30	16	e15	e14	e8.5	---	57	e55	92	35	37	8.9	13
31	17	---	e14	e8.5	---	54	---	88	---	35	8.5	---
TOTAL	497	448	464	359.0	234.9	1,760.3	3,452	3,037	2,314	1,343	652.4	325.4
MEAN	16.0	14.9	15.0	11.6	8.39	56.8	115	98.0	77.1	43.3	21.0	10.8
MAX	21	16	16	16	8.6	253	353	206	217	79	37	16
MIN	14	13	14	8.5	8.2	8.2	54	46	35	24	8.5	7.4
AC-FT	986	889	920	712	466	3,490	6,850	6,020	4,590	2,660	1,290	645

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2003, BY WATER YEAR (WY)

MEAN	10.6	9.92	8.06	6.94	8.10	66.6	207	69.6	36.5	28.5	13.9	9.32
MAX	57.9	36.5	19.3	16.3	38.4	323	1,182	1,037	255	232	280	53.3
(WY)	(1983)	(2001)	(1998)	(1986)	(1998)	(1995)	(1950)	(1950)	(1964)	(1982)	(1993)	(1993)
MIN	1.52	2.03	2.06	2.70	1.21	4.07	9.46	7.07	2.74	3.34	1.64	0.91
(WY)	(1941)	(1941)	(1941)	(1941)	(1963)	(1941)	(1991)	(1961)	(1940)	(1941)	(1945)	(1940)

RED RIVER OF THE NORTH BASIN

05084000 FOREST RIVER NEAR FORDVILLE, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1940 - 2003	
ANNUAL TOTAL	11,350.8		14,887.0			
ANNUAL MEAN	31.1		40.8		40.0	
HIGHEST ANNUAL MEAN					193	1950
LOWEST ANNUAL MEAN					6.37	1990
HIGHEST DAILY MEAN	529	Aug 29	353	Apr 10	10,900	Apr 18, 1950
LOWEST DAILY MEAN	8.0	Feb 27	7.4	Sep 5	0.00	Apr 1, 1940
ANNUAL SEVEN-DAY MINIMUM	8.0	Feb 27	8.0	Aug 31	0.00	Apr 1, 1940
MAXIMUM PEAK FLOW			a466	Apr 9	b16,400	Apr 18, 1950
MAXIMUM PEAK STAGE			c4.05	Mar 17	d14.48	Apr 18, 1950
ANNUAL RUNOFF (AC-FT)	22,510		29,530		28,950	
10 PERCENT EXCEEDS	66		99		57	
50 PERCENT EXCEEDS	16		16		9.1	
90 PERCENT EXCEEDS	9.0		8.4		3.9	

a Gage height, 3.67 ft

b From rating curve extended above 5,600 ft³/s on basis of indirect measurement

c Backwater from ice

d From floodmark

e Estimated

RED RIVER OF THE NORTH BASIN

05084000 FOREST RIVER NEAR FORDVILLE, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
NOV 20...	--	--	--	--	--	--
JAN 10...	--	--	--	--	--	--
FEB 26...	--	--	--	--	--	--
MAR 25...	30	420	<0.10	<1	<1	210
APR 22...	--	--	--	--	--	--
MAY 07...	--	--	--	--	--	--
JUN 04...	--	--	--	--	--	--
JUL 17...	70	150	<0.20	2	2	--
AUG 18...	--	--	--	--	--	--
SEP 09...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

M-- Presence verified, not quantified

05085000 FOREST RIVER AT MINTO, ND

LOCATION.--Lat 48°16'10", long 97°22'10", in SE¹₄ sec.31, T.156 N., R.52 W., Walsh County, Hydrologic Unit 09020308, on right bank 30 ft upstream from dam in Minto, 150 ft upstream from Burlington Northern Railway bridge, and 900 ft east of U.S. Highway 81.

DRAINAGE AREA.--740 mi², of which about 120 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1944 to current year.

REVISED RECORDS.--WSP 1438: 1948-50. WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 806.95 ft above National Geodetic Vertical Datum of 1929. Prior to July 15, 1954, nonrecording gage at site 400 ft upstream at same datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Occasionally during high stages, particularly when the channel is filled with snow, overflow occurs 0.5 mi below the municipality of Forest River and bypasses the gage 3 mi south of Minto and flows into Lake Ardoch. Bypass flow is not included in computation of discharge record for station at Minto.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	e20	19	15	e9.2	e8.7	e77	63	83	50	41	14
2	21	e20	17	15	e9.2	e8.6	89	59	77	49	39	13
3	23	e21	18	15	e9.2	e8.6	160	56	71	47	37	13
4	26	e22	18	15	e9.2	e8.6	139	54	66	46	37	12
5	26	e22	20	14	e9.1	e8.6	118	55	62	47	36	10
6	23	e18	20	15	e9.1	e8.6	128	60	59	47	35	9.8
7	23	e19	18	16	e9.1	e8.6	122	74	59	45	34	10
8	24	e21	18	17	e9.1	e8.7	135	86	59	43	36	9.6
9	23	24	21	e17	e9.1	e8.7	202	91	77	42	34	8.0
10	22	e19	20	e17	e9.0	e8.8	e353	97	107	42	33	8.2
11	22	e20	19	e16	e9.0	e9.0	e417	105	105	42	31	8.8
12	22	19	18	e15	e9.0	e9.1	e336	118	128	41	29	11
13	21	20	e18	e14	e9.0	e9.3	e253	128	204	41	28	7.3
14	21	17	e18	e13	e8.9	e9.6	e211	112	229	43	26	9.4
15	22	17	e18	e13	e8.9	e9.9	175	99	229	45	25	11
16	24	19	e18	e12	e8.9	e12	152	89	185	47	25	9.9
17	29	18	e18	e12	e8.9	e71	133	87	151	52	24	12
18	27	19	18	e11	e8.8	e301	116	88	154	65	23	15
19	26	19	17	e11	e8.8	e152	108	94	125	61	22	10
20	26	20	17	e11	e8.8	e114	116	136	104	60	20	11
21	e25	20	16	e10	e8.7	e101	133	241	90	63	17	11
22	24	21	17	e10	e8.8	e114	141	189	82	66	19	10
23	24	20	16	e9.9	e8.7	e143	116	155	78	73	18	9.9
24	e24	e19	16	e9.6	e8.7	e154	101	137	71	68	19	8.0
25	e24	e18	16	e9.5	e8.7	e111	91	124	66	61	19	8.4
26	e23	e18	16	e9.3	e8.7	e98	83	116	62	57	18	8.9
27	e23	18	16	e9.2	e8.6	e88	80	110	60	54	17	9.9
28	e23	19	15	e9.2	e8.7	e81	76	104	58	50	16	10
29	e22	22	16	e9.2	---	e74	72	96	56	47	16	9.4
30	e21	18	14	e9.2	---	e67	67	92	54	44	15	11
31	e20	---	15	e9.2	---	e62	---	89	---	42	14	---
TOTAL	726	587	541	388.3	249.9	1,876.4	4,500	3,204	3,011	1,580	803	309.5
MEAN	23.4	19.6	17.5	12.5	8.93	60.5	150	103	100	51.0	25.9	10.3
MAX	29	24	21	17	9.2	301	417	241	229	73	41	15
MIN	20	17	14	9.2	8.6	8.6	67	54	54	41	14	7.3
AC-FT	1,440	1,160	1,070	770	496	3,720	8,930	6,360	5,970	3,130	1,590	614

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2003, BY WATER YEAR (WY)

MEAN	10.2	10.1	6.11	3.59	3.65	70.2	298	100	50.1	35.2	17.4	10.1
MAX	59.1	32.4	20.9	15.8	50.2	438	1,573	1,515	267	348	328	69.0
(WY)	(1983)	(2001)	(1998)	(1998)	(1998)	(1966)	(1950)	(1950)	(1964)	(1997)	(1993)	(1993)
MIN	0.000	0.97	0.29	0.000	0.000	0.000	17.8	10.6	4.21	1.87	0.000	0.000
(WY)	(1991)	(1991)	(1990)	(1977)	(1961)	(1962)	(2000)	(1946)	(1991)	(1980)	(1946)	(1961)

RED RIVER OF THE NORTH BASIN

05085000 FOREST RIVER AT MINTO, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1944 - 2003	
ANNUAL TOTAL	14,832.9		17,776.1			
ANNUAL MEAN	40.6		48.7		51.7	
HIGHEST ANNUAL MEAN					268	1950
LOWEST ANNUAL MEAN					4.36	1990
HIGHEST DAILY MEAN	758	Jun 24	417	Apr 11	11,600	Apr 19, 1950
LOWEST DAILY MEAN	8.0	Feb 27	7.3	Sep 13	0.00	Sep 5, 1945
ANNUAL SEVEN-DAY MINIMUM	8.0	Feb 27	8.6	Mar 1	0.00	Sep 5, 1945
MAXIMUM PEAK FLOW			a500	Apr 12	b16,600	Apr 18, 1950
MAXIMUM PEAK STAGE			(c)	Apr 12	d11.80	Apr 18, 1950
ANNUAL RUNOFF (AC-FT)	29,420		35,260		37,440	
10 PERCENT EXCEEDS	84		118		80	
50 PERCENT EXCEEDS	21		22		9.0	
90 PERCENT EXCEEDS	9.3		9.0		0.50	

a About

b From rating curve extended above 7,200 ft³/s on basis of contracted opening measurement of peak flow

c Unknown

d From floodmark

e Estimated

RED RIVER OF THE NORTH BASIN

05085000 FOREST RIVER AT MINTO, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 11...	--	--	--	--	--	--
JAN 06...	--	--	--	--	--	--
FEB 27...	--	--	--	--	--	--
MAR 20...	--	--	--	--	--	--
APR 07...	50	180	<0.10	2	2	310
JUN 02...	--	--	--	--	--	--
JUL 18...	50	240	<0.20	2	2	380
AUG 29...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

05090000 PARK RIVER AT GRAFTON, ND

LOCATION.--Lat 48°25'29", long 97°24'42", in NE¹/₄ sec.13, T.157 N., R.53 W., Walsh County, Hydrologic Unit 09020310, on right bank just upstream of U.S. Highway 81 bridge in Grafton and 3.5 mi downstream from South Branch Park River.

DRAINAGE AREA.--695 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1931 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 955: 1941. WSP 1438: 1932, 1933(M), 1936-37(M), 1939(M), 1944. WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 811.00 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1984, gage located on right bank 30 ft upstream of Wakeman Avenue bridge. Datum of gage was 807.39 ft. Prior to Sept. 30, 1940, nonrecording gage at site 30 ft downstream at same datum. Oct. 1, 1940, to Sept. 17, 1946, nonrecording gage at site 2 mi downstream above masonry dam at same datum. Sept. 18, 1946, to July 25, 1952, nonrecording gage at site 30 ft downstream at same datum.

REMARKS.--Records fair except for periods where discharge is less than 1.0 ft³/s and for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	22	e10	e8.9	e0.56	e0.18	e150	53	136	62	2.1	e0.11
2	32	21	e10	e8.8	e0.54	e0.18	e135	54	120	47	1.8	e0.10
3	33	21	e9.8	e8.9	e0.52	e0.18	e120	45	85	39	1.8	e0.10
4	26	24	e9.4	e8.9	e0.50	e0.18	e115	43	74	36	1.4	e0.10
5	21	29	e9.1	e9.0	e0.49	e0.17	e125	51	69	33	1.4	e0.10
6	20	25	e9.0	e9.1	e0.47	e0.17	e140	74	62	30	1.2	e0.10
7	20	23	e8.9	e9.2	e0.45	e0.16	e150	139	92	26	1.2	e0.10
8	18	23	e9.2	e9.0	e0.43	e0.16	e155	136	78	25	1.2	e0.10
9	18	23	e9.1	e8.5	e0.41	e0.15	213	135	80	23	1.1	e0.11
10	16	18	e9.3	e8.0	e0.39	e0.15	679	139	465	23	1.1	e0.11
11	14	17	e9.3	e6.9	e0.38	e0.15	869	160	752	23	0.94	e0.11
12	13	e14	e8.8	e6.0	e0.36	e0.15	868	193	809	34	0.82	e0.11
13	13	e13	e9.0	e5.0	e0.34	e0.15	772	196	815	27	0.80	e0.10
14	13	e12	e9.2	e4.3	e0.32	e0.15	556	197	712	34	0.68	e0.10
15	13	e11	e9.3	e3.6	e0.31	e0.16	355	157	573	44	0.57	e0.10
16	14	e10	e9.2	e3.1	e0.30	e0.19	262	108	441	31	e0.53	e0.10
17	15	e10	e9.1	e2.7	e0.28	e0.23	235	92	362	29	e0.50	e0.25
18	15	e11	e9.0	e2.3	e0.27	e2.0	214	102	272	32	e0.47	e0.20
19	16	e11	e8.9	e2.0	e0.26	e25	193	169	190	24	0.45	e0.15
20	15	e11	e8.8	e1.7	e0.25	e130	179	365	138	17	0.40	e0.12
21	16	e11	e8.6	e1.5	e0.24	e115	181	445	103	12	0.36	e0.11
22	18	e11	e8.5	e1.3	e0.22	e95	235	442	98	11	0.30	e0.10
23	18	e10	e8.6	e1.1	e0.21	e90	227	375	86	9.2	0.26	e0.10
24	49	e10	e8.8	e0.90	e0.20	e100	194	318	95	6.8	0.24	e0.10
25	22	e9.9	e8.9	e0.80	e0.20	e130	148	282	103	4.4	0.25	e0.10
26	19	e9.8	e9.0	e0.75	e0.19	e230	102	231	96	3.8	0.24	e0.10
27	19	e9.9	e9.0	e0.70	e0.18	e210	94	176	91	3.0	0.18	e0.10
28	18	e10	e8.9	e0.66	e0.18	e180	88	161	80	2.8	0.15	e0.10
29	19	e11	e8.8	e0.63	---	e170	76	127	75	2.6	0.11	e0.10
30	20	e11	e8.9	e0.60	---	e160	59	105	72	2.4	0.12	e0.10
31	20	---	e8.9	e0.58	---	e175	---	115	---	2.2	0.12	---
TOTAL	618	452.6	281.3	135.42	9.45	1,814.86	7,889	5,385	7,224	699.2	22.79	3.38
MEAN	19.9	15.1	9.07	4.37	0.34	58.5	263	174	241	22.6	0.74	0.11
MAX	49	29	10	9.2	0.56	230	869	445	815	62	2.1	0.25
MIN	13	9.8	8.5	0.58	0.18	0.15	59	43	62	2.2	0.11	0.10
AC-FT	1,230	898	558	269	19	3,600	15,650	10,680	14,330	1,390	45	6.7

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1931 - 2003, BY WATER YEAR (WY)

MEAN	5.19	3.85	2.59	1.52	2.59	76.4	413	118	52.1	33.7	15.1	9.35
MAX	69.9	31.3	17.4	13.9	45.7	654	2,051	2,071	576	441	569	185
(WY)	(1983)	(1981)	(1983)	(1983)	(1981)	(1995)	(1950)	(1950)	(1964)	(1997)	(1993)	(2002)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.05	0.000	0.000	0.000	0.000
(WY)	(1934)	(1934)	(1933)	(1932)	(1933)	(1936)	(1991)	(1939)	(1961)	(1990)	(1932)	(1932)

RED RIVER OF THE NORTH BASIN
05090000 PARK RIVER AT GRAFTON, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1931 - 2003	
ANNUAL TOTAL	23,238.3		24,535.00			
ANNUAL MEAN	63.7		67.2		61.2	
HIGHEST ANNUAL MEAN					353	1950
LOWEST ANNUAL MEAN					1.38	1990
HIGHEST DAILY MEAN	1,430	Aug 29	869	Apr 11	11,700	Apr 19, 1950
LOWEST DAILY MEAN	1.6	Mar 16	0.10	Sep 2	0.00	Aug 10, 1931
ANNUAL SEVEN-DAY MINIMUM	2.2	Mar 15	0.10	Sep 2	0.00	Aug 21, 1931
MAXIMUM PEAK FLOW			896	Apr 11	a12,600	Apr 19, 1950
MAXIMUM PEAK STAGE			9.74	Apr 11	b20.13	Apr 19, 1950
INSTANTANEOUS LOW FLOW			0.10	Sep 2		
ANNUAL RUNOFF (AC-FT)	46,090		48,670		44,320	
10 PERCENT EXCEEDS	154		185		83	
50 PERCENT EXCEEDS	15		10		2.0	
90 PERCENT EXCEEDS	3.8		0.15		0.00	

a From rating curve extended above 9,000 ft³/s

b Site and datum then in use

c Estimated

RED RIVER OF THE NORTH BASIN

05090000 PARK RIVER AT GRAFTON, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 11...	--	--	--	--	--	--
NOV 20...	--	--	--	--	--	--
JAN 06...	--	--	--	--	--	--
FEB 26...	--	--	--	--	--	--
APR 11...	40	210	<0.10	2	1	240
JUN 04...	--	--	--	--	--	--
JUL 18...	70	130	<0.20	5	3	500
AUG 29...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

05092000 RED RIVER OF THE NORTH AT DRAYTON, ND

LOCATION.--Lat 48°34'20", long 97°08'50", in SE¹₄SE¹₄SE¹₄ sec.24, T.159 N., R.51 W., Pembina County, Hydrologic Unit 09020311, on downstream side of bridge on North Dakota State Highway 66, at the North Dakota-Minnesota border, 1.5 mi northeast of Drayton, and at mile 206.7.

DRAINAGE AREA.--34,800 mi², approximately, includes 3,800 mi² in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1936 to June 1937, April 1941 to current year (fragmentary prior to April 1949).

REVISED RECORDS.--WSP 1388: 1949-50. WSP 1728: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 755.00 ft above National Geodetic Vertical Datum of 1929 (Minnesota highway benchmark). Prior to Nov. 30, 1954, nonrecording gage at site 1.5 mi upstream at datum 1.59 ft higher.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of April 1897 reached a stage of about 41 ft at site and datum in use prior to Nov. 30, 1954.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e2,350	e2,620	e1,700	e1,290	e788	e710	e6,910	e2,980	4,510	15,100	e2,880	603
2	2,290	e2,500	e1,600	e1,290	e757	e680	e7,280	e2,900	e4,300	15,300	e2,810	562
3	2,290	e2,300	e1,540	e1,250	e747	e680	e7,510	e3,100	e4,100	15,000	e2,710	539
4	2,320	e2,200	e1,400	e1,220	e816	e690	7,520	e3,390	e3,810	14,400	e2,580	529
5	2,350	e2,100	e1,350	e1,200	e860	e700	7,500	e3,390	e3,670	13,500	e2,410	472
6	2,330	e2,100	e1,330	e1,200	e880	e690	6,980	e3,400	e3,480	12,500	e2,270	485
7	2,320	e2,150	e1,300	e1,160	e850	e690	6,180	e3,330	e3,340	11,100	e2,200	498
8	2,310	e2,240	e1,300	e1,160	e840	e690	5,050	e3,250	e3,260	9,770	e2,150	485
9	2,310	e2,250	e1,300	e1,140	e820	e680	e4,420	e3,600	e3,240	8,270	e2,060	466
10	2,310	e2,280	e1,300	e1,160	e810	e685	e4,290	e3,970	e3,240	6,980	e1,950	438
11	2,310	e2,280	e1,300	e1,160	e800	e700	e4,230	4,510	e3,400	6,080	e1,850	406
12	2,310	e2,300	e1,350	e1,130	e790	e710	e4,290	5,110	e3,850	5,530	e1,680	381
13	2,280	e2,200	e1,380	e1,120	e780	e730	e4,250	5,600	4,950	5,140	e1,510	353
14	2,280	e1,800	e1,410	e1,080	e770	e766	e4,090	5,860	5,560	5,000	e1,490	351
15	2,270	e1,400	e1,430	e1,050	e750	e790	e3,850	5,830	5,940	5,140	e1,460	428
16	2,270	e1,500	e1,470	e1,020	e740	e838	e3,410	5,590	6,050	5,390	e1,460	435
17	2,260	e1,700	e1,500	e1,000	e740	e911	e3,140	5,310	5,780	5,470	e1,420	465
18	2,250	e1,800	e1,500	e984	e730	e977	e3,020	5,080	5,340	5,390	e1,380	545
19	2,240	e1,960	e1,500	e962	e710	e1,140	e2,970	4,980	4,760	5,180	e1,320	802
20	2,230	e2,050	e1,480	e936	e690	1,740	e2,950	5,050	e4,260	4,870	e1,280	1,210
21	2,220	e2,150	e1,470	e933	e700	e2,870	e3,000	5,340	e3,730	e4,290	e1,230	1,190
22	2,200	e2,190	e1,450	e905	e710	e4,080	e3,180	5,930	e3,530	e4,080	e1,130	1,140
23	2,200	e2,200	e1,430	e905	e720	e4,990	e3,310	6,560	e3,440	e3,870	e1,040	1,160
24	2,190	e2,200	e1,410	e900	e720	e5,490	e3,640	6,850	e3,420	e3,600	e989	1,070
25	2,170	e2,220	e1,400	e900	e700	e5,730	e4,040	6,750	e4,310	e3,420	e949	1,090
26	2,160	e2,210	e1,360	e888	e690	e6,020	e4,130	6,340	6,160	e3,310	e873	913
27	2,150	e1,700	e1,330	e873	e720	e6,150	e4,080	5,820	8,400	e3,210	e771	850
28	e2,300	e1,580	e1,320	e861	e720	e6,170	e3,840	5,410	10,800	e3,160	e687	790
29	e2,400	e1,630	e1,310	e847	---	e6,080	e3,600	5,080	13,000	e3,070	550	701
30	e2,600	e1,660	e1,300	e826	---	e6,210	e3,310	4,860	14,400	e2,980	549	666
31	e2,650	---	e1,290	e802	---	e6,600	---	4,700	---	e2,910	581	---
TOTAL	71,120	61,470	43,510	32,152	21,348	76,587	135,970	149,870	158,030	213,010	48,219	20,023
MEAN	2,294	2,049	1,404	1,037	762	2,471	4,532	4,835	5,268	6,871	1,555	667
MAX	2,650	2,620	1,700	1,290	880	6,600	7,520	6,850	14,400	15,300	2,880	1,210
MIN	2,150	1,400	1,290	802	690	680	2,950	2,900	3,240	2,910	549	351
AC-FT	141,100	121,900	86,300	63,770	42,340	151,900	269,700	297,300	313,500	422,500	95,640	39,720

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2003, BY WATER YEAR (WY)

MEAN	1,985	1,908	1,458	1,197	1,159	3,372	15,260	9,563	6,077	5,574	2,675	2,158
MAX	5,194	11,840	4,168	2,679	2,598	16,290	54,710	58,890	23,420	28,240	21,580	12,140
(WY)	(1995)	(2001)	(1999)	(2001)	(1998)	(1998)	(1997)	(1950)	(1962)	(1975)	(1993)	(1999)
MIN	317	277	149	174	201	280	1,275	938	676	348	243	329
(WY)	(1991)	(1977)	(1977)	(1990)	(1977)	(1962)	(1981)	(1977)	(1977)	(1988)	(1977)	(1988)

RED RIVER OF THE NORTH BASIN

05092000 RED RIVER OF THE NORTH AT DRAYTON, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1949 - 2003	
ANNUAL TOTAL	2,328,230		1,031,309		4,388	
ANNUAL MEAN	6,379		2,826		11,280	
HIGHEST ANNUAL MEAN					536	
LOWEST ANNUAL MEAN					1977	
HIGHEST DAILY MEAN	34,700	Jun 18	15,300	Jul 2	124,000	Apr 24, 1997
LOWEST DAILY MEAN	1,290	Dec 31	351	Sep 14	110	Dec 23, 1989
ANNUAL SEVEN-DAY MINIMUM	1,310	Dec 5	399	Sep 10	118	Dec 28, 1989
MAXIMUM PEAK FLOW			15,300	Jul 2	124,000	Apr 24, 1997
MAXIMUM PEAK STAGE			21.12	Jul 2	45.55	Apr 24, 1997
INSTANTANEOUS LOW FLOW					7.7	Oct 16, 1936
ANNUAL RUNOFF (AC-FT)	4,618,000		2,046,000		3,179,000	
10 PERCENT EXCEEDS	20,500		5,890		10,100	
50 PERCENT EXCEEDS	2,850		2,190		1,930	
90 PERCENT EXCEEDS	1,700		700		499	

e Estimated

05092000 RED RIVER OF THE NORTH AT DRAYTON, ND—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm (90095)	Specif. conductance, wat unflab, uS/cm (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
OCT 02...	1100	2,360	--	--	--	--	--	--	--	659	--	12.0	--
FEB 03...	1235	732	--	--	--	--	--	--	--	936	-12.0	0.0	--
APR 14...	1440	3,980	--	--	--	--	7.7	7.8	800	804	12.5	10.0	280
MAY 01...	1130	2,960	--	--	--	--	--	--	--	890	15.5	13.5	--
MAY 28...	1310	5,450	--	--	--	--	--	--	--	1,150	30.0	18.0	--
JUL 07...	1130	10,600	--	--	--	--	--	--	--	641	22.0	23.5	--
JUL 24...	1105	3,580	--	--	--	--	--	--	--	1,000	29.5	25.0	--
AUG 13...	1135	1,450	--	--	--	--	8.3	8.4	931	933	27.5	26.0	340
SEP 10...	1530	426	--	--	--	--	--	--	--	1,010	21.0	20.5	--
SEP 15...	1610	426	43	741	9.1	100	8.6	8.6	880	877	21.0	18.4	350

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)
OCT 02...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 14...	62.0	31.0	11.0	1	52.0	28	178	66.0	0.20	--	150	479	5,720
MAY 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 24...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 13...	66.8	41.2	9.70	2	71.6	31	246	54.6	0.22	18.3	163	555	2,240
SEP 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 15...	71.7	42.7	9.30	1	60.8	26	237	54.7	--	--	151	534	613

05092000 RED RIVER OF THE NORTH AT DRAYTON, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, fltred, mg/L as N (00623)	Ammonia + org-N, water, unfltred, mg/L as N (00625)	Ammonia water, fltred, mg/L as N (00608)	Ammonia water, unfltred, mg/L as N (00610)	Nitrite + nitrate water fltred, mg/L as N (00631)	Nitrite + nitrate water unfltred, mg/L as N (00630)	Organic nitro- gen, water, unfltred, mg/L (00605)	Ortho- phos- phate, water, fltred, mg/L as P (00671)	Phos- phorus, water, fltred, mg/L (00666)	Phos- phorus, water, unfltred, mg/L (00665)	Total nitro- gen, water, fltred, mg/L (00602)	Total nitro- gen, water, unfltred, mg/L (00600)
OCT 02...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 14...	532	--	--	--	--	--	--	--	--	--	--	--	--
MAY 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 24...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 15...	--	0.71	0.58	<0.010	0.030	<0.020	0.030	0.55	0.079	0.074	0.317	0.73	0.61

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)	Arsenic water, fltred, ug/L (01000)	Iron, water, fltred, ug/L (01046)	Lead, water, fltred, ug/L (01049)	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 02...	--	--	--	--	--	--	--	--	--	--	--
FEB 03...	--	--	--	--	--	--	--	--	--	--	--
APR 14...	--	--	4.0	50	<1	40	30	<0.10	3	2	320
MAY 01...	--	--	--	--	--	--	--	--	--	--	--
MAY 28...	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--	--	--	--	--	--
JUL 24...	--	--	--	--	--	--	--	--	--	--	--
AUG 13...	--	--	7.1	<10	<1	50	<10	<0.20	4	<1	340
SEP 10...	--	--	--	--	--	--	--	--	--	--	--
SEP 15...	<17.1	<5.7	--	20	--	--	20	--	--	--	--

Remark codes used in this table:

< -- Less than

05099100 SNOWFLAKE CREEK NEAR SNOWFLAKE, MANITOBA
(International gaging station)

LOCATION.--Lat 49°01'17", long 98°36'13", in SW¹₄ sec.10, T.1, R.9 W., first meridian, Hydrologic Unit 09020313, at traffic bridge, 2.5 mi east, and 1.5 mi south of Snowflake, Manitoba.

DRAINAGE AREA.--348 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1961 to current year.

GAGE.--Water-stage recorder since March 1968 and nonrecording gage prior thereto. Datum of gage is Geodetic Survey of Canada Datum of 1929. Prior to Jan. 1, 1987, recording gage at same site at datum of 1221.66 ft above Geodetic Survey of Canada Datum of 1929. Prior to Apr. 2, 1964, nonrecording gage at present site and datum. Apr. 2, 1964, to May 10, 1965, nonrecording gage at site 0.5 mi downstream at present datum.

COOPERATION.--This station is one of the international gaging stations maintained by Canada under agreement with the United States. Records provided by the Water Survey of Canada.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	e0.04	e0.00	e0.00	e0.00	e0.00	e17	19	9.0	0.46	e0.11	0.00
2	0.99	e0.04	e0.00	e0.00	e0.00	e0.00	e4.6	19	e7.9	0.53	0.07	0.00
3	0.88	e0.04	e0.00	e0.00	e0.00	e0.00	e4.0	18	e7.9	0.62	0.04	0.00
4	0.71	e0.04	e0.00	e0.00	e0.00	e0.00	e2.0	16	e7.9	e0.60	0.04	0.00
5	1.1	e0.04	e0.00	e0.00	e0.00	e0.00	e1.6	16	e8.5	0.53	0.04	0.00
6	0.85	e0.04	e0.00	e0.00	e0.00	e0.00	e1.4	17	e9.3	0.39	0.04	0.00
7	0.53	e0.04	e0.00	e0.00	e0.00	e0.00	e1.9	22	e9.9	0.32	0.04	0.00
8	0.32	e0.04	e0.00	e0.00	e0.00	e0.00	e61	20	e9.7	0.28	0.00	0.00
9	0.32	e0.04	e0.00	e0.00	e0.00	e0.00	e105	16	e9.6	e0.32	0.04	0.00
10	0.39	e0.04	e0.00	e0.00	e0.00	e0.00	85	12	e9.9	e0.28	0.00	0.00
11	0.46	e0.00	e0.00	e0.00	e0.00	e0.00	83	8.0	e9.7	e0.28	0.00	0.00
12	0.67	e0.00	e0.00	e0.00	e0.00	e0.00	90	16	e9.6	e0.25	0.00	0.00
13	0.57	e0.00	e0.00	e0.00	e0.00	e0.00	99	15	10	e0.25	0.00	0.00
14	0.39	e0.00	e0.00	e0.00	e0.00	e0.00	102	10	8.5	e0.25	0.00	0.00
15	0.25	e0.00	e0.00	e0.00	e0.00	e0.00	101	6.6	6.3	e0.21	0.00	0.00
16	0.14	e0.00	e0.00	e0.00	e0.00	e0.04	95	10	4.3	0.21	0.00	0.00
17	e0.18	e0.00	e0.00	e0.00	e0.00	e0.07	103	17	2.7	0.18	0.00	e0.00
18	e0.18	e0.00	e0.00	e0.00	e0.00	e0.14	100	18	2.2	0.07	0.00	e0.00
19	e0.14	e0.07	e0.00	e0.00	e0.00	e0.21	90	29	1.6	0.11	0.00	e0.00
20	e0.14	e0.00	e0.00	e0.00	e0.00	e0.35	81	30	1.2	0.14	0.00	e0.00
21	e0.14	e0.00	e0.00	e0.00	e0.00	e0.46	78	29	e0.92	0.11	0.00	e0.00
22	e0.11	e0.00	e0.00	e0.00	e0.00	e0.60	71	20	e0.60	0.07	0.00	e0.00
23	e0.14	e0.00	e0.00	e0.00	e0.00	e0.74	62	19	e0.39	0.04	0.00	e0.00
24	e0.04	e0.00	e0.00	e0.00	e0.00	e0.88	49	24	e0.14	0.04	0.00	e0.00
25	e0.04	e0.00	e0.00	e0.00	e0.00	e1.2	38	13	e0.60	e0.04	0.00	e0.00
26	e0.04	e0.00	e0.00	e0.00	e0.00	e1.4	36	19	e1.1	0.04	0.00	e0.00
27	e0.07	e0.00	e0.00	e0.00	e0.00	e2.1	33	23	e1.9	0.11	0.00	e0.00
28	e0.07	e0.00	e0.00	e0.00	e0.00	e3.2	27	7.3	e1.4	0.04	0.00	e0.00
29	e0.07	e0.00	e0.00	e0.00	---	e4.5	28	5.7	e1.1	0.04	0.00	e0.00
30	e0.04	e0.00	e0.00	e0.00	---	e7.0	27	10	e0.78	0.11	0.00	e0.00
31	e0.04	---	e0.00	e0.00	---	e9.5	---	3.5	---	0.21	0.00	---
TOTAL	11.31	0.47	0.00	0.00	0.00	32.39	1,676.5	508.1	154.63	7.13	0.42	0.00
MEAN	0.36	0.016	0.000	0.000	0.000	1.04	55.9	16.4	5.15	0.23	0.014	0.000
MAX	1.3	0.07	0.00	0.00	0.00	9.5	105	30	10	0.62	0.11	0.00
MIN	0.04	0.00	0.00	0.00	0.00	0.00	1.4	3.5	0.14	0.04	0.00	0.00
AC-FT	22	0.9	0.00	0.00	0.00	64	3,330	1,010	307	14	0.8	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2003, BY WATER YEAR (WY)

MEAN	5.28	2.28	0.26	0.037	0.15	8.60	138	87.4	24.0	22.1	10.8	5.77
MAX	70.5	39.9	7.67	1.36	4.90	74.6	668	945	131	529	139	99.7
(WY)	(1995)	(1995)	(1995)	(1995)	(1981)	(1995)	(1995)	(1997)	(2002)	(1997)	(1997)	(1993)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.22	0.061	0.000	0.000	0.000	0.000
(WY)	(1962)	(1962)	(1962)	(1962)	(1962)	(1962)	(1973)	(1988)	(1962)	(1961)	(1961)	(1961)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1961 - 2003

ANNUAL TOTAL	5,797.22	2,390.95	
ANNUAL MEAN	15.9	6.55	26.0
HIGHEST ANNUAL MEAN			197
LOWEST ANNUAL MEAN			0.14
HIGHEST DAILY MEAN	392	Jun 11	2,160
LOWEST DAILY MEAN	0.00	Jan 1	0.00
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	0.00
MAXIMUM PEAK FLOW			117
MAXIMUM PEAK STAGE			1,226.12
ANNUAL RUNOFF (AC-FT)	11,500	4,740	18,840
10 PERCENT EXCEEDS	24	18	46
50 PERCENT EXCEEDS	0.85	0.04	0.04
90 PERCENT EXCEEDS	0.00	0.00	0.00

e Estimated

RED RIVER OF THE NORTH BASIN

05099150 MOWBRAY CREEK NEAR MOWBRAY, MANITOBA
(International gaging station)

LOCATION.--Lat 49°00'00", long 98°27'15", in SE¹/₄ sec.3, T.1, R.8 W., first meridian, Hydrologic Unit 09020313, on downstream side of bridge on Municipal Road on international boundary and 1.5 mi east of Mowbray, Manitoba.

DRAINAGE AREA.--93.9 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1962 to current year (seasonal records only most years).

GAGE.--Water-stage recorder. Datum of gage is Geodetic Survey of Canada Datum of 1929. Nonrecording gage prior to 1971.

COOPERATION.--Records furnished by the Water Survey of Canada.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.39	e3.8	e0.00	e0.00	e0.00	e0.00	e36	2.8	1.5	3.4	0.11	0.00
2	0.32	e2.6	e0.00	e0.00	e0.00	e0.00	e35	2.9	1.1	2.9	0.07	0.00
3	0.25	e1.8	e0.00	e0.00	e0.00	e0.00	e24	2.4	0.92	2.4	0.04	0.00
4	0.21	e1.3	e0.00	e0.00	e0.00	e0.00	e27	2.3	0.64	5.8	0.04	0.00
5	0.18	e0.92	e0.00	e0.00	e0.00	e0.00	e21	2.1	0.46	12	0.11	0.00
6	0.18	e0.71	e0.00	e0.00	e0.00	e0.00	e14	1.8	0.64	8.2	0.11	0.00
7	0.21	e0.67	e0.00	e0.00	e0.00	e0.00	e16	1.8	0.74	5.8	0.11	0.00
8	0.21	e0.64	e0.00	e0.00	e0.00	e0.00	e21	1.7	0.78	3.9	0.07	0.00
9	0.21	e0.56	e0.00	e0.00	e0.00	e0.00	e30	1.6	1.6	3.1	0.11	0.00
10	0.21	e0.46	e0.00	e0.00	e0.00	e0.00	e38	1.8	3.4	2.6	0.07	0.00
11	0.21	e0.35	e0.00	e0.00	e0.00	e0.00	e40	2.0	3.3	2.3	0.04	0.00
12	0.25	e0.32	e0.00	e0.00	e0.00	e0.00	e34	1.9	18	1.8	0.00	0.00
13	0.25	e0.25	e0.00	e0.00	e0.00	e0.00	26	1.6	17	1.4	0.00	0.35
14	0.25	e0.14	e0.00	e0.00	e0.00	e0.00	20	1.4	14	1.2	0.00	0.53
15	0.28	e0.11	e0.00	e0.00	e0.00	e0.04	37	1.1	11	0.99	0.00	0.42
16	0.28	e0.07	e0.00	e0.00	e0.00	e0.18	35	1.7	7.8	0.85	0.00	0.18
17	0.32	e0.07	e0.00	e0.00	e0.00	e0.35	28	1.9	5.4	0.74	0.00	0.11
18	0.42	e0.04	e0.00	e0.00	e0.00	e0.71	25	4.2	4.1	0.56	0.00	0.18
19	0.46	e0.07	e0.00	e0.00	e0.00	e0.92	31	21	2.9	0.78	0.00	0.11
20	0.49	e0.07	e0.00	e0.00	e0.00	e1.9	26	27	2.1	0.78	0.00	0.07
21	0.53	e0.07	e0.00	e0.00	e0.00	e5.2	18	20	1.8	0.56	0.00	0.04
22	0.53	e0.07	e0.00	e0.00	e0.00	e6.1	14	13	2.0	0.46	0.00	0.04
23	0.53	e0.07	e0.00	e0.00	e0.00	e26	11	10	5.0	0.32	0.00	0.00
24	0.56	e0.04	e0.00	e0.00	e0.00	e72	8.4	8.1	11	0.28	0.00	0.00
25	0.60	e0.00	e0.00	e0.00	e0.00	e65	6.4	6.2	11	0.21	0.00	0.00
26	0.64	e0.00	e0.00	e0.00	e0.00	e58	4.6	4.7	10	0.18	0.00	0.00
27	e4.9	e0.00	e0.00	e0.00	e0.00	e38	4.2	3.6	7.8	0.14	0.00	0.00
28	e11	e0.00	e0.00	e0.00	e0.00	e40	3.7	2.7	6.0	0.11	0.00	0.00
29	e6.9	e0.00	e0.00	e0.00	---	e33	3.5	2.3	4.7	0.07	0.00	0.00
30	e6.6	e0.00	e0.00	e0.00	---	e27	3.1	2.4	3.8	0.11	0.00	0.00
31	e4.7	---	e0.00	e0.00	---	e28	---	2.0	---	0.11	0.00	---
TOTAL	43.07	15.20	0.00	0.00	0.00	402.40	640.9	160.0	160.48	64.05	0.88	2.03
MEAN	1.39	0.51	0.000	0.000	0.000	13.0	21.4	5.16	5.35	2.07	0.028	0.068
MAX	11	3.8	0.00	0.00	0.00	72	40	27	18	12	0.11	0.53
MIN	0.18	0.00	0.00	0.00	0.00	0.00	3.1	1.1	0.46	0.07	0.00	0.00
AC-FT	85	30	0.00	0.00	0.00	798	1,270	317	318	127	1.7	4.0

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2003, BY WATER YEAR (WY)

	MEAN	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2.02	0.92	0.066	0.003	0.24	14.6	81.2	19.4	9.24	9.15	8.27	1.88
MAX	56.5	16.4	1.35	0.080	5.68	122	344	159	69.0	189	161	28.6
(WY)	(1995)	(1995)	(1995)	(1995)	(1981)	(1995)	(1997)	(1974)	(2002)	(1997)	(1995)	(1995)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.41	0.009	0.000	0.000	0.000	0.000
(WY)	(1963)	(1963)	(1963)	(1963)	(1963)	(1962)	(2000)	(1973)	(1968)	(1968)	(1962)	(1962)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1962 - 2003

ANNUAL TOTAL	2,623.56	1,489.01	
ANNUAL MEAN	7.19	4.08	15.1
HIGHEST ANNUAL MEAN			57.9
LOWEST ANNUAL MEAN			0.59
HIGHEST DAILY MEAN	288	Jun 13	72
LOWEST DAILY MEAN	0.00	Jan 1	0.00
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	0.00
MAXIMUM PEAK FLOW			83
MAXIMUM PEAK STAGE			1,530.95
ANNUAL RUNOFF (AC-FT)	5,200	2,950	10,950
10 PERCENT EXCEEDS	9.6	14	19
50 PERCENT EXCEEDS	0.28	0.14	0.00
90 PERCENT EXCEEDS	0.00	0.00	0.00

e Estimated

05099300 PEMBINA RIVER NEAR WINDYGATES, MANITOBA
(International gaging station)

LOCATION.--Lat 49°01'53", long 98°16'40", in SE¹/₄ sec.13, T.1, R.7 W., first meridian, Hydrologic Unit 09020313, on left bank 0.2 mi downstream from bridge and 3 mi northeast of Windygates, Manitoba.

DRAINAGE AREA.--3,020 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is Geodetic Survey of Canada datum of 1929. Prior to Jan. 1, 1985, datum of gage at 1,102.02 ft above Geodetic Survey of Canada Datum of 1929.

COOPERATION.--This station is one of the international gaging stations maintained by Canada under agreement with the United States. Records provided by Water Survey of Canada.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	e50	e11	e6.3	e1.6	e0.35	e258	130	113	32	15	3.3
2	70	e50	e8.5	e5.3	e1.5	e0.25	e234	125	109	35	16	4.0
3	71	e49	e6.6	e4.3	e1.3	e0.18	e211	122	102	34	15	1.5
4	72	e47	e12	e3.4	e1.2	e0.11	e203	118	96	28	16	3.7
5	72	e49	e14	e3.0	e1.1	e0.07	e209	114	94	24	16	4.4
6	68	e42	e15	e2.8	e0.92	e0.04	e192	109	97	28	16	4.1
7	70	e41	e16	e2.5	e0.85	e0.04	e159	108	134	29	16	5.7
8	73	e34	e14	e2.9	e0.88	e0.00	e170	106	115	27	13	5.1
9	73	e35	e15	e2.1	e0.78	e0.00	e238	104	117	24	15	5.9
10	69	e27	e15	e1.8	e0.71	e0.00	300	107	164	24	21	7.3
11	69	e26	e13	e1.7	e0.64	e0.00	293	110	152	22	20	14
12	70	e24	e12	e1.6	e0.60	e0.00	306	108	150	21	19	6.9
13	68	e20	e12	e1.5	e0.56	e0.00	293	107	151	19	17	5.9
14	66	e23	e12	e1.5	e0.53	e0.04	271	101	131	19	13	6.8
15	68	e19	e13	e1.5	e0.49	e0.85	250	96	117	15	13	9.4
16	68	e18	e12	e1.4	e0.49	e2.0	251	100	115	14	12	12
17	65	e20	e11	e1.4	e0.56	e6.2	236	108	111	16	12	11
18	66	e22	e11	e1.4	e0.64	e11	235	137	113	15	10	13
19	65	e23	e10	e1.3	e0.67	e28	226	177	99	13	7.9	11
20	63	e24	e10	e1.2	e0.60	e42	220	171	87	18	6.5	6.0
21	61	e25	e11	e1.2	e0.53	e100	208	175	75	17	7.0	4.9
22	62	e22	e12	e1.2	e0.49	e146	197	165	59	14	6.5	6.7
23	64	e26	e9.3	e1.4	e0.46	e180	186	149	50	12	5.0	6.7
24	e56	e15	e9.8	e1.6	e0.42	e175	175	149	43	11	5.9	8.7
25	e55	e14	e6.5	e1.4	e0.39	e185	161	142	49	12	5.3	11
26	e58	e16	e4.1	e1.5	e0.39	e194	150	130	53	16	3.1	14
27	e62	e16	e4.6	e1.6	e0.42	e181	147	131	46	16	4.8	15
28	e60	e14	e6.7	e1.7	e0.42	e200	139	133	51	14	12	16
29	e55	e12	e6.5	e1.8	---	e219	132	119	43	13	8.0	13
30	e35	e7.3	e7.6	e1.8	---	e227	133	122	36	14	5.7	12
31	e42	---	e7.5	e1.8	---	e248	---	122	---	15	3.0	---
TOTAL	1,991	810.3	328.7	65.9	20.14	2,146.13	6,383	3,895	2,872	611	355.7	249.0
MEAN	64.2	27.0	10.6	2.13	0.72	69.2	213	126	95.7	19.7	11.5	8.30
MAX	75	50	16	6.3	1.6	248	306	177	164	35	21	16
MIN	35	7.3	4.1	1.2	0.39	0.00	132	96	36	11	3.0	1.5
AC-FT	3,950	1,610	652	131	40	4,260	12,660	7,730	5,700	1,210	706	494

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2003, BY WATER YEAR (WY)

MEAN	343	391	195	82.7	64.9	949	4,257	3,616	1,752	1,128	719	543
(WY)	(1969)	(1995)	(1995)	(1995)	(1995)	(1995)	(1998)	(1974)	(1999)	(1997)	(1993)	(1993)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	21.3	27.0	4.03	0.070	0.000	0.000
(WY)	(1989)	(1989)	(1989)	(1965)	(1963)	(1964)	(1977)	(1988)	(1988)	(1988)	(1988)	(1988)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1962 - 2003

ANNUAL TOTAL	28,225.4	19,727.87	
ANNUAL MEAN	77.3	54.0	
HIGHEST ANNUAL MEAN			242
LOWEST ANNUAL MEAN			936
HIGHEST DAILY MEAN	1,800	306	9.61
LOWEST DAILY MEAN	3.1	0.00	13,500
ANNUAL SEVEN-DAY MINIMUM	3.8	0.01	0.00
MAXIMUM PEAK FLOW		316	13,700
MAXIMUM PEAK STAGE		1,108.75	1,122.27
ANNUAL RUNOFF (AC-FT)	55,990	39,130	175,300
10 PERCENT EXCEEDS	139	164	593
50 PERCENT EXCEEDS	32	16	32
90 PERCENT EXCEEDS	6.6	0.87	0.04

e Estimated

05099400 LITTLE SOUTH PEMBINA RIVER NEAR WALHALLA, ND

LOCATION.--Lat 48°51'55", long 98°00'20", in SE¹₄SW¹₄ sec.10, T.162 N., R.57 W., Cavalier County, Hydrologic Unit 09020313, on right bank 10 ft upstream from county bridge, 3.5 mi above mouth, and 6 mi southwest of Walhalla.

DRAINAGE AREA.--182 mi², of which 10 mi² is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1956 to Sept. 1982, March 2001 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage not yet determined. Datum of gage was 1,099.48 ft above National Geodetic Vertical Datum of 1929 from April 1956 to Sept. 1982. Prior to Sept. 10, 1956, nonrecording gage at bridge 25 ft downstream at same datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--A discharge of 5,080 ft³/s, gage height, unknown, was measured on Apr. 24, 1997. A high-water mark 3 ft higher than gage height of measurement was observed.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e7.2	3.4	e2.2	e2.2	e0.16	e0.04	e168	11	23	6.4	2.0	0.76
2	e7.1	3.3	e2.2	e2.4	e0.15	e0.04	101	15	20	15	2.0	0.82
3	e6.9	3.3	e2.1	e2.3	e0.14	e0.04	142	17	18	20	1.9	0.78
4	e6.9	3.3	e2.2	e2.3	e0.13	e0.04	145	18	17	18	1.8	0.73
5	e6.8	e3.3	e2.1	e2.3	e0.13	e0.04	127	19	16	13	2.3	0.73
6	e6.6	e3.2	e2.2	e2.3	e0.12	e0.04	89	18	16	9.5	2.0	0.70
7	e6.4	e3.1	e2.2	e2.3	e0.12	e0.04	84	18	17	7.8	1.7	0.84
8	e6.5	e2.8	e2.3	e2.2	e0.11	e0.04	227	17	43	6.8	1.7	0.84
9	e6.3	e2.7	e2.3	e1.9	e0.11	e0.04	168	18	48	6.5	1.5	0.89
10	5.6	e2.6	e2.2	e1.7	e0.10	e0.04	90	21	119	6.4	1.4	1.0
11	5.0	e2.6	e2.3	e1.7	e0.09	e0.04	59	23	96	5.9	1.3	0.99
12	4.6	e2.7	e2.2	e1.4	e0.09	e0.04	48	21	68	5.3	1.4	0.87
13	4.6	e2.7	e2.3	e1.2	e0.09	e0.03	41	19	50	4.7	1.2	1.1
14	4.7	e2.7	e2.3	e0.95	e0.08	e0.03	37	17	36	4.4	1.2	1.1
15	4.9	e2.8	e2.2	e0.77	e0.07	e0.03	32	16	27	4.5	1.0	1.0
16	4.8	e2.7	e2.2	e0.65	e0.07	e0.03	27	17	22	3.8	0.99	0.92
17	5.1	e2.7	e2.2	e0.61	e0.07	e0.03	27	21	19	3.5	0.86	1.2
18	5.3	e2.7	e2.2	e0.54	e0.07	e0.03	29	95	16	3.3	0.83	1.7
19	5.0	e2.4	e2.1	e0.48	e0.06	e0.03	49	165	14	3.5	0.78	1.2
20	4.9	e2.3	e2.2	e0.43	e0.06	e0.03	33	87	12	4.2	0.83	1.2
21	4.9	e2.3	e2.1	e0.39	e0.06	e0.03	27	61	11	3.1	1.1	1.4
22	4.6	e2.2	e2.1	e0.35	e0.06	e0.03	24	49	13	3.0	0.80	1.3
23	4.6	e2.4	e2.1	e0.34	e0.05	e0.03	22	42	11	2.7	0.76	1.3
24	4.3	e2.4	e2.1	e0.31	e0.05	e0.03	20	46	9.8	2.5	0.63	1.2
25	4.2	e2.2	e2.2	e0.30	e0.05	e0.03	19	42	10	2.5	0.80	1.3
26	4.5	e2.2	e2.2	e0.28	e0.05	e0.02	17	36	9.7	2.5	0.66	1.3
27	4.3	e2.3	e2.2	e0.27	e0.05	e0.03	18	32	8.8	2.7	0.67	1.4
28	4.4	e2.3	e2.3	e0.25	e0.05	e0.02	17	30	8.2	2.2	1.6	1.7
29	4.0	e2.4	e2.4	e0.24	---	e0.03	14	28	7.8	2.0	1.1	1.7
30	3.5	e2.3	e2.4	e0.20	---	e0.03	12	32	6.8	2.1	0.91	1.3
31	3.4	---	e2.4	e0.18	---	e5.0	---	26	---	2.0	0.84	---
TOTAL	161.9	80.3	68.7	33.74	2.44	6.00	1,913	1,077	793.1	179.8	38.56	33.27
MEAN	5.22	2.68	2.22	1.09	0.087	0.19	63.8	34.7	26.4	5.80	1.24	1.11
MAX	7.2	3.4	2.4	2.4	0.16	5.0	227	165	119	20	2.3	1.7
MIN	3.4	2.2	2.1	0.18	0.05	0.02	12	11	6.8	2.0	0.63	0.70

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2003, BY WATER YEAR (WY)

MEAN	1.72	1.30	0.66	0.40	1.38	21.5	174	41.2	22.4	9.38	3.76	3.15
MAX	5.45	3.94	2.22	1.09	30.1	139	461	255	162	62.6	23.1	20.7
(WY)	(1981)	(1971)	(2003)	(2003)	(1981)	(1966)	(1970)	(1974)	(2002)	(1970)	(2002)	(2002)
MIN	0.18	0.18	0.053	0.000	0.000	0.000	4.92	2.34	0.44	0.18	0.010	0.090
(WY)	(1962)	(1962)	(1977)	(1973)	(1961)	(1962)	(1973)	(1958)	(1958)	(1961)	(1961)	(1961)

05099400 LITTLE SOUTH PEMBINA RIVER NEAR WALHALLA, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1956 - 2003 ^a	
ANNUAL TOTAL	7,211.20		4,387.81			
ANNUAL MEAN	19.8		12.0		21.4	
HIGHEST ANNUAL MEAN					63.2	1974
LOWEST ANNUAL MEAN					1.78	1958
HIGHEST DAILY MEAN	2,000	Jun 10	227	Apr 8	3,260	Apr 10, 1969
LOWEST DAILY MEAN	0.90	Jan 15	0.02	Mar 26	0.00	Jan 4, 1958
ANNUAL SEVEN-DAY MINIMUM	0.90	Jan 15	0.03	Mar 22	0.00	Jan 4, 1958
MAXIMUM PEAK FLOW			b663	Apr 8	6,600	Apr 25, 1970
MAXIMUM PEAK STAGE			c6.56	Mar 23	d13.95	Apr 25, 1970
10 PERCENT EXCEEDS	18		29		25	
50 PERCENT EXCEEDS	2.8		2.3		1.0	
90 PERCENT EXCEEDS	0.90		0.06		0.12	

- a Complete water years only
- b Gage height, 5.59 ft
- c Backwater from ice
- d Site and datum then in use
- e Estimated

05099400 LITTLE SOUTH PEMBINA RIVER NEAR WALHALLA, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 10...	--	--	--	--	--	--
NOV 07...	--	--	--	--	--	--
JAN 07...	--	--	--	--	--	--
FEB 24...	--	--	--	--	--	--
APR 01...	40	100	<0.10	1	1	280
23...	--	--	--	--	--	--
JUN 03...	--	--	--	--	--	--
JUL 16...	70	140	<0.20	8	4	510
AUG 27...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

RED RIVER OF THE NORTH BASIN

05099600 PEMBINA RIVER AT WALHALLA, ND

LOCATION.--Lat 48°54'48", long 97°55'00", in SW¹₄NE¹₄NE¹₄ sec.29, T.163 N., R.56 W., Pembina County, Hydrologic Unit 09020313, on southeast corner of State Highway 32 bridge, 0.5 mi south of Walhalla, and 7 mi downstream from Little South Pembina River.

DRAINAGE AREA.--3,350 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1939 to September 1990, April 2000 to current year. Prior to October 1963, published as "near Walhalla".

REVISED RECORDS.--WSP 1388: 1943, 1950(P). WSP 1558: 1957. WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 933.34 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 10, 1943, nonrecording gage and Nov. 10, 1943, to Sept. 30, 1963, water stage recorder at site 5.5 mi upstream at different datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--A peak gage height of 16.53 ft (from floodmark), discharge not determined, occurred on Apr. 25 or 26, 1997. A measured discharge of 22,500 ft³/s, gage height, 16.20 ft, occurred on Apr. 26, 1997.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	77	e27	e26	e4.9	e3.4	e332	121	156	58	29	18
2	81	79	e28	e26	e5.0	e3.3	e308	117	141	88	33	16
3	77	73	e29	e25	e5.0	e3.3	e234	115	131	93	35	11
4	77	52	e28	e26	e4.8	e3.2	e216	116	120	67	34	8.9
5	77	67	e29	e26	e4.6	e3.1	e201	114	111	59	38	7.7
6	76	52	e30	e25	e4.6	e3.1	e219	108	109	53	40	6.4
7	72	55	e31	e25	e4.7	e3.1	e224	105	183	51	38	5.8
8	73	52	e30	e26	e4.5	e3.0	424	102	243	50	38	5.0
9	71	42	e30	e24	e4.5	e2.9	609	104	196	49	37	5.6
10	69	53	e30	e23	e4.6	e3.0	490	113	570	50	39	4.5
11	67	51	e32	e21	e4.6	e3.0	414	115	381	47	39	5.0
12	66	49	e32	e19	e4.5	e2.9	376	110	328	46	39	7.9
13	64	e48	e32	e18	e4.4	e2.9	375	104	280	43	38	21
14	63	e48	e33	e15	e4.3	e6.8	339	100	224	41	35	18
15	63	e45	e32	e12	e4.3	e13	296	92	181	40	33	17
16	65	e44	e31	e10	e4.0	e13	273	89	157	37	32	15
17	67	e41	e31	e9.6	e4.1	e25	271	118	142	34	31	14
18	68	e37	e31	e8.7	e3.9	e29	274	316	131	33	29	20
19	65	e33	e30	e7.9	e3.8	e29	300	620	121	33	29	17
20	62	e30	e31	e7.7	e3.7	e57	258	395	102	34	27	16
21	61	e29	e30	e7.1	e3.7	e116	231	322	89	35	29	20
22	59	e30	e30	e6.6	e3.7	e172	208	285	101	33	26	22
23	58	e30	e30	e6.3	e3.6	e214	192	254	89	32	23	20
24	58	e30	e29	e5.9	e3.6	e236	181	268	77	30	25	18
25	74	e28	e28	e5.7	e3.5	e256	167	245	75	31	23	16
26	64	e28	e29	e5.5	e3.4	e266	153	218	77	30	22	16
27	57	e29	e28	e5.3	e3.5	e266	153	194	73	29	18	16
28	59	e27	e28	e5.1	e3.4	e266	146	183	70	30	27	18
29	56	e27	e28	e5.3	---	e270	132	170	72	28	29	18
30	45	e28	e27	e5.1	---	e286	123	184	64	28	26	15
31	50	---	e26	e5.0	---	e336	---	178	---	28	20	---
TOTAL	2,049	1,314	920	443.8	117.2	2,897.0	8,119	5,675	4,794	1,340	961	418.8
MEAN	66.1	43.8	29.7	14.3	4.19	93.5	271	183	160	43.2	31.0	14.0
MAX	85	79	33	26	5.0	336	609	620	570	93	40	22
MIN	45	27	26	5.0	3.4	2.9	123	89	64	28	18	4.5
AC-FT	4,060	2,610	1,820	880	232	5,750	16,100	11,260	9,510	2,660	1,910	831

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2003, BY WATER YEAR (WY)

MEAN	65.3	43.8	21.3	12.2	9.26	122	1,061	772	348	168	115	76.0
MAX	600	454	216	120	68.9	1,206	4,950	4,672	1,933	814	960	432
(WY)	(1995)	(1995)	(1995)	(1995)	(1995)	(1995)	(1995)	(1974)	(1974)	(1970)	(1995)	(1944)
MIN	0.042	0.15	0.000	0.000	0.000	0.000	49.6	18.8	2.83	0.74	0.10	0.000
(WY)	(1940)	(1941)	(1941)	(1940)	(1940)	(1940)	(1977)	(1940)	(1940)	(1940)	(1961)	(1940)

05099600 PEMBINA RIVER AT WALHALLA, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1940 - 2003	
ANNUAL TOTAL	40,619		29,048.8			
ANNUAL MEAN	111		79.6		236	
HIGHEST ANNUAL MEAN					1,146	1995
LOWEST ANNUAL MEAN					9.77	1940
HIGHEST DAILY MEAN	2,830	Jun 11	620	May 19	13,800	Apr 18, 1950
LOWEST DAILY MEAN	14	Mar 20	2.9	Mar 9	0.00	Oct 14, 1939
ANNUAL SEVEN-DAY MINIMUM	14	Mar 20	3.0	Mar 7	0.00	Oct 14, 1939
MAXIMUM PEAK FLOW			a991	Apr 8	b20,400	Apr 18, 1950
MAXIMUM PEAK STAGE			c5.84	Mar 29	d16.20	Apr 18, 1950
ANNUAL RUNOFF (AC-FT)	80,570		57,620		171,300	
10 PERCENT EXCEEDS	185		235		565	
50 PERCENT EXCEEDS	49		34		38	
90 PERCENT EXCEEDS	18		4.6		2.0	

a Gage height, 5.28 ft

b From rating curve extended above 7,000 ft³/s on basis of contracted-opening measurement of discharge

c Backwater from ice

d Present datum

e Estimated

05099600 PEMBINA RIVER AT WALHALLA, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 09...	--	--	--	--	--	--
NOV 07...	--	--	--	--	--	--
JAN 07...	--	--	--	--	--	--
FEB 25...	--	--	--	--	--	--
APR 09...	40	110	<0.10	3	2	240
JUN 03...	--	--	--	--	--	--
JUL 17...	80	110	<0.20	8	3	500
AUG 27...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

RED RIVER OF THE NORTH BASIN

05100000 PEMBINA RIVER AT NECHE, ND
(International gaging station)LOCATION.--Lat 48°59'23", long 97°33'24", in NW¹₄NW¹₄ sec.31, T.164 N., R.53 W., Pembina County, Hydrologic Unit 09020313, on right bank at bridge on State Highway 18 and at northwest corner of Neche.DRAINAGE AREA.--3,410 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1903 to September 1908, June 1909 to September 1915, April 1919 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1904-8, 1910-15, 1920, 1921, 1923, 1924. WSP 1388: 1904(M), 1914, 1915(M), 1931(M), 1933, 1938(M). WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 809.69 ft above National Geodetic Vertical Datum of 1929. From Apr. 18, 1939, to July 21, 1999, at site 0.8 miles downstream at same datum. May 25, 1932, to Apr. 17, 1939, nonrecording gage on bridge on State Highway 18 at same datum. Prior to May 24, 1932, nonrecording gage at Burlington Northern Railway bridge, 0.1 mi upstream, at same datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	42	e53	e36	e8.5	e5.1	e358	176	170	119	e36	23
2	99	54	e53	e36	e8.4	e5.1	e353	170	143	118	e38	21
3	96	64	e51	e36	e8.3	e5.0	e325	164	121	131	e39	17
4	91	e69	e50	e36	e8.0	e4.8	e303	162	106	167	e40	16
5	87	e68	e49	e35	e7.6	e4.8	e280	159	94	138	43	15
6	87	e66	e48	e34	e7.6	e4.8	e265	157	85	118	44	13
7	89	e64	e47	e33	e7.4	e4.8	e269	154	79	103	42	12
8	87	e66	e46	e32	e7.6	e4.7	e396	148	98	92	44	10
9	82	e62	e46	e32	e7.4	e4.8	e500	146	188	89	41	7.7
10	82	e57	e45	e29	e7.4	e4.8	e600	149	182	88	41	7.0
11	81	42	e44	e28	e7.2	e4.8	e550	163	457	90	39	8.5
12	79	49	e43	e25	e7.0	e4.8	484	167	422	86	39	6.2
13	77	51	e42	e23	e6.9	e4.8	457	156	377	78	42	6.2
14	76	44	e42	e21	e6.6	e11	446	144	353	73	e40	8.8
15	75	40	e42	e19	e6.6	e17	428	137	312	65	e39	21
16	74	49	e43	e17	e6.3	e15	400	131	285	59	37	24
17	75	56	e44	e15	e6.1	e26	383	129	249	54	35	25
18	78	57	e44	e13	e6.1	e32	370	165	229	48	34	28
19	78	57	e43	e12	e6.1	e32	372	345	210	43	31	26
20	76	e55	e42	e12	e6.0	e57	401	611	200	41	30	25
21	75	e52	e41	e11	e5.7	e123	361	407	184	40	31	23
22	72	e49	e40	e11	e5.7	e180	330	318	178	42	28	20
23	71	e47	e40	e10	e5.7	e217	302	e278	165	39	27	23
24	72	e45	e39	e9.9	e5.7	e240	281	e253	162	35	27	23
25	61	e45	e39	e9.8	e5.6	e261	260	257	149	33	28	23
26	80	e47	e39	e9.3	e5.6	e269	241	242	141	30	26	24
27	78	e50	e38	e9.2	e5.4	e265	225	211	135	e30	23	23
28	77	e50	e40	e8.9	e5.1	e271	214	184	136	e30	32	21
29	74	e53	e40	e9.1	---	e275	203	167	131	e32	28	20
30	73	e53	e38	e8.7	---	e294	190	160	125	e35	26	21
31	52	---	e36	e8.5	---	e340	---	157	---	e36	26	---
TOTAL	2,454	1,603	1,347	629.4	187.6	2,988.1	10,547	6,367	5,866	2,182	1,076	541.4
MEAN	79.2	53.4	43.5	20.3	6.70	96.4	352	205	196	70.4	34.7	18.0
MAX	100	69	53	36	8.5	340	600	611	457	167	44	28
MIN	52	40	36	8.5	5.1	4.7	190	129	79	30	23	6.2
AC-FT	4,870	3,180	2,670	1,250	372	5,930	20,920	12,630	11,640	4,330	2,130	1,070

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 2003, BY WATER YEAR (WY)

MEAN	75.5	49.0	24.1	12.8	9.21	106	917	727	350	190	114	81.4
MAX	643	486	261	120	65.8	1,216	4,713	4,770	1,894	1,509	946	648
(WY)	(1995)	(1995)	(1995)	(1995)	(1995)	(1995)	(1998)	(1997)	(1999)	(1997)	(1993)	(1993)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	24.7	11.8	6.56	0.000	0.000	0.000
(WY)	(1939)	(1939)	(1939)	(1933)	(1933)	(1936)	(1939)	(1939)	(1940)	(1940)	(1939)	(1938)

05100000 PEMBINA RIVER AT NECHE, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1903 - 2003	
ANNUAL TOTAL	50,081		35,788.5		223	
ANNUAL MEAN	137		98.1		1,116	
HIGHEST ANNUAL MEAN					1995	
LOWEST ANNUAL MEAN					1939	
HIGHEST DAILY MEAN	3,070	Jun 12	611	May 20	14,300	Apr 27, 1997
LOWEST DAILY MEAN	15	Mar 20	4.7	Mar 8	0.00	Feb 1, 1932
ANNUAL SEVEN-DAY MINIMUM	15	Mar 20	4.8	Mar 4	0.00	Feb 1, 1932
MAXIMUM PEAK FLOW			a712	May 20	15,100	Apr 27, 1997
MAXIMUM PEAK STAGE			b8.10	Mar 30	b24.51	Apr 21, 1997
ANNUAL RUNOFF (AC-FT)	99,340		70,990		161,800	
10 PERCENT EXCEEDS	279		273		505	
50 PERCENT EXCEEDS	67		47		43	
90 PERCENT EXCEEDS	20		7.4		1.4	

- a Gage height, 6.56 ft
- b Backwater from ice
- e Estimated

05100000 PEMBINA RIVER AT NECHE, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 09...	--	--	--	--	--	--
NOV 07...	--	--	--	--	--	--
JAN 08...	--	--	--	--	--	--
FEB 12...	--	--	--	--	--	--
APR 08...	50	60	<0.10	3	2	330
JUN 03...	--	--	--	--	--	--
JUL 16...	70	30	<0.20	9	3	520
AUG 26...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

RED RIVER OF THE NORTH BASIN

05100460 TONGUE RIVER NEAR OLGA, ND

LOCATION.--Lat 48°45'65", long 98°06'14", in NE¹₄ sec.14, T.161 N., R.58 W., Pembina County, Hydrologic Unit 09020313, on right bank 95 ft upstream of North Dakota Highway 5, 3 mi west of Olga and 12 mi east of Langdon.

DRAINAGE AREA.--Not determined.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to September 2003.

GAGE.--Water-stage recorder. Elevation of gage is 1,556.69 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Discharges for Apr. 1 to May 28 based on once daily, Monday through Friday, observer readings.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 71 ft³/s, on or about May 19, gage height, 4.43 ft (from floodmark); maximum gage height, 4.54 ft, on or about Apr. 9 (from floodmark), backwater from ice; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	e0.50	0.17	0.19	0.07	0.00	0.00
2	---	---	---	---	---	---	e15	0.16	0.16	0.18	0.00	0.00
3	---	---	---	---	---	---	e1.1	e0.18	0.14	1.8	0.00	0.00
4	---	---	---	---	---	---	e0.75	e0.20	0.14	1.3	0.00	0.00
5	---	---	---	---	---	---	e0.60	0.22	0.13	0.62	0.00	0.00
6	---	---	---	---	---	---	e0.44	0.13	0.12	0.44	0.00	0.00
7	---	---	---	---	---	---	e0.28	0.15	0.16	0.28	0.00	0.00
8	---	---	---	---	---	---	e40	0.02	0.23	0.18	0.00	0.00
9	---	---	---	---	---	---	e50	0.09	0.38	0.18	0.00	0.00
10	---	---	---	---	---	---	e25	e0.15	1.0	0.22	0.00	0.00
11	---	---	---	---	---	---	e20	e0.25	7.3	0.21	0.00	0.00
12	---	---	---	---	---	---	e30	0.32	5.9	0.14	0.00	0.00
13	---	---	---	---	---	---	e40	0.16	4.7	0.10	0.00	0.00
14	---	---	---	---	---	---	54	0.17	3.2	0.08	0.00	0.00
15	---	---	---	---	---	---	e40	0.09	2.0	0.07	0.00	0.00
16	---	---	---	---	---	---	15	0.17	1.3	0.04	0.00	0.00
17	---	---	---	---	---	---	4.8	e4.0	0.92	0.01	0.00	0.00
18	---	---	---	---	---	---	2.5	e15	0.48	0.00	0.00	0.00
19	---	---	---	---	---	---	e2.8	56	0.26	0.00	0.00	0.00
20	---	---	---	---	---	---	e3.0	20	0.23	0.00	0.00	0.00
21	---	---	---	---	---	---	3.4	4.7	0.17	0.00	0.00	0.00
22	---	---	---	---	---	---	1.6	1.9	0.25	0.00	0.00	0.00
23	---	---	---	---	---	---	1.3	1.4	0.24	0.00	0.00	0.00
24	---	---	---	---	---	---	0.72	e1.3	0.18	0.00	0.00	0.00
25	---	---	---	---	---	---	0.54	e1.2	0.22	0.00	0.00	0.00
26	---	---	---	---	---	---	e0.55	e1.2	0.23	0.00	0.00	0.00
27	---	---	---	---	---	---	e0.56	1.1	0.22	0.00	0.00	0.00
28	---	---	---	---	---	---	0.58	0.24	0.19	0.00	0.00	0.00
29	---	---	---	---	---	---	0.22	0.42	0.13	0.00	0.00	0.00
30	---	---	---	---	---	---	0.28	0.41	0.10	0.00	0.00	0.00
31	---	---	---	---	---	---	---	0.32	---	0.00	0.00	---
TOTAL	---	---	---	---	---	---	355.52	111.82	30.87	5.92	0.00	0.00
MEAN	---	---	---	---	---	---	11.9	3.61	1.03	0.19	0.000	0.000
MAX	---	---	---	---	---	---	54	56	7.3	1.8	0.00	0.00
MIN	---	---	---	---	---	---	0.22	0.02	0.10	0.00	0.00	0.00
AC-FT	---	---	---	---	---	---	705	222	61	12	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2003 - 2003, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	---	11.9	3.61	1.03	0.19	0.000	0.000
MAX	---	---	---	---	---	---	11.9	3.61	1.03	0.19	0.000	0.000
(WY)	(---	(---	(---	(---	(---	(---	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	---	---	---	---	---	---	11.9	3.61	1.03	0.19	0.000	0.000
(WY)	(---	(---	(---	(---	(---	(---	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)

e Estimated

05100480 TONGUE RIVER BELOW YOUNG DAM NEAR CONCRETE, ND

LOCATION.--Lat 48°45'18", long 98°00'50", in NE¹₄ sec.22, T.161 N., R.57 W., Cavalier County, Hydrologic Unit 09020313, on right bank, 4 mi west of Concrete and 16 mi east of Langdon.

DRAINAGE AREA.--Not determined.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to September 2003.

GAGE.--Water-stage recorder. Elevation of gage is 1,360 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Discharges for Apr. 1 to May 27 computed on basis of once daily, Monday through Friday, observer readings.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 200 ft³/s, on or about Apr. 10, gage height, 8.77 ft (from floodmark); maximum gage height, 8.77 ft (from floodmark), on or about Apr. 10; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	25	1.3	2.5	0.16	0.09	0.00
2	---	---	---	---	---	---	20	1.2	2.1	0.22	0.09	0.00
3	---	---	---	---	---	---	30	e1.6	1.8	0.29	0.07	0.00
4	---	---	---	---	---	---	29	e2.1	1.7	0.25	0.05	0.00
5	---	---	---	---	---	---	e28	2.6	1.8	0.31	0.04	0.00
6	---	---	---	---	---	---	e27	2.0	2.0	0.25	0.05	0.00
7	---	---	---	---	---	---	26	1.8	2.5	0.20	0.03	0.00
8	---	---	---	---	---	---	68	1.8	2.4	0.17	0.02	0.00
9	---	---	---	---	---	---	e105	1.7	2.9	0.19	0.00	0.00
10	---	---	---	---	---	---	150	e2.5	8.3	0.24	0.00	0.00
11	---	---	---	---	---	---	40	e3.2	5.7	0.23	0.00	0.00
12	---	---	---	---	---	---	e45	4.0	13	0.22	0.00	0.00
13	---	---	---	---	---	---	e55	3.2	5.8	0.19	0.00	0.00
14	---	---	---	---	---	---	62	2.4	2.8	0.18	0.00	0.00
15	---	---	---	---	---	---	48	2.1	1.3	0.18	0.00	0.00
16	---	---	---	---	---	---	28	2.0	0.79	0.16	0.00	0.00
17	---	---	---	---	---	---	12	e20	0.54	0.15	0.00	0.00
18	---	---	---	---	---	---	4.0	e65	0.37	0.15	0.00	0.00
19	---	---	---	---	---	---	e5.5	99	0.29	0.15	0.00	0.00
20	---	---	---	---	---	---	e6.5	51	0.23	0.16	0.00	0.00
21	---	---	---	---	---	---	8.0	20	0.19	0.16	0.00	0.00
22	---	---	---	---	---	---	3.3	8.7	0.23	0.16	0.00	0.00
23	---	---	---	---	---	---	2.7	4.8	0.28	0.16	0.00	0.00
24	---	---	---	---	---	---	2.4	e13	0.23	0.16	0.00	0.00
25	---	---	---	---	---	---	1.8	e9.0	0.26	0.16	0.00	0.00
26	---	---	---	---	---	---	e1.8	e6.0	0.27	0.16	0.00	0.00
27	---	---	---	---	---	---	e1.8	e4.0	0.25	0.16	0.00	0.00
28	---	---	---	---	---	---	1.8	2.9	0.22	0.15	0.00	0.00
29	---	---	---	---	---	---	1.6	2.7	0.20	0.13	0.00	0.00
30	---	---	---	---	---	---	1.5	4.0	0.17	0.11	0.00	0.00
31	---	---	---	---	---	---	---	3.6	---	0.10	0.00	---
TOTAL	---	---	---	---	---	---	840.7	349.2	61.12	5.66	0.44	0.00
MEAN	---	---	---	---	---	---	28.0	11.3	2.04	0.18	0.014	0.000
MAX	---	---	---	---	---	---	150	99	13	0.31	0.09	0.00
MIN	---	---	---	---	---	---	1.5	1.2	0.17	0.10	0.00	0.00
AC-FT	---	---	---	---	---	---	1,670	693	121	11	0.9	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2003 - 2003, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	---	28.0	11.3	2.04	0.18	0.014	0.000
MAX	---	---	---	---	---	---	28.0	11.3	2.04	0.18	0.014	0.000
(WY)	(---)	(---)	(---)	(---)	(---)	(---)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	---	---	---	---	---	---	28.0	11.3	2.04	0.18	0.014	0.000
(WY)	(---)	(---)	(---)	(---)	(---)	(---)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)

e Estimated

05100800 TONGUE RIVER ABOVE RENWICK DAM NEAR AKRA, ND

LOCATION.--Lat 48°46'44", long 97°47'42", in NW¹₄SW¹₄ sec.8, T.161 N., R.55 W., Pembina County, Hydrologic Unit 09020313, on left bank, 3 mi west and 1.25 mi north of Akra.

DRAINAGE AREA.--Not determined.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to September 2003.

GAGE.--Water-stage recorder. Elevation of gage is 960 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Discharges for Apr. 1 to May 28 computed on basis of once daily, Monday through Friday, observer readings.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 248 ft³/s, Apr. 10, gage height, 11.96 ft (from floodmark); no flow on all or part of Sept. 8-16.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	e85	14	30	5.6	3.7	0.99
2	---	---	---	---	---	---	e90	12	22	5.2	4.4	0.91
3	---	---	---	---	---	---	e95	e11	18	7.4	5.1	0.70
4	---	---	---	---	---	---	e84	e12	15	7.4	4.4	0.60
5	---	---	---	---	---	---	e70	15	14	5.8	6.1	0.63
6	---	---	---	---	---	---	e62	15	14	5.0	6.0	0.60
7	---	---	---	---	---	---	e75	15	18	4.8	11	0.53
8	---	---	---	---	---	---	110	15	29	4.3	8.7	0.28
9	---	---	---	---	---	---	e214	15	26	4.3	4.1	0.02
10	---	---	---	---	---	---	e225	e14	64	5.3	2.5	0.22
11	---	---	---	---	---	---	168	e14	68	5.4	1.6	0.26
12	---	---	---	---	---	---	e140	28	60	5.0	1.4	0.00
13	---	---	---	---	---	---	e110	36	55	4.2	1.1	0.07
14	---	---	---	---	---	---	95	25	37	4.2	1.1	0.20
15	---	---	---	---	---	---	e80	18	28	4.4	1.3	0.15
16	---	---	---	---	---	---	71	17	22	3.6	0.83	0.18
17	---	---	---	---	---	---	60	e14	18	3.1	0.95	0.52
18	---	---	---	---	---	---	48	e12	14	2.9	0.88	2.9
19	---	---	---	---	---	---	e65	125	11	2.9	0.32	2.8
20	---	---	---	---	---	---	e60	115	10	3.1	0.28	1.9
21	---	---	---	---	---	---	58	61	8.9	2.4	0.68	1.4
22	---	---	---	---	---	---	40	43	9.2	2.5	0.52	1.5
23	---	---	---	---	---	---	35	31	9.0	1.8	0.49	1.1
24	---	---	---	---	---	---	31	e30	9.5	1.6	0.37	1.9
25	---	---	---	---	---	---	30	e30	9.1	1.2	0.56	1.0
26	---	---	---	---	---	---	e30	e26	10	1.8	0.51	1.9
27	---	---	---	---	---	---	e30	22	9.0	1.5	0.26	1.4
28	---	---	---	---	---	---	30	18	8.5	2.0	1.6	1.2
29	---	---	---	---	---	---	20	15	7.1	1.9	1.1	2.1
30	---	---	---	---	---	---	16	21	6.2	2.0	1.1	2.3
31	---	---	---	---	---	---	---	38	---	3.2	0.93	---
TOTAL	---	---	---	---	---	---	2,327	877	659.5	115.8	73.88	30.26
MEAN	---	---	---	---	---	---	77.6	28.3	22.0	3.74	2.38	1.01
MAX	---	---	---	---	---	---	225	125	68	7.4	11	2.9
MIN	---	---	---	---	---	---	16	11	6.2	1.2	0.26	0.00
AC-FT	---	---	---	---	---	---	4,620	1,740	1,310	230	147	60

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2003 - 2003, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	---	---	---	---	---	---	77.6	28.3	22.0	3.74	2.38	1.01
MAX	---	---	---	---	---	---	77.6	28.3	22.0	3.74	2.38	1.01
(WY)	(---	(---	(---	(---	(---	(---	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)
MIN	---	---	---	---	---	---	77.6	28.3	22.0	3.74	2.38	1.01
(WY)	(---	(---	(---	(---	(---	(---	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)

e Estimated

05101000 TONGUE RIVER AT AKRA, ND

LOCATION.--Lat 48°46'42", long 97°44'47", in SW¹₄ sec.10, T.161 N., R.55 W., Pembina County, Hydrologic Unit 09020313, on left bank 300 ft downstream from Renwick Dam, 0.9 mi northwest of Akra, and 6 mi west of Cavalier.

DRAINAGE AREA.--160 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to June 1950 (WSP 1137-B), October 1951 to current year (seasonal record since 1983).

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 930.00 ft above National Geodetic Vertical Datum of 1929. Prior to July 10, 1954, nonrecording gage 1.2 mi downstream at datum 30.00 ft lower. July 23, 1954, to Dec. 19, 1973, water stage recorder 2.7 mi downstream at datum 9.10 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are poor. Flow regulated by temporary retention in ten retarding basins beginning 300 ft above station, four of which have slow release outlet structures to regulate the flow. Retarding basins were completed during the period 1955 to 1961 and have a combined capacity of 19,245 acre-ft.

EXTREMES FOR CURRENT YEAR.--Maximum instantaneous discharge, 220 ft³/s, Apr. 11, gage height, 11.72 ft; minimum daily discharge, 1.2 ft³/s, Aug. 1.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e1.8	53	20	38	5.8	1.2	4.2
2	---	---	---	---	---	e1.8	65	17	35	5.4	1.3	4.2
3	---	---	---	---	---	e1.8	66	15	31	5.2	1.3	3.9
4	---	---	---	---	---	e1.8	56	13	26	5.0	1.3	3.8
5	---	---	---	---	---	e1.8	48	14	21	4.8	e1.3	3.7
6	---	---	---	---	---	e1.9	37	14	18	4.4	1.4	3.6
7	---	---	---	---	---	e2.0	27	15	18	4.1	1.5	3.6
8	---	---	---	---	---	e2.2	34	14	24	3.5	1.8	3.4
9	---	---	---	---	---	e2.5	85	15	32	3.1	2.1	3.1
10	---	---	---	---	---	e3.0	195	18	48	3.6	2.2	3.0
11	---	---	---	---	---	e3.5	207	25	76	3.6	2.6	3.1
12	---	---	---	---	---	e4.0	163	27	85	3.4	2.8	2.9
13	---	---	---	---	---	e5.0	127	25	79	3.2	2.7	3.0
14	---	---	---	---	---	5.3	108	25	64	3.2	2.5	2.8
15	---	---	---	---	---	6.0	94	21	49	3.2	2.7	2.7
16	---	---	---	---	---	8.0	82	18	39	3.0	2.9	2.6
17	---	---	---	---	---	13	75	18	32	2.7	2.8	2.7
18	---	---	---	---	---	20	64	29	24	2.5	2.9	3.2
19	---	---	---	---	---	23	68	84	17	2.4	2.9	3.3
20	---	---	---	---	---	25	77	153	12	2.5	3.1	3.5
21	---	---	---	---	---	26	73	124	9.8	2.5	3.1	3.5
22	---	---	---	---	---	30	61	88	9.3	2.3	3.0	3.3
23	---	---	---	---	---	40	49	62	8.1	2.2	3.0	3.1
24	---	---	---	---	---	61	42	50	7.2	1.9	3.1	2.9
25	---	---	---	---	---	61	36	49	6.9	1.8	3.1	2.6
26	---	---	---	---	---	48	35	45	6.5	1.7	3.3	2.5
27	---	---	---	---	---	36	38	40	6.5	1.6	3.4	2.4
28	---	---	---	---	---	29	36	34	6.8	1.5	4.2	2.2
29	---	---	---	---	---	26	30	30	7.3	1.4	4.4	1.9
30	---	---	---	---	---	25	24	29	6.5	1.5	4.4	1.7
31	---	---	---	---	---	26	---	34	---	1.3	4.3	---
TOTAL	---	---	---	---	---	541.4	2,155	1,165	842.9	94.3	82.6	92.4
MEAN	---	---	---	---	---	17.5	71.8	37.6	28.1	3.04	2.66	3.08
MAX	---	---	---	---	---	61	207	153	85	5.8	4.4	4.2
MIN	---	---	---	---	---	1.8	24	13	6.5	1.3	1.2	1.7
AC-FT	---	---	---	---	---	1,070	4,270	2,310	1,670	187	164	183

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 2003, BY WATER YEAR (WY)

MEAN	6.29	6.76	4.46	3.16	3.60	23.6	120	61.9	22.4	15.0	7.62	7.04
MAX	30.1	22.7	12.9	7.27	18.7	135	451	587	196	216	144	42.8
(WY)	(1981)	(1981)	(1971)	(1971)	(1981)	(1966)	(1950)	(1950)	(2002)	(1997)	(1993)	(2002)
MIN	0.51	0.56	0.065	0.51	0.24	0.22	0.43	1.63	0.47	0.086	0.21	0.096
(WY)	(1962)	(1976)	(1953)	(1953)	(1953)	(1964)	(1991)	(1980)	(1988)	(1978)	(1988)	(1989)

SUMMARY STATISTICS

WATER YEARS 1950 - 2003

ANNUAL MEAN	a	21.4	
HIGHEST ANNUAL MEAN	a	50.1	1956
LOWEST ANNUAL MEAN	a	3.11	1961
HIGHEST DAILY MEAN		5,240	Apr 18, 1950
LOWEST DAILY MEAN		0.00	Dec 1, 1952
ANNUAL SEVEN-DAY MINIMUM		0.00	Dec 1, 1952
MAXIMUM PEAK FLOW	b	11,800	Apr 18, 1950
MAXIMUM PEAK STAGE	c	16.75	Apr 22, 1979
ANNUAL RUNOFF (AC-FT)	a	15,480	
10 PERCENT EXCEEDS		39	
50 PERCENT EXCEEDS		4.1	
90 PERCENT EXCEEDS		0.80	

a Based on complete water years only (1952-82)

b From indirect measurement of flow; gage height, 48.7 ft, from floodmark, site and datum then in use

c Present location

e Estimated

05101000 TONGUE RIVER AT AKRA, ND—Continued

WATER-QUALITY RECORDS

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

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
FEB 28...	1250	1.8	--	--	--	1,250	-5.0	2.0	--	--	--	--	--
MAR 26...	0825	48	7.8	7.9	522	548	1.5	2.0	210	57.0	16.0	11.0	0.9
MAR 26...	1345	--	--	--	--	--	--	--	--	--	--	--	--
APR 10...	1350	201	--	--	--	578	11.0	4.0	--	--	--	--	--
APR 11...	0820	218	--	--	--	--	--	--	--	--	--	--	--
MAY 13...	1330	25	8.5	--	--	560	20.0	13.5	--	--	--	--	--
MAY 20...	1015	159	8.0	--	--	304	12.5	13.0	--	--	--	--	--
JUN 03...	1510	30	--	--	--	706	17.0	18.0	--	--	--	--	--
JUN 10...	1010	40	7.4	--	--	743	14.0	18.0	--	--	--	--	--
JUL 22...	0830	2.3	7.7	7.8	697	710	17.0	23.0	300	77.0	25.8	7.10	1
JUL 22...	0835	--	--	--	--	--	--	--	--	--	--	--	--
AUG 28...	1005	4.2	7.8	--	--	634	16.0	20.5	--	--	--	--	--
SEP 18...	1200	3.4	7.8	--	--	625	11.5	14.0	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, mg/L (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)
FEB 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 26...	29.0	22	162	19.0	0.20	--	78.0	308	42.8	330	--	--	--
MAR 26...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 13...	--	--	--	--	--	--	--	--	--	--	1.3	0.081	<0.010
MAY 20...	--	--	--	--	--	--	--	--	--	--	0.64	0.107	0.040
JUN 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 10...	--	--	--	--	--	--	--	--	--	--	1.1	0.309	0.030
JUL 22...	38.7	21	211	16.6	0.33	20.7	141	435	2.83	--	--	--	--
JUL 22...	--	--	--	--	--	--	--	--	--	--	0.95	0.154	0.100
AUG 28...	--	--	--	--	--	--	--	--	--	--	1.2	0.359	0.060
SEP 18...	--	--	--	--	--	--	--	--	--	--	0.70	<0.010	0.060

RED RIVER OF THE NORTH BASIN

05101000 TONGUE RIVER AT AKRA, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Organic nitrogen, water, unfltrd mg/L (00605)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, unfltrd mg/L (00600)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)	Suspnd. sediment, sieve diameter percent <.063mm (70331)
FEB 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 26...	--	--	--	2.0	70	<1	40	340	<0.10	<1	<1	250	--
MAR 26...	--	--	--	--	--	--	--	--	--	--	--	--	88
APR 10...	--	--	--	--	--	--	--	--	--	--	--	--	51
APR 11...	--	--	--	--	--	--	--	--	--	--	--	--	43
MAY 13...	1.2	0.073	1.3	--	--	--	--	--	--	--	--	--	17
MAY 20...	0.53	0.115	0.68	--	--	--	--	--	--	--	--	--	--
JUN 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 10...	0.81	0.159	1.1	--	--	--	--	--	--	--	--	--	100
JUL 22...	--	--	--	7.6	<10	<1	40	780	<0.20	4	2	350	--
JUL 22...	0.80	0.225	1.1	--	--	--	--	--	--	--	--	--	97
AUG 28...	0.86	0.268	1.3	--	--	--	--	--	--	--	--	--	90
SEP 18...	--	0.147	0.76	--	--	--	--	--	--	--	--	--	74

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Suspended sediment concentration mg/L (80154)	Suspended sediment load, tons/d (80155)
FEB 28...	--	--
MAR 26...	--	--
MAR 26...	30	--
APR 10...	642	348
APR 11...	813	479
MAY 13...	59	4.0
MAY 20...	--	--
JUN 03...	--	--
JUN 10...	9	0.97
JUL 22...	--	--
JUL 22...	10	--
AUG 28...	14	0.16
SEP 18...	32	0.29

Remark codes used in this table:

< -- Less than

05102490 RED RIVER OF THE NORTH AT PEMBINA, ND

LOCATION.--Lat 48°58'25", long 97°14'29", in NE¹/₄ sec.4, T.163 N., R.51 W., Pembina County, Hydrologic Unit 09020311, on left bank on bridge crossing the Red River of the North, 0.2 mi north of Pembina.

DRAINAGE AREA.--40,200 mi².

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--March 1985 to September 2002 (peak gage height and discharge only), October 2002 to September 2003 (gage height and maximum discharge only).

GAGE.--Water stage recorder. Datum of gage is 739.45 ft above National Geodetic Vertical Datum of 1929 (levels by North Dakota State Water Commission).

REMARKS.--Gage heights for Apr. 2 and Aug. 26 based on once daily readings by U.S. Geological Survey personnel.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 141,000 ft³/s, Apr. 26, 1997, gage height, 54.94 ft; minimum recorded gage height, 7.37 ft, Sept. 15, 2003.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 14,200 ft³/s, gage height, 25.05 ft, July 3; minimum gage height, 7.37 ft, Sept. 15.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.38	12.40	11.11	11.29	10.10	10.45	---	13.85	16.12	24.29	12.63	8.04
2	12.28	12.40	10.98	11.28	10.13	10.43	23.60	13.52	15.74	24.81	12.52	8.10
3	12.18	12.28	11.01	11.29	10.16	10.43	23.83	13.33	15.34	25.03	12.40	8.06
4	12.06	12.12	11.05	11.30	10.22	10.39	22.81	13.45	14.95	24.96	12.24	8.00
5	12.01	11.92	11.02	11.31	10.26	10.35	22.11	13.70	14.57	24.76	12.04	7.93
6	11.90	11.80	10.91	11.33	10.27	10.32	---	13.87	14.23	24.35	11.82	7.82
7	11.83	11.80	10.80	11.33	10.32	10.31	---	13.87	14.11	23.70	11.65	7.74
8	11.78	11.89	10.76	11.29	10.35	10.34	20.30	13.75	13.98	22.75	11.49	7.76
9	11.80	12.04	10.76	11.24	10.39	10.36	18.74	13.78	13.74	21.48	11.32	7.74
10	11.79	12.08	10.74	11.18	10.41	10.36	16.77	14.19	13.75	20.06	11.16	7.69
11	11.81	12.10	10.78	11.12	10.44	10.35	15.79	14.81	14.12	18.70	10.99	7.61
12	11.85	11.88	10.85	11.06	10.45	10.33	15.70	15.51	15.13	17.56	10.82	7.54
13	11.86	11.54	10.94	11.04	10.45	10.33	15.81	16.26	16.11	16.67	10.62	7.48
14	11.84	11.97	11.02	11.01	10.41	10.34	15.73	16.86	17.09	16.14	10.46	7.42
15	11.83	12.21	11.11	10.98	10.36	10.38	15.51	17.15	17.77	15.93	10.32	7.40
16	11.83	12.12	11.20	10.94	10.33	10.47	15.05	17.15	18.29	15.96	10.19	7.43
17	11.82	11.84	11.29	10.91	10.31	10.61	14.46	16.95	18.64	16.11	10.08	7.53
18	11.82	11.55	11.38	10.84	10.36	10.80	13.96	16.74	18.32	16.15	9.98	7.67
19	11.80	11.34	11.46	10.76	10.39	11.04	13.59	16.73	17.61	16.09	9.88	7.82
20	11.76	11.28	11.53	10.66	10.38	11.86	13.37	17.05	16.69	15.90	9.81	8.15
21	11.72	11.37	11.55	10.58	10.37	13.92	13.41	17.55	15.73	15.62	9.69	8.73
22	11.70	11.56	11.55	10.52	10.38	16.41	13.51	17.89	14.97	15.27	---	9.03
23	11.70	11.89	11.57	10.47	10.37	18.79	13.70	18.42	14.45	14.91	---	9.07
24	11.70	12.23	11.55	10.43	10.35	---	14.09	18.81	14.09	14.50	---	9.01
25	11.68	12.39	11.50	10.40	10.35	---	14.59	18.93	13.97	14.08	---	9.03
26	11.76	12.36	11.46	10.37	10.36	---	14.97	18.77	15.13	13.72	8.83	8.96
27	11.90	12.23	11.44	10.33	10.40	---	15.05	18.39	17.48	13.42	---	8.90
28	12.12	11.98	11.41	10.24	10.43	---	14.91	17.89	19.74	13.18	8.39	8.78
29	12.27	11.67	11.37	10.17	---	---	14.61	17.34	21.83	13.00	8.26	8.66
30	12.36	11.41	11.34	10.12	---	---	14.23	16.87	23.37	12.87	8.07	8.53
31	12.36	---	11.32	10.08	---	---	---	16.50	---	12.75	7.99	---
MEAN	11.92	11.92	11.19	10.83	10.34	---	---	16.13	16.24	17.89	---	8.12
MAX	12.38	12.40	11.57	11.33	10.45	---	---	18.93	23.37	25.03	---	9.07
MIN	11.68	11.28	10.74	10.08	10.10	---	---	13.33	13.74	12.75	---	7.40

Miscellaneous discharge measurement for Red River of the North at Pembina

Date	Discharge	Gage height
April 14, 2003	4,940	15.75

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1994 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
APR 14...	1150	4,940	7.4	7.9	835	851	10.0	8.5	290	64.0	31.0	11.0	2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat fltrd mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)
APR 14...	57.0	29	172	72.0	0.20	170	508	7,390	554	4.0	60	<1	40

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
APR 14...	20	<0.10	3	2	350

Remark codes used in this table:

< -- Less than

05102500 RED RIVER OF THE NORTH AT EMERSON, MANITOBA
(International gaging station)

LOCATION.--Lat 49°00'30", long 97°12'40", in sec.2, T.1, R.2 E., Hydrologic Unit 09020311, on right bank 1,500 ft downstream from Canadian National Railway bridge in Emerson, 0.8 mi downstream from international boundary, 3.6 mi downstream from Pembina River, and at mile 154.3.

DRAINAGE AREA.--40,200 mi², approximately, includes 3,800 mi² in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March to November 1902 (gage heights only), May 1912 to September 1929 (monthly discharge only, published in WSP 1308), October 1929 to current year.

GAGE.--Water-stage recorder. Datum of gage is Geodetic Survey of Canada Datum of 1929. See WSP 1728 or 1913 for history of changes prior to Apr. 10, 1953.

COOPERATION.--This station is one of the international gaging stations maintained by Canada under agreement with the United States. Records provided by Water Survey of Canada.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,720	2,730	e1,460	e1,330	e932	e922	e7,560	3,670	5,580	13,300	2,890	689
2	2,650	2,730	e1,460	e1,320	e936	e907	e7,770	3,450	5,260	13,900	2,810	710
3	2,600	2,670	e1,480	e1,320	e946	e904	e7,870	3,320	4,940	14,200	2,740	692
4	2,550	2,570	e1,490	e1,320	e957	e886	e7,270	3,390	4,630	14,200	2,640	664
5	2,520	2,450	e1,470	e1,320	e971	e862	e6,600	3,570	4,310	13,900	2,540	639
6	2,480	2,380	e1,420	e1,330	e975	e847	e6,210	3,670	4,030	13,500	2,420	600
7	2,440	2,380	e1,360	e1,330	e985	e837	e5,790	3,670	3,920	12,800	2,310	568
8	2,410	e2,390	e1,330	e1,320	e996	e840	e5,440	3,600	3,810	11,800	2,230	565
9	2,410	e2,360	e1,320	e1,310	e1,000	e844	5,260	3,640	3,670	10,500	2,140	558
10	2,400	e2,320	e1,310	e1,300	e1,010	e837	4,980	3,920	3,670	9,110	2,040	547
11	2,410	e2,250	e1,310	e1,280	e1,020	e830	4,940	4,410	3,880	7,800	1,960	523
12	2,430	e2,070	e1,320	e1,260	e1,020	e816	4,870	4,980	4,660	6,740	1,870	498
13	2,430	e1,870	e1,330	e1,250	e1,010	e809	4,940	5,540	5,400	6,000	1,780	484
14	2,420	e2,050	e1,350	e1,240	e992	e805	4,840	6,070	6,250	5,510	1,690	466
15	2,400	e2,040	e1,360	e1,220	e964	e812	4,660	6,320	6,850	5,330	1,620	452
16	2,390	e2,010	e1,380	e1,200	e946	e833	4,310	6,360	7,380	5,330	1,570	463
17	2,400	e1,910	e1,390	e1,200	e932	e847	3,920	6,210	7,870	5,440	1,520	487
18	2,420	e1,790	e1,410	e1,170	e943	e879	3,600	6,040	7,590	5,470	1,470	516
19	2,400	e1,710	e1,430	e1,140	e950	e929	3,360	6,070	6,960	5,440	1,420	558
20	2,380	e1,710	e1,430	e1,110	e939	e1,110	3,240	6,320	6,140	5,300	1,380	660
21	2,360	e1,770	e1,420	e1,070	e929	e1,770	3,260	6,740	5,300	5,080	1,340	876
22	2,350	e1,730	e1,420	e1,050	e929	e2,800	3,330	7,060	4,700	4,800	1,270	1,010
23	2,350	e1,740	e1,410	e1,030	e918	e3,990	3,470	7,520	4,240	4,480	1,200	1,030
24	2,340	e1,730	e1,400	e1,020	e907	e5,160	3,740	7,910	3,950	4,170	1,110	1,020
25	2,340	e1,700	e1,380	e1,020	e904	e6,070	4,100	8,020	3,850	3,850	1,060	1,010
26	2,380	e1,670	e1,370	e1,020	e904	e6,530	4,410	7,910	4,660	3,600	1,010	989
27	2,450	e1,570	e1,370	e1,010	e907	e6,640	4,520	7,560	6,570	3,400	943	960
28	2,560	e1,530	e1,360	e978	e918	e6,710	4,410	7,130	8,650	3,240	869	915
29	2,650	e1,510	e1,350	e957	---	e6,710	4,200	6,670	10,700	3,120	787	869
30	2,700	e1,480	e1,330	e943	---	e6,810	3,920	6,250	12,300	3,040	717	819
31	2,700	---	e1,330	e929	---	e7,100	---	5,930	---	2,960	681	---
TOTAL	76,440	60,820	42,950	36,297	26,740	77,646	146,790	172,920	171,720	227,310	52,027	20,837
MEAN	2,466	2,027	1,385	1,171	955	2,505	4,893	5,578	5,724	7,333	1,678	695
MAX	2,720	2,730	1,490	1,330	1,020	7,100	7,870	8,020	12,300	14,200	2,890	1,030
MIN	2,340	1,480	1,310	929	904	805	3,240	3,320	3,670	2,960	681	452
AC-FT	151,600	120,600	85,190	72,000	53,040	154,000	291,200	343,000	340,600	450,900	103,200	41,330

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 2003, BY WATER YEAR (WY)

MEAN	1,656	1,610	1,133	907	863	2,578	13,840	9,591	5,606	4,770	2,292	1,848
MAX	6,015	13,780	4,257	2,684	2,459	20,490	48,890	72,820	25,430	28,020	27,000	11,480
(WY)	(1995)	(2001)	(1999)	(2001)	(2001)	(1998)	(1997)	(1950)	(1962)	(1975)	(1993)	(1999)
MIN	28.6	23.8	33.4	7.05	1.21	2.25	1,282	663	196	121	46.6	23.8
(WY)	(1937)	(1937)	(1937)	(1937)	(1937)	(1937)	(1938)	(1934)	(1934)	(1936)	(1934)	(1934)

RED RIVER OF THE NORTH BASIN

05102500 RED RIVER OF THE NORTH AT EMERSON, MANITOBA—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1912 - 2003	
ANNUAL TOTAL	2,590,400		1,112,497		3,902	
ANNUAL MEAN	7,097		3,048		12,830	
HIGHEST ANNUAL MEAN					1997	
LOWEST ANNUAL MEAN					1934	
HIGHEST DAILY MEAN	35,700	Jun 18	14,200	Jul 3	133,000	Apr 26, 1997
LOWEST DAILY MEAN	1,310	Dec 10	452	Sep 15	0.90	Feb 6, 1937
ANNUAL SEVEN-DAY MINIMUM	1,320	Dec 8	481	Sep 12	0.97	Feb 4, 1937
MAXIMUM PEAK FLOW			14,200	Jul 3	133,000	Apr 26, 1997
MAXIMUM PEAK STAGE			763.24	Jul 3	792.41	Apr 26, 1997
INSTANTANEOUS LOW FLOW					0.90	Feb 6, 1937
ANNUAL RUNOFF (AC-FT)	5,138,000		2,207,000		2,827,000	
10 PERCENT EXCEEDS	25,300		6,690		8,900	
50 PERCENT EXCEEDS	2,730		2,140		1,580	
90 PERCENT EXCEEDS	1,630		856		285	

e Estimated

05113360 LONG CREEK AT WESTERN CROSSING OF INTERNATIONAL BOUNDARY, SASKATCHEWAN
(International gaging station)

LOCATION.--Lat 49°00'01", long 103°21'08", in SE¹/₄ sec.1, T.1, R.11 W., second meridian, Hydrologic Unit 09010001, on right bank 10 mi south of Outram, Saskatchewan.

DRAINAGE AREA.--1,320 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and artificial control. Datum of gage is 1,894.00 ft above National Geodetic Vertical Datum of 1929 (international boundary survey).

REMARKS.--Records good.

COOPERATION.--This station is one of the international gaging stations maintained by Canada under agreement with the United States. Records provided by the Water Survey of Canada.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	e0.00	e0.00	e0.00	69	36	11	0.60	0.00	0.00
2	0.00	0.00	0.00	e0.00	e0.00	e0.00	70	33	10	0.60	0.00	0.00
3	0.00	0.00	0.00	e0.00	e0.00	e0.00	e50	31	9.7	0.46	0.00	0.00
4	0.00	0.00	0.00	e0.00	e0.00	e0.00	e64	29	9.4	0.35	0.00	0.00
5	0.00	0.00	0.00	e0.00	e0.00	e0.00	e58	28	8.1	0.28	0.00	0.00
6	0.00	0.00	0.00	e0.00	e0.00	e0.00	e56	27	6.4	0.18	0.00	0.00
7	0.00	0.00	0.00	e0.00	e0.00	e0.00	51	29	6.1	0.07	0.00	0.00
8	0.00	0.00	0.00	e0.00	e0.00	e0.00	48	33	6.4	0.07	0.00	0.00
9	0.00	0.00	0.00	e0.00	e0.00	e0.00	54	35	6.2	0.28	0.00	0.00
10	0.00	0.00	0.00	e0.00	e0.00	e0.00	70	37	5.9	0.32	0.00	0.00
11	0.00	0.00	0.00	e0.00	e0.00	e0.00	99	39	5.7	0.21	0.00	0.00
12	0.00	0.00	0.00	e0.00	e0.00	e0.00	109	38	5.9	0.14	0.00	0.00
13	0.00	0.00	0.00	e0.00	e0.00	e0.00	97	37	5.5	0.14	0.00	0.00
14	0.00	0.00	0.00	e0.00	e0.00	e0.00	82	36	4.9	0.11	0.00	0.00
15	0.00	0.00	0.00	e0.00	e0.00	e0.00	91	31	4.6	0.04	0.00	0.00
16	0.00	0.00	0.00	e0.00	e0.00	e0.00	86	26	4.3	0.04	0.00	0.00
17	0.00	0.00	0.00	e0.00	e0.00	e42	69	23	4.1	0.00	0.00	0.00
18	0.00	0.00	0.00	e0.00	e0.00	e452	101	21	3.7	0.07	0.00	0.00
19	0.00	0.00	0.00	e0.00	e0.00	e1,060	127	18	2.9	0.11	0.00	0.00
20	0.00	0.00	0.00	e0.00	e0.00	e900	126	16	2.5	0.07	0.00	0.00
21	0.00	0.00	0.00	e0.00	e0.00	e540	110	16	2.3	0.04	0.00	0.00
22	0.00	0.00	0.00	e0.00	e0.00	e306	92	16	2.0	0.00	0.00	0.00
23	0.00	0.00	0.00	e0.00	e0.00	e221	79	18	2.0	0.00	0.00	0.00
24	0.00	0.00	0.00	e0.00	e0.00	e160	67	18	2.2	0.00	0.00	0.00
25	0.00	0.00	0.00	e0.00	e0.00	117	59	17	2.2	0.00	0.00	0.00
26	0.00	0.00	0.00	e0.00	e0.00	93	50	16	2.0	0.00	0.00	0.00
27	0.00	0.00	0.00	e0.00	e0.00	75	45	17	1.7	0.00	0.00	0.00
28	0.00	0.00	0.00	e0.00	e0.00	60	42	17	1.2	0.00	0.00	0.00
29	0.00	0.00	0.00	e0.00	---	45	39	15	0.88	0.00	0.00	0.00
30	0.00	0.00	0.00	e0.00	---	48	38	14	0.71	0.00	0.00	0.00
31	0.00	---	0.00	e0.00	---	63	---	12	---	0.00	0.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	4,182.00	2,198	779	140.49	4.18	0.00	0.00
MEAN	0.000	0.000	0.000	0.000	0.000	135	73.3	25.1	4.68	0.13	0.000	0.000
MAX	0.00	0.00	0.00	0.00	0.00	1,060	127	39	11	0.60	0.00	0.00
MIN	0.00	0.00	0.00	0.00	0.00	0.00	38	12	0.71	0.00	0.00	0.00
AC-FT	0.00	0.00	0.00	0.00	0.00	8,290	4,360	1,550	279	8.3	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2003, BY WATER YEAR (WY)

MEAN	0.91	0.30	0.23	0.11	1.17	84.4	191	50.3	26.8	28.1	5.85	2.49
MAX	25.1	4.17	2.75	1.75	26.5	545	1,052	578	360	415	115	61.4
(WY)	(1979)	(1979)	(1994)	(2001)	(1981)	(1994)	(1979)	(1970)	(1976)	(1978)	(1993)	(1978)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	(1960)	(1960)	(1960)	(1960)	(1960)	(1964)	(1961)	(1961)	(1961)	(1961)	(1960)	(1960)

05113360 LONG CREEK AT WESTERN CROSSING OF INTERNATIONAL BOUNDARY, SASKATCHEWAN—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1960 - 2003	
ANNUAL TOTAL	333.19		7,303.67			
ANNUAL MEAN	0.91		20.0		32.6	
HIGHEST ANNUAL MEAN					150	1976
LOWEST ANNUAL MEAN					0.000	1988
HIGHEST DAILY MEAN	24	Apr 16	1,060	Mar 19	4,350	Apr 1, 1976
LOWEST DAILY MEAN	0.00	Jan 1	0.00	Oct 1	0.00	Oct 1, 1959
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	0.00	Oct 1	0.00	Oct 1, 1959
MAXIMUM PEAK FLOW			a1,060	Mar 19	4,690	Apr 1, 1976
MAXIMUM PEAK STAGE			b7.49	Mar 19	12.05	Apr 1, 1976
ANNUAL RUNOFF (AC-FT)	661		14,490		23,630	
10 PERCENT EXCEEDS	2.6		50		34	
50 PERCENT EXCEEDS	0.00		0.00		0.00	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

a Maximum daily discharge

b Backwater from ice

e Estimated

05113600 LONG CREEK NEAR NOONAN, ND
(International gaging station)

LOCATION.--Lat 48°58'52", long 103°04'34", near north line of NE¹/₄ sec.1, T.163 N., R.96 W., Divide County, Hydrologic Unit 09010001, on right bank 150 ft upstream from county highway bridge, 1.5 mi upstream from international boundary, and 7 mi northwest of Noonan.

DRAINAGE AREA.--1,790 mi², approximately, of which about 1,160 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 2113: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,840 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Aug. 18, 1960, nonrecording gage at same site and datum.

REMARKS.--Records good except for estimated daily discharges, which are fair.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	e0.50	e0.30	e0.70	e0.48	e0.00	e85	47	13	0.78	0.00	0.00
2	0.00	e0.40	0.32	e0.70	e0.50	e0.00	78	43	12	0.82	0.00	0.00
3	0.00	e0.45	e0.35	e0.70	e0.47	e0.00	63	39	12	0.82	0.00	0.00
4	0.00	e0.45	e0.35	e0.70	e0.44	e0.00	70	37	11	0.74	0.00	0.00
5	0.00	e0.50	e0.40	e0.80	e0.40	e0.00	66	35	9.6	0.61	0.00	0.00
6	0.02	e0.45	e0.40	e0.95	e0.37	e0.00	55	36	9.6	0.56	0.00	0.00
7	0.01	e0.50	e0.40	e1.0	e0.34	e0.00	55	37	11	0.43	0.00	0.00
8	0.08	e0.48	e0.40	e1.0	e0.30	e0.00	52	38	8.7	0.34	0.00	0.00
9	0.05	e0.48	e0.40	0.97	e0.27	e0.00	54	40	7.0	0.56	0.00	0.00
10	0.06	e0.42	e0.40	0.95	e0.25	e0.00	72	43	9.6	0.57	0.00	0.00
11	0.07	e0.40	e0.40	e0.90	e0.23	e0.00	82	45	9.0	0.45	0.00	0.00
12	0.00	e0.38	e0.35	0.85	e0.22	e0.00	112	46	7.5	0.45	0.00	0.00
13	0.00	e0.45	e0.35	0.76	e0.21	e0.00	123	45	6.0	0.42	0.00	0.00
14	0.00	e0.50	e0.40	e0.78	e0.20	e0.20	105	43	5.3	0.37	0.00	0.00
15	0.00	e0.48	e0.45	e0.74	e0.18	e1.5	88	41	4.8	0.25	0.00	0.00
16	e0.00	e0.46	e0.50	0.75	e0.17	e8.0	97	36	4.7	0.17	0.00	0.00
17	e0.00	e0.46	e0.55	0.76	e0.17	e40	92	33	4.2	0.09	0.00	0.00
18	e0.00	e0.46	e0.60	0.74	e0.16	e150	79	29	3.4	0.30	0.00	0.00
19	e0.00	e0.44	e0.70	0.69	e0.14	e750	116	26	3.0	0.44	0.00	0.00
20	e0.00	e0.44	e0.70	0.75	e0.13	e1,100	139	24	2.4	0.36	0.00	0.00
21	e0.00	e0.42	e0.75	0.74	e0.10	e850	137	22	2.2	0.27	0.00	0.00
22	e0.00	e0.40	e0.70	e0.72	e0.10	599	119	21	1.9	0.22	0.00	0.00
23	e0.10	e0.38	e0.70	e0.69	e0.10	397	101	20	1.6	0.22	0.00	0.00
24	e0.20	e0.45	e0.65	e0.60	e0.00	277	89	22	2.0	0.17	0.00	0.00
25	e0.16	e0.48	e0.65	e0.57	e0.00	198	78	21	2.4	0.10	0.00	0.00
26	e0.15	e0.50	e0.65	e0.50	e0.00	149	72	21	1.8	0.02	0.00	0.00
27	e0.11	e0.45	e0.65	e0.45	e0.00	114	67	23	1.4	0.00	0.00	0.00
28	e0.15	e0.35	e0.70	e0.43	e0.00	96	58	22	1.4	0.00	0.00	0.00
29	e0.20	e0.40	e0.70	e0.42	---	77	54	20	1.1	0.00	0.00	0.00
30	0.21	e0.35	e0.75	e0.41	---	65	50	19	0.96	0.00	0.00	0.00
31	0.29	---	e0.70	e0.46	---	e70	---	16	---	0.00	0.00	---
TOTAL	1.86	13.28	16.32	22.18	5.93	4,941.70	2,508	990	170.56	10.53	0.00	0.00
MEAN	0.060	0.44	0.53	0.72	0.21	159	83.6	31.9	5.69	0.34	0.000	0.000
MAX	0.29	0.50	0.75	1.0	0.50	1,100	139	47	13	0.82	0.00	0.00
MIN	0.00	0.35	0.30	0.41	0.00	0.00	50	16	0.96	0.00	0.00	0.00
AC-FT	3.7	26	32	44	12	9,800	4,970	1,960	338	21	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2003, BY WATER YEAR (WY)

MEAN	1.48	0.86	0.65	0.43	2.72	107	248	63.2	32.1	36.8	7.63	3.30
MAX	31.0	7.17	4.35	5.11	71.3	600	1,396	728	376	452	131	77.2
(WY)	(1979)	(1979)	(1976)	(1976)	(1981)	(1994)	(1979)	(1970)	(1976)	(1978)	(1993)	(1978)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	(1960)	(1961)	(1961)	(1961)	(1961)	(1965)	(1990)	(1990)	(1961)	(1961)	(1960)	(1960)

RED RIVER OF THE NORTH BASIN

05113600 LONG CREEK NEAR NOONAN, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1960 - 2003	
ANNUAL TOTAL	685.51		8,680.36			
ANNUAL MEAN	1.88		23.8		42.0	
HIGHEST ANNUAL MEAN					200	1976
LOWEST ANNUAL MEAN					0.017	1988
HIGHEST DAILY MEAN	21	Apr 18	1,100	Mar 20	5,710	Apr 1, 1976
LOWEST DAILY MEAN	0.00	Mar 10	0.00	Oct 1	0.00	Oct 1, 1959
ANNUAL SEVEN-DAY MINIMUM	0.00	Sep 14	0.00	Oct 12	0.00	Oct 1, 1959
MAXIMUM PEAK FLOW			1,200	Mar 20	6,310	Mar 31, 1976
MAXIMUM PEAK STAGE			a10.84	Mar 20	17.61	Mar 31, 1976
ANNUAL RUNOFF (AC-FT)	1,360		17,220		30,450	
10 PERCENT EXCEEDS	6.0		64		47	
50 PERCENT EXCEEDS	0.46		0.45		0.40	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

a Backwater from ice

e Estimated

RED RIVER OF THE NORTH BASIN

05113600 LONG CREEK NEAR NOONAN, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb- denum, water, fltrd, ug/L (01060)	Selen- ium, water, fltrd, ug/L (01145)	Stront- ium, water, fltrd, ug/L (01080)
NOV 20...	--	--	--	--	--	--
JAN 08...	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--
20...	40	30	<0.10	<1	<1	210
25...	--	--	--	--	--	--
APR 09...	--	--	--	--	--	--
30...	--	--	--	--	--	--
MAY 28...	--	--	--	--	--	--
JUL 17...	130	50	<0.20	2	2	590
AUG 21...	--	--	--	--	--	--
SEP 25...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

05113750 EAST BRANCH SHORT CREEK RESERVOIR NEAR COLUMBUS, ND

LOCATION.--Lat 48°59'26", long 102°47'07", in SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.32, T.164 N., R.93 W., Burke County, Hydrologic Unit 09010001, on left bank of reservoir on East Branch Short Creek, 0.5 mi south of international boundary, and 6.0 mi north of Columbus.

DRAINAGE AREA.--280 mi², of which 175 mi² is probably noncontributing.

MONTHEND-GAGE HEIGHT AND CONTENTS RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,860.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated periods, which are fair. Reservoir is formed by earth-ll dam; storage began April 1963. Outlet of lake is a x ed-crest concrete dam; average crest elevation, 1,886.90 ft above sea level. Reservoir capacity at crest elevation, 1,200 acre-ft. The reservoir is operated for water supply and recreation. Records of daily reservoir stage and contents are available from les at the Bismarck Distric t of ce.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,850 acre-ft, Mar. 28, 1976, gage height, 32.13 ft; minimum, 770 acre-ft, Dec. 10, 1988, gage height, 22.57 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,420 acre-ft, Mar. 23, gage height, 28.84 ft; minimum contents, 1,020 acre-ft, many days during the year, gage height, 25.30 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 -----	25.46	1,040	--
Oct. 31 -----	25.40	1,030	-10
Nov. 30 -----	25.33	1,020	-10
Dec. 31 -----	25.39	1,030	+10
CAL YR 2002	--	--	-30
Jan. 31 -----	25.40	1,030	0
Feb. 28 -----	25.42	1,030	0
Mar. 31 -----	28.38	1,370	+340
Apr. 30 -----	28.24	1,350	-20
May 31 -----	28.02	1,320	-30
June 30 -----	27.62	1,270	-50
July 31 -----	27.14	1,220	-50
Aug. 31 -----	26.50	1,140	-80
Sept. 30 -----	26.04	1,090	-50
WTR YR 2003	--	--	+50

05113800 SHORT CREEK BELOW INTERNATIONAL BOUNDARY NEAR ROCHE PERCEE, SASKATCHEWAN
(International gaging station)

LOCATION.--Lat 49°01'42", long 102°51'00", in SW¹/₄ sec.14, T.1, R.7 W., second meridian, Hydrologic Unit 09010001, 4 mi southwest of Roche Percee, Saskatchewan, and 5 mi upstream from mouth.

DRAINAGE AREA.--480 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1960 to current year.

GAGE.--Water-stage recorder.

COOPERATION.--This station is one of the international gaging stations maintained by Canada under agreement with the United States.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.04	e0.04	e0.04	0.07	0.00	0.00	34	12	4.4	0.35	0.04	0.00
2	0.04	e0.04	e0.04	0.07	0.00	0.00	28	12	3.9	0.35	0.04	0.00
3	0.04	e0.04	e0.04	0.07	0.00	0.00	16	11	4.0	0.42	0.00	0.00
4	0.04	e0.04	e0.04	0.07	0.00	0.00	16	10	3.8	0.35	0.04	0.00
5	0.04	e0.04	e0.04	0.07	0.00	0.00	11	11	3.5	0.28	0.04	0.00
6	0.04	e0.04	e0.04	0.07	0.00	0.00	7.9	11	3.1	0.21	0.04	0.00
7	0.04	e0.04	e0.04	0.07	0.00	0.00	9.5	12	3.3	0.21	0.04	0.00
8	0.04	e0.04	e0.04	0.07	0.00	0.00	13	14	2.8	0.21	0.04	0.00
9	0.04	e0.04	e0.04	0.07	0.00	0.00	34	18	2.6	0.32	0.04	0.00
10	0.04	e0.04	e0.07	0.07	0.00	0.00	109	25	2.8	0.35	0.04	0.00
11	0.04	e0.04	e0.07	0.07	0.00	0.00	103	34	2.8	0.32	0.04	0.00
12	0.04	e0.04	e0.07	0.04	0.00	0.00	101	34	2.8	0.28	0.04	0.00
13	0.04	e0.04	e0.07	0.00	0.00	0.00	86	30	2.7	0.21	0.00	0.00
14	0.04	e0.04	e0.07	0.04	0.00	0.00	68	25	2.6	0.18	0.00	0.00
15	0.04	e0.04	e0.07	0.04	0.00	0.35	50	23	2.5	0.18	0.00	0.00
16	0.04	e0.04	e0.07	0.04	0.00	5.3	37	20	2.3	0.14	0.00	0.00
17	0.04	e0.04	e0.07	0.04	0.00	104	32	17	2.2	0.14	0.00	0.00
18	0.04	e0.04	e0.07	0.07	0.00	193	27	15	2.0	0.14	0.00	0.00
19	0.04	e0.04	e0.07	0.07	0.00	154	22	13	1.8	0.14	0.00	0.00
20	0.04	e0.04	e0.07	0.04	0.00	125	19	11	1.7	0.11	0.00	0.00
21	0.04	e0.04	e0.07	0.04	0.00	168	17	9.4	1.7	0.11	0.00	0.00
22	0.04	e0.04	e0.07	0.04	0.00	127	14	8.5	1.5	0.11	0.00	0.00
23	0.04	e0.04	e0.07	0.04	0.00	114	11	8.5	1.1	0.11	0.00	0.00
24	0.04	e0.04	e0.07	0.00	0.00	98	8.8	7.2	0.81	0.11	0.00	0.00
25	0.04	e0.04	e0.07	0.00	0.00	79	7.3	6.6	0.71	0.11	0.00	0.00
26	0.04	e0.04	e0.07	0.00	0.00	66	8.3	7.0	0.64	0.11	0.00	0.00
27	0.04	e0.04	e0.07	0.00	0.00	56	12	7.7	0.64	0.07	0.00	0.00
28	0.04	e0.04	e0.07	0.00	0.00	51	12	5.9	0.53	0.07	0.00	0.00
29	0.04	e0.04	e0.07	0.00	---	44	13	6.4	0.39	0.07	0.00	0.00
30	0.04	e0.04	e0.07	0.00	---	41	13	5.2	0.39	0.04	0.00	0.00
31	e0.04	---	e0.07	0.00	---	37	---	4.5	---	0.04	0.00	---
TOTAL	1.24	1.20	1.90	1.27	0.00	1,462.65	939.8	434.9	66.01	5.84	0.44	0.00
MEAN	0.040	0.040	0.061	0.041	0.000	47.2	31.3	14.0	2.20	0.19	0.014	0.000
MAX	0.04	0.04	0.07	0.07	0.00	193	109	34	4.4	0.42	0.04	0.00
MIN	0.04	0.04	0.04	0.00	0.00	0.00	7.3	4.5	0.39	0.04	0.00	0.00
AC-FT	2.5	2.4	3.8	2.5	0.00	2,900	1,860	863	131	12	0.9	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2003, BY WATER YEAR (WY)

	MEAN	MAX	MIN	(WY)	MEAN	MAX	MIN	(WY)	MEAN	MAX	MIN	(WY)	MEAN	MAX	MIN	(WY)
	0.77	10.9	0.000	(1976)	0.32	6.00	0.000	(1976)	0.086	1.42	0.000	(1961)	0.028	0.28	0.000	(1962)
									1.28	27.9	0.000	(1962)	1.28	27.9	0.000	(1962)
									37.3	285	0.000	(1965)	37.3	285	0.000	(1965)
									60.8	311	0.016	(1991)	60.8	311	0.016	(1991)
									19.1	169	0.010	(1990)	19.1	169	0.010	(1990)
									8.08	100	0.000	(1980)	8.08	100	0.000	(1980)
									6.13	41.1	0.000	(1961)	6.13	41.1	0.000	(1961)
									3.89	69.9	0.000	(1961)	3.89	69.9	0.000	(1961)
									1.19	16.5	0.000	(1961)	1.19	16.5	0.000	(1961)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1960 - 2003

ANNUAL TOTAL	686.76	2,915.25	
ANNUAL MEAN	1.88	7.99	11.4
HIGHEST ANNUAL MEAN			51.9
LOWEST ANNUAL MEAN			0.029
HIGHEST DAILY MEAN	36	Jun 26	1,410
LOWEST DAILY MEAN	0.00	Jan 1	0.00
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	0.00
MAXIMUM PEAK FLOW			230
MAXIMUM PEAK STAGE			a6.48
ANNUAL RUNOFF (AC-FT)	1,360	5,780	8,250
10 PERCENT EXCEEDS	4.9	18	14
50 PERCENT EXCEEDS	0.04	0.04	0.06
90 PERCENT EXCEEDS	0.00	0.00	0.00

a Backwater from ice

e Estimated

05114000 SOURIS (MOUSE) RIVER NEAR SHERWOOD, ND
(International gaging station)

LOCATION.--Lat 48°59'24", long 101°57'28", in NW¹₄SE¹₄NE¹₄ sec.33, T.164 N., R.87 W., Renville County, Hydrologic Unit 09010001, on right bank 0.8 mi downstream from international boundary, 16 mi northwest of Sherwood, and at mile 511.4.

DRAINAGE AREA.--8,940 mi², approximately, of which about 5,900 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1930 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1934, 1945. WSP 2113: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,603.73 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 8, 1935, nonrecording gage at same site and datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow is regulated by reservoirs in Canada (Boundary Reservoir, 48,990 acre-ft - 1958; Rafferty Reservoir, 356,400 acre-ft - 1991; and Alameda Reservoir, 85,560 ac-ft - 1992). Total reservoir capacity is about 490,000 acre-ft. Some diversions for irrigation and municipal supply.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1927 reached a stage of about 22 ft and flood in 1904 reached a stage of about 25.8 ft from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	5.4	6.1	5.8	e1.7	e0.83	174	83	98	11	19	1.6
2	13	5.6	5.8	5.9	e1.7	e0.78	98	83	101	11	19	1.6
3	11	5.8	5.8	6.1	e1.6	e0.75	156	85	106	12	17	1.5
4	10	6.1	5.3	6.2	e1.5	e0.72	150	81	83	10	14	1.6
5	9.0	6.2	5.0	6.1	e1.5	e0.70	186	80	49	8.6	11	1.6
6	8.3	6.3	4.9	6.0	e1.4	e0.70	178	79	39	7.6	9.4	1.5
7	7.5	6.3	3.8	6.2	e1.4	e0.69	70	96	43	6.8	7.9	1.5
8	7.0	6.3	3.4	6.2	e1.4	e0.65	59	130	39	6.1	6.8	1.4
9	6.1	6.5	4.7	5.5	e1.3	e0.64	78	142	39	6.5	7.1	1.5
10	5.2	6.5	4.8	e5.2	e1.3	e0.62	218	142	38	6.9	7.4	2.6
11	5.8	6.5	4.8	e5.0	e1.3	e0.61	215	132	38	6.4	7.4	3.7
12	5.7	6.5	4.8	e4.6	e1.2	e0.60	177	130	40	5.8	6.2	3.6
13	5.6	6.7	4.8	e4.1	e1.2	e0.68	153	134	37	5.9	4.6	3.3
14	5.5	6.7	5.0	e3.4	e1.2	e0.90	172	139	35	5.7	4.0	3.2
15	5.4	6.4	5.0	e3.2	e1.2	e5.0	156	140	29	5.3	3.7	2.8
16	5.2	6.3	5.0	e3.1	e1.1	e3.0	137	143	25	4.7	4.5	2.6
17	5.1	6.2	4.6	e3.0	e1.1	e6.0	122	139	25	4.4	6.2	2.2
18	5.2	6.4	5.3	e3.0	e1.1	e9.0	111	131	23	4.3	6.1	2.2
19	5.0	6.7	5.2	e2.9	e1.2	e15.0	118	125	21	4.4	5.9	2.1
20	4.8	7.1	5.3	e2.6	e1.2	e30.0	133	119	18	4.3	5.4	1.8
21	4.7	7.7	5.6	e2.4	e1.1	e50.0	124	119	17	4.2	4.3	2.6
22	4.9	8.1	5.7	e2.3	e1.0	e57.0	117	117	17	4.1	3.9	1.5
23	4.9	8.3	5.6	e2.2	e1.0	e63.0	113	113	16	4.0	3.3	1.4
24	4.9	8.0	5.6	e2.1	e0.97	e55.0	109	113	16	3.9	2.9	2.3
25	5.1	7.7	5.5	e2.0	e0.93	e50.0	103	109	16	3.6	3.1	3.5
26	5.1	7.1	5.5	e2.0	e0.90	e44.0	98	108	16	3.6	2.6	3.7
27	5.2	6.6	5.6	e2.0	e0.88	e36.0	98	110	15	4.2	2.2	3.7
28	5.5	6.3	5.8	e1.9	e0.85	334	94	111	14	3.8	2.0	3.8
29	5.5	6.1	6.0	e1.8	---	273	88	104	13	3.4	1.8	3.8
30	5.5	6.0	5.6	e1.8	---	235	86	103	12	12	1.6	3.9
31	5.4	---	5.5	e1.8	---	220	---	98	---	18	1.6	---
TOTAL	201.1	198.4	161.4	116.4	34.23	5,256.87	3,891	3,538	1,078	202.5	201.9	296.4
MEAN	6.49	6.61	5.21	3.75	1.22	170	130	114	35.9	6.53	6.51	9.88
MAX	14	8.3	6.1	6.2	1.7	630	218	143	106	18	19	39
MIN	4.7	5.4	3.4	1.8	0.85	0.60	59	79	12	3.4	1.6	1.4
AC-FT	399	394	320	231	68	10,430	7,720	7,020	2,140	402	400	588

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2003, BY WATER YEAR (WY)

MEAN	13.4	9.72	4.77	3.07	6.30	137	682	407	125	83.1	27.0	16.5
MAX	121	65.4	47.7	44.5	143	1,148	6,739	3,995	954	1,050	324	173
(WY)	(1994)	(1955)	(1976)	(1976)	(1981)	(1972)	(1976)	(1975)	(1953)	(1953)	(1999)	(1999)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	1.82	2.63	0.17	0.000	0.000	0.000
(WY)	(1932)	(1935)	(1932)	(1931)	(1931)	(1936)	(1988)	(1988)	(1988)	(1937)	(1931)	(1931)

RED RIVER OF THE NORTH BASIN

05114000 SOURIS (MOUSE) RIVER NEAR SHERWOOD, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1930 - 2003	
ANNUAL TOTAL	6,331.7		15,176.20			
ANNUAL MEAN	17.3		41.6		127	
HIGHEST ANNUAL MEAN					878	1976
LOWEST ANNUAL MEAN					0.62	1988
HIGHEST DAILY MEAN	81	Apr 18	630	Mar 23	13,700	Apr 10, 1976
LOWEST DAILY MEAN	3.2	Jan 2	0.60	Mar 12	0.00	Sep 4, 1930
ANNUAL SEVEN-DAY MINIMUM	3.7	Jan 1	0.64	Mar 7	0.00	Sep 4, 1930
MAXIMUM PEAK FLOW			a650	Mar 23	14,800	Apr 10, 1976
MAXIMUM PEAK STAGE			8.12	Mar 23	25.15	Apr 10, 1976
ANNUAL RUNOFF (AC-FT)	12,560		30,100		92,080	
10 PERCENT EXCEEDS	48		130		219	
50 PERCENT EXCEEDS	10		6.0		6.3	
90 PERCENT EXCEEDS	4.3		1.4		0.00	

a About

e Estimated

05114000 SOURIS RIVER NEAR SHERWOOD, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970, 1972 to current year.

REMARKS.-- Quality assurance samples also collected at this location. Environment Canada also collected a sample on Sept.10.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1983 to current year.

SPECIFIC CONDUCTANCE: August 1983 to current year.

PH: August 1992 to current year.

DISSOLVED OXYGEN: May 1993 to current year.

INSTRUMENTATION.--Water-quality monitor since August 1983.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 31.3°C, June 29, 2002; minimum recorded, 0.0°C several days during winter months each year.

SPECIFIC CONDUCTANCE: Maximum recorded, 3,490 microsiemens, Apr. 28, 1991; minimum recorded, 94 microsiemens, Apr. 5, 1990.

PH: Maximum recorded, 9.8 units, Sept. 17, 21, 22, 1992 (revised); minimum recorded, 7.3 units, Jan. 16-23, 2000, and Jan. 3, 2002.

DISSOLVED OXYGEN: Maximum recorded, 19.6 mg/L, Mar. 16-21, 2000; minimum recorded, 0.1 mg/L, Mar. 8, 2003.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 28.2°C, July 1,2; minimum recorded, 0.0°C, several days during winter months.

SPECIFIC CONDUCTANCE: Maximum recorded, 2,310 microsiemens, July 8-10; minimum recorded, 385 microsiemens, Mar. 16.

PH: Maximum recorded, 8.8 units, Sept. 29-30; minimum recorded, 7.5 units, Mar. 7-15.

DISSOLVED OXYGEN: Maximum recorded, 15.5 milligrams per liter, Nov. 25; minimum recorded, 0.1 milligram per liter, Mar. 8-9.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specific conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specific conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)
OCT													
08...	1445	7.0	--	--	--	--	--	--	1,170	6.0	8.0	--	--
NOV													
20...	1615	7.3	--	14.7	--	8.2	8.2	1,540	1,610	8.0	0.0	500	93.1
JAN													
08...	1715	6.3	716	3.7	--	7.6	--	--	2,100	0.0	--	--	--
MAR													
06...	1715	0.70	712	1.0	7	7.6	7.9	2,210	2,300	-16.5	0.0	590	127
26...	1230	445	--	--	--	--	--	--	650	0.0	0.2	--	--
APR													
02...	1230	71	715	13.4	98	8.1	7.9	764	800	-6.0	0.0	210	38.4
18...	1000	112	--	--	--	--	--	--	856	10.0	7.5	--	--
30...	1745	88	715	11.6	118	8.4	8.3	999	1,080	16.0	13.2	330	60.0
MAY													
28...	1600	112	720	11.3	138	8.4	8.4	952	1,000	27.0	22.1	320	57.4
JUL													
11...	1115	6.8	720	6.6	77	8.3	8.2	1,260	1,300	21.0	19.7	360	66.4
AUG													
21...	1530	4.1	718	6.1	73	8.4	--	--	1,790	27.0	21.0	--	--
SEP													
10...	1715	2.8	716	2.9	32	8.3	8.3	1,540	1,610	16.0	16.5	380	64.5
26...	1130	37	714	9.5	88	8.7	--	--	1,470	15.0	8.9	--	--
26...	1315	37	714	10.0	95	8.8	--	--	1,420	16.0	10.0	--	--

05114000 SOURIS RIVER NEAR SHERWOOD, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chromium, water, unfltrd recover- able, ug/L (01034)	Cobalt water, unfltrd recover- able, ug/L (01037)	Copper, water, unfltrd recover- able, ug/L (01042)	Iron, water, unfltrd recover- able, ug/L (01045)	Lead, water, unfltrd recover- able, ug/L (01051)	Molyb- denum, water, unfltrd recover- able, ug/L (01062)	Nickel, water, unfltrd recover- able, ug/L (01067)	Selen- ium, water, unfltrd ug/L (01147)	Zinc, water, unfltrd recover- able, ug/L (01092)	Tri- zine screen, wat unf ELISA, ug/L as atrazin (34757)	2,4-D screen total ug/L (99906)
OCT 08...	--	--	--	--	--	--	--	--	--	--	--
NOV 20...	<0.8	<3.4	E1.0	150	<1	2	E1.7	<3	<25	<0.1	<0.700
JAN 08...	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	<0.8	<3.4	E.8	880	<1	3	3.9	<3	<25	<0.1	<0.700
26...	--	--	--	--	--	--	--	--	--	--	--
APR 02...	E.5	<3.4	2.6	800	M	2	3.4	<3	E19	--	--
18...	--	--	--	--	--	--	--	--	--	--	--
30...	<0.8	<3.4	2.3	220	M	E2	E1.9	<3	E17	--	--
MAY 28...	<0.8	<3.4	6.0	<20	<1	2	2.5	<3	<25	<0.1	<0.700
JUL 11...	<0.8	0.903	3.1	630	0.49	2.6	5.51	1.0	4	<0.1	<0.700
AUG 21...	--	--	--	--	--	--	--	--	--	<0.1	<0.700
SEP 10...	E.5n	1.10	4.3	810	0.64	3.5	6.02	0.8	5	0.1	<0.700
26...	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--

Remark codes used in this table:

- < -- Less than
- E -- Estimated value
- M -- Presence verified, not quantified

Value qualifier codes used in this table:

- d -- Diluted sample: method hi range exceeded
- k -- Counts outside acceptable range
- n -- Below the NDV

Null value qualifier codes used in this table:

- r -- Sample ruined in preparation

RED RIVER OF THE NORTH BASIN
05114000 SOURIS RIVER NEAR SHERWOOD, ND—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	---	---	---	---	---	---	0.2	0.0	0.1	0.0	0.0	0.0
2	---	---	---	---	---	---	0.1	0.0	0.1	0.0	0.0	0.0
3	---	---	---	---	---	---	0.1	0.0	0.0	0.0	0.0	0.0
4	---	---	---	---	---	---	0.1	0.0	0.0	0.0	0.0	0.0
5	---	---	---	---	---	---	0.1	0.0	0.0	0.0	0.0	0.0
6	---	---	---	---	---	---	0.1	0.0	0.1	0.0	0.0	0.0
7	---	---	---	---	---	---	0.1	0.0	0.1	0.0	0.0	0.0
8	---	---	---	---	---	---	0.1	0.0	0.1	0.0	0.0	0.0
9	---	---	---	---	---	---	0.1	0.0	0.0	0.0	0.0	0.0
10	---	---	---	---	---	---	0.1	0.0	0.0	0.0	0.0	0.0
11	---	---	---	---	---	---	0.1	0.0	0.0	0.0	0.0	0.0
12	---	---	---	---	---	---	0.1	0.0	0.0	0.0	0.0	0.0
13	---	---	---	---	---	---	0.1	0.0	0.0	0.0	0.0	0.0
14	---	---	---	---	---	---	0.1	0.0	0.0	0.0	0.0	0.0
15	---	---	---	---	---	---	0.1	0.0	0.0	0.0	0.0	0.0
16	---	---	---	---	---	---	0.1	0.0	0.0	---	---	---
17	---	---	---	---	---	---	0.0	0.0	0.0	---	---	---
18	---	---	---	---	---	---	0.0	0.0	0.0	---	---	---
19	---	---	---	---	---	---	0.0	0.0	0.0	---	---	---
20	---	---	---	0.2	0.1	0.1	0.0	0.0	0.0	---	---	---
21	---	---	---	0.3	0.1	0.1	0.0	0.0	0.0	---	---	---
22	---	---	---	0.2	0.1	0.1	0.0	0.0	0.0	---	---	---
23	---	---	---	0.2	0.0	0.1	0.0	0.0	0.0	---	---	---
24	---	---	---	0.2	0.0	0.1	0.0	0.0	0.0	---	---	---
25	---	---	---	0.2	0.0	0.1	0.0	0.0	0.0	---	---	---
26	---	---	---	0.2	0.0	0.1	0.0	0.0	0.0	---	---	---
27	---	---	---	0.2	0.0	0.1	0.0	0.0	0.0	---	---	---
28	---	---	---	0.3	0.1	0.1	0.0	0.0	0.0	---	---	---
29	---	---	---	0.2	0.1	0.1	0.0	0.0	0.0	---	---	---
30	---	---	---	0.2	0.0	0.1	0.0	0.0	0.0	---	---	---
31	---	---	---	---	---	---	0.0	0.0	0.0	---	---	---
MONTH	---	---	---	0.3	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	1.4	0.0	0.7	---	---	---
2	---	---	---	---	---	---	0.1	0.0	0.0	---	---	---
3	---	---	---	---	---	---	0.0	0.0	0.0	---	---	---
4	---	---	---	---	---	---	0.1	0.0	0.0	---	---	---
5	---	---	---	---	---	---	0.1	0.0	0.0	---	---	---
6	---	---	---	0.0	0.0	0.0	0.2	0.0	0.1	---	---	---
7	---	---	---	0.0	0.0	0.0	1.0	0.0	0.4	---	---	---
8	---	---	---	0.0	0.0	0.0	2.7	0.0	0.9	---	---	---
9	---	---	---	0.0	0.0	0.0	4.6	0.4	2.1	---	---	---
10	---	---	---	0.0	0.0	0.0	6.0	3.6	4.8	---	---	---
11	---	---	---	0.0	0.0	0.0	7.7	5.3	6.3	---	---	---
12	---	---	---	0.0	0.0	0.0	10.1	7.4	8.5	---	---	---
13	---	---	---	0.0	0.0	0.0	11.5	9.0	10.2	---	---	---
14	---	---	---	0.0	0.0	0.0	10.7	9.4	10.1	---	---	---
15	---	---	---	0.1	0.0	0.0	---	---	---	---	---	---
16	---	---	---	0.1	0.0	0.0	---	---	---	---	---	---
17	---	---	---	0.1	0.0	0.0	---	---	---	---	---	---
18	---	---	---	0.1	0.0	0.0	---	---	---	---	---	---
19	---	---	---	0.1	0.0	0.0	---	---	---	---	---	---
20	---	---	---	0.3	0.0	0.1	---	---	---	---	---	---
21	---	---	---	0.3	0.0	0.1	---	---	---	---	---	---
22	---	---	---	0.3	0.0	0.1	---	---	---	---	---	---
23	---	---	---	0.3	0.0	0.1	---	---	---	---	---	---
24	---	---	---	0.3	0.0	0.1	---	---	---	---	---	---
25	---	---	---	0.4	0.0	0.1	---	---	---	---	---	---
26	---	---	---	0.1	0.0	0.0	---	---	---	---	---	---
27	---	---	---	0.4	0.0	0.1	---	---	---	---	---	---
28	---	---	---	0.3	0.0	0.1	---	---	---	---	---	---
29	---	---	---	0.4	0.0	0.1	---	---	---	23.0	20.1	21.3
30	---	---	---	1.3	0.0	0.5	---	---	---	21.6	18.8	20.1
31	---	---	---	2.6	0.1	1.2	---	---	---	19.8	17.6	18.7
MONTH	---	---	---	2.6	0.0	0.1	11.5	0.0	3.1	23.0	17.6	20.0

RED RIVER OF THE NORTH BASIN

05114000 SOURIS RIVER NEAR SHERWOOD, ND—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	---	---	---	---	---	---	1,780	1,760	1,770	2,220	2,200	2,210
2	---	---	---	---	---	---	1,800	1,760	1,780	2,200	2,180	2,180
3	---	---	---	---	---	---	1,830	1,800	1,820	2,180	2,160	2,170
4	---	---	---	---	---	---	1,830	1,800	1,820	2,160	2,140	2,150
5	---	---	---	---	---	---	1,800	1,800	1,800	2,140	2,120	2,130
6	---	---	---	---	---	---	1,800	1,780	1,790	2,130	2,120	2,120
7	---	---	---	---	---	---	1,780	1,770	1,780	2,130	2,120	2,130
8	---	---	---	---	---	---	1,820	1,780	1,800	2,120	2,100	2,110
9	---	---	---	---	---	---	1,850	1,820	1,840	2,100	2,080	2,090
10	---	---	---	---	---	---	1,860	1,850	1,860	2,100	2,090	2,100
11	---	---	---	---	---	---	1,880	1,860	1,870	2,120	2,100	2,110
12	---	---	---	---	---	---	1,890	1,880	1,890	---	---	---
13	---	---	---	---	---	---	1,900	1,890	1,900	---	---	---
14	---	---	---	---	---	---	1,930	1,900	1,920	---	---	---
15	---	---	---	---	---	---	1,950	1,930	1,940	---	---	---
16	---	---	---	---	---	---	1,970	1,950	1,960	---	---	---
17	---	---	---	---	---	---	1,980	1,970	1,980	---	---	---
18	---	---	---	---	---	---	1,990	1,980	1,980	---	---	---
19	---	---	---	---	---	---	1,980	1,980	1,980	---	---	---
20	---	---	---	---	---	---	2,000	1,980	1,990	---	---	---
21	---	---	---	1,630	1,610	1,620	2,000	2,000	2,000	---	---	---
22	---	---	---	1,630	1,610	1,620	2,000	2,000	2,000	---	---	---
23	---	---	---	1,620	1,600	1,610	2,010	2,000	2,010	---	---	---
24	---	---	---	1,660	1,620	1,650	2,040	2,010	2,020	---	---	---
25	---	---	---	1,660	1,640	1,650	2,080	2,040	2,060	---	---	---
26	---	---	---	1,660	1,640	1,660	2,100	2,080	2,090	---	---	---
27	---	---	---	1,700	1,660	1,690	2,120	2,100	2,110	---	---	---
28	---	---	---	1,720	1,700	1,710	2,150	2,120	2,130	---	---	---
29	---	---	---	1,720	1,700	1,710	2,180	2,150	2,170	---	---	---
30	---	---	---	1,760	1,710	1,740	2,210	2,180	2,200	---	---	---
31	---	---	---	---	---	---	2,220	2,210	2,220	---	---	---
MONTH	---	---	---	1,760	1,600	1,670	2,220	1,760	1,950	2,220	2,080	2,140
	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	---	---	---	---	---	---	813	797	804	---	---	---
2	---	---	---	---	---	---	846	803	822	---	---	---
3	---	---	---	---	---	---	843	827	833	---	---	---
4	---	---	---	---	---	---	849	832	842	---	---	---
5	---	---	---	---	---	---	849	830	839	---	---	---
6	---	---	---	---	---	---	830	814	821	---	---	---
7	---	---	---	2,300	2,290	2,300	814	788	801	---	---	---
8	---	---	---	2,310	2,300	2,300	799	789	795	---	---	---
9	---	---	---	2,310	2,310	2,310	822	730	799	---	---	---
10	---	---	---	2,310	2,300	2,300	739	632	684	---	---	---
11	---	---	---	2,300	2,290	2,300	710	674	690	---	---	---
12	---	---	---	2,290	2,270	2,280	781	705	740	---	---	---
13	---	---	---	2,270	2,250	2,260	835	781	816	---	---	---
14	---	---	---	2,250	2,230	2,240	810	683	749	---	---	---
15	---	---	---	2,230	488	2,030	---	---	---	---	---	---
16	---	---	---	1,000	385	516	---	---	---	---	---	---
17	---	---	---	955	394	673	---	---	---	---	---	---
18	---	---	---	1,240	532	727	---	---	---	---	---	---
19	---	---	---	2,540	876	1,500	---	---	---	---	---	---
20	---	---	---	2,640	1,420	1,970	---	---	---	---	---	---
21	---	---	---	1,610	1,020	1,170	---	---	---	---	---	---
22	---	---	---	1,020	716	853	---	---	---	---	---	---
23	---	---	---	716	542	591	---	---	---	---	---	---
24	---	---	---	726	579	650	---	---	---	---	---	---
25	---	---	---	729	696	718	---	---	---	---	---	---
26	---	---	---	696	666	676	---	---	---	---	---	---
27	---	---	---	701	671	680	---	---	---	---	---	---
28	---	---	---	771	701	746	---	---	---	---	---	---
29	---	---	---	809	766	793	---	---	---	997	986	992
30	---	---	---	849	809	827	---	---	---	999	986	992
31	---	---	---	833	804	820	---	---	---	1,000	991	997
MONTH	---	---	---	2,640	385	1,370	849	632	788	1,000	986	994

05114000 SOURIS RIVER NEAR SHERWOOD, ND—Continued

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	---	---	---	---	---	---	15.2	13.6	14.3	3.3	2.7	2.9
2	---	---	---	---	---	---	15.2	13.5	14.1	2.8	2.5	2.6
3	---	---	---	---	---	---	13.9	12.1	12.7	2.6	2.4	2.5
4	---	---	---	---	---	---	12.4	11.3	11.7	2.9	2.5	2.7
5	---	---	---	---	---	---	11.3	11.1	11.2	3.5	2.8	3.1
6	---	---	---	---	---	---	11.2	10.7	10.9	3.4	3.0	3.2
7	---	---	---	---	---	---	11.0	10.1	10.5	3.2	2.7	3.0
8	---	---	---	---	---	---	10.2	9.4	9.7	3.8	3.0	3.4
9	---	---	---	---	---	---	9.5	8.9	9.1	4.2	3.5	3.9
10	---	---	---	---	---	---	9.0	8.4	8.6	4.0	3.5	3.7
11	---	---	---	---	---	---	8.5	7.7	7.9	3.5	3.0	3.2
12	---	---	---	---	---	---	7.8	7.0	7.3	---	---	---
13	---	---	---	---	---	---	7.1	6.7	6.9	---	---	---
14	---	---	---	---	---	---	7.4	6.8	7.0	---	---	---
15	---	---	---	---	---	---	8.1	7.1	7.4	---	---	---
16	---	---	---	---	---	---	8.2	7.2	7.6	---	---	---
17	---	---	---	---	---	---	7.7	6.8	7.2	---	---	---
18	---	---	---	---	---	---	7.0	6.4	6.7	---	---	---
19	---	---	---	---	---	---	6.6	6.1	6.3	---	---	---
20	---	---	---	---	---	---	6.2	5.9	6.1	---	---	---
21	---	---	---	14.3	12.9	13.6	6.4	6.0	6.2	---	---	---
22	---	---	---	14.2	13.2	13.7	6.4	5.8	6.0	---	---	---
23	---	---	---	14.2	12.9	13.5	5.9	5.4	5.6	---	---	---
24	---	---	---	15.3	13.4	14.2	5.5	4.7	5.0	---	---	---
25	---	---	---	15.5	13.6	14.4	4.8	4.3	4.5	---	---	---
26	---	---	---	15.1	13.4	14.2	4.5	4.0	4.2	---	---	---
27	---	---	---	15.0	13.1	14.0	4.2	3.8	3.9	---	---	---
28	---	---	---	15.1	13.4	14.3	3.9	3.6	3.7	---	---	---
29	---	---	---	15.0	13.6	14.2	3.7	3.3	3.4	---	---	---
30	---	---	---	14.8	13.2	14.0	3.6	3.3	3.4	---	---	---
31	---	---	---	---	---	---	3.5	3.2	3.4	---	---	---
MONTH	---	---	---	15.5	12.9	14.0	15.2	3.2	7.5	4.2	2.4	3.1
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	11.8	11.2	11.5	---	---	---
2	---	---	---	---	---	---	12.1	11.3	11.8	---	---	---
3	---	---	---	---	---	---	11.9	11.8	11.9	---	---	---
4	---	---	---	---	---	---	11.8	11.5	11.6	---	---	---
5	---	---	---	---	---	---	11.7	11.5	11.6	---	---	---
6	---	---	---	---	---	---	11.8	11.6	11.7	---	---	---
7	---	---	---	0.3	0.2	0.2	12.0	11.7	11.8	---	---	---
8	---	---	---	0.2	0.1	0.2	12.2	11.9	12.0	---	---	---
9	---	---	---	0.3	0.1	0.2	12.1	11.5	11.9	---	---	---
10	---	---	---	0.5	0.3	0.4	11.5	10.7	11.0	---	---	---
11	---	---	---	0.6	0.5	0.5	10.8	10.2	10.6	---	---	---
12	---	---	---	0.6	0.5	0.6	10.2	9.6	9.9	---	---	---
13	---	---	---	0.7	0.5	0.6	10.3	9.3	9.8	---	---	---
14	---	---	---	0.6	0.5	0.5	10.1	9.2	9.6	---	---	---
15	---	---	---	10.8	0.4	1.6	---	---	---	---	---	---
16	---	---	---	12.0	8.9	11.3	---	---	---	---	---	---
17	---	---	---	11.9	10.8	11.4	---	---	---	---	---	---
18	---	---	---	11.4	10.5	11.2	---	---	---	---	---	---
19	---	---	---	11.5	10.7	11.1	---	---	---	---	---	---
20	---	---	---	11.5	11.1	11.3	---	---	---	---	---	---
21	---	---	---	11.3	11.0	11.2	---	---	---	---	---	---
22	---	---	---	11.3	10.9	11.1	---	---	---	---	---	---
23	---	---	---	11.0	10.8	10.9	---	---	---	---	---	---
24	---	---	---	11.4	10.8	11.1	---	---	---	---	---	---
25	---	---	---	12.5	11.3	11.5	---	---	---	---	---	---
26	---	---	---	11.7	11.4	11.5	---	---	---	---	---	---
27	---	---	---	11.8	11.2	11.5	---	---	---	---	---	---
28	---	---	---	12.1	11.6	11.8	---	---	---	---	---	---
29	---	---	---	12.4	11.2	11.8	---	---	---	10.0	6.4	7.9
30	---	---	---	14.1	11.8	12.1	---	---	---	10.6	6.3	8.1
31	---	---	---	12.0	11.4	11.8	---	---	---	9.9	6.5	8.1
MONTH	---	---	---	14.1	0.1	7.5	12.2	9.2	11.2	10.6	6.3	8.0

05115500 LAKE DARLING NEAR FOXHOLM, ND

LOCATION.--Lat 48°27'29", long 101°35'00", in NE¹/₄NE¹/₄ sec.1, T.157 N., R.85 W., Ward County, Hydrologic Unit 09010001, on embankment of Lake Darling Dam, reservoir of Fish and Wildlife Service, on Souris River about 6 mi north of Foxholm, and at mile 430.0.

DRAINAGE AREA.--9,450 mi², approximately, of which about 6,200 mi² is probably noncontributing.

MONTHEND-ELEVATION AND CONTENTS RECORDS

PERIOD OF RECORD.--April 1936 to current year (no winter records 1936-39).

REVISED RECORDS.--WSP 1338: 1942. WSP 2113: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,577.00 ft above National Geodetic Vertical Datum of 1929. April 1936 to Aug. 8, 1963, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earth dam; storage began in April 1936; dam completed in July 1936. Usable capacity, 118,600 acre-ft between elevation of 1,577 ft, sill of control gages, and 1,598 feet, legal full-capacity level. Flood-emergency maximum level is 1,601 ft (148,600 ac-ft). Dead storage below sill at control gages is 144 acre-ft. Figures given herein represent total contents based on capacity table dated April 12, 1995 (provided by U.S. Fish and Wildlife Service). Water is used during periods of low flow at wildlife refuges downstream. Elevations are adjusted for wind effect.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 145,400 acre-ft, Apr. 17, 1976, elevation, 1601.24 ft; minimum observed since April 1943 when reservoir was first spilled to spillway level, 31,200 acre-ft, Feb. 18 and 25, 1963, elevation, 1587.04 ft.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 112,600 acre-ft, May 10, elevation, 1,597.38 ft; minimum daily observed contents, 92,810 acre-ft, Oct. 24, elevation, 1,595.31 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 -----	1,595.51	94,690	--
Oct. 31 -----	1,595.35	93,180	-1,510
Nov. 30 -----	1,595.36	93,280	+100
Dec. 31 -----	*1,595.49	94,500	+1,220
CAL YR 2002	--	--	-3,970
Jan. 31 -----	1,595.49	94,500	0
Feb. 28 -----	1,595.51	94,690	+190
Mar. 31 -----	1,596.62	105,200	+10,510
Apr. 30 -----	1,597.00	108,900	+3,700
May 31 -----	1,596.77	106,700	-2,200
June 30 -----	1,596.77	106,700	0
July 31 -----	1,596.43	103,400	-3,300
Aug. 31 -----	1,595.88	98,180	-5,220
Sept. 30 -----	1,595.59	95,440	-2,740
WTR YR 2003	--	--	+750

* Estimated

RED RIVER OF THE NORTH BASIN
05115500 LAKE DARLING NEAR FOXHOLM, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1993 to current year.

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth to bottom of sampling intrval meters (82048)	Depth to top of sampling intrval meters (82047)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfltrd lab, uS/cm 25 degC (90095)	Hard-ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)
OCT													
23...	1345	1.0	0.80	8.3	840	250	44.4	33.3	2	87.3	E229	23.2	0.23
23...	1350	5.9	2.9	--	--	--	--	--	--	--	--	--	--
23...	1355	6.0	7.8	8.3	846	250	44.1	33.2	2	86.8	E229	23.2	0.22
JUN													
04...	1120	1.1	0.90	8.3	934	270	47.6	35.9	3	101	244	27.0	0.2
04...	1125	6.1	5.9	8.3	929	270	47.4	35.8	3	99.3	244	27.3	0.2
04...	1130	5.8	2.9	--	--	--	--	--	--	--	--	--	--
25...	1000	1.0	0.80	8.4	908	280	50.5	36.4	3	104	245	28.2	0.2
25...	1010	5.8	2.9	--	--	--	--	--	--	--	--	--	--
25...	1015	7.2	7.0	8.4	900	280	51.2	36.5	3	106	241	29.2	0.2
JUL													
16...	1155	1.0	0.80	8.5	889	270	48.9	36.0	3	100	246	27.9	0.2
16...	1200	7.0	6.8	8.4	888	270	49.1	35.9	3	100	246	28.0	0.2
16...	1205	1.0	0.50	--	--	--	--	--	--	--	--	--	--
AUG													
14...	1145	1.0	0.80	8.5	962	260	46.7	35.4	3	99.7	249	28.3	0.2
14...	1150	3.6	1.8	--	--	--	--	--	--	--	--	--	--
14...	1155	7.3	7.1	8.5	955	270	48.0	36.6	3	102	249	28.8	0.2
28...	1355	1.0	0.80	8.4	953	270	47.7	36.9	3	99.8	255	28.5	0.2
28...	1400	2.0	1.0	--	--	--	--	--	--	--	--	--	--
28...	1405	7.0	6.8	8.7	942	260	46.0	34.9	3	96.2	257	28.6	0.2
SEP													
09...	1405	1.0	0.80	8.7	922	280	51.4	36.6	3	102	261	29.5	0.3
09...	1410	2.4	1.2	--	--	--	--	--	--	--	--	--	--
09...	1415	6.2	6.0	8.8	924	280	51.4	36.6	3	103	261	29.5	0.3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sulfate water, fltrd, mg/L (00945)	Residue on evap. at 180degC wat flt mg/L (70300)	Residue total at 105 deg. C, sus-pended, mg/L (00530)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Phos-phorus, water, unfltrd mg/L (00665)	Total nitro-gen, water, unfltrd mg/L (00600)	Organic carbon, unfltrd mg/L (00680)	Chloro-phyll a phyto-plank- ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank- ton, fluoro, ug/L (70954)	Alum-inum, water, unfltrd recover-able, ug/L (01105)	Arsenic water unfltrd ug/L (01002)
OCT													
23...	195	584	<10	0.93	<0.04	0.28	0.11	1.2	9.9	--	--	E20	4
23...	--	--	--	--	--	--	--	--	--	0.9	<0.1	--	--
23...	194	575	<10	0.86	<0.04	0.28	0.11	1.1	10.8	--	--	30	3
JUN													
04...	216	630	<10	1.0	<0.04	<0.06	0.10	--	11.6	--	--	30	2
04...	215	631	<10	1.2	<0.04	<0.06	0.12	--	13.4	--	--	E20	2
04...	--	--	--	--	--	--	--	--	--	0.7	0.2	--	--
25...	214	630	<10	0.87	<0.04	<0.06	0.12	--	14.7	--	--	70	3
25...	--	--	--	--	--	--	--	--	--	0.7	<0.1	--	--
25...	214	628	<10	0.98	<0.04	<0.06	0.11	--	15.2	--	--	60	5
JUL													
16...	216	637	<10	1.1	<0.04	<0.06	0.16	--	15.0	--	--	--	--
16...	216	635	<10	0.98	<0.04	<0.06	0.16	--	12.9	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	2.0	0.1	--	--
AUG													
14...	219	650	<10	1.3	<0.04	<0.06	0.20	--	15.8	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	4.5d	<0.5d	--	--
14...	218	641	<10	1.0	<0.04	<0.06	0.17	--	13.8	--	--	--	--
28...	222	619	<10	2.8	<0.04	<0.06	0.31	--	15.4	--	--	60	5
28...	--	--	--	--	--	--	--	--	--	E14.9d	<0.1d	--	--
28...	222	656	<10	1.2	<0.04	<0.06	0.18	--	13.5	--	--	60	5
SEP													
09...	226	670	<10	1.3	E.03n	<0.06	0.18	--	11.9	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	9.8d	<0.1d	--	--
09...	226	672	<10	1.4	E.04n	E.03n	0.19	--	13.1	--	--	--	--

05115500 LAKE DARLING NEAR FOXHOLM, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Barium, water, unfltrd recover-able, ug/L (01007)	Beryllium, water, unfltrd recover-able, ug/L (01012)	Boron, water, unfltrd recover-able, ug/L (01022)	Cadmium, water, unfltrd recover-able, ug/L (01027)	Chromium, water, unfltrd recover-able, ug/L (01034)	Cobalt, water, unfltrd recover-able, ug/L (01037)	Copper, water, unfltrd recover-able, ug/L (01042)	Iron, water, unfltrd recover-able, ug/L (01045)	Lead, water, unfltrd recover-able, ug/L (01051)	Mercury, water, unfltrd recover-able, ug/L (71900)	Molybdenum, water, unfltrd recover-able, ug/L (01062)	Nickel, water, unfltrd recover-able, ug/L (01067)	Selenium, water, unfltrd recover-able, ug/L (01147)
OCT 23...	74.4	E1	257	<0.2	<0.8	<3.4	1.7	20	<1	<0.02	6	2.2	<3
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
23...	74.9	E1	254	<0.2	<0.8	<3.4	1.9	30	<1	E.01	6	2.5	<3
JUN 04...	80.8	<2	258	<0.2	<0.8	<3.4	6.0	40	<1	<0.02	7	2.2	<3
04...	80.6	<2	260	<0.2	<0.8	<3.4	1.6	40	<1	<0.02	7	2.2	<3
04...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	73.9	<0.5	238	<0.2	<0.8	<3.4	1.9	50	<1	E.01n	6	2.6	<3
25...	--	--	--	--	--	--	--	--	--	--	--	--	--
25...	73.6	<0.5	235	<0.2	<0.8	<3.4	1.8	40	<1	<0.02	6	2.2	<3
JUL 16...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--	--	--	--
28...	73	<0.06	273	0.04	<0.8	0.528	3.4	50	0.07	<0.02	7.4	4.07	0.7
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
28...	73	<0.06	276	E.03n	E.4n	0.558	3.4	80	0.08	<0.02	7.3	4.39	0.8
SEP 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Zinc, water, unfltrd recover-able, ug/L (01092)	Phenolic compounds, water, unfltrd recover-able, ug/L (32730)	Triazine screen, wat unf ELISA, ug/L as atrazin (34757)	2,4-D screen total ug/L (99906)
OCT 23...	E13n	<16	<0.1	<0.700
23...	--	--	--	--
23...	<25	<16	--	--
JUN 04...	E3	<16	0.1	<0.700
04...	5	<16	<0.1	<0.700
04...	--	--	--	--
25...	<4	<16	--	--
25...	--	--	--	--
25...	<4	<16	--	--
JUL 16...	--	<16	<0.1	<0.700
16...	--	<16	--	--
16...	--	--	--	--
AUG 14...	--	<16	<0.1	<0.700
14...	--	--	--	--
14...	--	<16	--	--
28...	2	<16	<0.1	0.700
28...	--	--	--	--
28...	3	<16	--	--
SEP 09...	--	<16	0.1	<0.700
09...	--	--	--	--
09...	--	<16	--	--

Remark codes used in this table:

- < -- Less than
- E -- Estimated value

Value qualifier codes used in this table:

- d -- Diluted sample; method hi range exceeded
- n -- Below the NDV

05115500 LAKE DARLING NEAR FOXHOLM, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth of lake, maximum meters (85310)	Sam-pling depth, meters (00098)	Trans-parency Secchi disc, inches (00077)	Wind direc-tion, clkwise from north, degrees (00036)	Wind speed, mph (00035)	Baro-metric pres-sure, mm Hg (00025)	Dis-solved oxygen, mg/L (00300)	Dis-solved oxygen, percent of sat-uration (00301)	pH, water, unfltrd field, std units (00400)	Specif. conduc-tance, wat un-f uS/cm 25 degC (00095)	Temper-ature, air, deg C (00020)	Temper-ature, water, deg C (00010)
OCT													
23...	1335	6.1	0.00	117	220	<5.0	739	13.7	104	8.1	932	0.0	2.7
23...	1336	--	1.0	--	--	--	--	13.5	--	8.1	930	--	2.6
23...	1337	--	2.2	--	--	--	--	13.3	--	8.2	930	--	2.6
23...	1338	--	3.4	--	--	--	--	13.2	--	8.2	931	--	2.6
23...	1339	--	4.9	--	--	--	--	13.0	--	8.2	930	--	2.8
23...	1340	--	6.1	--	--	--	--	12.9	--	8.2	930	--	2.8
JUN													
04...	1110	7.3	0.00	114	210	<5.0	724	8.2	90	8.2	960	17.5	17.2
04...	1111	--	0.50	--	--	--	--	8.2	--	8.2	960	--	17.2
04...	1112	--	1.0	--	--	--	--	8.2	--	8.2	961	--	17.1
04...	1113	--	2.0	--	--	--	--	8.2	--	8.2	961	--	17.0
04...	1114	--	3.0	--	--	--	--	8.1	--	8.2	961	--	17.0
04...	1115	--	4.0	--	--	--	--	8.1	--	8.2	963	--	16.9
04...	1116	--	5.0	--	--	--	--	8.0	--	8.2	963	--	16.9
04...	1117	--	6.0	--	--	--	--	7.8	--	8.2	963	--	16.9
04...	1118	--	7.0	--	--	--	--	4.7	--	8.0	967	--	16.8
04...	1119	--	7.3	--	--	--	--	3.7	--	7.9	973	--	16.6
25...	0948	7.2	0.00	114	260	<5.0	728	8.1	91	8.5	949	12.5	19.0
25...	0949	--	1.0	--	--	--	--	7.9	--	8.5	952	--	19.0
25...	0950	--	2.0	--	--	--	--	7.9	--	8.5	952	--	19.0
25...	0951	--	3.0	--	--	--	--	7.8	--	8.5	953	--	19.0
25...	0952	--	4.0	--	--	--	--	7.8	--	8.5	953	--	19.0
25...	0953	--	5.0	--	--	--	--	7.8	--	8.5	953	--	19.0
25...	0954	--	6.0	--	--	--	--	7.8	--	8.5	953	--	19.0
25...	0955	--	7.2	--	--	--	--	7.8	--	8.5	952	--	19.0
JUL													
16...	1145	7.0	0.00	13.0	45	5.0	729	8.7	105	8.5	964	25.0	22.2
16...	1146	--	1.0	--	--	--	--	8.7	--	8.5	966	--	22.2
16...	1147	--	2.2	--	--	--	--	8.7	--	8.4	966	--	22.1
16...	1148	--	3.2	--	--	--	--	8.6	--	8.4	967	--	21.9
16...	1149	--	4.3	--	--	--	--	7.9	--	8.3	970	--	21.5
16...	1150	--	5.2	--	--	--	--	7.6	--	8.3	970	--	21.5
16...	1151	--	6.3	--	--	--	--	7.3	--	8.3	971	--	21.3
16...	1152	--	7.0	--	--	--	--	6.9	--	8.3	971	--	21.2
AUG													
14...	1135	7.3	0.00	72.0	210	<5.0	728	7.5	94	8.4	967	32.0	24.1
14...	1136	--	1.0	--	--	--	--	7.3	--	8.4	967	--	24.0
14...	1137	--	2.1	--	--	--	--	7.3	--	8.4	968	--	23.7
14...	1138	--	3.1	--	--	--	--	7.2	--	8.4	968	--	23.7
14...	1139	--	4.2	--	--	--	--	6.9	--	8.4	969	--	23.6
14...	1140	--	5.0	--	--	--	--	6.8	--	8.4	969	--	23.6
14...	1141	--	6.1	--	--	--	--	6.7	--	8.4	968	--	23.6
14...	1142	--	7.3	--	--	--	--	6.5	--	8.4	969	--	23.5
28...	1345	7.0	0.00	39.0	345	8.0	725	9.6	114	8.6	983	19.3	21.3
28...	1346	--	1.0	--	--	--	--	9.5	--	8.6	984	--	21.3
28...	1347	--	2.1	--	--	--	--	9.5	--	8.6	986	--	21.3
28...	1348	--	3.2	--	--	--	--	9.6	--	8.6	986	--	21.3
28...	1349	--	4.1	--	--	--	--	9.3	--	8.6	987	--	21.3
28...	1350	--	5.0	--	--	--	--	8.6	--	8.6	990	--	21.1
28...	1351	--	6.1	--	--	--	--	8.3	--	8.6	989	--	21.1
28...	1352	--	7.0	--	--	--	--	8.1	--	8.6	990	--	21.1
SEP													
09...	1355	6.2	0.00	48.0	230	13	719	8.3	97	8.9	994	25.0	19.8
09...	1356	--	1.0	--	--	--	--	8.3	--	8.9	994	--	19.8
09...	1357	--	2.1	--	--	--	--	8.2	--	8.9	995	--	19.8
09...	1358	--	3.2	--	--	--	--	8.2	--	8.9	994	--	19.8
09...	1359	--	4.0	--	--	--	--	8.1	--	9.0	995	--	19.8
09...	1400	--	5.1	--	--	--	--	8.0	--	9.0	995	--	19.8
09...	1401	--	6.0	--	--	--	--	7.9	--	9.0	995	--	19.8
09...	1402	--	6.2	--	--	--	--	7.9	--	9.0	995	--	19.7

Remark codes used in this table:

< -- Less than

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND

LOCATION.--Lat 48°22'20", long 101°30'18", in SW¹₄SE¹₄ sec.34, T.157 N., R.84 W., Ward County, Hydrologic Unit 09010001, on left bank 30 ft upstream from county highway bridge, 3 mi east of Foxholm, 19 mi upstream from Des Lacs River, and at mile 414.5.

DRAINAGE AREA.--9,470 mi², approximately, of which about 6,200 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1904 to November 1905, March to July 1906 (gage heights only), October 1936 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as Mouse River near Foxholm, 1904-06.

REVISED RECORDS.--WSP 1308: 1905. WSP 2113: Drainage area.

GAGE.--Water-stage recorder and sheet piling weir. Datum of gage is 1,560.73 ft above National Geodetic Vertical Datum of 1929. June 23, 1904, to July 31, 1906, nonrecording gage at site 3.2 mi upstream at different datum. Apr. 1, 1937, to Mar. 25, 1938, nonrecording gage at site 600 ft downstream at datum about 0.5 ft higher.

REMARKS.--Records good. Flow almost completely regulated since 1936 by Lake Darling (station 05115500), 15 mi upstream, Canadian Reservoirs (Boundary Reservoir, 48,990 acre-ft - 1958; Rafferty Reservoir, 356,400 acre-ft - 1991; and Alameda Reservoir, 85,560 ac-ft - 1992) and several small reservoirs, combined capacity, about 646,000 acre-ft. Some small diversions for irrigation and municipal supply.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.02	0.04	0.04	0.08	0.06	e0.00	111	53	0.81	0.09	0.00	0.33
2	0.02	0.04	0.04	0.09	0.06	e0.00	111	51	0.60	0.09	0.00	0.23
3	0.02	0.04	0.04	0.08	0.06	e0.00	112	51	0.59	0.10	0.00	0.17
4	0.02	0.04	0.04	0.08	0.06	e0.00	111	51	0.62	0.08	0.00	0.14
5	0.02	0.04	0.04	0.09	0.05	e0.00	111	55	0.58	0.06	0.00	0.09
6	0.04	0.04	0.04	0.09	0.05	e0.00	111	102	0.53	0.05	0.00	0.08
7	0.05	0.03	0.05	0.09	0.04	e0.00	111	137	0.58	0.03	0.00	0.07
8	0.04	0.03	0.05	0.10	0.04	e0.00	112	143	0.60	0.02	0.00	0.05
9	0.04	0.04	0.04	0.10	0.05	e0.00	112	157	0.73	0.03	0.00	0.03
10	0.04	0.04	0.05	0.08	0.04	e0.00	113	184	0.85	0.03	0.00	0.03
11	0.04	0.04	0.05	0.08	0.04	e0.00	113	174	0.84	0.02	0.00	0.08
12	0.03	0.04	0.05	0.06	0.03	e0.00	113	166	0.95	0.02	0.00	0.10
13	0.02	0.04	0.06	0.06	0.02	e0.10	113	165	0.90	0.01	0.00	0.11
14	0.02	0.04	0.06	0.06	0.04	e0.10	111	193	0.78	0.02	0.00	0.10
15	0.01	0.04	0.06	0.06	0.04	e0.30	111	218	0.70	0.01	0.00	0.08
16	0.01	0.04	0.06	0.06	0.03	e0.50	114	216	0.63	0.01	0.00	0.08
17	0.01	0.04	0.06	0.05	0.03	e0.40	116	212	0.49	0.00	0.00	0.07
18	0.02	0.04	0.07	0.06	0.03	0.56	116	213	0.33	0.01	8.0	0.06
19	0.02	0.04	0.08	0.05	0.03	0.50	116	210	0.24	0.03	60	0.06
20	0.01	0.05	0.08	0.06	0.03	0.56	116	210	0.16	0.02	60	0.05
21	0.01	0.05	0.08	0.06	e0.00	0.63	116	208	0.13	0.02	59	0.05
22	0.01	0.05	0.08	0.05	e0.00	0.61	116	208	0.12	0.01	60	0.05
23	0.01	0.04	0.08	0.04	e0.00	0.66	87	209	0.12	0.00	59	0.05
24	0.01	0.04	0.08	0.04	e0.00	0.63	5.7	209	0.14	0.00	59	0.04
25	0.02	0.04	0.08	0.05	e0.00	24	7.3	210	0.22	0.00	46	0.03
26	0.02	0.04	0.08	0.05	e0.00	111	46	210	0.23	0.00	4.3	0.02
27	0.02	0.04	0.08	0.05	e0.00	111	48	209	0.20	0.00	1.5	0.02
28	0.03	0.04	0.08	0.07	e0.00	113	47	184	0.18	0.00	1.2	0.02
29	0.04	0.04	0.08	0.07	---	111	48	93	0.15	0.00	0.90	0.01
30	0.04	0.04	0.08	0.06	---	111	53	5.5	0.12	0.00	0.61	0.01
31	0.04	---	0.08	0.05	---	111	---	1.5	---	0.00	0.44	---
TOTAL	0.75	1.21	1.94	2.07	0.83	697.55	2,828.0	4,708.0	14.12	0.76	419.95	2.31
MEAN	0.024	0.040	0.063	0.067	0.030	22.5	94.3	152	0.47	0.025	13.5	0.077
MAX	0.05	0.05	0.08	0.10	0.06	113	116	218	0.95	0.10	60	0.33
MIN	0.01	0.03	0.04	0.04	0.00	0.00	5.7	1.5	0.12	0.00	0.00	0.01
AC-FT	1.5	2.4	3.8	4.1	1.6	1,380	5,610	9,340	28	1.5	833	4.6

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2003, BY WATER YEAR (WY)

MEAN	26.3	25.3	24.9	25.8	31.9	104	493	486	141	98.7	57.2	37.3
MAX	146	137	144	166	334	1,058	5,443	4,242	1,138	1,238	440	345
(WY)	(2000)	(1952)	(1976)	(1976)	(1997)	(1976)	(1976)	(1975)	(1975)	(1953)	(1999)	(1999)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.010	0.000	0.000
(WY)	(1937)	(1937)	(1937)	(1937)	(1937)	(1937)	(1942)	(1942)	(1991)	(1991)	(1937)	(1937)

RED RIVER OF THE NORTH BASIN

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1937 - 2003	
ANNUAL TOTAL	2,100.44		8,677.49			
ANNUAL MEAN	5.75		23.8		129	
HIGHEST ANNUAL MEAN					948 1976	
LOWEST ANNUAL MEAN					1.13 1989	
HIGHEST DAILY MEAN	101	Apr 24	218	May 15	8,500	Apr 17, 1976
LOWEST DAILY MEAN	0.00	May 20	0.00	Feb 21	-5.0	Apr 5, 1949
ANNUAL SEVEN-DAY MINIMUM	0.00	May 24	0.00	Feb 21	0.00	Oct 1, 1936
MAXIMUM PEAK FLOW			225	May 14	8,600	Apr 17, 1976
MAXIMUM PEAK STAGE			7.08	May 14	17.17	Apr 17, 1976
INSTANTANEOUS LOW FLOW					a,b-25	Apr 4, 1949
ANNUAL RUNOFF (AC-FT)	4,170		17,210		93,820	
10 PERCENT EXCEEDS	1.6		112		241	
50 PERCENT EXCEEDS	0.07		0.06		11	
90 PERCENT EXCEEDS	0.02		0.00		0.00	

a Reverse flow caused by backwater from Des Lacs River

b No flow at times most years

c Estimated

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)
OCT 03...	1015	0.02	--	--	--	--	1,150	9.0	7.9	--	--	--	--
23...	1525	0.01	--	--	--	--	1,190	--	1.8	--	--	--	--
NOV 21...	1245	0.05	--	--	--	--	1,260	2.0	3.0	--	--	--	--
JAN 09...	1150	0.10	--	--	--	--	1,490	-10.0	1.0	--	--	--	--
FEB 20...	0820	0.04	--	--	--	--	1,920	-14.0	0.0	--	--	--	--
MAR 27...	1145	111	--	8.1	8.0	1,380	1,400	2.0	0.9	410	71.0	57.0	21.0
MAY 01...	1045	54	--	--	--	--	1,010	--	12.5	--	--	--	--
30...	1115	4.8	--	--	--	--	975	14.0	18.7	--	--	--	--
JUL 18...	0920	0.00	--	--	--	--	--	--	--	--	--	--	--
AUG 15...	1000	0.00	--	--	--	--	--	--	--	--	--	--	--
SEP 09...	1700	0.03	713	8.2	8.3	1,210	1,200	27.0	16.9	350	52.9	51.6	20.8

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat fltr mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)
OCT 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 21...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 20...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 27...	3	160	44	398	50.0	0.30	--	320	919	283	945	4.0	40
MAY 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 15...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 09...	4	153	47	376	39.1	0.28	11.5	233	778	0.06	--	14.3	10

RED RIVER OF THE NORTH BASIN

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lead, water, fltred, ug/L (01049)	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT							
03...	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--
NOV							
21...	--	--	--	--	--	--	--
JAN							
09...	--	--	--	--	--	--	--
FEB							
20...	--	--	--	--	--	--	--
MAR							
27...	1	70	440	<0.10	3	<1	340
MAY							
01...	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--
JUL							
18...	--	--	--	--	--	--	--
AUG							
15...	--	--	--	--	--	--	--
SEP							
09...	<1	70	200	<0.20	4	6	390

Remark codes used in this table:

< -- Less than

05116500 DES LACS RIVER AT FOXHOLM, ND

LOCATION.--Lat 48°22'14", long 101°34'11", in NW¹₄NE¹₄NW¹₄ sec 2, T.156 N., R.85 W., Ward County, Hydrologic Unit 09010002, on left bank 200 ft upstream from county highway bridge in Foxholm and at mile 23.0.

DRAINAGE AREA.--939 mi², of which about 400 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1904 to July 1906, October 1945 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,632.98 ft above National Geodetic Vertical Datum of 1929. June 14 to Oct. 23, 1955, non-recording gage at site 200 ft downstream from present gage at same datum. See WSP 1728 or 1913 for history of changes prior to June 14, 1955.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow is affected by reservoirs of Des Lacs National Wildlife Refuge. Combined reservoir capacity is about 54,000 acre-ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	2.0	2.0	1.3	e0.07	e0.02	20	37	14	3.5	2.1	0.72
2	1.7	2.0	2.0	1.3	e0.07	e0.02	11	35	14	3.4	1.9	0.68
3	1.6	2.0	1.9	1.3	e0.07	e0.02	14	33	14	3.6	1.8	0.63
4	1.6	2.0	1.9	1.3	e0.07	e0.02	15	31	14	3.7	1.8	0.65
5	1.6	2.0	1.8	1.3	e0.06	e0.03	11	30	14	4.1	2.1	0.73
6	1.7	2.0	1.8	1.4	e0.06	e0.02	9.4	30	14	3.9	2.1	0.97
7	2.0	2.1	1.8	1.4	e0.06	e0.02	9.8	31	13	3.2	2.0	1.1
8	2.2	2.1	1.8	1.5	e0.06	e0.01	12	34	13	2.9	1.9	1.1
9	2.3	2.1	1.7	1.6	e0.06	e0.01	30	41	13	3.0	2.1	1.0
10	2.2	2.2	1.7	1.5	e0.05	e0.01	89	61	13	3.0	1.8	1.1
11	2.2	2.2	1.7	1.3	e0.05	e0.02	214	78	13	2.9	1.4	2.0
12	2.1	2.2	1.8	1.1	e0.05	e0.03	170	66	13	2.7	1.3	2.3
13	2.0	2.2	1.8	0.90	e0.05	e0.05	120	53	12	2.6	1.3	2.4
14	2.0	2.2	1.8	0.82	e0.04	e0.10	98	44	10	2.8	1.1	2.4
15	2.0	2.1	1.8	0.80	e0.04	e1.0	91	38	9.2	2.7	1.1	2.4
16	2.0	2.1	1.8	0.74	e0.04	e10	88	35	8.3	2.5	1.1	2.4
17	2.0	2.1	1.9	0.72	e0.04	e50	86	32	6.9	2.5	0.97	2.4
18	2.0	2.1	1.9	e0.65	e0.03	e150	84	30	5.7	2.7	0.94	2.4
19	2.0	2.1	1.8	e0.57	e0.03	e100	82	28	5.2	3.7	1.0	2.3
20	2.0	2.1	1.8	e0.47	e0.03	e60	77	26	4.5	3.4	1.1	2.3
21	2.0	2.1	1.6	e0.38	e0.03	e40	73	25	4.5	2.9	1.2	2.2
22	2.0	2.2	1.6	e0.25	e0.03	51	69	24	4.3	2.7	1.4	2.1
23	2.1	2.2	1.6	e0.18	e0.03	78	65	23	4.1	2.5	1.4	2.1
24	2.1	2.1	1.5	e0.15	e0.03	97	60	22	4.2	2.4	1.4	2.0
25	2.0	2.0	1.5	e0.13	e0.03	131	53	21	5.7	2.3	1.2	1.8
26	2.0	2.0	1.4	e0.10	e0.02	55	49	20	5.4	2.3	1.0	1.8
27	2.0	2.0	1.4	e0.09	e0.02	38	47	19	5.1	2.2	0.82	1.7
28	2.0	2.0	1.3	e0.08	e0.02	24	44	18	4.8	2.2	0.80	1.7
29	2.0	2.0	1.4	e0.08	---	18	42	16	4.1	2.1	0.80	1.6
30	2.0	2.0	1.3	e0.08	---	19	40	15	3.7	2.0	0.80	1.6
31	2.0	---	1.3	e0.08	---	23	---	15	---	1.9	0.76	---
TOTAL	61.2	62.5	52.4	23.57	1.24	945.38	1,873.2	1,011	269.7	88.3	42.49	50.58
MEAN	1.97	2.08	1.69	0.76	0.044	30.5	62.4	32.6	8.99	2.85	1.37	1.69
MAX	2.3	2.2	2.0	1.6	0.07	150	214	78	14	4.1	2.1	2.4
MIN	1.6	2.0	1.3	0.08	0.02	0.01	9.4	15	3.7	1.9	0.76	0.63
AC-FT	121	124	104	47	2.5	1,880	3,720	2,010	535	175	84	100

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904 - 2003, BY WATER YEAR (WY)

MEAN	9.64	6.43	2.95	1.36	4.26	48.1	117	60.8	36.4	22.5	11.8	10.8
MAX	83.5	50.7	16.3	8.52	76.1	362	730	399	228	216	108	97.9
(WY)	(1976)	(1976)	(2000)	(2000)	(1981)	(1976)	(1976)	(1975)	(1975)	(1999)	(1972)	(1975)
MIN	0.000	0.000	0.000	0.000	0.000	0.10	1.77	0.30	0.020	0.000	0.000	0.000
(WY)	(1993)	(1993)	(1959)	(1946)	(1946)	(1948)	(1963)	(1993)	(1961)	(1961)	(1961)	(1958)

RED RIVER OF THE NORTH BASIN

05116500 DES LACS RIVER AT FOXHOLM, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1904 - 2003	
ANNUAL TOTAL	1,840.2		4,481.56			
ANNUAL MEAN	5.04		12.3		27.7	
HIGHEST ANNUAL MEAN					148	1976
LOWEST ANNUAL MEAN					0.44	1991
HIGHEST DAILY MEAN	82	Apr 12	214	Apr 11	3,200	Apr 30, 1970
LOWEST DAILY MEAN	1.3	Jan 4	0.01	Mar 8	0.00	Dec 11, 1945
ANNUAL SEVEN-DAY MINIMUM	1.4	Dec 25	0.02	Mar 4	0.00	Dec 11, 1945
MAXIMUM PEAK FLOW			222	Apr 11	4,260	Apr 19, 1979
MAXIMUM PEAK STAGE			a7.91	Apr 11	b21.23	Apr 19, 1979
ANNUAL RUNOFF (AC-FT)	3,650		8,890		20,050	
10 PERCENT EXCEEDS	9.3		40		59	
50 PERCENT EXCEEDS	2.1		2.0		3.0	
90 PERCENT EXCEEDS	1.6		0.06		0.01	

a Also gage height of 7.91 ft, March 18, backwater from ice

b From high-water mark

c Estimated

RED RIVER OF THE NORTH BASIN

05116500 DES LACS RIVER AT FOXHOLM, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 03...	--	--	--	--	--	--
NOV 21...	--	--	--	--	--	--
JAN 09...	--	--	--	--	--	--
FEB 20...	--	--	--	--	--	--
MAR 27...	50	90	<0.10	<1	<1	300
APR 18...	--	--	--	--	--	--
MAY 30...	--	--	--	--	--	--
JUL 18...	90	70	<0.20	3	2	550
AUG 15...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

05117500 SOURIS (MOUSE) RIVER ABOVE MINOT, ND

LOCATION.--Lat 48°14'45", long 101°22'15", in NW¹₄NW¹₄SE¹₄ sec.17, T.155 N., R.83 W., Ward County, Hydrologic Unit 09010001, on right bank 180 ft downstream from county highway bridge, 3.5 mi west of Minot, 7 mi downstream from Des Lacs River, and at mile 388.5.

DRAINAGE AREA.--10,600 mi², approximately, of which about 6,700 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1903 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as Mouse River at Minot, 1903-24, Souris River at Minot, 1927-28, 1929-34, and Souris River near Minot, 1928-29.

REVISED RECORDS.--WSP 1308: 1905, 1909-14, 1918, 1924-25, 1927. WSP 1338: 1903-4, 1906, 1917, 1928, 1929(M). WSP 2113: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,545.75 ft above National Geodetic Vertical Datum of 1929. May 5, 1903, to Sept. 30, 1928; Oct. 1, 1929, to Sept. 30, 1934; nonrecording gages at mile 377.6 in Minot, at datum 12.5 ft lower, Oct. 1, 1928, to Sept. 30, 1929, nonrecording gages at Saugstad bridge at mile 366.8, 5 mi southeast of Minot and at datum 19.2 ft lower than present datum. Records equivalent except those for periods of extreme low flow, as some industrial and sanitary waste enters the river between the sites.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated by reservoirs on Souris and Des Lacs Rivers, combined capacity, about 700,000 acre-ft; some small diversions for irrigation and municipal supply.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage in Minot at least 3 ft higher than 1904 peak, in 1881, according to Apr. 20, 1904, issue of Minot Daily Optic. This peak probably occurred in 1882.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.52	e3.4	3.6	3.6	e1.3	e0.36	142	78	28	3.3	0.02	0.58
2	0.54	e3.3	3.7	3.5	e1.2	e0.35	132	79	21	3.0	0.00	0.32
3	0.53	e3.3	3.5	3.7	e1.1	e0.35	98	75	20	3.6	0.00	0.17
4	0.52	e3.2	3.5	3.9	e1.0	e0.34	121	78	20	4.2	0.00	0.10
5	0.57	3.2	3.4	3.9	e1.0	e0.34	130	87	19	3.8	0.00	0.04
6	0.98	3.1	3.2	4.0	e0.95	e0.33	120	95	18	3.2	0.00	0.02
7	1.6	3.2	3.2	4.0	e0.90	e0.33	117	134	18	2.5	0.00	0.00
8	1.9	3.3	3.2	4.2	e0.80	e0.32	115	167	19	2.3	0.00	0.00
9	1.8	3.5	3.2	4.4	e0.71	e0.31	120	184	20	3.2	0.00	0.00
10	1.7	3.5	3.4	4.2	e0.62	e0.30	139	200	20	3.7	0.00	0.01
11	1.6	3.4	3.5	4.0	e0.59	e0.30	249	234	19	3.2	0.00	0.03
12	1.6	3.7	3.6	3.6	e0.57	e0.35	329	237	19	2.7	0.00	0.02
13	1.8	3.6	3.5	3.3	e0.56	e0.40	245	213	15	2.1	0.00	0.01
14	e3.2	3.7	3.6	3.3	e0.54	e0.80	195	200	12	1.9	0.00	0.00
15	e3.1	3.9	3.6	3.2	e0.52	e1.5	179	212	9.4	1.4	0.00	0.00
16	e2.9	e3.9	3.8	3.1	e0.52	e1.5	176	226	8.3	1.1	0.00	0.00
17	e2.7	e3.9	3.8	3.0	e0.51	e1.00	178	227	7.3	0.79	0.00	0.00
18	e2.6	e3.8	4.2	3.0	e0.51	e2.00	175	229	6.4	0.87	0.00	0.00
19	e2.4	e3.9	4.9	2.8	e0.50	e3.50	174	222	4.9	0.98	0.00	0.00
20	e2.3	e3.9	4.7	2.9	e0.48	e2.50	170	216	4.2	0.85	0.00	0.00
21	e2.3	4.0	4.4	2.7	e0.46	e1.00	167	218	3.9	0.69	0.00	0.00
22	e2.2	3.6	4.5	2.7	e0.44	64	163	217	3.9	0.59	17	0.00
23	e2.2	3.6	4.5	2.3	e0.42	84	161	219	3.8	0.48	71	0.00
24	2.2	3.5	4.2	1.6	e0.40	113	134	220	3.8	0.37	81	0.00
25	2.2	3.4	4.1	1.5	e0.38	94	69	216	4.6	0.29	82	0.00
26	3.4	3.2	3.9	1.5	e0.37	74	45	213	5.5	0.24	78	0.00
27	4.0	3.4	3.8	1.5	e0.36	88	74	213	5.2	0.18	43	0.00
28	3.7	3.5	3.7	e1.5	e0.36	132	76	196	4.8	0.12	8.5	0.00
29	3.8	3.7	3.7	e1.4	---	125	76	173	4.5	0.08	3.4	0.00
30	3.6	3.6	3.9	e1.4	---	125	77	120	4.0	0.05	1.9	0.00
31	e3.4	---	3.8	e1.3	---	135	---	56	---	0.04	0.99	---
TOTAL	67.86	106.2	117.6	91.0	18.07	2,055.68	4,346	5,454	352.5	51.82	386.81	1.30
MEAN	2.19	3.54	3.79	2.94	0.65	66.3	145	176	11.8	1.67	12.5	0.043
MAX	4.0	4.0	4.9	4.4	1.3	350	329	237	28	4.2	82	0.58
MIN	0.52	3.1	3.2	1.3	0.36	0.30	45	56	3.8	0.04	0.00	0.00
AC-FT	135	211	233	180	36	4,080	8,620	10,820	699	103	767	2.6

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 2003, BY WATER YEAR (WY)

MEAN	32.7	27.9	22.6	20.8	28.3	138	646	560	193	123	62.1	45.8
MAX	266	159	164	170	399	1,272	6,209	4,916	1,402	1,393	480	748
(WY)	(1904)	(1952)	(1976)	(1976)	(1997)	(1976)	(1976)	(1904)	(1975)	(1953)	(1999)	(1903)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	1.27	0.31	0.000	0.000	0.000	0.000
(WY)	(1935)	(1935)	(1935)	(1935)	(1935)	(1936)	(1937)	(1993)	(1938)	(1937)	(1937)	(1935)

RED RIVER OF THE NORTH BASIN

05117500 SOURIS (MOUSE) RIVER ABOVE MINOT, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1903 - 2003	
ANNUAL TOTAL	4,921.94		13,048.84			
ANNUAL MEAN	13.5		35.8		158	
HIGHEST ANNUAL MEAN					1,105	1976
LOWEST ANNUAL MEAN					1.30	1931
HIGHEST DAILY MEAN	138	Apr 21	350	Mar 19	11,400	Apr 22, 1904
LOWEST DAILY MEAN	0.00	Aug 10	0.00	Aug 2	0.00	Sep 26, 1917
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 10	0.00	Aug 2	0.00	Sep 26, 1917
MAXIMUM PEAK FLOW			357	Apr 12	b12,000	Apr 20, 1904
MAXIMUM PEAK STAGE			a6.62	Mar 19	c21.90	Apr 20, 1904
ANNUAL RUNOFF (AC-FT)	9,760		25,880		114,300	
10 PERCENT EXCEEDS	32		165		309	
50 PERCENT EXCEEDS	4.0		3.4		21	
90 PERCENT EXCEEDS	0.62		0.00		0.20	

a Backwater from ice

b At site in Minot, from rating curve extended above 8,000 ft³/s

c Maximum stage at present site about 23 ft in April 1904

e Estimated

05117500 SOURIS (MOUSE) RIVER ABOVE MINOT, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Total nitrogen, water, unfltrd mg/L (00600)	Organic carbon, water, unfltrd mg/L (00680)	Fecal coliform, M-FC 0.7u MF col/100 mL (31625)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Aluminum, water, unfltrd recover-able, ug/L (01105)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recover-able, ug/L (01007)	Beryllium, water, unfltrd recover-able, ug/L (01012)	Boron, water, unfltrd recover-able, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recover-able, ug/L (01034)	Cobalt water, unfltrd recover-able, ug/L (01037)
OCT 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 20...	1.4	18.0	2k	--r	--r	70	4	66.3	<2	218	<0.2	3.2	<3.4
JAN 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 07...	--	19.2	<2k	--	--	<30	5	106	E2	282	<0.2	<0.8	<3.4
MAR 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 03...	1.9	16.2	5k	11.2	<0.1	80	3	80.8	<2	224	<0.2	<0.8	<3.4
MAY 01...	--	--	8k	E3.8	E.3	50	5	61.5	<2	199	<0.2	<0.8	<3.4
MAY 30...	--	14.6	6k	1.8	0.5	50	4	53.6	<2	261	<0.2	<0.8	<3.4
JUL 10...	--	23.4	620	1.4	0.2	80	13	59	<0.06	156	E.02n	<0.8	0.857
AUG 20...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 11...	--	25.0	148	14.5d	2.2d	48oc	16	72	<0.06	394	<0.04	<0.8	0.677
SEP 26...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Copper, water, unfltrd recover-able, ug/L (01042)	Iron, water, unfltrd recover-able, ug/L (01045)	Lead, water, unfltrd recover-able, ug/L (01051)	Molybdenum, water, unfltrd recover-able, ug/L (01062)	Nickel, water, unfltrd recover-able, ug/L (01067)	Selenium, water, unfltrd ug/L (01147)	Zinc, water, unfltrd recover-able, ug/L (01092)
OCT 03...	--	--	--	--	--	--	--
NOV 20...	<1.0	260	<1	3	4.7	<3	E13n
JAN 09...	--	--	--	--	--	--	--
MAR 07...	1.3	830	M	2	4.2	<3	<25
MAR 27...	--	--	--	--	--	--	--
APR 03...	1.3	260	<1	3	3.5	<3	E19
MAY 01...	1.4	190	M	3	3.1	<3	E15
MAY 30...	2.2	160	<1	5	2.3	<3	E16
JUL 10...	3.3	140	0.20	2.9	5.36	0.8	2
AUG 20...	--	--	--	--	--	--	--
SEP 11...	2.5	190	0.24	3.1	4.57	0.8	4
SEP 26...	--	--	--	--	--	--	--

Remark codes used in this table:

- < -- Less than
- E -- Estimated value
- M -- Presence verified, not quantified

Value qualifier codes used in this table:

- c -- See laboratory comment
- d -- Diluted sample: method hi range exceeded
- k -- Counts outside acceptable range
- n -- Below the NDV
- o -- Result determined by alternate method

Null value qualifier codes used in this table:

- r -- Sample ruined in preparation

05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND

LOCATION.--Lat 48°09'35", long 100°43'45", in NW¹₄SW¹₄ sec.17, T.154 N., R.78 W., McHenry County, Hydrologic Unit 09010003, on left bank 2.7 mi north of Verendrye, 19 mi upstream from mouth of Winterring River, and at mile 302.0.

DRAINAGE AREA.--11,300 mi², approximately, of which about 6,900 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February to June 1933 (gage heights only), April 1937 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 2113: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,464.87 ft above National Geodetic Vertical Datum of 1929. February to June 1933, at site 4 mi upstream at datum 1.65 ft higher. Apr. 1, 1937, to Mar. 3, 1938, nonrecording gage at present site, at datum 1.97 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated by reservoirs on Souris and Des Lacs Rivers, combined capacity about 700,000 acre-ft; some diversions for irrigation and municipal supply.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	18	e16	e22	e14	e12	222	103	234	24	8.7	18
2	14	19	e15	e23	e14	e11	192	112	184	21	8.8	26
3	10	19	e17	e22	e13	e11	129	109	151	14	8.6	19
4	9.9	19	e18	e22	e13	e11	97	107	128	10	8.2	18
5	12	20	e20	e22	e14	e11	197	112	113	11	8.0	15
6	12	22	e21	e21	e14	e10	211	120	115	14	7.5	12
7	11	27	e20	e21	e14	e10	183	138	106	14	7.7	10
8	11	31	e21	e20	e15	e9.8	185	157	91	16	8.0	9.1
9	13	34	e22	e20	e15	e9.5	185	180	85	20	12	8.0
10	14	32	e24	e19	e15	e9.3	194	260	82	26	18	8.3
11	22	30	e23	e19	e14	e9.2	206	357	82	29	17	10
12	18	31	e22	e18	e15	e9.0	205	369	84	26	11	15
13	14	28	e22	e18	e14	e9.5	216	334	91	23	13	21
14	13	26	e22	e18	e14	e10	272	313	97	22	20	36
15	16	21	e22	e17	e14	e12	312	292	95	23	18	53
16	16	e21	e23	e17	e13	e15	268	270	78	23	14	42
17	17	e21	e22	e16	e14	e100	218	258	65	22	12	32
18	18	e20	e21	e17	e14	e350	200	264	59	18	11	26
19	18	e20	e20	e18	e15	e600	204	273	55	16	10	24
20	23	e20	e20	e18	e14	e550	203	281	49	17	10	21
21	33	e21	e19	e18	e14	e500	199	284	43	19	9.3	18
22	14	e23	e19	e17	e13	e450	196	271	29	18	8.3	17
23	11	e22	e19	e17	e13	e500	191	261	18	21	8.5	16
24	12	e20	e20	e16	e13	e450	186	260	21	22	8.3	12
25	15	e18	e21	e16	e13	e350	182	262	25	23	8.2	11
26	16	e19	e23	e15	e13	e320	176	266	29	22	8.8	8.6
27	17	e20	e24	e15	e12	e290	151	269	33	21	8.5	8.0
28	34	e19	e23	e15	e12	e270	114	269	34	20	8.4	8.4
29	30	e18	e24	e14	---	250	94	268	29	e18	8.1	8.4
30	24	e17	e23	e15	---	209	98	264	26	e15	8.1	7.9
31	19	---	e23	e15	---	224	---	258	---	e11	8.3	---
TOTAL	529.9	676	649	561	385	5,582.3	5,686	7,341	2,331	599	324.3	538.7
MEAN	17.1	22.5	20.9	18.1	13.8	180	190	237	77.7	19.3	10.5	18.0
MAX	34	34	24	23	15	600	312	369	234	29	20	53
MIN	9.9	17	15	14	12	9.0	94	103	18	10	7.5	7.9
AC-FT	1,050	1,340	1,290	1,110	764	11,070	11,280	14,560	4,620	1,190	643	1,070

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2003, BY WATER YEAR (WY)

MEAN	51.7	43.3	34.2	30.5	48.2	230	676	675	257	162	85.7	55.7
MAX	225	169	160	171	277	1,209	6,280	4,918	2,122	1,599	512	363
(WY)	(2000)	(1976)	(1976)	(1976)	(1976)	(1976)	(1976)	(1975)	(1975)	(1953)	(1976)	(1999)
MIN	1.50	1.00	1.00	0.50	0.50	2.25	11.7	6.80	2.33	0.67	0.42	0.10
(WY)	(1938)	(1938)	(1938)	(1938)	(1938)	(1940)	(1937)	(1938)	(1938)	(1937)	(1937)	(1937)

RED RIVER OF THE NORTH BASIN

05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1937 - 2003	
ANNUAL TOTAL	14,690.0		25,203.2			
ANNUAL MEAN	40.2		69.0		199	
HIGHEST ANNUAL MEAN					1,185	1976
LOWEST ANNUAL MEAN					18.8	1991
HIGHEST DAILY MEAN	562	Jun 26	600	Mar 19	9,700	Apr 20, 1976
LOWEST DAILY MEAN	5.2	Jul 28	7.5	Aug 6	0.10	Sep 1, 1937
ANNUAL SEVEN-DAY MINIMUM	8.1	Jul 25	8.1	Aug 2	0.10	Sep 1, 1937
MAXIMUM PEAK FLOW			a600	Mar 19	9,900	Apr 19, 1976
MAXIMUM PEAK STAGE			b8.72	Mar 19	17.84	Apr 19, 1976
ANNUAL RUNOFF (AC-FT)	29,140		49,990		143,900	
10 PERCENT EXCEEDS	103		253		420	
50 PERCENT EXCEEDS	21		20		38	
90 PERCENT EXCEEDS	12		10		4.0	

a About

b Backwater from ice

e Estimated

05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-51, 1957 to current year.

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, unfltrd, mg/L (00915)
OCT 02...	1145	13	--	--	--	--	--	--	1,380	7.0	8.8	--	--
NOV 19...	1445	20	717	15.7	115	8.2	8.1	1,980	2,110	8.0	0.1	490	101
JAN 07...	1130	21	--	--	--	--	--	--	2,190	4.0	0.0	--	--
MAR 07...	1330	10	717	--	--	7.4	--e	1,990	2,110	-16.5	0.0	600	136
MAR 25...	1530	329	--	--	--	--	--	--	667	8.5	1.7	--	--
APR 01...	1245	222	716	11.4	86	7.9	7.8	638	670	-1.0	1.0	190	40.4
MAY 01...	1500	102	722	11.6	121	8.4	8.3	1,210	1,260	18.0	14.5	360	66.8
MAY 21...	1345	286	--	--	--	--	--	--	1,280	18.5	14.3	--	--
MAY 27...	1245	270	722	7.6	87	8.2	8.2	1,140	1,180	23.0	19.0	340	62.2
JUL 10...	1330	25	720	7.3	86	8.2	8.1	1,440	1,480	23.0	20.4	430	86.3
AUG 20...	1230	11	722	7.9	104	8.1	--	--	1,620	32.0	26.2	--	--
SEP 11...	1215	9.2	716	5.5	61	8.1	8.2	1,640	1,750	19.0	17.1	450	94.8

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Magnesium, water, fltrd, mg/L (00925)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Residue on evap. at 180degC wat fltrd mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Organic nitrogen, water, unfltrd mg/L (00605)	Phosphorus, water, unfltrd mg/L (00665)
OCT 02...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 19...	57.5	5	268	E335	113	0.35	582	1,470	1.3	<0.04	<0.06	--	0.14
JAN 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 07...	63.8	4	237	373	76.3	0.35	538	1,430	2.0	1.13	0.31	0.84	0.08
MAR 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 01...	20.7	2	61.3	140	16.3	0.13	157	440	1.4	0.34	1.48	1.0	0.32
MAY 01...	47.2	3	147	278	30.6	0.23	348d	863	--	--	--	--	--
MAY 21...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 27...	44.1	3	119	274	30.9	0.3	304	798	1.2	E.03	<0.06	--	0.17
JUL 10...	52.0	4	182	376	47.0	0.3	370	1,020	1.0	E.03	<0.06	--	0.23
AUG 20...	--	--	--	--	--	--	--	--	1.4	<0.04	<0.06	--	0.46
SEP 11...	53.0	5	234	387	92.7d	0.4	423d	1,200	1.4	0.15	E.04n	1.2	0.37

05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Total nitrogen, water, unfltrd mg/L (00600)	Organic carbon, water, unfltrd mg/L (00680)	Fecal coliform, M-FC 0.7u MF col/100 mL (31625)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Aluminum, water, unfltrd recover-able, ug/L (01105)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recover-able, ug/L (01007)	Beryllium, water, unfltrd recover-able, ug/L (01012)	Boron, water, unfltrd recover-able, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chromium, water, unfltrd recover-able, ug/L (01034)	Cobalt water, unfltrd recover-able, ug/L (01037)
OCT 02...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 19...	--	13.8	5k	--r	--r	40	3	60.9	<2	339	<0.2	<0.8	<3.4
JAN 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 07...	2.3	10.2	42	--	--	E20	E2	80.6	E2	321	<0.2	<0.8	<3.4
MAR 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 01...	2.8	12.3	4k	E2.4	E.1	490	3	52.2	<2	62	<0.2	0.8	<3.4
MAY 01...	--	--	22k	E2.3	E.3	110	12	62.9	<2	224	<0.2	<0.8	<3.4
MAY 21...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 27...	--	13.9	4k	4.9	0.8	260	4	64.6	<2	244	<0.2	E.6	<3.4
JUL 10...	--	13.4	144	2.6	0.5	100	10	59	<0.06	324	0.04	<0.8	0.878
AUG 20...	--	17.9	25k	16.9d	3.6d	--	--	--	--	--	--	--	--
SEP 11...	--	13.1	212	E1.0	E.1	100	16	59	<0.06	357	E.02n	<0.8	1.03

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Copper, water, unfltrd recover-able, ug/L (01042)	Iron, water, unfltrd recover-able, ug/L (01045)	Lead, water, unfltrd recover-able, ug/L (01051)	Molybdenum, water, unfltrd recover-able, ug/L (01062)	Nickel, water, unfltrd recover-able, ug/L (01067)	Selenium, water, unfltrd ug/L (01147)	Zinc, water, unfltrd recover-able, ug/L (01092)
OCT 02...	--	--	--	--	--	--	--
NOV 19...	E.9	400	<1	7	2.1	<3	<25
JAN 07...	--	--	--	--	--	--	--
MAR 07...	1.7	520	<1	3	2.6	<3	<25
MAR 25...	--	--	--	--	--	--	--
APR 01...	3.4	1,350	1	E2	4.2	<3	E24
MAY 01...	2.5	320	Mn	4	3.8	<3	E25n
MAY 21...	--	--	--	--	--	--	--
MAY 27...	3.6	660	M	4	3.4	<3	<25
JUL 10...	4.0	230	0.33	4.1	6.03	1.1	3
AUG 20...	--	--	--	--	--	--	--
SEP 11...	4.1	200	0.16	3.9	6.10	1.1	2

Remark codes used in this table:

- < -- Less than
- E -- Estimated value
- M-- Presence verified, not quantified

Value qualifier codes used in this table:

- d -- Diluted sample: method hi range exceeded
- k -- Counts outside acceptable range
- n -- Below the NDV

Null value qualifier codes used in this table:

- e -- Required equipment not functional/avail
- r -- Sample ruined in preparation

05120500 WINTERING RIVER NEAR KARLSRUHE, ND

LOCATION.--Lat 48°08'18", long 100°32'22", SW¹₄SW¹₄SW¹₄ sec.23, T.154 N., R.77 W., McHenry County, Hydrologic Unit 09010003, on right bank downstream from county highway bridge, 9 mi upstream from mouth, and 5 mi northeast of Karlsruhe.

DRAINAGE AREA.--705 mi², of which about 420 mi² is probably noncontributing. (Drainage area shown is for former location 5 river miles downstream. Total drainage area has been reduced about 10 percent, which mostly consists of noncontributing area. New drainage areas will be published, but have not been delineated.)

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,500 ft above National Geodetic Vertical Datum of 1929, from topographic map. Mar. 1937 to Sept. 30, 1994, at site 5 miles downstream, at datum 20 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are fair. Some regulation by Fish and Wildlife Service dams on Cottonwood and Wintering Lakes, controlled capacity, about 850 acre-ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	6.5	e0.95	e0.00	e0.00	e0.00	143	20	46	15	4.5	1.5
2	2.8	6.9	e0.80	e0.00	e0.00	e0.00	131	19	46	19	4.5	2.3
3	4.4	7.2	e0.63	e0.00	e0.00	e0.00	108	17	45	22	6.6	2.2
4	5.8	7.1	e0.54	e0.00	e0.00	e0.00	89	18	45	21	7.5	2.5
5	6.4	7.5	e0.49	e0.00	e0.00	e0.00	97	19	45	19	10	3.1
6	4.5	6.9	e0.42	e0.00	e0.00	e0.00	86	22	45	16	10	3.3
7	2.6	6.9	e0.43	e0.00	e0.00	e0.00	87	21	43	13	9.5	3.3
8	2.9	6.8	e0.44	e0.00	e0.00	e0.00	80	22	42	12	9.1	3.2
9	6.6	6.6	e0.45	e0.00	e0.00	e0.00	70	26	42	16	13	2.9
10	8.7	6.2	e0.46	e0.00	e0.00	e0.00	62	29	42	14	16	6.0
11	8.8	6.1	e0.50	e0.00	e0.00	e0.00	57	33	43	12	13	8.8
12	8.1	6.3	e0.53	e0.00	e0.00	e0.00	53	36	48	11	10	3.7
13	7.6	6.2	e0.55	e0.00	e0.00	e0.10	49	35	45	9.9	9.1	2.6
14	8.6	5.9	e0.53	e0.00	e0.00	e0.40	45	36	44	11	7.7	2.5
15	7.9	5.4	e0.51	e0.00	e0.00	e0.80	43	36	41	9.7	7.5	3.6
16	7.6	3.9	e0.50	e0.00	e0.00	e2.0	42	39	39	8.7	6.2	4.1
17	7.9	3.5	e0.45	e0.00	e0.00	e1.9	43	44	41	8.9	6.1	4.8
18	8.2	3.7	e0.40	e0.00	e0.00	e1.8	43	58	38	10	5.4	5.1
19	8.2	3.5	e0.36	e0.00	e0.00	e1.9	42	71	36	11	4.9	4.8
20	8.5	3.4	e0.30	e0.00	e0.00	e2.0	41	80	34	13	4.2	4.9
21	8.2	2.9	e0.21	e0.00	e0.00	e10	40	87	32	13	2.8	5.5
22	8.1	2.3	e0.14	e0.00	e0.00	e40	37	89	31	13	2.4	5.1
23	8.8	1.8	e0.10	e0.00	e0.00	e30	34	88	29	13	1.8	5.5
24	9.5	e1.4	e0.10	e0.00	e0.00	e26	33	86	30	12	0.97	4.6
25	7.4	e1.4	e0.00	e0.00	e0.00	e22	31	85	26	11	2.0	3.2
26	6.7	e1.5	e0.00	e0.00	e0.00	e40	30	75	26	10	0.84	3.2
27	7.1	e1.6	e0.00	e0.00	e0.00	e100	27	68	23	8.4	0.23	3.4
28	7.8	e1.7	e0.00	e0.00	e0.00	e190	25	61	21	7.4	1.4	2.8
29	10	e1.5	e0.00	e0.00	---	e230	24	57	19	6.6	e1.0	2.7
30	7.3	e1.2	e0.00	e0.00	---	242	22	53	17	4.9	e0.45	2.5
31	6.8	---	e0.00	e0.00	---	167	---	47	---	4.9	0.59	---
TOTAL	216.3	133.8	10.79	0.00	0.00	1,107.90	1,714	1,477	1,104	376.4	179.28	113.7
MEAN	6.98	4.46	0.35	0.000	0.000	35.7	57.1	47.6	36.8	12.1	5.78	3.79
MAX	10	7.5	0.95	0.00	0.00	242	143	89	48	22	16	8.8
MIN	2.5	1.2	0.00	0.00	0.00	0.00	22	17	17	4.9	0.23	1.5
AC-FT	429	265	21	0.00	0.00	2,200	3,400	2,930	2,190	747	356	226

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2003, BY WATER YEAR (WY)

MEAN	6.38	6.18	2.56	1.26	1.55	26.3	72.0	34.1	18.7	12.1	7.48	5.70
MAX	109	98.8	22.7	9.77	10.7	343	465	304	194	95.1	87.3	67.3
(WY)	(1995)	(1995)	(2001)	(2002)	(2000)	(1995)	(1997)	(1999)	(1999)	(1999)	(1993)	(1999)
MIN	0.034	0.50	0.000	0.000	0.000	0.000	2.81	1.65	0.43	0.23	0.006	0.000
(WY)	(1993)	(1938)	(1938)	(1938)	(1938)	(1951)	(1992)	(1992)	(1992)	(1989)	(1989)	(1992)

RED RIVER OF THE NORTH BASIN

05120500 WINTERING RIVER NEAR KARLSRUHE, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1937 - 2003	
ANNUAL TOTAL	3,806.54		6,433.17			
ANNUAL MEAN	10.4		17.6		16.4	
HIGHEST ANNUAL MEAN					82.0	1999
LOWEST ANNUAL MEAN					1.36	1992
HIGHEST DAILY MEAN	101	Jun 24	242	Mar 30	2,500	Apr 7, 1949
LOWEST DAILY MEAN	0.00	Jul 28	0.00	Dec 25	0.00	Mar 1, 1937
ANNUAL SEVEN-DAY MINIMUM	0.00	Jul 28	0.00	Dec 25	0.00	Mar 1, 1937
MAXIMUM PEAK FLOW			273	Mar 30	3,000	Apr 7, 1949
MAXIMUM PEAK STAGE			6.09	Mar 30	a12.00	Apr 7, 1949
ANNUAL RUNOFF (AC-FT)	7,550		12,760		11,880	
10 PERCENT EXCEEDS	23		45		34	
50 PERCENT EXCEEDS	6.2		6.1		3.5	
90 PERCENT EXCEEDS	0.33		0.00		0.10	

a Backwater from ice

e Estimated

RED RIVER OF THE NORTH BASIN

05120500 WINTERING RIVER NEAR KARLSRUHE, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lead, water, fltred, ug/L (01049)	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT							
02...	--	--	--	--	--	--	--
NOV							
19...	--	--	--	--	--	--	--
JAN							
07...	--	--	--	--	--	--	--
MAR							
05...	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--
APR							
01...	1	40	90	<0.10	1	1	200
17...	--	--	--	--	--	--	--
MAY							
21...	--	--	--	--	--	--	--
JUL							
10...	<1	90	60	<0.20	<1	2	290
AUG							
20...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

05122000 SOURIS (MOUSE) RIVER NEAR BANTRY, ND

LOCATION.--Lat 48°30'20", long 100°26'04", in SE¹₄NW¹₄SE¹₄ sec.14, T.158 N., R.76 W., McHenry County, Hydrologic Unit 09010003, on left bank 200 ft upstream from Nelson bridge, 8 mi east of Bantry, 18 mi upstream from Willow Creek, and at mile 228.0.

DRAINAGE AREA.--12,300 mi² approximately, of which about 7,600 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 2113: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,427.56 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 16, 1938, nonrecording gage at same site at datum 0.17 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated by reservoirs on Souris, Des Lacs, and Wintering Rivers, total capacity, about 700,800 acre-ft. Diversions for irrigation of about 7,600 acres at Eaton Dam about 42 mi above station and other small diversions for irrigation and municipal supply.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	36	e33	e30	e13	e12	e160	146	487	62	25	9.0
2	20	37	e31	e30	e13	e12	e130	101	470	58	22	8.7
3	19	36	e30	e29	e13	e12	e150	72	445	57	21	e8.1
4	18	34	e29	e29	e13	e12	e250	54	411	54	20	e7.6
5	18	33	e29	e28	e13	e11	e300	45	365	52	20	7.5
6	22	33	e30	e27	e13	e11	e380	42	315	50	19	7.7
7	25	34	e30	e27	e13	e11	e290	45	272	47	19	9.2
8	25	34	e31	e27	e13	e11	e200	52	232	42	19	11
9	25	35	e31	e26	e13	e11	e160	70	208	43	20	12
10	26	36	e33	e26	e13	e11	e130	154	195	41	21	15
11	27	37	e34	e26	e13	e10	e100	368	181	41	21	e20
12	28	36	e36	e26	e14	e10	93	535	172	43	21	e19
13	30	34	e37	e25	e15	e10	86	595	163	46	23	18
14	30	e33	e38	e25	e15	e10	85	616	157	46	26	18
15	29	e32	e36	e25	e15	e10	84	617	157	45	28	19
16	30	e31	e35	e25	e15	e10	87	615	155	43	26	19
17	30	e32	e35	e25	e15	e11	133	611	150	40	23	22
18	30	e33	e34	e24	e14	e15	178	604	144	40	22	22
19	28	e34	e34	e24	e14	e30	212	592	135	38	21	26
20	27	e35	e33	e23	e14	e60	210	578	123	36	20	28
21	27	e35	e33	e23	e13	e120	179	569	113	34	18	30
22	27	e36	e32	e22	e12	e230	156	556	103	32	18	27
23	27	e35	e31	e21	e11	e360	142	541	95	30	17	25
24	28	e34	e31	e19	e11	e300	141	529	89	30	15	23
25	31	e33	e32	e17	e11	e290	161	513	85	30	14	22
26	33	e33	e33	e16	e12	e280	184	488	97	31	13	21
27	32	e32	e33	e14	e13	e270	199	472	85	31	12	19
28	30	e33	e32	e13	e13	e240	205	466	71	33	13	17
29	29	e35	e31	e13	---	e210	200	480	66	32	e10	16
30	23	e35	e31	e13	---	e200	178	500	63	30	e9.9	15
31	34	---	e30	e13	---	e190	---	498	---	28	9.4	---
TOTAL	829	1,026	1,008	711	370	2,980	5,163	12,124	5,804	1,265	586.3	521.8
MEAN	26.7	34.2	32.5	22.9	13.2	96.1	172	391	193	40.8	18.9	17.4
MAX	34	37	38	30	15	360	380	617	487	62	28	30
MIN	18	31	29	13	11	10	84	42	63	28	9.4	7.5
AC-FT	1,640	2,040	2,000	1,410	734	5,910	10,240	24,050	11,510	2,510	1,160	1,030

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2003, BY WATER YEAR (WY)

MEAN	66.7	59.2	42.5	33.5	42.3	144	628	804	407	218	121	71.9
MAX	421	219	172	175	388	912	5,666	5,161	2,821	1,616	1,080	633
(WY)	(2000)	(1976)	(1976)	(1976)	(1997)	(1995)	(1976)	(1979)	(1975)	(1953)	(1999)	(1999)
MIN	0.68	0.50	1.00	0.50	0.000	0.44	5.60	3.04	11.7	2.73	1.03	0.010
(WY)	(1941)	(1941)	(1938)	(1938)	(1938)	(1937)	(1990)	(1937)	(1992)	(1992)	(1992)	(1939)

RED RIVER OF THE NORTH BASIN

05122000 SOURIS (MOUSE) RIVER NEAR BANTRY, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1937 - 2003	
ANNUAL TOTAL	22,135		32,388.1		223	
ANNUAL MEAN	60.6		88.7		1,226	
HIGHEST ANNUAL MEAN					1976	
LOWEST ANNUAL MEAN					15.9	
HIGHEST DAILY MEAN	501	Jun 29	617	May 15	9,260	Apr 23, 1976
LOWEST DAILY MEAN	13	Mar 8	7.5	Sep 5	0.00	Mar 1, 1937
ANNUAL SEVEN-DAY MINIMUM	15	Mar 4	8.3	Sep 1	0.00	Mar 1, 1937
MAXIMUM PEAK FLOW			621	May 14	9,330	Apr 23, 1976
MAXIMUM PEAK STAGE			8.16	May 14	14.59	Apr 23, 1976
ANNUAL RUNOFF (AC-FT)	43,900		64,240		161,800	
10 PERCENT EXCEEDS	172		258		530	
50 PERCENT EXCEEDS	30		31		52	
90 PERCENT EXCEEDS	20		13		5.5	

e Estimated

RED RIVER OF THE NORTH BASIN

05122000 SOURIS (MOUSE) RIVER NEAR BANTRY, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 02...	--	--	--	--	--	--
NOV 19...	--	--	--	--	--	--
JAN 07...	--	--	--	--	--	--
MAR 05...	--	--	--	--	--	--
APR 10...	--	--	--	--	--	--
17...	--	--	--	--	--	--
JUN 26...	60	80	<0.20	2	2	340
JUL 31...	70	120	<0.20	3	2	390
SEP 11...	--	--	--	--	--	--
24...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

05123400 WILLOW CREEK NEAR WILLOW CITY, ND

LOCATION.--Lat 48°35'20", long 100°26'30", in NE¹₄NW¹₄ sec.23, T.159 N., R.76 W., McHenry County, Hydrologic Unit 09010004, on left bank 50 ft downstream from culverts on county road, 1.5 mi upstream from Snake Creek, and 7 mi west of Willow City.

DRAINAGE AREA.--1,160 mi², approximately, of which about 430 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1956 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,430 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Oct. 5, 1956, nonrecording gage at site 50 ft upstream at same datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	0.00	0.00	e0.00	e65	e10	7.7	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	e0.00	e60	e9.3	5.8	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	e0.00	e55	e8.5	8.5	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	e0.00	e50	e8.8	10	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	e0.00	e54	e9.2	8.7	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	e0.00	e48	e11	6.8	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	e0.00	e43	e10	5.8	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	e0.00	e39	e10	5.3	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	e0.00	e36	e11	5.1	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	e0.00	e34	e12	8.3	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	e0.00	e32	14	6.7	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	e0.00	e30	16	6.5	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	e0.00	e29	20	4.7	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	e0.10	e29	18	3.2	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	e0.50	e28	12	1.6	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	e0.00	e28	7.5	0.74	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	e0.00	e27	6.7	0.43	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	e0.00	e26	5.3	0.10	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	e0.00	e25	5.4	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	e0.00	e24	10	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	e0.00	e22	24	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	e0.00	e21	34	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	e0.00	e19	36	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	e0.00	e18	36	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	e0.00	e30	e17	29	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	e0.00	e50	e15	20	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	e0.00	e100	e14	18	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	e0.00	e150	e13	17	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	---	e160	e12	13	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	---	e125	e11	11	0.00	0.00	0.00
31	0.00	---	0.00	0.00	---	e80	---	8.7	---	0.00	0.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	753.50	924	461.4	95.97	0.00	0.00	0.00
MEAN	0.000	0.000	0.000	0.000	0.000	24.3	30.8	14.9	3.20	0.000	0.000	0.000
MAX	0.00	0.00	0.00	0.00	0.00	160	65	36	10	0.00	0.00	0.00
MIN	0.00	0.00	0.00	0.00	0.00	0.00	11	5.3	0.00	0.00	0.00	0.00
AC-FT	0.00	0.00	0.00	0.00	0.00	1,490	1,830	915	190	0.00	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2003, BY WATER YEAR (WY)

MEAN	7.01	7.19	2.11	0.29	0.60	38.3	256	147	58.1	26.4	21.8	8.63
MAX	71.8	57.7	24.8	4.39	16.4	342	1,242	1,424	769	255	197	75.5
(WY)	(1981)	(2001)	(1960)	(1960)	(1981)	(1995)	(1969)	(1999)	(1999)	(1999)	(2001)	(1980)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	(1957)	(1957)	(1957)	(1957)	(1958)	(1959)	(1977)	(1959)	(1959)	(1958)	(1957)	(1957)

RED RIVER OF THE NORTH BASIN

05123400 WILLOW CREEK NEAR WILLOW CITY, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1956 - 2003	
ANNUAL TOTAL	3,178.10		2,234.87			
ANNUAL MEAN	8.71		6.12		47.8	
HIGHEST ANNUAL MEAN					323	1999
LOWEST ANNUAL MEAN					0.005	1990
HIGHEST DAILY MEAN	154	Jun 30	160	Mar 29	5,310	Apr 12, 1969
LOWEST DAILY MEAN	0.00	Jan 1	0.00	Oct 1	0.00	Sep 23, 1956
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	0.00	Oct 1	0.00	Sep 23, 1956
MAXIMUM PEAK FLOW			a180	Mar 29	5,900	Apr 12, 1969
MAXIMUM PEAK STAGE			b6.48	Apr 2	16.76	Apr 12, 1969
ANNUAL RUNOFF (AC-FT)	6,300		4,430		34,610	
10 PERCENT EXCEEDS	21		19		96	
50 PERCENT EXCEEDS	0.00		0.00		0.00	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

a About

b Observed, may have been higher during period of no record, Mar. 26 to Apr. 1

e Estimated

RED RIVER OF THE NORTH BASIN

05123400 WILLOW CREEK NEAR WILLOW CITY, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb- denum, water, fltrd, ug/L (01060)	Selen- ium, water, fltrd, ug/L (01145)	Stront- ium, water, fltrd, ug/L (01080)
OCT					
02...	--	--	--	--	--
NOV					
19...	--	--	--	--	--
JAN					
07...	--	--	--	--	--
MAR					
05...	--	--	--	--	--
APR					
02...	--	--	--	--	--
10...	20	<0.10	1	1	380
17...	--	--	--	--	--
MAY					
27...	--	--	--	--	--
JUL					
16...	--	--	--	--	--
AUG					
20...	--	--	--	--	--
SEP					
24...	--	--	--	--	--

Remark codes used in this table:

< -- Less than

05123510 DEEP RIVER NEAR UPHAM, ND

LOCATION.--Lat 48°35'03", long 100°51'44", in SW¹₄NW¹₄ sec.22, T.159 N., R.79 W., McHenry County, Hydrologic Unit 09010005, 60 ft downstream from county highway bridge, 0.8 mi downstream from Little Deep River, and 6.3 mi west of Upham.

DRAINAGE AREA.--975 mi², of which about 605 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1957 to September 1980, March 1985 to current year (seasonal records only since 1985).

GAGE.--Water-stage recorder. Elevation of gage is 1,430 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in April 1951 reached a stage of about 16 ft, discharge, 2,700 ft³/s, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 69 ft³/s, Apr. 23, gage height, 8.08 ft; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	0.00	0.34	47	e7.5	1.8	0.00	0.00
2	---	---	---	---	---	0.00	0.36	46	e6.5	1.8	0.00	0.00
3	---	---	---	---	---	0.00	0.32	45	e4.5	2.1	0.00	0.00
4	---	---	---	---	---	0.00	0.25	45	e3.0	2.1	0.00	0.00
5	---	---	---	---	---	0.00	0.19	44	e2.3	1.7	0.00	0.00
6	---	---	---	---	---	0.00	0.16	36	e1.7	1.5	0.00	0.00
7	---	---	---	---	---	0.00	0.28	27	1.3	1.1	0.00	0.00
8	---	---	---	---	---	0.00	12	27	0.92	0.90	0.00	0.00
9	---	---	---	---	---	0.00	38	29	0.65	0.83	0.00	0.00
10	---	---	---	---	---	0.00	49	31	0.39	0.88	0.00	0.00
11	---	---	---	---	---	0.00	50	29	0.28	0.82	0.00	0.00
12	---	---	---	---	---	0.00	50	27	0.18	0.61	0.00	0.00
13	---	---	---	---	---	0.00	49	26	0.09	0.43	0.00	0.00
14	---	---	---	---	---	0.00	48	24	0.06	0.37	0.00	0.00
15	---	---	---	---	---	0.00	46	23	0.03	0.30	0.00	0.00
16	---	---	---	---	---	0.00	45	22	0.00	0.17	0.00	0.00
17	---	---	---	---	---	0.00	43	20	0.00	0.05	0.00	0.00
18	---	---	---	---	---	0.00	43	19	0.00	0.01	0.00	0.00
19	---	---	---	---	---	0.00	43	19	0.00	0.00	0.00	0.00
20	---	---	---	---	---	0.00	43	18	0.33	0.00	0.00	0.00
21	---	---	---	---	---	0.00	52	17	1.3	0.00	0.00	0.00
22	---	---	---	---	---	e0.00	64	17	4.9	0.00	0.00	0.00
23	---	---	---	---	---	e0.00	68	16	6.5	0.00	0.00	0.00
24	---	---	---	---	---	e0.00	67	15	3.4	0.00	0.00	0.00
25	---	---	---	---	---	e0.00	65	15	3.2	0.00	0.00	0.00
26	---	---	---	---	---	e0.00	62	14	3.1	0.00	0.00	0.00
27	---	---	---	---	---	e0.10	59	13	3.0	0.00	0.00	0.00
28	---	---	---	---	---	e0.15	56	13	3.1	0.00	0.00	0.00
29	---	---	---	---	---	e0.18	51	e12	2.6	0.00	0.00	0.00
30	---	---	---	---	---	e0.21	48	e11	2.1	0.00	0.00	0.00
31	---	---	---	---	---	e0.25	---	e9.0	---	0.00	0.00	---
TOTAL	---	---	---	---	---	0.89	1,152.90	756.0	62.93	17.47	0.00	0.00
MEAN	---	---	---	---	---	0.029	38.4	24.4	2.10	0.56	0.000	0.000
MAX	---	---	---	---	---	0.25	68	47	7.5	2.1	0.00	0.00
MIN	---	---	---	---	---	0.00	0.16	9.0	0.00	0.00	0.00	0.00
AC-FT	---	---	---	---	---	1.8	2,290	1,500	125	35	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 2003, BY WATER YEAR (WY)

MEAN	0.12	0.72	0.24	0.034	0.10	27.4	143	44.5	7.86	4.59	3.33	0.22
MAX	1.99	16.1	5.08	0.77	2.37	276	1,300	469	121	57.6	81.5	6.17
(WY)	(1976)	(1976)	(1976)	(1976)	(1976)	(1976)	(1976)	(1999)	(1999)	(2000)	(2001)	(1999)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	(1958)	(1958)	(1958)	(1958)	(1958)	(1959)	(1959)	(1959)	(1958)	(1958)	(1958)	(1958)

05123510 DEEP RIVER NEAR UPHAM, ND—Continued

SUMMARY STATISTICS

WATER YEARS 1958 - 2003

ANNUAL MEAN	a20.5		
HIGHEST ANNUAL MEAN	a140		1,976
LOWEST ANNUAL MEAN	0.000		1,959
HIGHEST DAILY MEAN	5,700	Apr 1	2 1,969
LOWEST DAILY MEAN	0.00	Oct	1 1,957
ANNUAL SEVEN-DAY MINIMUM	0.00	Oct	1 1,957
MAXIMUM PEAK FLOW	6,760	Apr 1	2 1,969
MAXIMUM PEAK STAGE	18.18	Apr 1	2 1,969
ANNUAL RUNOFF (AC-FT)	a14,820		
10 PERCENT EXCEEDS	6.8		
50 PERCENT EXCEEDS	0.00		
90 PERCENT EXCEEDS	0.00		

a Based on complete water years only (1958-80)

e Estimated

05123510 DEEP RIVER NEAR UPHAM, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1972-80, 1985 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)
MAR													
20...	1545	0.00	--	--	--	--	--	--	--	--	--	--	--
26...	1730	0.00	--	--	--	--	--	--	--	--	--	--	--
APR													
10...	1115	49	--	7.9	8.0	783	805	10.0	4.6	310	47.0	46.0	17.0
12...	1650	0.35	--	--	--	--	743	-6.0	0.9	--	--	--	--
MAY													
29...	1600	12	--	--	--	--	1,330	29.0	22.4	--	--	--	--
JUL													
16...	1415	0.17	723	9.9	9.8	765	765	29.0	25.5	280	29.2	51.2	19.6
AUG													
20...	1805	0.00	--	--	--	--	--	--	--	--	--	--	--
SEP													
24...	1800	0.00	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat fltrd mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)
MAR													
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
10...	1	41.0	21	169	45.0	0.10	--	190	487	68.0	514	2.0	50
12...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
16...	1	52.0	27	176	53.7	0.14	<2.00	180	492	0.23	--	6.8	30
AUG													
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP													
24...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
MAR							
20...	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--
APR							
10...	1	40	50	<0.10	<1	<1	210
12...	--	--	--	--	--	--	--
MAY							
29...	--	--	--	--	--	--	--
JUL							
16...	<1	40	20	<0.20	1	1	170
AUG							
20...	--	--	--	--	--	--	--
SEP							
24...	--	--	--	--	--	--	--

Remark codes used in this table:
 < -- Less than

05123990 J. CLARK SALYER POOL 357 NEAR WESTHOPE, ND

LOCATION.--Lat 48°58'40", long 100°57'45", in SW¹₄ sec.31, T.164 N., R.79 W., Bottineau County, Hydrologic Unit 09010003, just upstream from U.S. Fish and Wildlife Service Dam 357, 1.2 mi upstream of International border, 7 mi northeast of Westhope, 10 mi downstream from Boundary Creek, and at mile 154.2.

DRAINAGE AREA.--16,900 mi², of which about 10,300 mi² is probably noncontributing.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1994 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth to bottom of sampling intrval meters (82048)	Depth to top of sampling intrval meters (82047)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfltrd lab, uS/cm 25 degC (90095)	Hard-ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	ANC, wat unfixed end pt, lab, mg/L as CaCO3 (90410)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)
OCT													
24...	0945	1.0	0.80	8.8	1,650	420	50.4	70.3	5	222	E385	41.8	0.24
24...	0950	1.0	0.50	--	--	--	--	--	--	--	--	--	--
24...	0955	2.8	2.6	8.8	E1560	410	50.3	70.2	5	221	E383	43.4	0.24
JUN													
05...	1200	1.0	0.80	8.6	1,200	360	65.3	47.8	3	138	304	35.0	0.2
05...	1205	2.0	1.0	--	--	--	--	--	--	--	--	--	--
05...	1210	2.5	2.3	8.6	1,180	360	64.6	47.5	3	136	305	35.8	0.2
25...	1320	1.0	0.80	9.0	1,210	340	55.0	50.1	4	163	291	35.5	0.2
25...	1330	2.8	2.6	9.0	1,240	360	60.3	50.1	4	166	305	34.3	0.2
25...	1340	2.0	1.0	--	--	--	--	--	--	--	--	--	--
JUL													
16...	1410	1.0	0.80	9.3	1,170	300	44.0	46.8	4	168	293	35.3	0.2
16...	1415	2.0	1.0	--	--	--	--	--	--	--	--	--	--
16...	1420	2.8	2.6	9.3	1,180	300	43.4	46.7	4	168	290	35.1	0.2
AUG													
14...	1500	1.0	0.80	9.4	1,350	310	41.0	51.5	5	210	279	40.0	0.2
14...	1505	1.0	0.50	--	--	--	--	--	--	--	--	--	--
14...	1510	2.9	2.7	9.2	1,350	310	40.9	51.3	5	212	278	40.8	0.2
29...	0940	1.0	0.80	9.1	1,390	270	34.7	45.1	5	187	290	42.6	0.2
29...	0945	0.40	0.20	--	--	--	--	--	--	--	--	--	--
29...	0950	2.7	2.5	9.0	1,390	290	37.5	47.1	5	203	292	42.8	0.2
SEP													
10...	0845	1.0	0.80	9.1	1,420	300	37.0	49.6	5	216	295	44.6d	0.3
10...	0850	1.4	0.70	--	--	--	--	--	--	--	--	--	--
10...	0855	2.5	2.3	9.1	1,420	310	38.3	51.3	6	224	297	44.4d	0.3

RED RIVER OF THE NORTH BASIN

05123990 J. CLARK SALYER POOL 357 NEAR WESTHOPE, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Zinc, water, unfltrd recover- able, ug/L (01092)	Phen- olic com- pounds, water, unfltrd ug/L (32730)	Tri- zine screen, wat unf ELISA, ug/L as atrazin (34757)	2,4-D screen total ug/L (99906)
OCT				
24...	<25	<16	--	--
24...	--	--	--	--
24...	<25	<16	--	--
JUN				
05...	--	<16	--	--
05...	--	--	--	--
05...	--	<16	<0.1	<0.700
25...	7	<16	--	--
25...	<4	<16	--	--
25...	--	--	--	--
JUL				
16...	--	<16	0.1	<0.700
16...	--	--	--	--
16...	--	<16	--	--
AUG				
14...	--	<16	0.1	0.710
14...	--	--	--	--
14...	--	<16	--	--
29...	4	<16	0.1	1.34
29...	--	--	--	--
29...	7	E8n	--	--
SEP				
10...	--	<16	0.1	0.860
10...	--	--	--	--
10...	--	<16	--	--

Remark codes used in this table:

< -- Less than

E -- Estimated value

M-- Presence verified, not quantified

Value qualifier codes used in this table:

d -- Diluted sample: method hi range exceeded

n -- Below the NDV

05123990 J. CLARK SALYER POOL 357 NEAR WESTHOPE, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth of lake, maximum meters (85310)	Sampling depth, meters (00098)	Transparency Secchi disc, inches (00077)	Wind direction, clkwise from north, degrees (00036)	Wind speed, mph (00035)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unfiltered, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)
OCT													
24...	0935	2.8	0.00	13.0	120	12	735	18.3	138	8.8	1,720	-2.5	2.1
24...	0936	--	0.50	--	--	--	--	18.9	--	8.9	1,750	--	2.1
24...	0937	--	1.0	--	--	--	--	17.0	--	8.9	1,760	--	2.2
24...	0938	--	1.5	--	--	--	--	18.4	--	8.9	1,760	--	2.2
24...	0939	--	2.0	--	--	--	--	16.5	--	8.9	1,770	--	2.2
24...	0940	--	2.8	--	--	--	--	15.2	--	8.9	1,770	--	2.2
JUN													
05...	1150	2.8	0.00	37.0	15	<5.0	722	10.1	113	8.4	1,240	21.5	18.0
05...	1151	--	0.60	--	--	--	--	9.8	--	8.5	1,240	--	18.1
05...	1152	--	1.1	--	--	--	--	9.7	--	8.5	1,240	--	18.2
05...	1153	--	1.5	--	--	--	--	9.1	--	8.5	1,250	--	18.0
05...	1154	--	2.0	--	--	--	--	8.9	--	8.4	1,250	--	17.8
05...	1156	--	2.8	--	--	--	--	10.3	--	8.6	1,240	--	17.4
05...	1155	--	2.5	--	--	--	--	10.3	--	8.6	1,240	--	17.7
25...	1310	2.8	0.00	34.0	10	<5.0	733	9.5	105	9.2	1,240	13.5	17.9
25...	1311	--	0.50	--	--	--	--	9.6	--	9.2	1,250	--	18.0
25...	1312	--	1.0	--	--	--	--	9.3	--	9.2	1,250	--	17.9
25...	1313	--	1.5	--	--	--	--	8.4	--	9.1	1,270	--	17.9
25...	1314	--	2.0	--	--	--	--	8.2	--	9.1	1,280	--	17.9
25...	1315	--	2.5	--	--	--	--	8.4	--	9.1	1,280	--	17.9
25...	1316	--	2.8	--	--	--	--	8.3	--	9.1	1,280	--	17.9
JUL													
16...	1400	2.8	0.00	39.0	45	10	730	2.9	35	9.3	1,290	28.0	22.9
16...	1401	--	0.50	--	--	--	--	2.6	--	9.3	1,280	--	22.8
16...	1402	--	1.0	--	--	--	--	2.5	--	9.3	1,280	--	22.7
16...	1403	--	1.5	--	--	--	--	2.2	--	9.3	1,290	--	22.6
16...	1404	--	2.0	--	--	--	--	1.8	--	9.3	1,290	--	22.3
16...	1405	--	2.5	--	--	--	--	1.2	--	9.3	1,290	--	22.1
16...	1406	--	2.8	--	--	--	--	0.9	--	9.3	1,280	--	22.0
AUG													
14...	1445	2.9	0.00	6.00	205	6.0	731	10.4	134	9.3	1,330	32.5	25.6
14...	1446	--	0.50	--	--	--	--	10.4	--	9.3	1,330	--	25.4
14...	1447	--	1.0	--	--	--	--	10.5	--	9.3	1,330	--	25.4
14...	1448	--	1.5	--	--	--	--	6.7	--	9.3	1,320	--	24.6
14...	1449	--	2.0	--	--	--	--	5.2	--	9.2	1,360	--	22.3
14...	1450	--	2.5	--	--	--	--	4.6	--	9.2	1,350	--	21.6
14...	1451	--	2.9	--	--	--	--	4.1	--	9.2	1,350	--	21.5
29...	0930	2.7	0.00	8.00	315	<5.0	735	5.3	56	9.1	1,430	10.0	16.2
29...	0931	--	0.50	--	--	--	--	5.1	--	9.1	1,430	--	16.2
29...	0932	--	1.0	--	--	--	--	5.0	--	9.1	1,440	--	16.2
29...	0933	--	1.5	--	--	--	--	5.0	--	9.1	1,440	--	16.2
29...	0934	--	2.0	--	--	--	--	4.9	--	9.1	1,430	--	16.3
29...	0935	--	2.5	--	--	--	--	4.8	--	9.1	1,440	--	16.3
29...	0936	--	2.7	--	--	--	--	4.8	--	9.1	1,440	--	16.2
SEP													
10...	0835	2.5	0.00	28.0	60	5.0	725	5.9	66	9.4	1,490	16.0	18.6
10...	0836	--	0.50	--	--	--	--	5.8	--	9.5	1,490	--	18.6
10...	0837	--	1.0	--	--	--	--	5.7	--	9.5	1,490	--	18.6
10...	0838	--	1.5	--	--	--	--	5.6	--	9.5	1,490	--	18.6
10...	0839	--	2.0	--	--	--	--	5.7	--	9.5	1,490	--	18.6
10...	0840	--	2.5	--	--	--	--	5.6	--	9.5	1,490	--	18.6

Remark codes used in this table:

< -- Less than

RED RIVER OF THE NORTH BASIN

05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND
(International gaging station)

LOCATION.--Lat 48°59'47", long 100°57'29", in SW¹₄SE¹₄ sec.30, T.164 N., R.79 W., Bottineau County, Hydrologic Unit 09010003, on left bank 1,200 ft upstream from second crossing of international boundary, 1 mi downstream from Fish and Wildlife Service Dam 357, 7 mi northeast of Westhope, 11 mi downstream from Boundary Creek, and at mile 154.5.

DRAINAGE AREA.--16,900 mi², approximately, of which about 10,300 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July to October 1929, April 1930 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1338: 1932. WSP 2113: Drainage area.

GAGE.--Water-stage recorder and control. Datum of gage is 1,402.45 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 28, 1938, nonrecording gage at site 6.3 mi upstream at datum 2.52 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated by dams on Souris River and tributaries, combined capacity, about 321,000 acre-ft. Diversion at Eaton Dam for irrigation of about 7,000 acres and other small diversions for irrigation and municipal supply upstream from station.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	68	28	9.3	8.1	e7.4	75	175	456	56	30	27
2	26	67	28	9.4	7.9	e7.3	77	177	457	49	29	26
3	25	67	28	9.6	8.1	e7.2	75	177	459	47	29	25
4	26	67	28	9.4	8.0	e7.1	72	178	457	47	29	25
5	33	67	28	9.5	6.8	e7.0	72	177	448	46	29	25
6	31	67	28	9.8	6.6	e7.0	72	174	380	46	29	27
7	29	58	28	9.7	6.6	e6.9	77	170	206	45	29	26
8	28	29	28	11	6.7	e6.9	97	170	199	41	28	26
9	27	27	28	11	6.8	e6.8	99	164	196	41	28	23
10	29	27	28	11	6.7	e6.7	99	157	192	40	26	25
11	60	27	26	11	6.6	e6.7	137	161	193	39	26	26
12	59	27	26	11	7.0	e6.6	224	166	194	40	25	25
13	58	27	22	e11	7.2	e6.5	227	184	192	40	25	26
14	52	27	11	11	7.1	e6.5	227	245	191	37	24	25
15	53	27	11	11	7.7	e6.4	226	256	189	41	24	25
16	66	27	10	11	7.7	e7.0	228	293	187	48	24	25
17	65	27	8.9	11	7.5	e9.0	196	417	187	47	24	25
18	60	27	9.1	10	7.5	e12	148	416	193	47	24	25
19	59	27	8.3	10	7.6	e13	143	414	195	47	24	25
20	58	27	8.0	10	7.5	e15	142	432	199	45	26	26
21	59	27	8.0	10	e7.5	e14	142	446	203	46	26	25
22	67	27	7.9	10	e7.4	11	155	465	202	46	27	25
23	68	26	8.3	e10	e7.3	12	184	473	201	45	26	25
24	68	27	8.3	10	e7.2	12	179	462	200	46	26	24
25	68	27	8.6	9.7	e7.1	11	179	476	203	45	23	25
26	68	27	9.0	9.9	e7.2	22	182	482	202	44	22	24
27	69	27	9.0	10	e7.3	62	172	463	202	44	25	24
28	68	27	9.3	8.8	e7.4	66	174	460	201	42	23	25
29	67	27	9.3	8.3	---	68	176	466	200	34	27	24
30	68	34	9.7	7.7	---	66	174	437	165	34	27	24
31	69	---	9.6	8.0	---	68	---	456	---	33	27	---
TOTAL	1,611	1,090	517.3	309.1	204.1	571.0	4,430	9,789	7,349	1,348	811	753
MEAN	52.0	36.3	16.7	9.97	7.29	18.4	148	316	245	43.5	26.2	25.1
MAX	69	68	28	11	8.1	68	228	482	459	56	30	27
MIN	25	26	7.9	7.7	6.6	6.4	72	157	165	33	22	23
AC-FT	3,200	2,160	1,030	613	405	1,130	8,790	19,420	14,580	2,670	1,610	1,490

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2003, BY WATER YEAR (WY)

MEAN	68.1	55.6	34.6	27.9	26.5	71.8	857	1,002	582	280	131	73.6
MAX	473	387	201	191	190	779	8,850	5,967	4,919	1,726	1,014	657
(WY)	(1976)	(1995)	(1976)	(1976)	(1976)	(1983)	(1976)	(1976)	(1999)	(1999)	(1953)	(1999)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.000
(WY)	(1933)	(1935)	(1935)	(1935)	(1935)	(1936)	(1941)	(1937)	(1937)	(1937)	(1931)	(1931)

05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1929 - 2003	
ANNUAL TOTAL	16,999.5		28,782.5		270	
ANNUAL MEAN	46.6		78.9		1,697	
HIGHEST ANNUAL MEAN					1976	
LOWEST ANNUAL MEAN					0.15	
HIGHEST DAILY MEAN	353	Jul 8	482	May 26	12,400	Apr 26, 1976
LOWEST DAILY MEAN	1.6	Apr 25	6.4	Mar 15	0.00	Jul 20, 1931
ANNUAL SEVEN-DAY MINIMUM	2.2	Apr 23	6.6	Mar 9	0.00	Jul 20, 1931
MAXIMUM PEAK FLOW			495	May 26	12,600	Apr 26, 1976
MAXIMUM PEAK STAGE			7.85	May 26	19.16	Apr 26, 1976
INSTANTANEOUS LOW FLOW					a-35	Apr 8, 1943
ANNUAL RUNOFF (AC-FT)	33,720		57,090		195,600	
10 PERCENT EXCEEDS	73		201		605	
50 PERCENT EXCEEDS	27		27		27	
90 PERCENT EXCEEDS	6.1		7.5		0.00	

a Reverse flow caused by backwater from downstream tributary inflow

e Estimated

RED RIVER OF THE NORTH BASIN
05124000 SOURIS RIVER NEAR WESTHOPE, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1970, 1972 to current year.

REMARKS.--Environment Canada also collected a sample on Sept. 10.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Water years 1974-81 and June 1992 to current year.
SPECIFIC CONDUCTANCE: Water years 1974-81 and June 1992 to current year.
PH: June 1992 to current year.
DISSOLVED OXYGEN: May 1993 to current year.

INSTRUMENTATION.--Water-quality monitor since June 1992.

REMARKS.--Records good. Quality assurance sample also collected at this location.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 28.5°C, July 11, 1998; minimum recorded, -0.4°C, Dec. 20, 1995, and Feb. 1, 2002.
SPECIFIC CONDUCTANCE: Maximum recorded, 3,250 microsiemens, Jan 3, 2001; minimum recorded, 512 microsiemens, Sept. 22, 2002.
PH: Maximum recorded, 10.1 units, July 12, 1993; minimum recorded, 7.3 units, on many days in February and March 2002.
DISSOLVED OXYGEN: Maximum recorded, 19.1 milligrams per liter, Dec. 29-31, 1999, Jan. 1-5, 2000; minimum recorded, 0.0 milligrams per liter, Feb. 17, 2002.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 26.6°C, July 19; minimum recorded, -0.3°C, Nov. 29-30.
SPECIFIC CONDUCTANCE: Maximum recorded, 4,200 microsiemens, Mar. 26; minimum recorded, 554 microsiemens, Apr. 19.
PH: Maximum recorded, 9.9 units, Sept. 19; minimum recorded, 7.8 units, Apr. 7-11.
DISSOLVED OXYGEN: Maximum recorded, 19.1 milligrams per liter, Dec. 1; minimum recorded, 0.0 milligrams per liter, Feb. 14, 16-19.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specific conductance, wat unfl lab, uS/cm 25 degC (90095)	Specific conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium, water, unfltrd mg/L (00915)
OCT 24...	1145	67	--	17.0	--	9.3	--	--	1,700	--	1.7	--	--
NOV 20...	1215	27	--	--	--	--	--	--	1,930	4.8	0.2	--	--
JAN 06...	1555	9.7	--	0.3	--	8.0	--	--	2,320	--	1.1	--	--
FEB 19...	1445	7.4	--	0.2	--	7.9	--	--	3,450	--	0.0	--	--
APR 09...	1730	102	--	5.0	--	7.6	--	--	2,560	18.0	4.9	--	--
MAY 29...	1130	470	--	7.2	--	8.4	--	--	1,200	--	20.0	--	--
JUN 25...	1430	208	722	9.4	105	9.1	--	--	1,270	--	17.8	--	--
AUG 14...	1715	23	--	13.2	--	9.5	--	--	1,320	--	25.2	--	--
SEP 10...	1115	24	719	3.4	38	9.4	9.2	1,380	1,460	17.0	17.5	290	36.0

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Magnesium, water, unfltrd, mg/L (00925)	Sodium adsorption ratio (00931)	Sodium, water, unfltrd, mg/L (00930)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, unfltrd, mg/L (00940)	Fluoride, water, unfltrd, mg/L (00950)	Sulfate, water, unfltrd, mg/L (00945)	Residue on evap. at 180degC, wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia, water, unfltrd, mg/L as N (00608)	Nitrite + nitrate, water, unfltrd, mg/L as N (00631)	Phosphorus, water, unfltrd mg/L (00665)	Organic carbon, water, unfltrd mg/L (00680)
OCT 24...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 20...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 19...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 14...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 10...	49.7	6	222	281	48.0	0.2	411d	1,050	2.9	E.04n	<0.06	0.28	45.1

05124000 SOURIS RIVER NEAR WESTHOPE, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)	Alum- inum, water, unfltrd recover -able, ug/L (01105)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recover -able, ug/L (01007)	Beryll- ium, water, unfltrd recover -able, ug/L (01012)	Boron, water, unfltrd recover -able, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chrom- ium, water, unfltrd recover -able, ug/L (01034)	Cobalt water, unfltrd recover -able, ug/L (01037)	Copper, water, unfltrd recover -able, ug/L (01042)	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)
OCT 24...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 20...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 19...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 14...	--	--	--	--	--	--	--	--	--	--	--	--	--
SEP 10...	53.6d	2.6d	410	12	55	E.04n	223	0.04	E.7n	1.30	4.5	700	0.83

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Molyb- denum, water, unfltrd recover -able, ug/L (01062)	Nickel, water, unfltrd recover -able, ug/L (01067)	Selen- ium, water, unfltrd ug/L (01147)	Zinc, water, unfltrd recover -able, ug/L (01092)
OCT 24...	--	--	--	--
NOV 20...	--	--	--	--
JAN 06...	--	--	--	--
FEB 19...	--	--	--	--
APR 09...	--	--	--	--
MAY 29...	--	--	--	--
JUN 25...	--	--	--	--
AUG 14...	--	--	--	--
SEP 10...	2.6	5.00	0.8	6

Remark codes used in this table:

- < -- Less than
- E -- Estimated value

Value qualifier codes used in this table:

- d -- Diluted sample; method hi range exceeded
- n -- Below the NDV

RED RIVER OF THE NORTH BASIN

05124000 SOURIS RIVER NEAR WESTHOPE, ND—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	11.0	8.1	8.9	2.1	1.1	1.5	1.9	1.3	1.7	1.5	1.2	1.3
2	8.6	6.6	7.6	2.6	1.4	1.9	1.3	0.4	0.8	1.6	1.4	1.5
3	8.8	6.2	7.4	2.2	1.7	1.9	1.2	0.7	0.9	1.6	1.4	1.5
4	8.7	6.5	7.5	2.8	2.1	2.3	1.2	0.9	1.0	1.8	1.6	1.6
5	8.2	6.7	7.3	3.1	2.0	2.4	1.3	1.0	1.1	1.9	1.7	1.8
6	7.8	6.6	7.2	2.7	2.3	2.5	1.3	1.0	1.1	2.0	1.6	1.8
7	8.1	6.6	7.2	3.9	2.4	3.1	1.3	1.0	1.1	2.1	1.7	1.8
8	7.9	6.7	7.3	3.6	2.4	3.0	1.1	0.8	1.0	2.2	1.7	2.0
9	7.7	5.4	6.5	2.7	1.8	2.4	1.6	1.0	1.2	2.2	1.5	1.7
10	9.1	6.1	7.5	2.1	0.8	1.4	1.8	1.2	1.4	1.6	1.0	1.3
11	8.6	7.8	8.2	2.3	1.8	2.1	1.9	1.3	1.6	1.4	0.8	1.0
12	7.8	5.5	6.6	2.1	1.1	1.6	2.2	1.6	1.9	1.1	0.8	0.9
13	5.5	4.2	4.9	1.6	1.4	1.4	2.1	1.4	1.7	1.1	0.8	0.9
14	5.1	4.6	4.8	1.6	1.1	1.4	2.3	1.8	1.9	1.1	0.9	1.0
15	5.4	4.1	4.6	1.6	1.0	1.3	2.3	1.0	1.7	1.1	0.9	1.0
16	5.3	3.8	4.5	1.9	1.4	1.6	1.0	0.2	0.6	1.0	0.9	0.9
17	4.8	3.2	4.1	2.4	1.3	1.8	0.4	0.0	0.2	1.0	0.8	0.9
18	3.2	2.5	3.0	2.3	1.6	2.0	1.2	0.4	0.9	1.0	0.6	0.8
19	2.5	2.0	2.3	2.6	1.6	2.1	1.1	0.1	0.5	0.9	0.5	0.7
20	2.1	1.1	1.7	2.8	2.2	2.5	0.1	-0.1	0.0	0.8	0.4	0.6
21	1.8	0.8	1.3	3.0	2.0	2.5	0.9	0.0	0.2	0.7	0.3	0.4
22	2.3	1.3	1.7	2.6	1.6	2.2	1.4	0.9	1.2	0.5	0.2	0.3
23	2.8	1.6	2.0	2.3	0.4	1.5	1.4	0.9	1.2	0.3	0.1	0.2
24	2.3	1.6	1.9	1.7	0.2	1.0	1.3	0.9	1.1	0.2	0.0	0.1
25	2.9	1.7	2.2	1.6	0.9	1.2	1.5	1.3	1.4	0.2	0.0	0.1
26	2.8	2.3	2.5	1.4	1.1	1.2	1.6	1.4	1.5	0.1	0.0	0.0
27	3.1	1.9	2.5	2.0	1.1	1.5	1.7	1.4	1.6	0.2	0.0	0.0
28	2.6	2.0	2.3	2.4	1.4	1.8	1.8	1.6	1.7	0.2	0.0	0.1
29	2.0	1.0	1.6	2.0	-0.3	1.0	1.8	1.7	1.7	0.2	0.0	0.0
30	1.8	0.9	1.3	2.0	-0.3	1.0	1.8	1.4	1.7	0.0	0.0	0.0
31	1.8	0.9	1.2	---	---	---	1.7	1.3	1.5	0.1	0.0	0.0
MONTH	11.0	0.8	4.5	3.9	-0.3	1.8	2.3	-0.1	1.2	2.2	0.0	0.8
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	0.2	0.1	0.1	0.6	0.2	0.4	2.0	0.5	1.5	14.8	12.0	13.3
2	0.3	0.2	0.3	0.5	0.1	0.2	1.1	0.2	0.5	14.7	12.6	13.5
3	0.4	0.2	0.3	0.2	0.0	0.1	1.6	0.2	0.7	14.8	11.5	13.2
4	0.2	0.1	0.2	0.2	0.0	0.1	3.1	0.9	1.7	14.4	12.4	13.3
5	0.2	0.1	0.2	0.1	0.1	0.0	3.0	0.7	1.5	12.4	11.4	11.9
6	0.3	0.1	0.2	---	---	---	3.1	0.3	1.4	11.9	11.1	11.5
7	0.2	0.1	0.1	0.0	-0.1	0.0	3.5	0.5	1.7	13.4	10.1	11.5
8	0.4	0.2	0.3	0.0	-0.1	-0.1	3.9	0.9	2.0	12.5	11.8	12.0
9	0.4	0.2	0.3	0.1	-0.1	-0.1	5.4	1.3	2.8	12.1	11.3	11.7
10	0.2	0.1	0.1	0.0	-0.1	-0.1	5.2	1.8	3.3	11.6	8.8	9.9
11	0.3	0.1	0.2	0.1	-0.1	0.0	4.5	2.3	3.2	10.3	7.5	8.8
12	0.3	0.1	0.2	0.1	-0.1	0.0	4.3	2.4	3.2	15.1	8.9	11.0
13	0.3	0.1	0.2	0.3	-0.1	0.1	4.4	2.9	3.7	15.0	12.5	13.7
14	0.4	0.3	0.3	0.4	0.0	0.2	4.3	3.0	3.7	16.3	12.4	13.9
15	0.4	0.1	0.2	0.8	0.1	0.4	4.2	2.8	3.4	16.8	14.4	15.5
16	0.2	0.0	0.1	0.9	0.4	0.6	3.5	2.3	2.9	16.5	14.2	14.9
17	0.3	0.0	0.2	0.8	0.3	0.6	4.5	2.5	3.1	17.4	13.4	15.0
18	0.3	0.0	0.3	0.4	0.2	0.3	5.4	2.4	3.6	16.9	14.0	15.1
19	0.3	0.2	0.3	0.7	0.3	0.4	6.2	2.9	4.5	14.0	11.1	12.5
20	0.4	0.3	0.3	1.4	0.4	0.8	7.9	4.9	6.1	12.6	10.0	11.2
21	0.4	0.2	0.2	1.7	0.9	1.1	9.2	6.8	7.8	15.7	10.9	12.9
22	0.2	0.0	0.0	2.1	1.1	1.4	10.9	7.6	9.2	15.5	13.4	14.5
23	0.1	0.0	0.0	2.1	1.3	1.5	13.0	10.0	11.4	15.2	13.7	14.4
24	0.1	0.0	0.1	1.8	1.1	1.3	14.2	12.1	13.0	17.0	14.5	15.5
25	0.1	0.0	0.0	2.5	1.4	1.7	14.9	12.6	13.7	17.6	15.4	16.5
26	0.1	0.0	0.0	2.5	0.2	1.7	14.8	12.7	13.7	18.5	15.7	17.0
27	0.3	0.1	0.1	0.7	0.1	0.3	14.1	11.2	12.5	19.5	17.4	18.4
28	0.3	0.1	0.2	0.8	0.3	0.5	11.5	10.3	10.9	20.9	18.1	19.3
29	---	---	---	1.7	0.5	1.0	13.4	10.1	11.4	20.9	19.4	20.2
30	---	---	---	2.5	0.9	1.5	13.8	11.3	12.6	19.9	17.2	18.2
31	---	---	---	3.5	1.3	2.1	---	---	---	17.9	16.4	17.1
MONTH	0.4	0.0	0.2	3.5	-0.1	0.6	14.9	0.2	5.7	20.9	7.5	14.1

RED RIVER OF THE NORTH BASIN

05124000 SOURIS RIVER NEAR WESTHOPE, ND—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	1,350	597	908	1,710	1,560	1,660	1,760	1,720	1,740	2,310	2,300	2,300
2	1,520	1,070	1,290	1,630	1,560	1,600	1,750	1,730	1,740	2,310	2,300	2,300
3	1,540	1,190	1,500	1,630	1,600	1,610	1,790	1,740	1,770	2,300	2,290	2,300
4	---	---	1,490	1,630	1,620	1,620	1,810	1,780	1,790	2,300	2,300	2,300
5	---	---	1,460	1,700	1,620	1,660	1,810	1,800	1,810	2,310	2,300	2,310
6	1,520	1,450	1,470	1,710	1,670	1,700	1,860	1,810	1,820	2,320	2,310	2,320
7	1,540	1,440	1,510	1,710	1,650	1,680	1,870	1,850	1,860	2,320	2,300	2,320
8	1,530	1,430	1,480	1,720	1,620	1,690	1,870	1,860	1,870	2,330	2,320	2,320
9	1,530	1,450	1,480	1,700	1,650	1,680	1,870	1,860	1,870	2,340	2,320	2,330
10	1,560	1,480	1,540	1,710	1,650	1,690	1,910	1,860	1,890	2,380	2,340	2,360
11	1,560	1,480	1,530	1,720	1,660	1,690	1,930	1,900	1,910	2,410	2,370	2,390
12	1,560	1,500	1,540	1,710	1,660	1,690	1,930	1,900	1,910	2,430	2,400	2,420
13	1,580	1,530	1,560	1,720	1,710	1,720	1,930	1,880	1,900	2,450	2,420	2,440
14	1,590	1,580	1,590	1,730	1,720	1,730	1,890	1,880	1,880	2,460	2,440	2,440
15	1,600	1,590	1,600	1,750	1,730	1,740	2,010	1,880	1,980	2,480	2,460	2,470
16	1,620	1,590	1,600	1,760	1,730	1,740	---	---	1,880	2,510	2,480	2,490
17	1,640	1,570	1,620	1,750	1,720	1,740	---	---	1,970	2,540	2,510	2,520
18	1,640	1,600	1,610	1,750	1,720	1,740	2,040	1,950	2,000	2,590	2,540	2,560
19	1,660	1,580	1,640	1,760	1,720	1,750	2,030	2,000	2,020	2,620	2,580	2,600
20	1,680	1,600	1,660	1,770	1,750	1,760	2,030	2,000	2,020	2,650	2,600	2,630
21	1,710	1,680	1,690	1,760	1,740	1,750	2,060	2,030	2,040	2,680	2,650	2,670
22	1,720	1,710	1,710	1,750	1,730	1,740	2,080	1,960	2,010	2,740	2,680	2,710
23	1,730	1,710	1,720	1,760	1,730	1,750	---	---	2,060	2,790	2,730	2,770
24	1,740	1,700	1,720	---	---	1,750	---	---	2,190	2,820	2,790	2,800
25	1,730	1,710	1,720	---	---	1,710	2,280	2,220	2,270	2,850	2,820	2,840
26	1,740	1,680	1,730	1,720	1,710	1,720	2,280	2,220	2,270	2,900	2,850	2,880
27	1,740	1,580	1,680	1,730	1,720	1,730	2,280	2,270	2,270	2,930	2,900	2,920
28	1,730	1,600	1,690	1,740	1,720	1,730	2,270	2,260	2,270	2,950	2,920	2,930
29	1,730	1,640	1,700	1,740	1,710	1,720	2,270	2,260	2,270	3,020	2,950	2,990
30	1,730	1,640	1,690	1,770	1,710	1,760	2,280	2,260	2,270	3,030	3,020	3,030
31	1,700	1,660	1,680	---	---	---	2,300	2,280	2,290	3,030	3,020	3,020
MONTH	1,740	597	1,570	1,770	1,560	1,710	2,300	1,720	1,990	3,030	2,290	2,570
DAY	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	3,030	3,020	3,020	3,660	3,630	3,640	3,640	3,540	3,590	864	765	822
2	3,040	3,030	3,040	3,730	3,660	3,700	3,550	3,480	3,520	888	760	834
3	3,070	3,040	3,050	3,760	3,730	3,750	3,480	3,380	3,430	911	842	885
4	3,110	3,070	3,090	3,800	3,760	3,780	3,380	3,280	3,340	969	862	936
5	3,120	3,110	3,120	3,850	3,800	3,830	3,280	3,170	3,230	967	840	923
6	3,160	3,120	3,140	---	---	3,860	3,170	3,070	3,120	---	---	819
7	3,170	3,160	3,170	3,920	3,860	3,890	3,070	2,870	3,010	---	---	654
8	3,170	3,160	3,160	3,970	3,920	3,940	2,870	2,700	2,790	---	---	737
9	3,200	3,170	3,190	4,010	3,970	3,990	2,700	2,500	2,600	---	---	631
10	3,250	3,200	3,230	4,030	4,010	4,020	2,500	2,230	2,350	---	---	757
11	3,270	3,250	3,260	4,040	4,030	4,040	2,230	1,680	2,040	---	---	664
12	3,300	3,260	3,280	4,080	4,040	4,060	1,680	1,400	1,560	---	---	606
13	3,320	3,300	3,310	4,110	4,080	4,100	1,400	1,150	1,270	---	---	637
14	3,340	3,310	3,330	4,120	4,110	4,120	1,170	1,100	1,120	---	---	654
15	3,380	3,340	3,360	4,130	4,120	4,130	1,100	1,010	1,050	---	---	800
16	3,400	3,380	3,390	4,130	4,060	4,100	1,070	922	1,020	---	---	658
17	3,410	3,400	3,400	4,150	4,110	4,140	933	791	879	---	---	664
18	3,430	3,410	3,420	4,160	4,120	4,150	791	625	725	---	---	799
19	3,460	3,400	3,440	4,180	4,160	4,170	821	554	669	---	---	765
20	3,460	3,440	3,450	4,190	4,050	4,160	829	657	760	---	---	800
21	3,490	3,460	3,470	4,160	3,870	4,100	825	764	795	---	---	869
22	3,520	3,490	3,510	4,150	3,620	3,970	794	719	780	---	---	907
23	3,530	3,520	3,530	4,080	3,790	3,990	796	766	781	---	---	1,020
24	3,560	3,530	3,550	3,950	3,830	3,900	781	751	766	---	---	929
25	3,590	3,560	3,570	4,160	3,840	4,060	788	721	767	---	---	1,020
26	3,600	3,580	3,590	4,200	3,810	4,090	878	769	809	---	---	1,190
27	3,620	3,600	3,610	3,880	3,800	3,850	878	786	829	---	---	1,180
28	3,630	3,610	3,620	3,900	3,880	3,890	838	749	817	---	---	1,100
29	---	---	---	3,900	3,860	3,880	851	809	840	---	---	1,130
30	---	---	---	3,860	3,800	3,840	851	730	820	---	---	1,160
31	---	---	---	3,800	3,640	3,750	---	---	---	---	---	1,160
MONTH	3,630	3,020	3,330	4,200	3,620	3,960	3,640	554	1,670	969	760	862

05124000 SOURIS RIVER NEAR WESTHOPE, ND—Continued

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	11.8	8.0	9.6	16.5	15.3	16.0	19.1	18.1	18.7	1.5	1.1	1.2
2	11.9	7.8	9.7	17.1	15.8	16.5	18.8	17.3	17.9	1.2	0.6	0.8
3	12.6	9.6	11.0	17.5	16.3	16.9	18.1	17.0	17.5	0.6	0.3	0.4
4	13.1	9.3	11.2	16.9	15.9	16.5	17.0	15.2	16.0	0.3	0.3	0.3
5	14.2	10.7	12.1	17.0	15.9	16.4	15.2	14.0	14.5	0.3	0.3	0.3
6	15.0	11.6	13.0	16.8	15.8	16.3	14.0	13.0	13.5	0.6	0.3	0.4
7	15.3	11.4	13.1	16.3	15.6	15.9	13.7	12.7	13.1	0.4	0.3	0.3
8	15.2	11.6	13.4	16.0	14.0	14.7	13.6	12.6	13.0	0.3	0.3	0.3
9	14.9	11.7	13.3	14.3	12.2	13.1	13.4	12.4	12.8	0.8	0.3	0.4
10	14.4	11.0	12.7	15.5	12.4	13.4	13.1	11.9	12.5	0.7	0.3	0.3
11	13.4	11.6	12.4	16.6	15.1	15.7	12.9	11.6	12.2	0.3	0.3	0.3
12	13.2	10.5	11.8	15.9	14.7	15.4	12.7	11.2	11.9	0.3	0.3	0.3
13	13.9	11.3	12.4	16.0	15.2	15.6	12.9	11.4	12.0	0.3	0.3	0.3
14	13.0	11.6	12.4	15.9	14.3	15.0	12.3	11.0	11.6	0.3	0.3	0.3
15	13.4	11.1	12.1	14.5	13.3	14.0	11.3	9.9	10.8	0.3	0.2	0.3
16	14.3	12.0	13.0	13.7	12.3	13.0	11.4	10.9	11.1	0.3	0.2	0.2
17	14.4	12.5	13.4	12.7	11.3	12.0	11.3	10.6	10.9	0.3	0.2	0.2
18	13.8	12.2	13.0	12.3	10.8	11.5	10.6	8.8	9.6	0.3	0.2	0.2
19	14.2	12.8	13.4	12.9	10.9	11.8	10.7	9.0	9.7	0.3	0.2	0.2
20	14.5	12.9	13.7	13.6	11.5	12.4	10.9	10.2	10.5	0.3	0.2	0.2
21	15.8	13.7	14.5	14.4	12.9	13.5	10.3	7.8	9.2	0.3	0.2	0.2
22	16.9	15.4	16.0	14.7	12.7	13.6	8.1	5.8	6.7	0.3	0.2	0.2
23	18.0	16.6	17.2	14.6	13.3	13.9	6.1	4.7	5.1	0.2	0.2	0.2
24	18.0	16.8	17.5	14.8	13.5	14.2	5.0	3.2	4.0	0.2	0.2	0.2
25	18.1	17.2	17.7	15.3	13.8	14.4	3.2	1.9	2.2	0.2	0.2	0.2
26	19.0	18.0	18.4	15.4	14.3	14.7	1.9	1.3	1.6	0.2	0.2	0.2
27	18.2	17.3	17.7	15.9	14.0	14.8	1.7	1.3	1.4	0.5	0.2	0.3
28	17.4	15.9	16.5	16.2	15.0	15.4	1.6	1.3	1.4	0.9	0.2	0.4
29	16.6	15.6	16.0	15.2	14.3	14.6	1.5	1.1	1.3	1.0	0.2	0.4
30	16.2	14.9	15.7	18.5	14.4	16.8	1.6	1.0	1.3	0.4	0.2	0.2
31	16.5	15.1	15.8	---	---	---	1.6	0.9	1.2	0.2	0.2	0.2
MONTH	19.0	7.8	13.9	18.5	10.8	14.6	19.1	0.9	9.5	1.5	0.2	0.3
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	0.2	0.2	0.2	0.4	0.4	0.4	2.0	1.4	1.5	11.1	9.5	10.6
2	0.2	0.1	0.2	0.5	0.4	0.4	3.6	2.0	2.7	10.9	8.6	9.7
3	0.2	0.1	0.1	0.5	0.5	0.5	4.0	1.8	2.7	9.5	7.7	8.6
4	0.2	0.1	0.2	0.5	0.5	0.5	2.4	1.6	1.8	9.2	8.3	8.8
5	0.2	0.1	0.1	0.6	0.5	0.5	2.9	1.8	2.2	10.1	8.6	9.4
6	0.1	0.1	0.1	---	---	---	4.4	2.5	3.6	9.6	8.8	9.3
7	0.1	0.1	0.1	0.6	0.6	0.6	4.0	2.6	3.2	9.9	8.7	9.4
8	0.1	0.1	0.1	0.7	0.6	0.6	5.6	3.2	4.2	9.2	8.3	8.5
9	0.1	0.1	0.1	0.7	0.7	0.7	5.5	3.9	4.5	9.0	8.0	8.5
10	0.1	0.1	0.1	0.7	0.7	0.7	7.2	5.1	6.2	9.2	8.4	8.9
11	0.1	0.1	0.1	0.8	0.7	0.7	9.9	6.0	7.3	10.0	8.8	9.4
12	0.1	0.1	0.1	0.8	0.8	0.8	10.6	8.9	9.8	9.3	8.2	8.8
13	0.1	0.1	0.1	0.8	0.8	0.8	11.4	8.9	9.9	8.9	7.5	8.3
14	0.1	0.0	0.1	0.9	0.8	0.8	12.3	10.5	11.1	8.5	7.8	8.1
15	0.1	0.1	0.1	0.9	0.8	0.9	13.2	11.4	12.1	8.6	7.0	8.0
16	0.1	0.0	0.1	0.9	0.8	0.9	14.8	11.7	12.8	8.0	7.0	7.5
17	0.1	0.0	0.1	1.0	0.9	0.9	15.2	12.8	13.9	7.8	7.3	7.6
18	0.1	0.0	0.1	1.0	0.9	1.0	15.2	13.3	14.2	8.3	7.2	7.7
19	0.3	0.0	0.1	1.0	0.9	1.0	15.1	13.4	14.1	9.3	7.4	8.2
20	0.3	0.1	0.2	1.1	0.9	1.0	14.5	13.1	13.7	9.3	8.7	8.9
21	0.3	0.1	0.2	1.1	1.0	1.1	15.5	13.2	14.3	8.8	8.4	8.6
22	0.3	0.2	0.3	1.1	1.0	1.1	15.6	13.6	15.0	8.8	8.2	8.4
23	0.3	0.3	0.3	1.2	1.0	1.1	13.6	9.5	11.5	8.4	7.7	8.0
24	0.4	0.2	0.3	1.2	1.1	1.2	10.8	8.0	9.3	8.2	7.2	7.7
25	0.3	0.3	0.3	1.2	1.1	1.2	12.0	9.1	10.4	8.0	7.2	7.7
26	0.3	0.3	0.3	1.3	1.1	1.2	11.1	8.4	9.8	7.4	6.7	7.2
27	0.4	0.3	0.4	1.3	1.2	1.3	10.0	8.0	9.0	7.6	6.7	7.1
28	0.4	0.4	0.4	1.3	1.2	1.3	10.3	8.6	9.5	7.8	6.6	7.1
29	---	---	---	1.4	1.2	1.3	11.5	9.0	10.3	7.8	6.5	7.2
30	---	---	---	1.4	1.3	1.4	11.3	9.6	10.7	7.7	6.4	7.1
31	---	---	---	1.4	1.4	1.4	---	---	---	8.8	6.9	7.7
MONTH	0.4	0.0	0.2	1.4	0.4	0.9	15.6	1.4	8.7	11.1	6.4	8.3

06185500 MISSOURI RIVER NEAR CULBERTSON, MT
(National stream quality accounting network station)

LOCATION.--Lat 48°07'30", long 104°28'20" (NAD 27), in SE¹₄NW¹₄ sec.3, T.27 N., R.56 E., Richland County, Hydrologic Unit 10060005, on right bank at upstream side of bridge on State Highway 16, 2.5 mi southeast of Culbertson, 10 mi downstream from Big Muddy Creek, and at river mile 1,620.76.

DRAINAGE AREA.--91,557 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1941 to December 1951, April 1958 to current year.

REVISED RECORDS.--WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,883.4 ft (NGVD 29) (U.S. Army Corps of Engineers benchmark). July 1 to Nov. 6, 1941, water-stage recorder at site 400 ft upstream at elevation 0.11 ft higher. Nov. 7, 1941, to Aug. 17, 1950, water-stage recorder at site 580 ft downstream at present elevation. Aug. 18, 1950, to Dec. 31, 1951, nonrecording gage on bridge at present elevation. Apr. 1, 1958, to Nov. 1, 1967, water-stage recorder at site 580 ft downstream at present elevation.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are fair. Flow partly regulated by Fort Peck Lake (station number 06131500) and many other reservoirs upstream from station. Diversions for irrigation of about 1,030,400 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5,240	5,290	9,830	e10,300	e10,000	e10,800	e8,600	8,630	8,900	8,270	7,460	6,850
2	5,240	5,270	9,780	e10,400	e10,300	e10,400	8,100	9,340	8,950	8,280	7,650	6,990
3	5,230	5,240	9,800	e10,500	e10,100	e9,400	7,830	9,570	9,100	8,290	7,910	6,920
4	5,290	5,290	9,780	e10,200	e10,400	e9,500	7,800	9,470	9,100	8,390	7,650	6,720
5	5,340	5,280	e9,700	e10,300	e10,300	e9,500	8,840	9,420	8,950	8,200	6,790	6,630
6	5,240	5,300	e10,300	e10,100	e10,600	e8,000	9,180	9,510	9,140	7,610	6,720	6,680
7	5,230	5,250	e10,600	e10,200	e10,400	e9,000	8,940	10,100	9,100	7,390	6,700	6,780
8	5,280	5,280	e10,800	e10,200	e10,500	e7,200	8,440	10,000	9,060	7,400	6,750	6,980
9	5,290	5,380	e10,300	e10,200	e10,300	e7,200	8,050	9,420	9,020	7,750	6,910	7,100
10	5,210	5,370	e10,400	e10,200	e10,500	e6,400	7,830	9,670	9,110	7,850	6,470	7,010
11	5,100	5,380	10,200	e9,800	e10,300	e6,100	7,560	9,970	9,220	7,960	6,770	6,830
12	5,090	5,320	10,100	e10,100	e10,500	e5,600	7,220	10,300	9,290	7,900	6,630	6,710
13	5,090	5,360	9,880	e10,200	e10,200	e5,000	7,070	10,600	9,400	7,750	6,520	6,790
14	5,100	5,370	9,860	e10,100	e10,200	e4,400	7,060	11,700	9,430	7,820	6,690	6,770
15	5,100	5,330	9,810	e10,200	e10,400	e4,100	7,630	12,000	9,250	7,810	6,790	6,700
16	5,170	5,300	9,810	e10,200	e10,100	e4,100	7,890	11,500	9,290	7,640	6,820	6,740
17	5,250	5,320	9,760	e10,200	e10,100	e4,600	7,990	11,100	9,210	7,770	6,610	7,180
18	5,070	5,380	9,580	e10,000	e10,400	e6,100	8,030	10,400	9,320	7,830	6,530	7,060
19	5,120	5,450	9,580	e10,200	e10,400	e9,900	7,880	11,100	9,230	7,560	6,740	6,720
20	5,170	5,410	9,560	e10,000	e10,400	e9,300	7,820	11,900	9,170	7,570	6,780	6,660
21	5,080	5,380	9,830	e10,200	e10,100	e9,100	7,680	11,700	8,860	7,560	6,800	6,660
22	5,100	5,420	e9,800	e10,100	e10,300	e9,900	7,480	10,700	8,740	7,560	6,630	6,670
23	5,160	5,440	e10,100	e10,300	e10,200	e11,200	7,450	11,000	8,820	7,490	6,610	6,610
24	5,230	5,480	e10,200	e10,200	e10,100	e10,900	7,320	11,500	8,860	7,430	6,730	6,530
25	5,270	5,450	e10,200	e10,100	e10,500	e10,200	7,590	11,000	8,790	7,430	6,570	5,790
26	5,350	5,710	e10,100	e8,900	e10,400	e9,900	8,100	9,840	8,510	7,450	6,950	5,020
27	5,360	5,670	e10,600	e8,700	e10,300	e10,000	8,390	9,580	8,350	7,360	6,690	4,830
28	5,350	6,940	e10,500	e9,800	e10,800	e9,300	8,480	9,520	8,310	7,440	6,690	4,780
29	5,270	8,990	e10,300	e10,200	---	e9,800	8,560	9,290	8,280	7,460	6,910	4,740
30	5,250	9,860	e10,300	e10,100	---	10,200	8,550	9,660	8,190	7,540	6,800	4,730
31	5,260	---	e10,200	e10,300	---	e9,400	---	10,200	---	7,530	6,700	---
TOTAL	161,530	170,910	311,560	312,500	289,100	256,500	239,360	319,690	268,950	239,290	211,970	193,180
MEAN	5,211	5,697	10,050	10,080	10,320	8,274	7,979	10,310	8,965	7,719	6,838	6,439
MAX	5,360	9,860	10,800	10,500	10,800	11,200	9,180	12,000	9,430	8,390	7,910	7,180
MIN	5,070	5,240	9,560	8,700	10,000	4,100	7,060	8,630	8,190	7,360	6,470	4,730
AC-FT	320,400	339,000	618,000	619,800	573,400	508,800	474,800	634,100	533,500	474,600	420,400	383,200

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2003, BY WATER YEAR (WY)*

MEAN	10,600	9,196	9,159	9,917	10,520	10,310	10,500	9,557	9,723	10,200	11,290	11,030
MAX	28,570	22,440	13,280	14,400	17,450	20,690	32,840	26,220	26,650	37,050	25,300	26,590
(WY)	(1949)	(1952)	(1944)	(1986)	(1976)	(1976)	(1979)	(1979)	(1975)	(1975)	(1948)	(1948)
MIN	1,237	1,126	1,061	1,010	1,167	2,674	1,965	1,353	1,366	1,273	3,823	3,771
(WY)	(1942)	(1942)	(1942)	(1943)	(1942)	(1950)	(1945)	(1945)	(1945)	(1945)	(1963)	(1992)

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1941 - 2003*	
ANNUAL TOTAL	2,586,330		2,974,540		10,170	
ANNUAL MEAN	7,086		8,149		19,910	
HIGHEST ANNUAL MEAN					4,083 1942	
LOWEST ANNUAL MEAN					69,200 Mar 27, 1943	
HIGHEST DAILY MEAN	11,800	Aug 26	12,000	May 15	709 Mar 27, 1943	
LOWEST DAILY MEAN	4,300	Mar 23	4,100	Mar 15	575 Nov 22, 1941	
ANNUAL SEVEN-DAY MINIMUM	4,400	Mar 21	4,840	Mar 11	709 Nov 19, 1941	
MAXIMUM PEAK FLOW			a12,000	May 14	c78,200 Mar 26, 1943	
MAXIMUM PEAK STAGE			b10.37	Dec 30	b19.66 Apr 14, 1979	
INSTANTANEOUS LOW FLOW					575 Nov 22, 1941	
ANNUAL RUNOFF (AC-FT)	5,130,000		5,900,000		7,366,000	
10 PERCENT EXCEEDS	9,870		10,400		15,800	
50 PERCENT EXCEEDS	5,600		8,280		9,410	
90 PERCENT EXCEEDS	4,810		5,270		4,500	
SUMMARY STATISTICS	WATER YEARS 1941 - 1951**		WATER YEARS 1958 - 2003***			
ANNUAL TOTAL						
ANNUAL MEAN	9,245		10,330			
HIGHEST ANNUAL MEAN	14,520	1948	16,580	1975		
LOWEST ANNUAL MEAN	4,083	1942	6,121	1963		
HIGHEST DAILY MEAN	69,200	Mar. 27, 1943	52,000	Apr. 18, 1979		
LOWEST DAILY MEAN	575	Nov. 22, 1941	2,000	Nov. 20, 1964		
ANNUAL SEVEN-DAY MINIMUM	709	Nov. 19, 1941	2,130	Nov. 19, 1964		
MAXIMUM PEAK FLOW	c78,200	Mar. 26, 1943	d55,000	Mar. 23, 1960		
MAXIMUM PEAK STAGE	b15.12	Mar. 26, 1943	b19.66	Apr. 14, 1979		
ANNUAL RUNOFF (AC-FT)	6,698,000		7,482,000			
10 PERCENT EXCEEDS	21,000		15,100			
50 PERCENT EXCEEDS	6,910		9,600			
90 PERCENT EXCEEDS	1,400		5,710			

* During period of operation (1941-52, 1958 to current year)

** Before operational level at Fort Peck Lake was reached

*** After operational level at Fort Peck Lake was reached

a Gage height, 6.32 ft

b Backwater from ice

c Gage height, 14.80 ft, from rating curve extended above 30,000 ft³/s

d Gage height, 19.14 ft

e Estimated

06185600 MISSOURI RIVER STAGE GAGE NO. 4 NEAR NOHLY, MT

LOCATION.--Lat 48°02'10", long 104°09'40", in NE¹₄ sec.1, T.26 N., R.58 E., Richland County, Hydrologic Unit 10060005, on right bank 4.5 mi northwest of Nohly, MT, and at mile 1,595.7.

DRAINAGE AREA.--93,000 mi², approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--March 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,860.00 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 18, 1962, at datum 60.00 ft lower.

REMARKS.--Stage regulated by Fort Peck Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 21.20 ft, Mar. 23, 1960, present datum; minimum daily recorded, 6.87 ft, Apr. 18, 1963.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	11.18	11.81	11.29	11.00	10.66
2	---	---	---	---	---	---	---	11.35	11.57	11.33	11.04	10.75
3	---	---	---	---	---	---	---	11.62	11.71	11.32	11.18	10.76
4	---	---	---	---	---	---	---	11.65	11.77	11.34	11.23	10.69
5	---	---	---	---	---	---	---	11.67	11.74	11.35	---	10.60
6	---	---	---	---	---	---	---	11.66	11.76	11.17	---	10.59
7	---	---	---	---	---	---	---	11.76	11.75	10.95	---	10.65
8	---	---	---	---	---	---	11.26	11.98	11.68	10.92	---	10.70
9	---	---	---	---	---	---	11.10	11.76	11.67	11.06	---	10.82
10	---	---	---	---	---	---	10.94	11.72	11.65	11.16	---	10.80
11	---	---	---	---	---	---	10.78	11.82	11.73	11.16	---	10.75
12	---	---	---	---	---	---	10.60	11.97	11.77	11.19	---	10.66
13	---	---	---	---	---	---	10.51	12.14	11.75	11.14	---	10.66
14	---	---	---	---	---	---	10.44	12.40	11.83	11.13	---	10.67
15	---	---	---	---	---	---	10.57	12.71	11.75	11.13	---	10.65
16	---	---	---	---	---	---	10.80	12.65	11.76	11.09	---	10.61
17	---	---	---	---	---	---	10.84	12.49	11.72	11.07	---	10.73
18	---	---	---	---	---	---	10.92	12.27	11.72	11.16	---	10.88
19	---	---	---	---	---	---	10.88	12.13	11.73	11.08	10.64	10.68
20	---	---	---	---	---	---	10.83	12.61	11.69	11.02	10.65	10.62
21	---	---	---	---	---	---	10.81	12.70	11.65	11.03	10.65	10.60
22	---	---	---	---	---	---	10.69	12.50	11.53	11.04	10.62	10.60
23	---	---	---	---	---	---	10.69	12.20	11.54	11.00	10.56	10.60
24	---	---	---	---	---	---	10.61	12.52	11.59	10.98	10.61	10.56
25	---	---	---	---	---	---	10.66	12.52	11.58	10.99	10.56	10.36
26	---	---	---	---	---	---	10.86	12.08	11.48	10.97	10.68	9.89
27	---	---	---	---	---	---	11.06	11.84	11.40	10.97	10.65	9.66
28	---	---	---	---	---	---	11.12	11.77	11.35	10.96	10.61	9.59
29	---	---	---	---	---	---	11.16	11.73	11.34	10.99	10.65	9.56
30	---	---	---	---	---	---	11.17	11.67	11.30	11.01	10.73	9.54
31	---	---	---	---	---	---	---	12.03	---	11.06	10.63	---
MEAN	---	---	---	---	---	---	---	12.04	11.64	11.10	---	10.50
MAX	---	---	---	---	---	---	---	12.71	11.83	11.35	---	10.88
MIN	---	---	---	---	---	---	---	11.18	11.30	10.92	---	9.54

MISSOURI RIVER MAIN STEM

06185650 MISSOURI RIVER STAGE GAGE NO. 5 AT NOHLY, MT

LOCATION.--Lat 48°00'10", long 104°05'30", in SE¹/₄ sec.16, T.26 N., R.59 E., Richland County, Hydrologic Unit 10060005, at downstream side of bridge, 0.2 mi northwest of Nohly, MT, and at mile 1,587.7.

DRAINAGE AREA.--93,000 mi², approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--April 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,800.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Stage regulated by Fort Peck Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 77.22 ft, Mar. 15, 1972; minimum daily recorded, 59.12 ft, Nov. 22, 1964.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	64.43	66.79	64.68	64.11	63.68
2	---	---	---	---	---	---	---	64.54	67.01	64.67	64.12	63.75
3	---	---	---	---	---	---	---	64.81	67.52	64.64	64.22	63.79
4	---	---	---	---	---	---	---	64.88	67.75	64.65	64.33	63.72
5	---	---	---	---	---	---	---	64.91	67.82	64.67	64.02	63.64
6	---	---	---	---	---	---	---	64.89	67.55	64.51	63.82	63.62
7	---	---	---	---	---	---	64.75	64.94	66.83	64.30	63.82	63.66
8	---	---	---	---	---	---	64.64	65.16	66.30	64.26	63.78	63.70
9	---	---	---	---	---	---	64.47	65.02	65.94	64.33	63.83	63.81
10	---	---	---	---	---	---	64.34	64.92	65.74	64.40	63.78	63.82
11	---	---	---	---	---	---	64.23	65.01	65.58	64.38	63.70	63.78
12	---	---	---	---	---	---	64.04	65.12	65.55	64.42	63.75	63.70
13	---	---	---	---	---	---	63.92	65.30	65.69	64.36	63.66	63.70
14	---	---	---	---	---	---	63.84	65.51	66.03	64.33	63.68	63.72
15	---	---	---	---	---	---	63.91	65.83	66.16	64.33	63.72	63.70
16	---	---	---	---	---	---	64.14	65.84	66.10	64.30	63.75	63.66
17	---	---	---	---	---	---	64.19	65.68	65.97	64.26	63.74	63.75
18	---	---	---	---	---	---	64.23	65.50	65.96	64.33	63.63	63.93
19	---	---	---	---	---	---	64.21	65.32	66.00	64.28	63.65	63.76
20	---	---	---	---	---	---	64.14	65.73	65.89	64.20	63.71	63.68
21	---	---	---	---	---	---	64.12	65.90	65.86	64.20	63.71	63.66
22	---	---	---	---	---	---	64.02	65.80	65.81	64.19	63.69	63.66
23	---	---	---	---	---	---	63.99	65.47	65.83	64.16	63.63	63.66
24	---	---	---	---	---	---	63.92	65.71	65.82	64.13	63.65	63.62
25	---	---	---	---	---	---	63.92	65.76	65.70	64.11	63.63	63.47
26	---	---	---	---	---	---	64.08	65.42	65.41	64.09	63.69	63.04
27	---	---	---	---	---	---	64.26	65.14	65.10	64.09	63.72	62.79
28	---	---	---	---	---	---	64.36	65.12	64.91	64.07	63.66	62.69
29	---	---	---	---	---	---	64.41	65.40	64.83	64.08	63.68	62.65
30	---	---	---	---	---	---	64.43	65.86	64.74	64.10	63.77	62.61
31	---	---	---	---	---	---	---	66.47	---	64.15	63.68	---
MEAN	---	---	---	---	---	---	---	65.34	66.07	64.31	63.78	63.55
MAX	---	---	---	---	---	---	---	66.47	67.82	64.68	64.33	63.93
MIN	---	---	---	---	---	---	---	64.43	64.74	64.07	63.63	62.61

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT
(National water-quality assessment program)

LOCATION.--Lat 47°40'42", long 104°09'22" (NAD 27), in SW¹₄NE¹₄SW¹₄ sec.9, T.22 N., R.59 E., Richland County, Hydrologic Unit 10100004, on left bank at Montana-Dakota Utilities Company powerplant, 0.2 mi downstream from bridge on State Highway 23, 2.5 mi south of Sidney, 3.0 mi downstream from Fox Creek, and at river mile 29.2.

DRAINAGE AREA.--69,083 mi². Area at site 4.5 mi upstream, 68,812 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1910 to September 1931 (published as "at Intake"), October 1933 to current year. If monthly figures of diversions to Lower Yellowstone Canal at Intake are added to records at this site, records equivalent to those published as Yellowstone River at Glendive (1898-1910, 1931-34) can be obtained. Monthly discharge only for some periods, published in WSP 1309. Monthly figures of diversions into Lower Yellowstone Canal prior to 1951 published in WSP 1309, 1951-60 published in WSP 1729, 1961-65 published in WSP 1916, 1966-70 published in WSP 2116, and 1971 to current year are published in annual reports.

REVISED RECORDS.--WDR MT-04-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,881.3 ft (NGVD 29) (levels by U.S. Army Corps of Engineers). Jan. 1, 1911, to Sept. 30, 1931, nonrecording gage at site 32 miles upstream at different elevation. Apr. 9, 1934, water-stage recorder at two sites within 500 ft of highway bridge 0.2 mi upstream and May 17, 1945, to Apr. 3, 1952, nonrecording gage on same bridge at elevation 1.36 ft higher. Apr. 4, 1952, to Nov. 19, 1967, water-stage recorder at site 4.5 mi upstream at different elevation.

REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow regulated to some extent by Bighorn Lake, usable capacity, 1,312,000 acre-ft, on the Bighorn River and on other tributary streams in Wyoming and Montana. Diversion for irrigation of about 1,250,000 acres upstream from station. Lower Yellowstone Project Main Canal diverts from left bank in NW¹₄ sec.36, T.18 N., R.56 E., at Lower Yellowstone diversion dam at Intake about 36.6 mi upstream for irrigation of about 52,000 acres of which about one-third lies upstream from station. U. S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4,570	5,250	e4,700	e3,700	e4,400	e3,000	6,400	8,190	36,600	12,700	5,050	1,850
2	4,830	5,130	e4,700	e4,000	e4,500	e3,100	6,080	7,820	41,800	12,600	4,660	2,070
3	4,970	5,300	e4,900	e4,200	e4,500	e3,800	5,740	7,400	45,900	13,800	4,340	2,260
4	5,020	4,970	e4,700	e4,200	e4,500	e4,000	5,690	7,480	47,400	13,800	3,930	2,450
5	5,000	4,750	e4,300	e4,200	e4,600	e4,700	5,740	7,760	48,400	13,900	3,710	2,560
6	5,120	4,740	e4,000	e4,200	e4,600	e4,800	5,910	8,600	40,300	13,200	3,690	2,560
7	5,360	4,810	e4,200	e4,200	e4,800	e4,700	6,140	10,000	33,000	12,600	3,730	2,510
8	5,440	5,080	e4,100	e4,200	e4,800	e4,400	6,340	9,610	29,000	11,900	3,350	2,490
9	5,380	5,250	e4,100	e4,100	e4,600	e3,700	6,280	8,700	26,300	11,600	3,190	2,660
10	5,310	5,360	e3,900	e3,900	e4,600	e3,300	5,990	8,430	23,900	10,900	3,190	2,650
11	5,250	5,360	e3,800	e3,700	e4,800	e3,000	5,730	8,230	21,700	10,200	2,900	2,720
12	5,250	5,330	e4,000	e3,500	e4,800	e2,600	5,410	8,500	22,900	9,690	2,720	2,840
13	5,220	5,310	e4,100	e3,300	e4,600	e2,400	5,140	9,210	26,200	8,940	2,600	2,960
14	5,160	5,270	e4,100	e3,100	e4,400	e5,000	5,020	9,580	28,600	8,310	2,560	3,220
15	5,240	5,220	e4,200	e2,900	e4,400	e7,500	4,990	8,970	28,500	8,060	2,450	3,380
16	5,200	5,180	e4,200	e2,900	e4,400	e14,000	5,190	8,080	27,000	7,690	2,320	3,410
17	5,180	5,100	e4,200	e3,000	e4,600	e25,000	5,640	7,490	26,200	7,290	2,080	3,400
18	5,200	5,070	e4,200	e2,800	e4,700	e30,000	6,210	7,500	26,500	6,860	1,980	3,500
19	5,160	5,050	e4,000	e3,000	e4,700	e28,000	6,960	8,040	25,800	6,610	1,860	3,570
20	5,120	5,060	e3,900	e3,600	e4,700	20,500	7,560	10,100	26,200	6,250	1,810	3,590
21	5,170	5,030	e3,700	e4,000	e4,700	18,000	7,630	12,600	26,400	5,950	1,910	3,600
22	5,220	5,010	e3,500	e4,000	e4,500	14,000	7,150	13,400	26,900	5,630	1,840	3,750
23	5,180	5,000	e3,300	e4,000	e4,400	12,300	6,790	12,300	26,600	5,320	1,840	3,990
24	5,110	5,000	e2,900	e3,700	e4,200	10,600	6,460	10,900	25,700	5,090	1,860	4,010
25	5,090	4,990	e2,400	e3,400	e4,000	9,130	6,070	10,200	23,500	4,920	1,950	3,920
26	5,100	e4,900	e2,000	e3,200	e3,700	8,190	5,800	10,100	20,500	4,760	1,950	3,960
27	5,150	e4,700	e2,200	e2,900	e3,500	7,270	6,490	12,900	18,400	4,650	1,810	3,950
28	5,180	e4,600	e2,500	e3,200	e3,400	6,900	7,820	18,600	16,900	4,580	1,780	4,000
29	5,190	e4,600	e2,800	e3,300	---	6,660	8,430	25,100	15,200	4,550	1,760	4,100
30	5,170	e4,700	e3,100	e4,000	---	6,340	8,330	29,500	13,600	4,890	1,720	4,010
31	5,200	---	e3,400	e4,300	---	6,260	---	32,400	---	5,360	1,750	---
TOTAL	159,740	151,120	116,100	112,700	124,400	283,150	189,130	357,690	845,900	262,600	82,290	95,940
MEAN	5,153	5,037	3,745	3,635	4,443	9,134	6,304	11,540	28,200	8,471	2,655	3,198
MAX	5,440	5,360	4,900	4,300	4,800	30,000	8,430	32,400	48,400	13,900	5,050	4,100
MIN	4,570	4,600	2,000	2,800	3,400	2,400	4,990	7,400	13,600	4,550	1,720	1,850
AC-FT	316,800	299,700	230,300	223,500	246,700	561,600	375,100	709,500	1,678,000	520,900	163,200	190,300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 2003, BY WATER YEAR (WY)*

MEAN	8,270	7,325	5,937	5,710	6,841	10,920	10,290	18,230	38,720	22,880	8,658	7,112
MAX	29,130	12,150	9,594	13,110	17,750	25,980	39,160	38,100	77,280	55,000	20,470	16,000
(WY)	(1924)	(1924)	(1976)	(1925)	(1971)	(1972)	(1924)	(1928)	(1918)	(1917)	(1912)	(1941)
MIN	3,726	3,700	3,019	2,087	2,702	3,235	2,821	5,409	11,580	3,311	1,602	2,389
(WY)	(1922)	(1922)	(1961)	(1937)	(1936)	(2002)	(1961)	(1961)	(1919)	(1919)	(1961)	(1934)

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1911 - 2003*	
ANNUAL TOTAL	2,582,560		2,780,760		12,590	
ANNUAL MEAN	7,076		7,619		21,250 1924	
HIGHEST ANNUAL MEAN					5,814 1934	
LOWEST ANNUAL MEAN					142,000 Jun 21, 1921	
HIGHEST DAILY MEAN	42,600	Jun 6	48,400	Jun 5	570 May 17, 1961	
LOWEST DAILY MEAN	2,000	Dec 26	1,720	Aug 30	1,010 Aug 8, 1961	
ANNUAL SEVEN-DAY MINIMUM	2,530	Jan 1	1,800	Aug 26	c159,000 Jun 21, 1921	
MAXIMUM PEAK FLOW			a49,100	Jun 5	b24.03 Mar 6, 1994	
MAXIMUM PEAK STAGE			b15.26	Mar 18	d470 May 17, 1961	
INSTANTANEOUS LOW FLOW					9,119,000	
ANNUAL RUNOFF (AC-FT)	5,123,000		5,516,000		28,200	
10 PERCENT EXCEEDS	16,200		17,300		8,000	
50 PERCENT EXCEEDS	4,800		4,990		4,100	
90 PERCENT EXCEEDS	3,200		2,720			
SUMMARY STATISTICS	WATER YEARS 1911 - 1965**				WATER YEARS 1967 - 2003***	
ANNUAL TOTAL					12,270	
ANNUAL MEAN	12,890				19,150 1997	
HIGHEST ANNUAL MEAN	21,250	1924			6,387 2001	
LOWEST ANNUAL MEAN	5,814	1934			104,000 May 23, 1978	
HIGHEST DAILY MEAN	142,000	Jun 21, 1921			800 Jan 2, 1989	
LOWEST DAILY MEAN	570	May 17, 1961			1,060 Aug 23, 2001	
ANNUAL SEVEN-DAY MINIMUM	1,010	Aug 8, 1961			f111,000 May 23, 1978	
MAXIMUM PEAK FLOW	c159,000	Jun 21, 1921			b24.03 Mar 6, 1994	
MAXIMUM PEAK STAGE	b21.85	Mar 22, 1947				
INSTANTANEOUS LOW FLOW	d470	May 17, 1961			8,889,000	
ANNUAL RUNOFF (AC-FT)	9,341,000				26,400	
10 PERCENT EXCEEDS	29,900				8,550	
50 PERCENT EXCEEDS	7,690				4,680	
90 PERCENT EXCEEDS	3,820					

* During period of operation 1911-31, 1934 to current year. Published as "at Intake" 1911-31

** Prior to Bighorn Lake reaching operational level

*** After Bighorn Lake reached operational level

a Gage height, 13.53 ft

b Backwater from ice

c Gage height, 12.6 ft, site and datum then in use

d Gage height, 2.73 ft, site and datum then in use

e Estimated

f Gage height, 20.02 ft

06329590 YELLOWSTONE RIVER STAGE GAGE NO. 1 NEAR FAIRVIEW, MT

LOCATION.--Lat 47°48'29", long 104°02'32", sec. 18, T.150 N., R.104 W., McKenzie County, Hydrologic Unit 10100004, on left bank 3 mi south of Fairview, MT, and at mile 15.2.

DRAINAGE AREA.--70,000 mi², approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--March 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,860.00 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 19, 1962, at datum 60.00 ft lower.

REVISED RECORDS.--WDR ND-82: 1980-81.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 23.78 ft, Mar. 21, 1960, present datum; minimum daily recorded, 6.99 ft, Aug. 29, 2001, present datum.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	10.74	17.75	12.27	---	7.84
2	---	---	---	---	---	---	---	10.73	18.55	12.12	---	7.91
3	---	---	---	---	---	---	---	10.55	19.24	12.30	---	8.06
4	---	---	---	---	---	---	---	10.52	19.41	12.57	---	8.19
5	---	---	---	---	---	---	---	10.82	19.44	12.53	---	8.28
6	---	---	---	---	---	---	---	11.13	18.50	12.41	---	8.32
7	---	---	---	---	---	---	---	11.32	17.07	12.22	---	8.30
8	---	---	---	---	---	---	10.13	11.72	16.32	12.00	---	8.29
9	---	---	---	---	---	---	10.12	11.50	15.72	11.90	---	8.36
10	---	---	---	---	---	---	10.00	11.17	15.30	11.68	---	8.38
11	---	---	---	---	---	---	9.88	11.06	14.80	11.49	---	8.39
12	---	---	---	---	---	---	9.74	11.11	14.89	11.34	---	8.45
13	---	---	---	---	---	---	9.58	11.45	15.53	11.14	---	8.50
14	---	---	---	---	---	---	9.51	11.74	16.18	10.97	---	8.66
15	---	---	---	---	---	---	9.54	11.52	16.31	10.84	---	8.77
16	---	---	---	---	---	---	9.52	11.20	16.04	10.75	---	8.83
17	---	---	---	---	---	---	9.67	10.81	15.83	10.76	---	8.83
18	---	---	---	---	---	---	9.91	10.76	15.87	10.60	---	8.85
19	---	---	---	---	---	---	10.17	10.78	15.79	10.38	---	8.92
20	---	---	---	---	---	---	10.43	11.30	15.74	10.24	7.86	8.93
21	---	---	---	---	---	---	10.57	12.33	15.78	10.10	7.91	8.92
22	---	---	---	---	---	---	10.43	12.79	15.86	10.08	7.91	8.97
23	---	---	---	---	---	---	10.26	12.70	15.84	---	7.85	9.08
24	---	---	---	---	---	---	10.13	12.20	15.63	---	7.88	9.10
25	---	---	---	---	---	---	9.99	11.94	15.25	---	7.93	9.06
26	---	---	---	---	---	---	9.82	11.79	14.55	---	7.94	9.00
27	---	---	---	---	---	---	9.95	11.99	13.94	---	7.88	9.00
28	---	---	---	---	---	---	10.39	13.69	13.54	---	7.80	9.01
29	---	---	---	---	---	---	10.82	15.42	13.08	---	7.81	9.02
30	---	---	---	---	---	---	10.84	16.59	12.61	---	7.80	8.99
31	---	---	---	---	---	---	---	17.14	---	---	7.82	---
MEAN	---	---	---	---	---	---	---	11.95	16.01	---	---	8.64
MAX	---	---	---	---	---	---	---	17.14	19.44	---	---	9.10
MIN	---	---	---	---	---	---	---	10.52	12.61	---	---	7.84

YELLOWSTONE RIVER BASIN

06329610 YELLOWSTONE RIVER STAGE GAGE NO. 2 NEAR CARTWRIGHT, ND

LOCATION.--Lat 47°51'43", long 103°57'59", in NW¹₄NW¹₄, sec. 35, T.151 N., R.104 W., McKenzie County, Hydrologic Unit 10100004, on bridge on State Highway 200, 2 mi west of Cartwright, and at mile 8.5.

DRAINAGE AREA.--70,000 mi², approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--April 1959 to September 2001 (seasonal), October 2001 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,800.00 ft above National Geodetic Vertical Datum of 1929.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 87.08 ft, Mar. 23, 1978; minimum daily recorded, 58.58 ft, July 26, 1974.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63.66	63.88	63.74	65.24	66.38	65.79	64.63	65.13	72.26	66.90	64.26	62.74
2	63.71	63.86	63.71	---	67.01	65.79	64.54	65.11	73.09	66.76	64.11	62.81
3	63.77	63.86	63.82	65.60	67.48	65.99	64.41	64.93	73.87	66.90	63.95	62.91
4	63.80	63.85	63.83	---	67.96	66.14	64.34	64.89	74.02	67.20	63.83	63.01
5	63.78	63.68	63.56	---	67.96	66.43	64.33	64.99	74.16	67.12	63.66	63.08
6	63.81	63.66	63.61	66.16	67.69	66.74	64.37	65.19	73.55	67.01	63.63	63.10
7	63.87	63.68	64.03	66.15	67.60	66.83	64.45	65.52	72.25	66.81	63.67	63.08
8	63.95	63.73	65.10	66.01	67.46	66.73	64.50	65.80	71.41	66.57	63.55	63.07
9	63.93	63.82	66.33	65.92	67.33	66.49	64.54	65.45	70.68	66.49	63.45	63.13
10	63.91	63.88	66.42	65.69	67.10	66.30	64.44	65.29	70.19	66.28	63.43	63.16
11	63.88	63.89	66.21	65.45	66.97	66.11	64.33	65.22	69.57	66.05	63.35	63.16
12	63.88	63.88	66.22	65.19	66.62	65.81	64.22	65.16	69.53	65.89	63.22	63.21
13	63.85	63.87	65.88	65.06	66.62	65.66	64.10	65.42	70.11	65.68	63.14	63.26
14	63.85	63.86	65.72	64.85	66.57	66.27	64.02	65.61	70.76	65.54	63.12	63.35
15	63.85	63.84	65.37	64.60	66.56	69.06	63.98	65.50	70.93	65.36	63.08	63.43
16	63.86	63.82	65.15	64.54	66.75	70.91	64.03	65.23	70.67	65.26	63.05	63.48
17	63.84	63.80	64.92	64.59	66.99	72.58	64.15	65.00	70.44	65.12	62.96	63.49
18	63.85	63.78	65.01	65.09	67.07	82.54	64.34	64.90	70.47	64.97	62.88	63.50
19	63.84	63.77	64.66	65.58	67.07	83.31	64.58	65.01	70.39	64.87	62.84	63.55
20	63.82	63.77	64.43	65.76	67.18	81.55	64.81	65.41	70.32	64.76	62.78	63.55
21	63.82	63.76	64.27	66.03	67.33	79.21	64.95	66.34	70.39	64.62	62.81	63.55
22	63.86	63.75	64.39	66.24	67.53	76.62	64.83	66.86	70.48	64.47	62.79	63.58
23	63.84	63.74	64.56	66.38	67.51	73.75	64.65	66.79	70.48	64.34	62.76	63.67
24	63.82	63.75	64.70	66.52	67.14	69.61	64.56	66.28	70.29	64.24	62.78	63.71
25	63.80	63.73	64.11	66.58	66.84	66.33	64.43	65.91	69.94	64.17	62.82	63.66
26	63.80	63.84	63.96	66.40	66.70	65.50	64.29	65.76	69.23	64.10	62.81	63.65
27	63.81	63.81	63.79	---	66.36	65.17	64.41	66.13	68.61	64.06	62.79	63.64
28	63.83	63.75	63.81	---	66.01	65.01	64.77	67.84	68.20	64.01	62.74	63.65
29	63.85	63.78	64.10	65.96	---	64.85	65.19	69.71	67.74	63.98	62.75	63.67
30	63.83	63.82	64.60	66.01	---	64.70	65.22	70.94	67.25	64.01	62.72	63.66
31	63.83	---	65.01	66.18	---	64.63	---	71.55	---	64.28	62.73	---
MEAN	63.83	63.80	64.68	---	67.06	69.11	64.48	66.09	70.71	65.41	63.18	63.35
MAX	63.95	63.89	66.42	---	67.96	83.31	65.22	71.55	74.16	67.20	64.26	63.71
MIN	63.66	63.66	63.56	---	66.01	64.63	63.98	64.89	67.25	63.98	62.72	62.74

06329620 YELLOWSTONE RIVER STAGE GAGE NO. 3 NEAR BUFORD, ND

LOCATION.--Lat 47°55'14", long 103°57'56", in SW¹₄ sec.2, T.151 N., R.104 W., McKenzie County, Hydrologic Unit 10100004, on left bank 4 mi south of Buford and 6.5 mi southeast of Nohly, MT.

DRAINAGE AREA.--70,000 mi², approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--April 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,850.00 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 19, 1962, at datum 50.00 ft lower. Prior to Apr. 23, 1987, gage was located 1 mi downstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 36.20 ft from floodmark, probably occurred sometime between Mar. 3-10, 1994; minimum daily recorded, 6.18 ft, Aug. 24, 1961, present datum.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	11.65	18.96	13.20	---	7.82
2	---	---	---	---	---	---	---	11.61	---	12.99	---	7.93
3	---	---	---	---	---	---	---	11.46	---	13.08	---	8.08
4	---	---	---	---	---	---	---	11.40	---	13.48	---	8.24
5	---	---	---	---	---	---	---	11.53	---	13.34	---	8.34
6	---	---	---	---	---	---	---	11.74	19.80	13.26	---	8.38
7	---	---	---	---	---	---	---	12.11	18.92	13.01	---	8.36
8	---	---	---	---	---	---	11.04	12.56	18.03	12.75	---	8.32
9	---	---	---	---	---	---	11.07	12.22	17.29	12.63	---	8.42
10	---	---	---	---	---	---	10.91	11.94	16.77	12.42	---	8.50
11	---	---	---	---	---	---	10.73	11.86	16.14	12.14	---	8.49
12	---	---	---	---	---	---	10.53	11.79	16.09	11.94	---	8.56
13	---	---	---	---	---	---	10.32	12.09	16.66	11.70	---	8.65
14	---	---	---	---	---	---	10.23	12.36	17.41	11.53	---	8.79
15	---	---	---	---	---	---	10.23	12.38	17.67	11.30	---	8.94
16	---	---	---	---	---	---	10.23	12.11	17.44	11.18	---	9.01
17	---	---	---	---	---	---	10.37	11.79	17.18	11.02	---	9.03
18	---	---	---	---	---	---	10.64	11.60	17.18	10.85	---	9.06
19	---	---	---	---	---	---	10.95	11.62	17.14	10.71	---	9.10
20	---	---	---	---	---	---	11.26	12.06	17.04	10.57	7.73	9.11
21	---	---	---	---	---	---	11.45	13.13	17.11	10.38	7.75	9.10
22	---	---	---	---	---	---	11.29	13.83	17.18	10.20	7.76	9.13
23	---	---	---	---	---	---	11.05	13.77	17.20	10.04	7.72	9.25
24	---	---	---	---	---	---	10.89	13.22	17.02	9.90	7.75	9.32
25	---	---	---	---	---	---	10.70	12.77	16.68	9.81	7.82	9.25
26	---	---	---	---	---	---	10.51	12.50	15.94	---	7.83	9.15
27	---	---	---	---	---	---	10.63	12.68	15.20	---	7.84	9.11
28	---	---	---	---	---	---	11.08	14.52	14.70	---	7.75	9.08
29	---	---	---	---	---	---	11.66	16.55	14.18	---	7.76	9.07
30	---	---	---	---	---	---	11.75	17.84	13.62	---	7.77	9.08
31	---	---	---	---	---	---	---	18.51	---	---	7.79	---
MEAN	---	---	---	---	---	---	---	12.81	---	---	---	8.76
MAX	---	---	---	---	---	---	---	18.51	---	---	---	9.32
MIN	---	---	---	---	---	---	---	11.40	---	---	---	7.82

MISSOURI RIVER MAIN STEM

06329640 MISSOURI RIVER STAGE GAGE NO. 5A AT BUFORD, ND

LOCATION.--Lat 47°59'08", long 103°59'07", in SE¹/₄ sec.15, T.152 N., R.104 W., Williams County, Hydrologic Unit 10110101, on left bank 1.5 mi southwest of Buford, at confluence, and at mile 1,580.7.

DRAINAGE AREA.--164,000 mi², approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--April 1960 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,850.00 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 8, 1962, at datum 50.00 ft lower.

REMARKS.--Stage regulated by upstream reservoirs.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 20.37 ft, June 18, 1997; minimum daily recorded, 2.63 ft, Aug. 15-16, 1966.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	9.17	15.55	---	---	6.01
2	---	---	---	---	---	---	---	9.19	---	---	---	6.09
3	---	---	---	---	---	---	---	9.24	---	---	---	6.25
4	---	---	---	---	---	---	---	9.21	---	---	---	6.35
5	---	---	---	---	---	---	---	9.35	---	---	---	6.38
6	---	---	---	---	---	---	---	9.49	---	---	---	6.39
7	---	---	---	---	---	---	8.71	9.80	---	---	---	6.44
8	---	---	---	---	---	---	8.66	10.29	---	10.02	---	6.47
9	---	---	---	---	---	---	8.59	10.04	---	10.04	---	6.52
10	---	---	---	---	---	---	8.42	9.69	---	9.93	---	6.59
11	---	---	---	---	---	---	8.25	9.68	---	9.71	---	6.57
12	---	---	---	---	---	---	8.01	9.67	---	9.57	---	6.60
13	---	---	---	---	---	---	7.81	9.96	---	9.37	---	6.64
14	---	---	---	---	---	---	7.67	10.28	---	9.22	---	6.79
15	---	---	---	---	---	---	7.66	10.48	---	9.03	---	6.96
16	---	---	---	---	---	---	7.82	10.27	---	8.94	---	7.02
17	---	---	---	---	---	---	8.01	9.92	---	8.79	---	7.05
18	---	---	---	---	---	---	8.21	9.66	---	8.70	---	7.18
19	---	---	---	---	---	---	8.43	9.53	---	8.58	6.02	7.17
20	---	---	---	---	---	---	8.63	10.05	---	8.42	6.02	7.13
21	---	---	---	---	---	---	8.80	10.96	---	8.29	6.03	7.09
22	---	---	---	---	---	---	8.71	11.55	---	8.14	6.05	7.13
23	---	---	---	---	---	---	8.50	11.37	---	8.00	5.95	7.18
24	---	---	---	---	---	---	8.36	11.06	---	7.86	5.97	---
25	---	---	---	---	---	---	8.22	10.76	---	7.78	6.01	---
26	---	---	---	---	---	---	8.13	10.40	---	7.69	6.00	---
27	---	---	---	---	---	---	8.27	10.23	---	7.66	6.06	---
28	---	---	---	---	---	---	8.64	11.48	---	---	5.93	---
29	---	---	---	---	---	---	9.12	13.15	---	---	5.94	---
30	---	---	---	---	---	---	9.23	14.34	---	---	6.03	---
31	---	---	---	---	---	---	---	15.10	---	---	6.00	---
MEAN	---	---	---	---	---	---	---	10.50	---	---	---	---
MAX	---	---	---	---	---	---	---	15.10	---	---	---	---
MIN	---	---	---	---	---	---	---	9.17	---	---	---	---

06329650 MISSOURI RIVER STAGE GAGE NO. 6 NEAR BUFORD, ND

LOCATION.--Lat 47°57'21", long 103°54'31", in SE¹₄ sec.30, T.152 N., R.103 W., McKenzie County, Hydrologic Unit 10110101, on right bank 5 mi southeast of Buford and at mile 1,576.0.

DRAINAGE AREA.--164,000 mi², approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--December 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,840.00 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 17, 1962, at datum 40.00 ft lower.

REMARKS.--Stage regulated by upstream reservoirs.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 27.39 ft, June 24, 1997; minimum daily recorded, 8.23 ft, Aug. 15 and 22, 1963.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	16.23	22.81	18.12	15.07	13.30
2	---	---	---	---	---	---	---	16.23	23.37	17.89	14.93	13.37
3	---	---	---	---	---	---	---	16.30	23.98	17.86	14.83	13.48
4	---	---	---	---	---	---	---	16.29	24.17	18.15	14.95	13.56
5	---	---	---	---	---	---	---	16.41	24.22	18.08	14.71	13.56
6	---	---	---	---	---	---	---	16.54	23.87	17.99	14.45	13.57
7	---	---	---	---	---	---	---	16.80	23.00	17.69	14.37	13.59
8	---	---	---	---	---	---	15.78	17.26	22.24	17.46	14.30	13.60
9	---	---	---	---	---	---	15.77	17.12	21.62	17.37	14.20	13.73
10	---	---	---	---	---	---	15.60	16.78	21.20	17.28	14.11	13.81
11	---	---	---	---	---	---	15.41	16.74	20.72	17.05	13.94	13.76
12	---	---	---	---	---	---	15.20	16.72	20.55	16.92	13.93	13.75
13	---	---	---	---	---	---	15.01	16.97	20.90	16.73	13.77	13.75
14	---	---	---	---	---	---	14.85	17.27	21.58	16.57	13.67	13.84
15	---	---	---	---	---	---	14.81	17.49	21.93	16.39	13.71	13.96
16	---	---	---	---	---	---	14.93	17.36	21.84	16.29	13.66	14.00
17	---	---	---	---	---	---	15.08	17.06	21.63	16.14	13.60	14.03
18	---	---	---	---	---	---	15.27	16.80	21.49	16.06	13.49	14.14
19	---	---	---	---	---	---	15.48	16.68	21.53	15.94	13.43	14.17
20	---	---	---	---	---	---	15.66	17.07	21.40	15.77	13.45	14.09
21	---	---	---	---	---	---	15.83	17.91	21.46	15.56	13.44	14.06
22	---	---	---	---	---	---	15.77	18.52	21.48	15.46	13.49	14.07
23	---	---	---	---	---	---	15.56	18.42	21.52	15.37	13.38	14.14
24	---	---	---	---	---	---	15.42	18.15	21.44	15.24	13.38	14.17
25	---	---	---	---	---	---	15.29	17.88	21.18	15.10	13.39	14.10
26	---	---	---	---	---	---	15.23	17.55	20.61	14.98	13.37	13.77
27	---	---	---	---	---	---	15.36	17.35	19.94	14.89	13.44	13.49
28	---	---	---	---	---	---	15.70	18.38	19.42	14.82	13.31	13.39
29	---	---	---	---	---	---	16.13	20.06	18.99	14.79	13.28	13.35
30	---	---	---	---	---	---	16.27	21.40	18.52	14.83	13.35	13.33
31	---	---	---	---	---	---	---	22.21	---	15.01	13.30	---
MEAN	---	---	---	---	---	---	---	17.55	21.62	16.38	13.86	13.76
MAX	---	---	---	---	---	---	---	22.21	24.22	18.15	15.07	14.17
MIN	---	---	---	---	---	---	---	16.23	18.52	14.79	13.28	13.30

06329660 MISSOURI RIVER STAGE GAGE NO. 7 NEAR TRENTON, ND

LOCATION.--Lat 47°59'35", long 103°47'56", in NE¹₄ sec.13, T.152 N., R.103 W., McKenzie County, Hydrologic Unit 10110101, on right bank 5 mi south of Trenton and at mile 1,566.7.

DRAINAGE AREA.--164,000 mi², approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--March 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,840.00 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 7, 1962, at site 0.8 mi upstream. Prior to May 29, 1963, at datum 40.00 ft lower.

REMARKS.--Stage regulated by upstream reservoirs.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 23.46 ft, June 24, 1997; minimum daily recorded, 4.34 ft, Aug. 19 and 22, 1963.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	12.65	18.87	14.26	---	9.67
2	---	---	---	---	---	---	---	12.63	19.37	14.02	---	9.74
3	---	---	---	---	---	---	---	12.72	19.94	13.97	---	9.83
4	---	---	---	---	---	---	---	12.73	20.15	14.23	---	9.91
5	---	---	---	---	---	---	---	12.79	20.17	14.19	---	9.93
6	---	---	---	---	---	---	---	12.95	19.82	14.14	---	9.93
7	---	---	---	---	---	---	---	13.16	18.96	13.83	---	9.95
8	---	---	---	---	---	---	---	13.64	18.23	13.58	---	9.96
9	---	---	---	---	---	---	12.13	13.54	17.69	13.50	---	10.09
10	---	---	---	---	---	---	12.08	13.29	17.29	13.45	---	10.17
11	---	---	---	---	---	---	---	13.18	16.86	13.21	---	10.14
12	---	---	---	---	---	---	---	13.12	16.66	13.05	---	10.13
13	---	---	---	---	---	---	---	13.37	16.87	12.81	---	10.15
14	---	---	---	---	---	---	---	13.67	17.43	12.65	---	10.21
15	---	---	---	---	---	---	---	13.89	17.85	---	---	10.33
16	---	---	---	---	---	---	---	13.85	17.83	---	---	10.37
17	---	---	---	---	---	---	---	13.57	17.66	---	---	10.40
18	---	---	---	---	---	---	---	13.27	17.55	---	---	10.51
19	---	---	---	---	---	---	11.96	13.13	17.56	---	---	10.54
20	---	---	---	---	---	---	12.11	13.44	17.48	---	9.69	10.47
21	---	---	---	---	---	---	12.26	14.26	17.51	---	9.65	10.45
22	---	---	---	---	---	---	12.18	14.95	17.52	---	9.67	10.43
23	---	---	---	---	---	---	12.00	---	17.56	---	9.62	10.51
24	---	---	---	---	---	---	---	14.31	17.50	---	9.61	10.57
25	---	---	---	---	---	---	---	13.93	17.31	---	9.67	10.50
26	---	---	---	---	---	---	---	13.48	16.81	---	9.65	10.23
27	---	---	---	---	---	---	---	13.19	16.14	---	9.73	9.94
28	---	---	---	---	---	---	12.11	14.59	15.60	---	9.66	9.83
29	---	---	---	---	---	---	12.44	16.12	15.16	---	9.65	9.80
30	---	---	---	---	---	---	12.66	17.41	14.67	---	9.71	9.78
31	---	---	---	---	---	---	---	18.24	---	---	9.69	---
MEAN	---	---	---	---	---	---	---	---	17.67	---	---	10.15
MAX	---	---	---	---	---	---	---	---	20.17	---	---	10.57
MIN	---	---	---	---	---	---	---	---	14.67	---	---	9.67

06330000 MISSOURI RIVER NEAR WILLISTON, ND

LOCATION.--Lat 48°06'29", long 103°42'51", in NW¹₄NE¹₄ sec.06, T.153 N., R.101 W., McKenzie County, Hydrologic Unit 10110101, on right bank, 5 mi southwest of Williston, 29.3 mi downstream from Yellowstone River, and at mile 1,552.7.

DRAINAGE AREA.--164,500 mi², approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--April 1966 to current year. Operated as a stage-discharge station October 1897 to July 1965.

GAGE.--Water-stage recorder. Datum of gage is 1,830.20 ft above National Geodetic Vertical Datum of 1929. See WSP 1917 for history of changes prior to April 1966.

REMARKS.--Stage regulated by upstream reservoirs and backwater from Lake Sakakawea.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height observed, 26.60 ft, Mar. 8, 1994; minimum daily recorded, 7.80 ft, Nov. 2, 1966.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.02	13.11	14.67	17.68	17.00	17.25	16.16	15.44	19.99	17.12	14.32	12.65
2	13.03	13.24	14.35	17.71	17.40	17.49	15.64	15.44	20.19	16.81	14.22	12.66
3	13.06	13.19	14.31	17.60	17.84	17.64	15.25	15.49	20.43	16.70	14.13	12.79
4	13.09	13.09	14.53	17.50	18.18	17.82	14.92	15.51	20.59	16.85	14.17	12.88
5	13.10	13.02	13.88	17.58	18.47	17.69	14.83	15.60	20.75	16.92	14.06	12.91
6	13.12	12.93	14.30	17.83	18.55	17.60	14.96	15.71	20.68	16.87	13.71	12.91
7	13.13	12.91	14.72	17.96	18.49	17.65	15.10	15.88	20.11	16.66	13.63	12.94
8	13.19	12.93	15.36	18.02	18.44	17.53	15.13	16.22	19.56	16.47	13.60	12.99
9	13.26	13.00	15.76	18.00	18.35	17.32	15.08	16.39	19.22	16.37	13.47	13.03
10	13.25	13.10	16.38	17.87	18.24	17.07	14.97	16.15	19.01	16.26	13.41	13.13
11	13.16	13.17	16.40	17.61	18.10	16.67	14.84	16.01	18.83	16.06	13.29	13.14
12	13.09	13.17	16.54	17.00	17.94	16.27	14.64	15.96	18.68	15.92	13.19	13.12
13	13.11	13.15	16.79	16.29	17.77	16.06	14.41	16.03	18.74	15.76	13.06	13.09
14	13.05	13.15	16.69	15.78	17.74	15.99	14.26	16.26	19.09	15.59	12.92	13.18
15	13.07	13.14	16.74	15.40	17.74	16.84	14.22	16.50	19.43	15.42	12.92	13.29
16	13.10	13.12	16.65	15.19	17.79	18.86	14.29	16.52	19.54	15.32	12.92	13.34
17	13.10	13.06	16.86	15.17	17.93	20.31	14.45	16.32	19.52	15.21	12.86	13.34
18	13.10	13.02	17.10	15.27	18.01	21.92	14.59	16.04	19.46	15.16	12.75	13.42
19	13.08	13.02	17.51	15.43	18.06	23.35	14.75	15.87	19.55	15.01	12.63	13.52
20	13.06	13.04	17.33	15.66	18.18	23.88	14.92	16.02	19.57	14.86	12.62	13.42
21	13.09	13.05	16.75	16.01	18.34	23.81	15.07	16.61	19.55	14.74	12.63	13.38
22	13.06	13.02	16.70	16.43	18.46	23.62	15.14	17.24	19.56	14.62	12.70	13.37
23	13.05	12.97	17.16	16.82	18.55	23.16	14.97	17.46	19.58	14.51	12.61	13.39
24	13.04	13.00	17.51	17.05	18.33	22.43	14.81	17.30	19.56	14.38	12.57	13.45
25	13.02	13.02	17.43	17.15	17.87	21.33	14.67	17.06	19.47	14.27	12.63	13.46
26	13.03	13.08	16.95	17.04	17.50	19.59	14.56	16.74	19.22	14.22	12.62	13.20
27	13.06	13.30	16.67	16.76	17.27	17.99	14.55	16.36	18.76	14.18	12.74	12.89
28	13.08	13.17	16.48	16.69	17.16	17.41	14.83	16.74	18.32	14.12	12.63	12.76
29	13.09	13.39	16.55	16.74	---	17.09	15.19	17.99	17.95	14.07	12.60	12.69
30	13.06	14.23	16.88	16.57	---	16.71	15.41	19.05	17.54	14.05	12.67	12.67
31	13.02	---	17.38	16.62	---	16.44	---	19.66	---	14.17	12.69	---
MEAN	13.09	13.13	16.24	16.79	17.99	18.86	14.89	16.50	19.41	15.44	13.13	13.10
MAX	13.26	14.23	17.51	18.02	18.55	23.88	16.16	19.66	20.75	17.12	14.32	13.52
MIN	13.02	12.91	13.88	15.17	17.00	15.99	14.22	15.44	17.54	14.05	12.57	12.65

06330110 MISSOURI RIVER STAGE GAGE NO. 9 AT WILLISTON, ND

LOCATION.--Lat 48°08'13", long 103°36'16", in NE¹₄NE¹₄ sec.25, T.154 N., R.101 W., Williams County, Hydrologic Unit 10110101, on left bank levee at southeast edge of Williston, 0.5 mi upstream from Little Muddy Creek, and at mile 1,546.2.

DRAINAGE AREA.--164,500 mi, approximately.

GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,820.00 ft above National Geodetic Vertical Datum of 1929. Prior to May 13, 1969, at site 900 ft downstream. At datum 20.00 ft lower prior to Apr. 7, 1962.

REMARKS.--Stage regulated by upstream reservoirs and backwater from Lake Sakakawea. Estimated daily gage heights are based on incomplete daily record. The incomplete daily record generally is the result of water transfer to the city of Williston, which causes temporary fluctuations in gage height.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 34.61 ft, July 6, 1997; minimum daily recorded, 5.44 ft, Aug. 20, 1961, present datum.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e22.23	e22.16	22.44	25.20	24.60	24.73	24.45	23.61	26.60	e24.79	21.98	e21.62
2	e22.21	e22.13	22.67	25.34	24.91	24.85	24.03	23.58	26.78	e24.48	21.97	e21.59
3	e22.22	e22.15	22.67	25.34	25.27	25.02	23.83	23.64	27.01	e24.28	e21.92	e21.56
4	e22.23	e22.16	22.64	25.29	25.55	25.17	23.54	23.66	27.28	e24.31	e21.94	21.60
5	22.25	e22.16	22.60	25.30	25.79	25.22	23.54	23.73	27.49	24.41	e22.00	21.54
6	22.20	e22.17	22.87	25.47	25.87	25.10	23.46	23.84	27.55	24.43	e22.01	21.54
7	22.18	e22.15	23.27	25.64	25.87	25.07	23.59	23.94	27.23	24.24	e22.04	21.54
8	22.15	e22.13	23.58	25.74	25.82	25.02	23.60	24.19	26.73	e24.07	e22.00	21.52
9	e22.12	e22.12	23.95	25.76	25.80	24.88	23.54	24.33	26.36	e23.99	e21.97	21.57
10	e22.13	22.12	24.25	25.70	25.74	24.72	23.55	24.17	26.14	e23.95	e21.94	21.56
11	e22.15	22.11	24.58	25.52	25.66	24.49	23.49	24.05	26.01	e23.79	e21.88	21.53
12	e22.16	e22.11	24.73	25.14	25.54	e24.24	23.35	24.06	25.85	e23.63	e21.88	21.54
13	22.12	e22.14	24.88	24.61	25.37	e24.07	23.15	24.09	25.87	e23.50	21.89	21.53
14	22.09	e22.14	24.94	24.11	25.30	e24.14	23.06	24.20	26.07	e23.32	21.86	21.53
15	e22.06	e22.12	24.96	23.77	25.28	e24.53	23.05	24.42	26.29	e23.16	21.84	21.55
16	e22.04	e22.12	24.99	23.51	25.30	26.25	23.04	24.46	26.39	e23.03	21.84	21.57
17	e22.04	22.11	25.05	23.39	25.37	27.67	23.10	24.32	26.34	e22.97	21.81	21.63
18	e22.07	e22.08	25.23	23.34	25.45	29.17	23.18	24.04	26.23	e22.87	21.76	21.61
19	22.07	e22.04	25.43	23.38	25.50	29.87	23.18	23.91	26.36	e22.77	e21.75	21.61
20	22.05	e22.00	25.39	23.49	25.57	30.12	23.27	23.95	26.40	e22.60	e21.76	21.64
21	e22.08	e21.99	25.08	23.69	25.68	30.25	23.41	24.32	26.35	e22.46	e21.78	21.66
22	e22.14	e22.01	24.82	23.98	25.76	30.01	23.58	24.77	26.34	e22.35	e21.79	21.69
23	e22.16	e22.02	25.03	24.33	25.83	29.37	23.53	25.02	26.33	e22.26	e21.76	21.71
24	e22.17	22.06	25.10	24.63	25.77	28.74	23.41	24.93	26.32	e22.15	21.77	e21.71
25	e22.18	22.08	25.01	24.78	25.46	28.37	23.29	24.87	26.27	e22.06	21.76	e21.72
26	e22.18	e22.11	24.78	24.80	25.12	27.53	23.08	24.70	26.13	e22.03	21.75	e21.74
27	e22.17	e22.11	24.58	24.67	24.89	26.19	22.98	24.39	25.87	e21.99	21.73	e21.76
28	e22.17	e22.12	24.38	24.52	24.74	25.41	23.12	24.40	25.56	e21.99	21.71	e21.77
29	e22.20	22.09	24.32	24.52	---	25.15	23.35	25.20	25.31	e22.01	21.70	e21.79
30	e22.20	22.17	24.53	24.46	---	24.91	23.57	25.90	25.05	e22.00	21.66	e21.80
31	e22.20	---	24.91	24.41	---	24.62	---	26.34	---	22.05	21.65	---
MEAN	22.15	22.11	24.31	24.64	25.46	26.29	23.41	24.36	26.35	23.16	21.84	21.62
MAX	22.25	22.17	25.43	25.76	25.87	30.25	24.45	26.34	27.55	24.79	22.04	21.80
MIN	22.04	21.99	22.44	23.34	24.60	24.07	22.98	23.58	25.05	21.99	21.65	21.52

e Estimated

06331000 LITTLE MUDDY RIVER BELOW COW CREEK NEAR WILLISTON, ND

LOCATION.--Lat 48°17'04", long 103°34'21", in NE¹₄NW¹₄ sec.5, T.155 N., R.100 W., Williams County, Hydrologic Unit 10110102, on left bank 37 ft downstream from centerline of highway, 1 mi downstream from Cow Creek, 4 mi upstream from Camp Creek, 10 mi northeast of Williston, and 13 mi upstream from mouth.

DRAINAGE AREA.--875 mi², approximately, of which about 100 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1954 to current year (seasonal records only 1984 to 2001).

GAGE.--Water-stage recorder. Datum of gage is 1,863.18 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges, which are poor. Some small diversions for irrigation. Some regulation by Lake Zahl, Fish and Wildlife Service reservoir, 22 mi upstream and by Blacktail Dam about 15 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	8.4	11	12	11	12	68	29	19	7.8	4.4	6.0
2	4.3	8.4	11	12	11	12	66	27	19	7.3	4.5	5.8
3	4.6	8.5	10	12	11	13	50	27	19	6.5	4.5	5.2
4	5.1	8.5	9.8	12	12	11	51	27	19	6.5	5.1	5.3
5	5.6	8.8	9.3	13	12	11	56	28	19	6.5	5.4	5.5
6	5.8	9.0	9.7	13	12	11	69	31	19	6.4	5.0	5.6
7	5.7	9.2	10	13	13	10	69	37	20	6.2	5.1	5.4
8	6.1	9.2	11	13	12	10	72	48	20	7.3	5.0	5.0
9	6.5	9.3	11	13	12	10	74	50	22	14	5.5	6.1
10	6.5	9.3	11	12	11	9.7	73	50	23	12	6.6	5.7
11	6.5	9.7	10	11	11	9.6	66	54	25	12	6.4	5.2
12	6.2	9.8	11	10	11	9.4	57	51	29	11	5.5	5.2
13	6.0	10	11	10	11	9.1	53	47	30	11	4.9	5.3
14	6.1	11	11	10	11	9.3	47	47	28	11	4.8	5.2
15	6.0	11	11	10	11	e12	44	47	31	9.1	4.2	5.1
16	6.6	10	11	10	11	e880	44	44	28	8.4	4.0	5.2
17	6.9	11	12	10	11	e3,700	47	38	24	8.0	3.8	5.5
18	7.1	11	12	10	11	e5,600	47	35	21	7.9	3.6	5.6
19	6.9	11	11	10	11	e2,000	51	32	19	7.6	3.3	5.4
20	7.2	11	10	11	12	e930	49	29	17	7.0	3.4	5.6
21	7.6	11	11	11	12	e890	46	28	17	6.7	3.2	5.7
22	7.6	11	12	11	12	e640	43	26	16	6.4	3.1	5.8
23	7.6	10	12	11	12	e450	40	26	11	6.1	2.9	5.5
24	7.8	9.9	12	10	12	e300	38	24	11	5.7	2.9	5.2
25	8.1	10	11	11	12	e220	35	23	10	5.8	2.9	5.0
26	8.2	9.9	11	9.9	11	e200	34	22	10	5.6	2.9	4.9
27	8.1	9.9	11	9.8	11	148	34	22	9.7	5.2	5.6	4.7
28	8.7	10	11	10	11	105	32	22	9.3	5.0	6.1	4.8
29	8.6	11	12	10	---	84	32	20	8.9	4.8	6.2	4.8
30	8.9	10	12	11	---	74	30	19	8.4	4.6	5.9	4.5
31	8.5	---	11	11	---	71	---	19	---	4.5	6.0	---
TOTAL	209.7	296.8	339.8	342.7	321	16,451.1	1,517	1,029	562.3	233.9	142.7	159.8
MEAN	6.76	9.89	11.0	11.1	11.5	531	50.6	33.2	18.7	7.55	4.60	5.33
MAX	8.9	11	12	13	13	5,600	74	54	31	14	6.6	6.1
MIN	4.3	8.4	9.3	9.8	11	9.1	30	19	8.4	4.5	2.9	4.5
AC-FT	416	589	674	680	637	32,630	3,010	2,040	1,120	464	283	317

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 2003, BY WATER YEAR (WY)

MEAN	10.0	10.9	8.73	7.21	24.7	185	106	26.2	19.1	25.2	8.09	7.48
MAX	17.4	17.7	12.1	24.5	363	1,018	996	114	91.6	170	49.1	18.9
(WY)	(1973)	(1973)	(1955)	(1974)	(1996)	(1976)	(1979)	(1965)	(1994)	(1978)	(1972)	(1954)
MIN	5.28	4.66	3.55	2.33	0.91	6.21	10.6	8.44	3.77	2.80	2.51	2.54
(WY)	(1962)	(1961)	(1961)	(1962)	(1959)	(1965)	(1990)	(1958)	(1988)	(1988)	(1988)	(1990)

LITTLE MUDDY RIVER BASIN

06331000 LITTLE MUDDY RIVER BELOW COW CREEK NEAR WILLISTON, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1954 - 2003	
ANNUAL TOTAL	5,337.8		21,605.8			
ANNUAL MEAN	14.6		59.2		a38.7	
HIGHEST ANNUAL MEAN					a110	1976
LOWEST ANNUAL MEAN					a9.24	1961
HIGHEST DAILY MEAN	195	Apr 8	5,600	Mar 18	6,610	Apr 18, 1979
LOWEST DAILY MEAN	4.0	Sep 28	2.9	Aug 23	0.50	Feb 17, 1959
ANNUAL SEVEN-DAY MINIMUM	4.2	Sep 26	3.0	Aug 20	0.50	Feb 17, 1959
MAXIMUM PEAK FLOW			7,330	Mar 18	9,180	Apr 18, 1979
MAXIMUM PEAK STAGE			12.43	Mar 18	13.57	Mar 27, 1960
ANNUAL RUNOFF (AC-FT)	10,590		42,860		a28,030	
10 PERCENT EXCEEDS	23		47		40	
50 PERCENT EXCEEDS	10		11		9.6	
90 PERCENT EXCEEDS	5.6		5.1		4.6	

a Based on complete water years only (1954-83, 2002-03)

e Estimated

LITTLE MUDDY RIVER BASIN

06331000 LITTLE MUDDY RIVER BELOW COW CREEK NEAR WILLISTON, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 02...	--	--	--	--	--	--
NOV 25...	--	--	--	--	--	--
JAN 06...	--	--	--	--	--	--
MAR 11...	--	--	--	--	--	--
19...	--	--	--	--	--	--
25...	20	60	<0.10	<1	1	250
MAY 07...	--	--	--	--	--	--
JUN 17...	--	--	--	--	--	--
JUL 29...	90	<10	<0.20	4	2	760
AUG 20...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

06332515 BEAR DEN CREEK NEAR MANDAREE, ND

LOCATION.--Lat 47°47'14", long 102°46'05", in NW¹₄ sec.30, T.150 N., R.94 W., McKenzie County, Hydrologic Unit 10110101, on right bank 0.5 mi upstream from county highway culvert and 5.5 mi northwest of Mandaree.

DRAINAGE AREA.--74 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,947.58 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.16	0.22	e0.22	e0.25	e0.12	e0.05	4.8	0.64	0.16	0.53	e0.18	0.11
2	0.17	0.22	e0.21	e0.26	e0.11	e0.05	3.4	0.66	0.18	0.51	e0.17	0.11
3	0.19	0.22	e0.20	e0.25	e0.11	e0.05	2.1	0.63	0.22	0.53	e0.18	0.09
4	0.19	0.22	e0.19	e0.24	e0.10	e0.04	1.7	0.75	0.20	0.48	e0.19	0.11
5	0.22	0.23	e0.20	e0.23	e0.10	e0.04	1.3	1.1	0.20	0.43	e0.21	0.11
6	0.23	0.23	e0.20	e0.24	e0.10	e0.04	1.8	2.3	0.19	0.37	e0.22	0.12
7	0.24	0.24	e0.21	e0.25	e0.09	e0.04	4.2	3.9	0.19	0.35	e0.23	0.12
8	0.23	0.23	e0.22	e0.23	e0.09	e0.03	4.4	4.5	0.22	0.34	e0.22	0.12
9	0.23	0.23	e0.23	e0.21	e0.09	e0.03	3.2	11	0.25	0.36	e0.21	0.12
10	0.22	0.23	e0.24	e0.18	e0.08	e0.03	2.7	8.6	0.31	0.30	e0.22	0.14
11	0.22	0.23	e0.25	e0.16	e0.08	e0.03	2.2	3.9	0.36	0.28	e0.22	0.15
12	0.23	0.23	e0.26	e0.15	e0.08	e0.10	1.5	2.2	e0.43	0.29	e0.21	0.13
13	0.23	0.23	e0.27	e0.14	e0.08	e0.62	1.1	3.7	e0.52	0.29	e0.21	0.12
14	0.23	0.23	e0.26	e0.13	e0.08	e10	0.98	21	e0.61	0.26	e0.20	0.11
15	0.24	0.23	e0.27	e0.11	e0.08	e92	0.87	6.2	e0.70	0.27	e0.20	0.10
16	0.25	0.24	e0.28	e0.11	e0.08	e350	1.1	2.1	e0.76	e0.28	e0.20	0.09
17	0.24	0.26	e0.29	e0.12	e0.08	e450	1.1	1.1	e0.75	e0.26	e0.19	0.10
18	0.24	0.25	e0.28	e0.12	e0.07	339	1.0	0.70	e0.70	e0.25	e0.19	0.10
19	0.23	0.24	e0.27	e0.13	e0.07	133	1.3	0.47	0.57	e0.23	e0.18	0.08
20	0.23	0.25	e0.27	e0.12	e0.07	126	1.2	0.34	0.57	e0.22	e0.18	0.10
21	0.23	0.25	e0.26	e0.11	e0.06	157	0.96	0.28	0.49	e0.21	0.17	0.13
22	0.22	0.23	e0.25	e0.10	e0.06	100	0.82	0.38	0.82	e0.19	0.18	0.12
23	0.23	0.22	e0.25	e0.09	e0.06	61	0.66	0.36	1.9	0.17	0.17	0.11
24	0.23	0.22	e0.24	e0.08	e0.06	e40	0.66	0.31	3.5	0.18	0.17	0.11
25	0.22	0.22	e0.23	e0.08	e0.06	e31	0.61	0.25	5.2	0.19	0.16	0.11
26	0.22	0.22	e0.22	e0.09	e0.06	e21	0.58	0.25	1.8	0.18	0.15	0.14
27	0.24	0.22	e0.23	e0.10	e0.06	e15	0.58	0.23	0.66	0.19	0.13	0.13
28	0.24	0.23	e0.24	e0.11	e0.06	e9.5	0.54	0.16	0.43	0.21	e0.14	0.13
29	0.23	0.23	e0.26	e0.11	---	e6.5	0.64	0.13	0.32	0.19	e0.11	0.12
30	0.22	0.23	e0.25	e0.10	---	e4.7	0.62	0.12	0.35	e0.19	e0.10	0.13
31	0.22	---	e0.24	e0.11	---	e3.8	---	0.14	---	e0.18	0.10	---
TOTAL	6.92	6.93	7.49	4.71	2.24	1,950.65	48.62	78.40	23.56	8.91	5.59	3.46
MEAN	0.22	0.23	0.24	0.15	0.080	62.9	1.62	2.53	0.79	0.29	0.18	0.12
MAX	0.25	0.26	0.29	0.26	0.12	450	4.8	21	5.2	0.53	0.23	0.15
MIN	0.16	0.22	0.19	0.08	0.06	0.03	0.54	0.12	0.16	0.17	0.10	0.08
AC-FT	14	14	15	9.3	4.4	3,870	96	156	47	18	11	6.9

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2003, BY WATER YEAR (WY)

	1967	1968	1974	1974	1983	1982	1975	1970	1994	1993	1974	1973
MEAN	1.37	0.31	0.14	0.15	6.29	36.3	19.1	3.79	2.77	3.21	0.30	0.61
MAX	23.0	1.45	0.33	1.51	41.7	217	243	42.0	21.0	40.5	1.52	5.12
(WY)	(1983)	(2001)	(1974)	(1974)	(1983)	(1982)	(1975)	(1970)	(1994)	(1993)	(1974)	(1973)
MIN	0.11	0.13	0.031	0.000	0.000	0.30	0.26	0.15	0.12	0.076	0.075	0.062
(WY)	(2000)	(1968)	(1985)	(1967)	(1967)	(2000)	(2000)	(1981)	(1987)	(1968)	(1988)	(1999)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1967 - 2003

ANNUAL TOTAL	796.13		2,147.48			
ANNUAL MEAN	2.18		5.88		6.20	
HIGHEST ANNUAL MEAN					22.7	1982
LOWEST ANNUAL MEAN					0.21	2000
HIGHEST DAILY MEAN	110	Mar 28	a450	Mar 17	1,110	Mar 14, 1972
LOWEST DAILY MEAN	0.09	Sep 16	0.03	Mar 8	0.00	Dec 10, 1966
ANNUAL SEVEN-DAY MINIMUM	0.10	Sep 11	0.03	Mar 5	0.00	Dec 25, 1966
MAXIMUM PEAK FLOW			450	Mar 17	2,840	Mar 13, 1972
MAXIMUM PEAK STAGE			b6.63	Mar 16	10.03	Apr 6, 1969
ANNUAL RUNOFF (AC-FT)	1,580		4,260		4,490	
10 PERCENT EXCEEDS	2.6		2.2		3.9	
50 PERCENT EXCEEDS	0.25		0.23		0.22	
90 PERCENT EXCEEDS	0.19		0.09		0.02	

a About
b Backwater from ice
e Estimated

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1968 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 09...	1110	0.23	--	--	--	2,840	12.5	6.0	--	--	--	--	--
NOV 26...	1220	0.22	--	--	--	--	-3.0	0.0	--	--	--	--	--
JAN 07...	1145	0.25	--	--	--	2,860	5.0	0.5	--	--	--	--	--
MAR 31...	1455	3.9	7.8	7.8	1,030	1,040	20.0	5.0	120	27.0	13.0	14.0	7
MAY 28...	1320	0.15	--	--	--	1,820	21.0	20.0	--	--	--	--	--
JUN 18...	0950	0.70	--	--	--	--	20.0	21.0	--	--	--	--	--
JUL 22...	1100	0.19	8.4	8.7	2,810	2,840	21.1	21.9	160	23.9	23.8	7.60	22

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 26...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 31...	180	74	252	6.8	0.20	--	290	682	7.41	698	1.0	270	1
MAY 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 22...	644	89	757	2.9	0.49	2.66	875	2,030	1.04	--	3.9	80	<1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
OCT 09...	--	--	--	--	--	--
NOV 26...	--	--	--	--	--	--
JAN 07...	--	--	--	--	--	--
MAR 31...	20	80.0	<0.10	<1	1	260
MAY 28...	--	--	--	--	--	--
JUN 18...	--	--	--	--	--	--
JUL 22...	60	<10	<0.20	4	1	330

Remark codes used in this table:

< -- Less than

06332523 EAST FORK SHELL CREEK NEAR PARSHALL, ND

LOCATION.--Lat 47°56'55", long 102°12'52", in NW¹₄NW¹₄ sec.33, T.152 N., R.90 W., Mountrail County, Hydrologic Unit 10110101, on right bank 10 ft upstream from bridge on county road and 4 mi west of Parshall.

DRAINAGE AREA.--360 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1991 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,890 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor due to beaver activity.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e0.70	0.78	0.54	e1.0	e0.43	e0.50	14	1.5	1.7	1.2	0.00	0.00
2	e0.75	0.74	0.55	e1.0	e0.45	e0.54	9.0	1.4	1.9	1.2	0.00	0.00
3	e0.73	0.79	e0.50	e1.0	e0.41	e0.54	6.5	1.3	2.2	1.1	0.00	0.00
4	e0.82	1.1	e0.45	e1.0	e0.39	e0.49	5.4	1.5	2.1	e0.91	0.00	0.00
5	e0.78	1.4	0.40	e0.92	e0.37	e0.48	5.1	3.5	1.9	0.87	0.01	0.10
6	e0.88	1.2	0.42	e0.87	e0.37	e0.49	5.1	8.2	4.0	0.87	0.00	0.23
7	e0.98	1.5	0.42	e0.89	e0.40	e0.49	6.8	7.6	6.7	0.72	0.00	0.32
8	e0.93	1.4	0.44	e0.94	e0.38	e0.50	9.0	11	3.5	0.69	0.01	0.39
9	1.0	1.6	0.44	e0.91	e0.39	e0.50	9.8	26	2.9	1.3	0.04	0.41
10	1.0	1.8	0.48	e0.85	e0.38	e0.49	8.0	25	2.9	3.4	0.00	0.62
11	1.3	2.1	0.57	e0.76	e0.37	e0.50	6.0	13	3.4	0.32	0.00	1.0
12	1.0	1.7	0.57	e0.64	e0.45	e0.49	5.0	12	3.8	0.13	0.00	0.91
13	1.1	1.7	0.63	e0.54	e0.47	e0.50	4.7	12	4.0	0.18	0.00	0.93
14	0.95	1.7	0.65	e0.52	e0.47	e0.54	3.7	20	3.3	0.18	0.00	0.56
15	1.0	1.6	0.66	e0.49	e0.60	e1.7	3.7	20	3.3	0.26	0.00	0.29
16	0.97	1.5	0.62	e0.50	e0.52	e48	3.6	13	3.5	0.32	0.00	0.14
17	1.1	1.6	0.65	e0.46	e0.49	e100	3.8	10	3.0	0.31	0.00	0.13
18	0.93	1.3	e0.74	e0.45	e0.50	e50	3.6	8.2	2.5	0.44	0.00	0.15
19	1.1	1.7	e0.75	e0.47	e0.49	e40	3.3	9.5	2.0	0.42	0.00	0.21
20	1.1	1.6	e0.73	e0.46	e0.49	e30	2.9	7.1	1.7	0.34	0.00	0.21
21	1.2	1.7	e0.86	e0.43	e0.47	e45	3.3	4.3	1.6	0.31	0.00	0.41
22	1.1	1.8	e0.99	e0.50	e0.45	128	3.4	4.3	1.6	0.28	0.00	1.4
23	1.2	1.3	e1.1	e0.47	e0.45	90	2.6	4.1	1.5	0.37	0.00	0.09
24	1.2	0.66	e1.1	e0.39	e0.48	64	3.0	3.9	e1.5	0.45	0.00	0.00
25	1.2	0.48	e1.1	e0.37	e0.50	54	2.5	3.5	e1.5	0.41	0.00	0.00
26	1.1	0.50	e1.0	e0.32	e0.50	47	2.3	2.9	1.5	0.29	0.00	0.00
27	1.2	0.41	e0.97	e0.40	e0.49	29	1.9	3.0	1.6	0.21	0.00	0.00
28	1.4	0.45	e0.87	e0.52	e0.48	19	1.9	2.7	1.5	0.13	0.00	0.00
29	1.3	0.50	e0.79	e0.42	---	10	1.9	2.0	1.4	0.07	0.00	0.03
30	1.0	0.51	e0.83	e0.41	---	10	1.7	1.7	1.4	0.03	0.00	0.05
31	0.86	---	e0.94	e0.43	---	9.7	---	1.6	---	0.00	0.00	---
TOTAL	31.88	37.12	21.76	19.33	12.64	782.45	143.5	245.8	75.4	17.71	0.06	8.58
MEAN	1.03	1.24	0.70	0.62	0.45	25.2	4.78	7.93	2.51	0.57	0.002	0.29
MAX	1.4	2.1	1.1	1.0	0.60	128	14	26	6.7	3.4	0.04	1.4
MIN	0.70	0.41	0.40	0.32	0.37	0.48	1.7	1.3	1.4	0.00	0.00	0.00
AC-FT	63	74	43	38	25	1,550	285	488	150	35	0.1	17

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2003, BY WATER YEAR (WY)

MEAN	1.41	1.71	0.97	0.40	0.82	37.6	15.4	5.40	5.00	3.11	1.34	0.76
MAX	4.71	3.10	1.54	1.22	3.58	134	64.9	16.0	16.4	23.5	11.6	2.66
(WY)	(1995)	(2000)	(2000)	(1995)	(1995)	(1999)	(1996)	(1999)	(1998)	(1993)	(1993)	(1991)
MIN	0.18	0.74	0.015	0.000	0.000	4.04	2.97	1.64	0.66	0.011	0.002	0.000
(WY)	(2001)	(2001)	(2001)	(2001)	(2001)	(2002)	(2000)	(1992)	(1992)	(2001)	(2003)	(2001)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1991 - 2003

ANNUAL TOTAL	963.99	1,396.23		
ANNUAL MEAN	2.64	3.83		6.22
HIGHEST ANNUAL MEAN				15.1
LOWEST ANNUAL MEAN				2.19
HIGHEST DAILY MEAN	64	Jun 10	128	Mar 22
LOWEST DAILY MEAN	0.10	Feb 4	0.00	Jul 31
ANNUAL SEVEN-DAY MINIMUM	0.10	Mar 4	0.00	Aug 10
MAXIMUM PEAK FLOW			195	Mar 22
MAXIMUM PEAK STAGE			5.39	Mar 22
ANNUAL RUNOFF (AC-FT)	1,910	2,770		4,510
10 PERCENT EXCEEDS	7.4	6.9		9.0
50 PERCENT EXCEEDS	0.75	0.86		1.1
90 PERCENT EXCEEDS	0.12	0.00		0.10

e Estimated

06332523 EAST FORK SHELL CREEK NEAR PARSHALL, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 07...	--	--	--	--	--
NOV 21...	--	--	--	--	--
JAN 08...	--	--	--	--	--
FEB 27...	--	--	--	--	--
MAR 19...	50	<0.10	<1	<1	480
31...	--	--	--	--	--
APR 30...	--	--	--	--	--
JUN 10...	--	--	--	--	--
JUL 22...	--	--	--	--	--
SEP 04...	--	--	--	--	--

Remark codes used in this table:

< -- Less than

0632770 DEEPWATER CREEK AT MOUTH NEAR RAUB, ND

LOCATION.--Lat 47°44'16", long 102°06'26", in NW¹₄NW¹₄SW¹₄sec.8, T.149 N., R.89 W., McLean County, Hydrologic Unit 10110101, on right bank 20 ft upstream from Highway 1804 bridge, 0.6 mi south of junction of State Highway 37 and 1804, and 3 mi west and 0.6 mi south of Raub.

DRAINAGE AREA.--220 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1991 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,832 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	2.0	1.2	e1.4	e0.43	e0.50	9.1	1.8	1.7	0.43	0.00	0.00
2	0.00	2.1	e1.2	1.5	e0.45	e0.54	7.9	2.0	1.6	0.59	0.00	0.00
3	0.00	2.2	e1.2	1.6	e0.43	e0.54	9.5	1.8	1.5	0.95	0.00	0.00
4	0.00	2.5	e1.2	1.7	e0.40	e0.51	6.6	1.7	1.7	1.1	0.00	0.00
5	0.00	5.6	e1.1	1.4	e0.38	e0.49	4.8	1.8	2.2	0.96	0.00	0.00
6	0.00	5.7	e1.1	1.0	e0.38	e0.50	3.8	2.4	1.9	0.73	0.00	0.00
7	0.00	3.9	e1.1	1.2	e0.39	e0.50	3.9	4.2	1.7	0.43	0.00	0.00
8	0.06	3.5	1.1	1.5	e0.39	e0.50	4.2	9.5	1.7	0.37	0.00	0.00
9	0.08	4.1	1.0	e1.3	e0.40	e0.50	8.1	19	2.0	1.2	0.00	0.00
10	0.45	3.8	1.1	e1.0	e0.39	e0.50	10	30	2.4	0.74	0.00	0.00
11	1.8	3.3	0.99	e0.90	e0.39	e0.50	9.6	24	2.5	0.86	0.00	0.00
12	1.3	3.1	0.99	e0.64	e0.42	e0.49	7.4	18	2.7	2.1	0.00	0.00
13	1.1	2.9	0.94	e0.54	e0.43	e0.50	6.8	14	3.0	2.3	0.00	0.00
14	1.1	2.8	0.97	e0.52	e0.45	e0.55	5.1	15	3.6	1.4	0.00	0.00
15	1.0	2.7	1.1	e0.49	e0.47	e2.0	4.5	22	3.4	0.51	0.00	0.00
16	0.95	2.6	e1.1	e0.48	e0.48	e42	4.5	20	3.1	0.58	0.00	0.00
17	0.86	2.5	e1.1	e0.46	e0.48	e70	4.2	15	2.7	0.36	0.00	0.00
18	0.82	2.4	e1.1	e0.45	e0.49	e52	5.4	13	10	0.56	0.00	0.00
19	0.71	2.4	e1.1	e0.45	e0.49	e40	4.9	13	15	0.33	0.00	0.00
20	0.75	2.3	1.1	e0.44	e0.48	41	4.2	16	7.1	0.23	0.00	0.00
21	0.78	2.3	e1.1	e0.43	e0.47	40	4.1	14	3.7	0.25	0.00	0.00
22	0.72	2.3	e1.1	e0.44	e0.46	39	3.8	9.7	2.7	0.12	0.00	0.00
23	0.79	2.3	e1.2	e0.43	e0.47	39	3.6	7.3	2.4	0.09	0.00	0.00
24	0.86	2.0	e1.2	e0.39	e0.48	39	2.9	5.6	1.7	0.11	0.00	0.00
25	0.91	e1.9	e1.2	e0.37	e0.50	37	2.6	4.1	1.0	0.09	0.00	0.00
26	0.96	e1.9	e1.2	e0.32	e0.50	e30	2.5	3.8	0.66	0.08	0.00	0.00
27	1.1	1.8	e1.2	e0.36	e0.49	e20	2.3	3.6	0.44	0.09	0.00	0.00
28	2.2	1.6	e1.2	e0.39	e0.49	e15	1.8	3.1	0.46	e0.05	0.00	0.00
29	2.4	1.4	1.2	e0.42	---	e12	1.9	2.5	0.55	e0.03	0.00	0.00
30	2.0	1.1	e1.3	e0.41	---	e10	1.8	2.1	0.43	0.00	0.00	0.00
31	2.1	---	e1.4	e0.43	---	e9.5	---	1.9	---	0.00	0.00	---
TOTAL	25.80	81.0	35.09	23.36	12.48	544.62	151.8	301.9	85.54	17.64	0.00	0.00
MEAN	0.83	2.70	1.13	0.75	0.45	17.6	5.06	9.74	2.85	0.57	0.000	0.000
MAX	2.4	5.7	1.4	1.7	0.50	70	10	30	15	2.3	0.00	0.00
MIN	0.00	1.1	0.94	0.32	0.38	0.49	1.8	1.7	0.43	0.00	0.00	0.00
AC-FT	51	161	70	46	25	1,080	301	599	170	35	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 2003, BY WATER YEAR (WY)

MEAN	1.18	1.89	1.14	0.61	1.17	63.5	20.4	6.77	5.44	2.32	0.88	0.48
MAX	4.15	3.97	2.01	1.81	5.40	279	68.3	21.8	18.3	18.5	5.68	4.49
(WY)	(1995)	(2001)	(1999)	(2000)	(1992)	(1999)	(1996)	(1999)	(1994)	(1993)	(1993)	(1991)
MIN	0.000	0.16	0.051	0.000	0.000	5.34	4.09	0.80	0.040	0.009	0.000	0.000
(WY)	(2002)	(1993)	(2001)	(1993)	(2001)	(2002)	(2000)	(1992)	(1992)	(1992)	(1994)	(1995)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1991 - 2003

ANNUAL TOTAL	1,447.76	1,279.23	
ANNUAL MEAN	3.97	3.50	8.88
HIGHEST ANNUAL MEAN			29.8
LOWEST ANNUAL MEAN			2.04
HIGHEST DAILY MEAN	52	70	1,100
LOWEST DAILY MEAN	0.00	0.00	0.00
ANNUAL SEVEN-DAY MINIMUM	0.00	0.00	0.00
MAXIMUM PEAK FLOW		a80	a1,300
MAXIMUM PEAK STAGE		b8.58	b13.26
ANNUAL RUNOFF (AC-FT)	2,870	2,540	6,430
10 PERCENT EXCEEDS	11	9.3	12
50 PERCENT EXCEEDS	1.1	1.0	0.90
90 PERCENT EXCEEDS	0.20	0.00	0.00

a About
b Backwater from ice
c Estimated

DEEPWATER CREEK BASIN

06332770 DEEPWATER CREEK AT MOUTH NEAR RAUB, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Mangan- ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb- denum, water, fltrd, ug/L (01060)	Selen- ium, water, fltrd, ug/L (01145)	Stront- ium, water, fltrd, ug/L (01080)
OCT 07...	--	--	--	--	--
NOV 21...	--	--	--	--	--
JAN 08...	--	--	--	--	--
FEB 27...	--	--	--	--	--
MAR 19...	80	<0.10	<1	1	450
31...	--	--	--	--	--
APR 30...	--	--	--	--	--
JUN 10...	--	--	--	--	--
JUL 22...	--	--	--	--	--

Remark codes used in this table:

< -- Less than

06335500 LITTLE MISSOURI RIVER AT MARMARTH, ND

LOCATION.--Lat 46°17'52", long 103°55'03", in SW¹/₄ sec.30, T.133 N., R.105 W., Slope County, Hydrologic Unit 10110203, on left bank 90 ft downstream from bridge on U.S. Highway 12 in Marmarth and 1.5 mi downstream from Little Beaver Creek.

DRAINAGE AREA.--4,640 mi², approximately.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS (WATER YEARS).--WSP 896: 1938-39. WSP 1086: 1943-44. WSP 1279: 1943(M), 1945-46, 1948. WSP 1439: 1950 (calendar year figures).

GAGE.--Water-stage recorder. Datum of gage is 2,686.32 ft above National Geodetic Vertical Datum of 1929. Prior to June 23, 1950, various nonrecording gages on former highway bridge at present site and datum. June 23, 1950, to Sept. 2, 1957, nonrecording gage at site 90 ft upstream at present datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. Small diversions for irrigation upstream from station.

EXTREMES OUTSIDE PERIOD OF RECORD.--According to local residents, the greatest known flood prior to 1953 occurred in June 1907 (stage unknown). Other major floods reached stages of about 21.5 ft in March 1913, 19.7 ft in March 1920, and 20.2 ft in May 1929. These stages are not comparable to stages during period of record, owing to construction of levees.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	13	e15	e4.5	e0.85	e0.59	131	34	29	45	0.11	0.00
2	6.6	11	e15	e4.2	e0.83	e0.58	109	35	31	33	0.08	0.00
3	5.6	12	e14	e3.9	e0.83	e0.58	93	39	51	37	0.05	0.00
4	5.7	17	e14	e3.6	e0.83	e0.58	92	38	113	31	0.04	0.00
5	7.0	18	e14	e3.1	e0.81	e0.57	84	52	121	26	0.03	0.00
6	7.9	24	e14	e2.9	e0.78	e0.57	77	65	74	21	0.02	0.00
7	8.8	21	e14	e2.8	e0.77	e0.56	68	45	74	19	0.00	0.00
8	8.1	21	e14	e2.6	e0.75	e0.56	62	58	106	19	0.06	0.00
9	8.5	23	e14	e2.2	e0.74	e0.63	56	289	141	20	2.1	0.00
10	9.7	16	e14	e2.0	e0.74	e1.7	52	449	154	19	0.52	138
11	9.5	22	e14	e2.0	e0.74	e15	49	227	105	18	0.27	519
12	9.4	e20	e13	e1.9	e0.74	e130	46	133	82	17	0.06	558
13	9.9	e18	e12	e1.7	e0.73	e300	43	101	96	14	0.01	158
14	9.2	22	e12	e1.6	e0.73	e700	39	91	69	11	2.4	96
15	9.7	20	e12	e1.6	e0.72	e1,100	37	70	54	8.6	3.7	132
16	11	18	e11	e1.5	e0.71	e1,500	35	55	162	6.4	1.8	91
17	11	17	e9.6	e1.4	e0.71	e1,000	35	46	80	4.1	0.94	60
18	10	15	e9.0	e1.3	e0.68	e1,400	53	42	59	7.4	0.31	46
19	11	15	e8.6	e1.2	e0.66	e2,000	52	63	52	46	0.52	53
20	12	17	e8.2	e1.2	e0.64	e1,330	48	75	42	15	0.38	46
21	12	17	e8.0	e1.1	e0.63	e1,120	46	84	34	5.5	0.17	38
22	12	16	e7.6	e1.1	e0.62	e1,320	39	57	32	2.4	0.09	32
23	10	e16	e7.2	e1.0	e0.61	1,280	35	47	29	1.3	0.03	28
24	11	e16	e7.1	e0.99	e0.61	1,030	32	46	60	0.92	0.00	21
25	13	15	e6.8	e0.97	e0.60	638	31	43	366	0.67	0.00	21
26	14	e15	e6.5	e0.94	e0.60	441	30	38	253	0.53	0.00	16
27	17	e15	e6.2	e0.92	e0.60	314	29	57	121	0.59	0.00	16
28	16	e15	e5.8	e0.90	e0.60	229	27	38	72	0.41	0.00	16
29	13	e15	e5.5	e0.88	---	174	28	35	125	0.26	0.00	15
30	21	e15	e5.3	e0.87	---	150	32	33	66	0.16	0.00	14
31	19	---	e4.9	e0.86	---	152	---	29	---	0.12	0.00	---
TOTAL	334.9	515	322.3	57.73	19.86	16,329.92	1,590	2,514	2,853	430.36	13.69	2,114.00
MEAN	10.8	17.2	10.4	1.86	0.71	527	53.0	81.1	95.1	13.9	0.44	70.5
MAX	21	24	15	4.5	0.85	2,000	131	449	366	46	3.7	558
MIN	5.6	11	4.9	0.86	0.60	0.56	27	29	29	0.12	0.00	0.00
AC-FT	664	1,020	639	115	39	32,390	3,150	4,990	5,660	854	27	4,190

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2003, BY WATER YEAR (WY)

MEAN	108	38.6	17.0	17.5	191	923	765	580	649	221	80.4	70.0
MAX	1,489	250	107	260	2,208	5,079	6,691	3,840	4,705	1,917	400	526
(WY)	(1972)	(1999)	(1952)	(1973)	(1943)	(1978)	(1952)	(1975)	(1944)	(1993)	(1993)	(1941)
MIN	0.87	0.37	0.000	0.000	0.000	22.1	10.7	4.75	3.51	0.10	0.16	0.000
(WY)	(1959)	(1956)	(1956)	(1939)	(1939)	(2002)	(1981)	(1980)	(1961)	(1980)	(1988)	(1955)

LITTLE MISSOURI RIVER BASIN

06335500 LITTLE MISSOURI RIVER AT MARMARTH, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1938 - 2003	
ANNUAL TOTAL	9,586.73		27,094.76			
ANNUAL MEAN	26.3		74.2		307	
HIGHEST ANNUAL MEAN					986	1944
LOWEST ANNUAL MEAN					20.5	1988
HIGHEST DAILY MEAN	670	Jun 11	2,000	Mar 19	28,600	Apr 5, 1944
LOWEST DAILY MEAN	0.00	Jul 22	0.00	Aug 7	0.00	Dec 18, 1938
ANNUAL SEVEN-DAY MINIMUM	0.00	Jul 21	0.00	Aug 24	0.00	Dec 18, 1938
MAXIMUM PEAK FLOW			a2,800	Mar 19	45,000	Mar 23, 1947
MAXIMUM PEAK STAGE			b6.72	Mar 15	23.40	Mar 31, 1952
ANNUAL RUNOFF (AC-FT)	19,020		53,740		222,200	
10 PERCENT EXCEEDS	49		123		630	
50 PERCENT EXCEEDS	16		14		33	
90 PERCENT EXCEEDS	1.1		0.40		0.90	

a About; gage height, 6.30 ft

b Backwater from ice

e Estimated

LITTLE MISSOURI RIVER BASIN

06335500 LITTLE MISSOURI RIVER AT MARMARTH, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 02...	--	--	--	--	--	--
NOV 13...	--	--	--	--	--	--
MAR 11...	--	--	--	--	--	--
19...	--	--	--	--	--	--
APR 01...	50	20	<0.10	4	<1	340
22...	--	--	--	--	--	--
JUN 04...	--	--	--	--	--	--
JUL 09...	80	<10	<0.20	13	2	460
AUG 20...	--	--	--	--	--	--
SEP 11...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

06336000 LITTLE MISSOURI RIVER AT MEDORA, ND

LOCATION.--Lat 46°55'10", long 103°31'40", in NE¹/₄ sec.27, T.140 N., R.102 W., Billings County, Hydrologic Unit 10110203, on left bank 50 ft upstream from bridge on county highway and 1 mi upstream from Andrews Creek and bridge on I-94.

DRAINAGE AREA.--6,190 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1903 to October 1908, October to November 1921, March to June and November to December 1922, May 1923 to September 1924, September 1928 to September 1934, October 1945 to September 1975, March 2001 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder on upstream side of highway bridge. Datum of gage is 2,246.75 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 9, 1945, nonrecording gages at several sites within 0.2 mi upstream from present site at various datums. Oct. 9, 1945, to Aug. 22, 1951, nonrecording gage at current location at current datum. Sept. 1951 to Sept. 1975 recording gage 600 ft downstream at current datum.

REMARKS.--Records good except for estimated daily discharges, which are poor.

REVISIONS (WATER YEARS).--WSP 546: Drainage area. WSP 1279: 1903-7, 1923-24, 1930-31, 1934(M).

CORRECTION.--When the gage was re-established in March 2001, the base gage was incorrectly set 0.84 ft too low. All gage heights since Oct. 1, 2002, and the 2001 peak stage have been corrected. Unit values and daily values data for water years 2001-02 have not been adjusted. Discharge data for those years are unaffected by this correction.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	9.7	e13	e6.5	e1.2	e0.78	e203	27	76	122	2.3	1.1
2	1.5	9.4	e20	e6.0	e1.2	e0.76	248	25	87	153	1.8	0.87
3	1.3	11	e18	e5.4	e1.1	e0.76	239	26	165	115	1.7	0.71
4	1.1	9.5	e16	e5.1	e1.1	e0.73	217	30	128	78	1.3	0.73
5	1.8	14	e17	e4.6	e1.1	e0.72	192	72	67	49	0.56	0.75
6	1.9	12	e18	e4.3	e1.1	e0.72	170	96	133	29	0.00	0.75
7	1.8	12	e18	e3.9	e1.1	e0.72	154	96	142	30	21	0.60
8	1.7	12	e19	e3.6	e1.1	e0.72	143	147	199	50	2.9	0.46
9	1.8	14	e19	e3.2	e1.1	e0.71	131	273	154	392	0.45	0.35
10	1.9	12	e18	e3.0	e1.1	e0.72	121	332	184	118	0.03	40
11	2.0	15	e18	e2.9	e1.1	e0.72	104	427	207	43	0.10	190
12	2.5	17	e19	e2.6	e1.0	e3.2	88	686	329	34	0.03	240
13	2.7	29	e19	e2.4	e1.0	e93	80	516	282	24	0.41	609
14	2.7	22	e19	e2.3	e1.0	e794	81	361	209	16	0.12	471
15	3.5	33	e17	e2.1	e0.97	e1,770	80	274	140	11	0.07	318
16	3.7	33	e16	e2.0	e0.95	e2,070	77	216	122	6.5	0.04	161
17	4.4	28	e15	e1.8	e0.95	e2,100	80	196	105	2.8	0.00	112
18	5.1	22	e14	e1.8	e0.94	e2,400	89	156	83	106	1.1	115
19	4.7	20	e13	e1.7	e0.93	e2,290	99	141	150	312	62	112
20	4.9	25	e12	e1.6	e0.93	e2,020	96	121	125	39	241	87
21	5.4	22	e11	e1.5	e0.91	e1,850	190	104	95	198	84	71
22	7.4	22	e11	e1.4	e0.89	e1,740	164	103	81	140	33	70
23	7.8	20	e10	e1.4	e0.88	e1,640	84	122	70	77	11	66
24	8.3	e19	e9.9	e1.4	e0.87	e1,490	56	138	81	45	5.3	53
25	8.3	e18	e9.4	e1.3	e0.87	e1,310	48	122	114	27	3.3	40
26	6.4	e18	e9.0	e1.3	e0.87	e1,090	53	94	118	15	2.2	32
27	11	e15	e8.8	e1.3	e0.84	820	38	75	500	18	1.8	23
28	9.7	e17	e8.4	e1.3	e0.82	e657	21	68	403	9.8	1.3	18
29	11	e22	e8.1	e1.3	---	e495	21	78	276	6.3	1.3	14
30	8.4	e14	e7.6	e1.2	---	e397	30	72	172	3.7	1.4	10
31	10	---	e7.0	e1.2	---	e245	---	61	---	2.7	1.2	---
TOTAL	146.1	546.6	438.2	81.4	27.92	25,282.26	3,397	5,255	4,997	2,272.8	482.71	2,858.32
MEAN	4.71	18.2	14.1	2.63	1.00	816	113	170	167	73.3	15.6	95.3
MAX	11	33	20	6.5	1.2	2,400	248	686	500	392	241	609
MIN	1.1	9.4	7.0	1.2	0.82	0.71	21	25	67	2.7	0.00	0.35

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 2003, BY WATER YEAR (WY)

MEAN	155	49.3	20.4	15.2	157	1,236	1,244	762	1,093	434	233	147
MAX	2,226	369	127	213	1,075	6,831	9,847	4,077	4,692	3,541	2,521	1,314
(WY)	(1924)	(1947)	(1947)	(1974)	(1947)	(1972)	(1952)	(1975)	(1929)	(1905)	(1903)	(1903)
MIN	1.67	1.97	0.023	0.000	0.000	32.8	8.12	3.94	53.5	11.4	0.75	0.29
(WY)	(1959)	(1956)	(1956)	(1950)	(1950)	(1964)	(1905)	(1931)	(1961)	(2002)	(1934)	(1934)

LITTLE MISSOURI RIVER BASIN

06336000 LITTLE MISSOURI RIVER AT MEDORA, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1903 - 2003	
ANNUAL TOTAL	17,566.2		45,785.31			
ANNUAL MEAN	48.1		125		a454	
HIGHEST ANNUAL MEAN					a1,329	1929
LOWEST ANNUAL MEAN					a52.7	2002
HIGHEST DAILY MEAN	878	Jun 11	2,400	Mar 18	39,600	Apr 8, 1952
LOWEST DAILY MEAN	1.1	Aug 20	0.00	Aug 6	0.00	Feb 1, 1932
ANNUAL SEVEN-DAY MINIMUM	1.4	Aug 16	0.11	Aug 11	0.00	Jan 21, 1933
MAXIMUM PEAK FLOW			b2,500	Mar 18	65,000	Mar 23, 1947
MAXIMUM PEAK STAGE			c10.99	Mar 15	20.50	Mar 23, 1947
10 PERCENT EXCEEDS	117		243		1,000	
50 PERCENT EXCEEDS	20		17		50	
90 PERCENT EXCEEDS	2.3		0.89		1.0	

a Based on complete water years only

b About; gage height, 7.46 ft

c Backwater from ice

e Estimated

LITTLE MISSOURI RIVER BASIN

06336000 LITTLE MISSOURI RIVER AT MEDORA, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 03...	--	--	--	--	--	--
NOV 14...	--	--	--	--	--	--
JAN 08...	--	--	--	--	--	--
MAR 26...	50	20	<0.10	2	<1	240
APR 23...	--	--	--	--	--	--
JUN 05...	--	--	--	--	--	--
JUL 15...	--	--	--	--	--	--
AUG 19...	60	30	<0.20	9	5	630
SEP 09...	--	--	--	--	--	--
12...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

06336600 BEAVER CREEK NEAR TROTTERS, ND

LOCATION.--Lat 47°09'47", long 103°59'32", in SW¹₄SW¹₄NE¹₄ sec.33, T.143 N., R.105 W., Golden Valley County, Hydrologic Unit 10110204, on left bank 100 ft upstream from bridge on county road, 2.4 mi east of Montana-North Dakota State line, 13 mi southwest of Trotters, 17 mi north of Beach, 20 mi upstream from Elk Creek, and 27 mi above mouth.

DRAINAGE AREA.--616 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year (seasonal records only since 1984).

REVISED RECORDS.--1982: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,371.96 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,130 ft³/s, Mar. 15, gage height, 16.56 ft, no flow many days in Aug. and Sept.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	e12	e1.8	42	7.9	6.0	3.5	0.24	0.00
2	---	---	---	---	e15	e1.8	40	7.7	6.3	3.3	0.23	0.00
3	---	---	---	---	e12	e1.9	37	7.3	7.2	8.3	0.23	0.00
4	---	---	---	---	e9.3	e1.9	34	7.1	7.6	5.2	0.23	0.00
5	---	---	---	---	e8.0	e1.9	32	8.1	7.2	3.3	0.28	0.00
6	---	---	---	---	e6.3	e2.0	30	9.1	7.1	3.1	0.35	0.00
7	---	---	---	---	e5.2	e2.0	29	9.2	8.9	3.0	3.5	0.00
8	---	---	---	---	e4.7	e2.0	27	9.2	8.9	2.4	2.7	0.00
9	---	---	---	---	e4.0	e2.0	26	10	8.6	7.8	0.85	0.00
10	---	---	---	---	e3.5	e2.0	24	11	8.3	6.1	0.68	e0.10
11	---	---	---	---	e3.1	e2.0	23	11	8.8	2.3	0.06	e0.40
12	---	---	---	---	e3.3	e2.0	21	11	9.2	2.0	0.03	e0.35
13	---	---	---	---	e3.5	e1.0	20	12	8.8	1.7	0.03	e0.30
14	---	---	---	---	e2.8	e1,000	19	11	7.6	1.7	0.00	e0.26
15	---	---	---	---	e2.5	1,930	18	10	8.2	1.5	0.00	e0.22
16	---	---	---	---	e2.2	1,750	17	9.2	10	1.5	0.00	e0.19
17	---	---	---	---	e2.4	1,210	17	8.9	7.5	1.2	0.00	e0.16
18	---	---	---	---	e2.8	706	16	8.6	6.6	0.70	0.00	e0.13
19	---	---	---	---	e3.0	392	15	8.1	4.9	2.2	0.03	e0.11
20	---	---	---	---	e2.7	291	14	7.6	4.1	1.4	0.00	e0.10
21	---	---	---	---	e2.1	202	14	7.4	4.0	0.89	0.00	e0.10
22	---	---	---	---	e1.7	142	12	7.4	3.9	0.86	0.00	e0.10
23	---	---	---	---	e1.4	111	11	7.4	3.8	0.90	0.00	e0.11
24	---	---	---	---	e1.5	95	11	6.9	3.8	0.75	0.00	e0.11
25	---	---	---	---	e1.6	82	10	6.6	4.3	0.46	0.00	e0.11
26	---	---	---	---	e1.6	76	9.6	6.2	3.9	0.36	0.00	e0.12
27	---	---	---	---	e1.7	69	9.2	6.2	3.8	0.28	0.00	e0.12
28	---	---	---	---	e1.8	60	8.8	6.0	3.7	1.4	0.00	e0.12
29	---	---	---	---	---	54	8.5	5.4	3.5	1.2	0.00	e0.11
30	---	---	---	---	---	49	8.2	5.2	3.6	0.55	0.00	e0.10
31	---	---	---	---	---	45	---	5.4	---	0.29	0.00	---
TOTAL	---	---	---	---	121.7	8,397.3	603.3	254.1	190.1	70.14	9.44	3.42
MEAN	---	---	---	---	4.35	271	20.1	8.20	6.34	2.26	0.30	0.11
MAX	---	---	---	---	15	1,930	42	12	10	8.3	3.5	0.40
MIN	---	---	---	---	1.4	1.8	8.2	5.2	3.5	0.28	0.00	0.00
AC-FT	---	---	---	---	241	16,660	1,200	504	377	139	19	6.8

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2003, BY WATER YEAR (WY)

MEAN	1.10	2.62	2.59	4.40	27.7	119	47.0	15.6	18.4	10.4	2.11	0.70
MAX	3.29	6.34	5.13	14.7	141	609	406	50.2	125	64.2	18.4	4.72
(WY)	(1983)	(1983)	(1979)	(1983)	(1983)	(1978)	(1979)	(1999)	(1982)	(1997)	(1993)	(1986)
MIN	0.006	0.010	0.032	0.000	0.000	1.21	1.11	1.05	0.12	0.000	0.000	0.000
(WY)	(1982)	(1982)	(1982)	(1982)	(1989)	(1991)	(1991)	(1981)	(1992)	(1988)	(1985)	(1981)

06336600 BEAVER CREEK NEAR TROTTERS, ND—Continued

SUMMARY STATISTICS

WATER YEARS 1978 - 2003

ANNUAL MEAN	a33.3	
HIGHEST ANNUAL MEAN	a79.7	1978
LOWEST ANNUAL MEAN	a2.77	1981
HIGHEST DAILY MEAN	2,500	Mar 22, 1978
LOWEST DAILY MEAN	0.00	Aug 1, 1981
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 10, 1981
MAXIMUM PEAK FLOW	2,720	Mar 29, 1978
MAXIMUM PEAK STAGE	b19.27	Mar 22, 1978
ANNUAL RUNOFF (AC-FT)	a24,110	
10 PERCENT EXCEEDS	51	
50 PERCENT EXCEEDS	2.8	
90 PERCENT EXCEEDS	0.03	

a Based on complete water years only (1978-83)

b Backwater from ice

e Estimated

LITTLE MISSOURI RIVER BASIN

06336600 BEAVER CREEK NEAR TROTTERS, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
FEB 04...	--	--	--	--	--	--
MAR 12...	--	--	--	--	--	--
15...	20	70	<0.10	<1	2	280
20...	--	--	--	--	--	--
27...	--	--	--	--	--	--
APR 23...	--	--	--	--	--	--
JUN 04...	--	--	--	--	--	--
JUL 08...	60	<10	<0.20	4	<1	1,400
AUG 20...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND

LOCATION.--Lat 47°35'45", long 103°15'45", in SE¹₄SE¹₄NW¹₄ sec.35, T.148 N., R.99 W., McKenzie County, Hydrologic Unit 10110205, 0.8 mi upstream from U.S. Highway 85 crossing, 17 mi upstream from Cherry Creek, and 17.5 mi south of Watford City.

DRAINAGE AREA.--8,310 mi², approximately.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS (WATER YEARS).--WSP 926: 1935. WSP 1270: 1943.

GAGE.--Water-stage recorder. Datum of gage is 1,929.03 ft above National Geodetic Vertical Datum of 1929. From Oct. 2, 1959, to June 17, 1963, and Nov. 28, 1964, to Sept. 30, 1990, water-stage recorder at site at U.S. Highway 85 crossing, 0.8 mi downstream. From June 18, 1963, to Nov. 28, 1964, at site 0.6 mi downstream at present datum. See WSP 1729 or 1917 for history of changes prior to Oct. 2, 1959.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.72	7.6	e25	e7.0	e0.74	e0.55	e630	87	85	277	22	17
2	1.4	6.5	e25	e5.5	e0.74	e0.54	527	85	86	217	23	15
3	1.1	5.5	e26	e4.2	e0.73	e0.53	463	82	86	216	20	16
4	0.90	6.2	e25	e3.5	e0.72	e0.53	412	82	86	153	20	16
5	1.4	6.8	e27	e3.0	e0.71	e0.52	410	98	93	176	16	16
6	1.1	11	e25	e2.8	e0.70	e0.51	369	176	137	119	16	15
7	1.3	14	e26	e2.5	e0.69	e0.50	344	177	114	83	16	16
8	0.99	12	e28	e2.2	e0.69	e0.48	316	160	105	65	15	20
9	1.1	17	e28	e1.6	e0.68	e0.47	286	195	112	130	199	14
10	1.1	29	e26	e1.4	e0.67	e0.45	262	265	121	84	164	15
11	0.70	19	e27	e1.3	e0.66	e0.45	242	385	165	395	73	17
12	0.71	22	e27	e1.2	e0.65	e0.47	224	396	202	234	38	15
13	1.3	21	e26	e1.2	e0.64	e1.0	208	390	219	130	21	52
14	e1.2	18	e26	e1.1	e0.63	e100	188	597	228	85	15	216
15	1.1	19	e25	e1.1	e0.61	e500	169	472	280	60	13	401
16	1.3	22	e21	e1.0	e0.60	e3,500	169	363	228	44	14	426
17	1.5	22	e19	e0.94	e0.59	e8,000	178	289	200	39	11	371
18	1.6	26	e17	e0.93	e0.57	e6,500	167	230	137	36	11	229
19	1.7	24	e16	e0.88	e0.55	e4,000	161	201	118	27	11	156
20	2.0	23	e14	e0.85	e0.56	e3,100	158	190	103	20	8.4	111
21	2.8	24	e12	e0.84	e0.55	e2,750	167	167	87	132	11	125
22	3.9	23	e11	e0.83	e0.57	e2,420	153	151	105	138	61	117
23	3.3	28	e10	e0.82	e0.56	e2,170	135	135	117	64	92	96
24	4.6	14	e11	e0.81	e0.57	e1,970	171	118	146	85	46	70
25	4.2	19	e11	e0.81	e0.56	e1,750	160	105	308	74	27	57
26	6.2	22	e11	e0.81	e0.56	e1,530	127	108	365	48	23	50
27	6.6	22	e11	e0.81	e0.57	e1,450	110	104	279	40	22	48
28	8.6	21	e10	e0.80	e0.56	e1,300	100	109	165	35	19	41
29	12	25	e9.6	e0.78	---	e1,000	98	101	242	32	18	36
30	6.6	24	e8.9	e0.77	---	e880	94	85	311	25	18	34
31	9.6	---	e8.1	e0.76	---	e750	---	84	---	24	18	---
TOTAL	92.62	553.6	592.6	53.04	17.63	43,677.00	7,198	6,187	5,030	3,287	1,081.4	2,828
MEAN	2.99	18.5	19.1	1.71	0.63	1,409	240	200	168	106	34.9	94.3
MAX	12	29	28	7.0	0.74	8,000	630	597	365	395	199	426
MIN	0.70	5.5	8.1	0.76	0.55	0.45	94	82	85	20	8.4	14
AC-FT	184	1,100	1,180	105	35	86,630	14,280	12,270	9,980	6,520	2,140	5,610

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 2003, BY WATER YEAR (WY)

MEAN	160	63.5	18.0	11.6	259	1,849	1,432	737	1,049	510	218	162
MAX	2,364	509	138	121	3,023	10,220	12,170	4,302	5,646	2,759	1,405	1,174
(WY)	(1972)	(2001)	(1947)	(1983)	(1943)	(1972)	(1952)	(1975)	(1944)	(1993)	(1937)	(1941)
MIN	0.83	0.33	0.000	0.000	0.000	22.2	29.5	18.0	14.8	9.26	0.023	1.38
(WY)	(1989)	(1989)	(1989)	(1935)	(1935)	(1964)	(1981)	(1981)	(1988)	(1980)	(1988)	(1936)

LITTLE MISSOURI RIVER BASIN

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1935 - 2003	
ANNUAL TOTAL	37,073.33		70,597.89			
ANNUAL MEAN	102		193		540	
HIGHEST ANNUAL MEAN					1,637	1971
LOWEST ANNUAL MEAN					38.0	1988
HIGHEST DAILY MEAN	1,530	Jun 11	8,000	Mar 17	55,000	Mar 25, 1947
LOWEST DAILY MEAN	0.39	Feb 6	0.45	Mar 10	0.00	Jan 1, 1935
ANNUAL SEVEN-DAY MINIMUM	0.73	Feb 26	0.48	Mar 6	0.00	Jan 1, 1935
MAXIMUM PEAK FLOW			a8,000	Mar 17	110,000	Mar 25, 1947
MAXIMUM PEAK STAGE			(b)		24.00	Mar 25, 1947
ANNUAL RUNOFF (AC-FT)	73,530		140,000		391,000	
10 PERCENT EXCEEDS	332		313		1,180	
50 PERCENT EXCEEDS	24		25		73	
90 PERCENT EXCEEDS	1.4		0.71		0.59	

a About
b Unknown
e Estimated

LITTLE MISSOURI RIVER BASIN

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 10...	--	--	--	--	--	--
NOV 26...	--	--	--	--	--	--
JAN 07...	--	--	--	--	--	--
MAR 17...	--	--	--	--	--	--
MAR 21...	--	--	--	--	--	--
MAY 07...	40	30	<0.10	8	5	570
JUN 18...	--	--	--	--	--	--
JUL 29...	60	<10	<0.20	9	5	490
AUG 20...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

06338000 LAKE SAKAKAWEA NEAR RIVERDALE, ND

LOCATION.--Lat 47°30'10", long 101°25'50", in S¹/₂ sec.31, T.147 N., R.84 W., Mercer County, Hydrologic Unit 10110101, in control structure of Garrison Dam, 2.5 mi west of Riverdale, 14 mi upstream from Knife River, and at mile 1,389.9.

DRAINAGE AREA.--181,400 mi², approximately.

MONTHEND-ELEVATION AND CONTENTS RECORDS

PERIOD OF RECORD.--October 1953 to current year. Prior to October 1966, published as Garrison Reservoir near Riverdale.

REVISED RECORDS.--WSP 1559: 1957(M).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by earth-ll dam; storage began in November 1953. Maximum capacity, 24,200,000 acre-ft below elevation 1,854.0 ft, top of 29-ft gates. Normal maximum, 22,700,000 acre-ft below elevation 1,850.0 ft, of which about 4,300,000 acre-ft is designated for flood control. Elevation of crest of spillway, 1,825.0 ft, surmounted by radial gates. Inactive storage, 5,000,000 acre-ft below elevation 1,775.0 ft. Dead storage, zero at elevation 1,672.0 ft. Snake Creek arm of the reservoir has connecting gate to main reservoir, with sill at elevation 1,810 ft. Figures herein represent total contents.

COOPERATION.--Records furnished by the U.S. Army Corps of Engineers. Elevations are observed elevations at midnight on the last day of each month. Contents are computed based on reservoir in o w, reservoir out o w, evaporation, and rainfall; and are adjusted for wind effect.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 24,368,000 acre-ft, July 25, 1975, elevation, 1,854.6 ft; minimum since first reaching normal maximum level in July of 1969, 12,155,000 acre-ft, May 10, 1991, adjusted for wind effect; minimum elevation, 1,815.0 ft, May 14, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 15,228,000 acre-ft, Oct. 1, adjusted for wind effect, elevation, 1,827.6 ft; maximum elevation, 1,827.8 ft, Oct. 3; minimum contents, 12,962,000 acre-ft, Mar. 15, elevation, 1,818.8.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 -----	1,827.5	15,239,000	--
Oct. 31 -----	1,826.6	14,988,000	-251,000
Nov. 30 -----	1,824.6	14,442,000	-546,000
Dec. 31 -----	1,822.5	13,917,000	-525,000
CAL YR 2002	--	--	-1,779,000
Jan. 31 -----	1,821.1	13,553,000	-364,000
Feb. 28 -----	1,819.7	13,182,000	-371,000
Mar. 31 -----	1,822.4	13,858,000	+676,000
Apr. 30 -----	1,821.7	13,695,000	-163,000
May 31 -----	1,822.6	13,914,000	+219,000
June 30 -----	1,827.0	15,101,000	+1,187,000
July 31 -----	1,826.1	14,857,000	-244,000
Aug. 31 -----	1,822.9	14,042,000	-815,000
Sept. 30 -----	1,820.9	13,512,000	-530,000
WTR YR 2003	--	--	-1,727,000

MISSOURI RIVER MAIN STEM

06338490 MISSOURI RIVER AT GARRISON DAM, ND

LOCATION.--Lat 47°30'08", long 101°25'50", in S¹₂ sec.31, T.147 N., R.84 W., Mercer County, Hydrologic Unit 10130101, in control structure of Garrison Dam, 2.5 mi west of Riverdale, 14 mi upstream from Knife River, and at mile 1,389.9.

DRAINAGE AREA.--181,400 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Flow meter and gate readings.

REMARKS.--Records good. Many diversions above station. Flow regulated by Garrison Dam. Prior to October 1969 records were obtained at a site 9.1 mi downstream. Discharges at the downstream site were generally about 7 percent greater than those furnished by the U.S. Army Corps of Engineers for the present site.

COOPERATION.--Records furnished by the U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13,400	14,200	20,100	19,500	19,600	22,000	13,800	16,400	21,100	21,400	21,500	21,400
2	13,900	16,100	20,300	18,500	20,300	22,200	15,900	16,500	21,200	21,400	21,300	21,300
3	14,200	16,100	20,100	18,200	20,600	22,000	18,100	15,900	21,100	21,300	21,300	19,500
4	14,200	16,600	19,900	18,300	20,600	21,200	17,800	16,400	21,300	21,100	21,400	19,400
5	14,200	18,100	19,800	17,700	21,000	21,300	17,800	16,200	21,200	21,500	20,900	19,600
6	14,400	18,100	20,100	17,900	21,400	21,300	18,410	16,300	21,100	21,300	21,100	19,100
7	14,000	18,100	20,000	17,400	21,800	20,200	18,000	16,300	21,300	21,300	21,400	19,100
8	14,100	18,100	20,600	17,700	22,000	20,100	17,600	16,100	21,300	21,200	21,200	19,200
9	13,800	17,700	20,200	17,400	22,600	20,000	17,700	16,500	21,300	21,500	21,100	19,200
10	13,800	18,200	20,100	18,300	22,500	19,100	17,600	16,400	21,500	21,400	21,000	18,800
11	13,600	17,800	20,400	18,800	22,800	19,600	17,600	16,400	21,300	21,500	20,800	19,100
12	13,800	17,700	20,500	18,300	22,800	19,300	19,400	16,300	21,200	21,300	21,000	18,800
13	13,900	17,700	20,400	18,200	23,100	18,100	19,400	16,300	21,300	21,000	21,000	19,700
14	13,700	17,700	19,900	17,800	23,200	18,100	19,400	16,700	21,500	21,200	20,900	19,800
15	14,000	18,000	19,800	18,200	22,700	18,000	19,600	16,700	21,200	21,300	20,900	16,700
16	14,200	18,100	20,131	18,200	22,900	16,900	19,500	16,600	21,600	21,500	20,900	14,300
17	14,000	17,800	19,900	18,300	22,900	16,800	19,400	21,300	21,100	21,700	20,900	14,100
18	13,700	17,800	19,600	18,500	23,000	15,600	19,500	21,200	21,500	21,700	21,100	14,100
19	13,800	18,000	20,000	18,500	22,800	15,500	19,600	21,100	21,500	21,600	21,200	14,100
20	14,000	18,200	19,900	18,900	22,800	14,700	19,800	21,100	21,300	21,700	21,000	14,800
21	13,700	17,800	19,800	18,700	23,300	15,100	19,700	21,400	21,100	21,600	21,000	14,500
22	13,700	17,800	19,800	18,100	22,800	14,100	20,100	20,900	21,000	21,600	21,000	14,600
23	14,300	18,000	20,200	18,000	23,100	13,900	19,300	21,200	21,200	21,700	21,100	14,000
24	13,600	18,400	20,000	18,800	23,500	13,900	19,700	21,300	21,200	21,300	21,200	14,700
25	13,000	18,000	18,700	19,000	22,700	13,900	19,900	21,200	21,300	21,400	21,100	14,300
26	13,000	19,900	18,300	18,400	23,000	13,800	19,500	21,300	21,100	21,700	20,800	14,100
27	12,820	20,000	17,900	17,900	22,600	14,300	19,400	21,300	21,000	21,700	21,100	13,900
28	13,700	20,000	18,000	19,000	22,800	14,100	19,400	21,300	21,400	21,700	21,000	14,600
29	14,400	20,000	18,000	19,800	---	13,900	19,600	21,300	21,400	21,500	20,900	14,500
30	14,200	20,000	18,000	19,400	---	14,100	16,500	21,400	21,300	21,500	21,300	14,200
31	14,200	---	18,300	19,600	---	14,100	---	21,200	---	21,300	21,200	---
TOTAL	429,320	540,000	608,731	571,300	625,200	537,200	559,010	580,500	637,900	664,900	653,600	505,500
MEAN	13,850	18,000	19,640	18,430	22,330	17,330	18,630	18,730	21,260	21,450	21,080	16,850
MAX	14,400	20,000	20,600	19,800	23,500	22,200	20,100	21,400	21,600	21,700	21,500	21,400
MIN	12,800	14,200	17,900	17,400	19,600	13,800	13,800	15,900	21,000	21,000	20,800	13,900
AC-FT	851,600	1,071,000	1,207,000	1,133,000	1,240,000	1,066,000	1,109,000	1,151,000	1,265,000	1,319,000	1,296,000	1,003,000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2003, BY WATER YEAR (WY)

MEAN	19,490	20,760	20,800	23,390	24,640	19,910	19,350	21,910	24,060	25,360	24,750	20,980
MAX	49,450	42,350	29,530	30,500	31,500	28,210	37,500	38,490	42,430	61,800	54,130	46,570
(WY)	(1998)	(1998)	(1970)	(1979)	(1976)	(1983)	(1972)	(1972)	(1997)	(1975)	(1975)	(1997)
MIN	9,945	10,110	12,900	13,070	13,230	10,370	10,280	10,560	11,080	13,220	13,960	10,990
(WY)	(1994)	(1993)	(2002)	(2002)	(2002)	(1993)	(1993)	(1986)	(1995)	(1995)	(2001)	(1990)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1970 - 2003

ANNUAL TOTAL	5,914,151	6,913,161	
ANNUAL MEAN	16,200	18,940	
HIGHEST ANNUAL MEAN			22,110
LOWEST ANNUAL MEAN			33,000
HIGHEST DAILY MEAN	21,700	Aug 30	23,500
LOWEST DAILY MEAN	10,100	May 19	12,800
ANNUAL SEVEN-DAY MINIMUM	10,200	May 18	13,400
ANNUAL RUNOFF (AC-FT)	11,730,000		13,710,000
10 PERCENT EXCEEDS	21,000		21,500
50 PERCENT EXCEEDS	14,200		19,600
90 PERCENT EXCEEDS	11,100		14,100
			16,020,000
			31,600
			20,600
			12,900
			65,200
			4,100
			7,960
			Mar 22, 1997
			Jul 25, 1975
			Mar 25, 1997
			Mar 22, 1997

06338490 MISSOURI RIVER AT GARRISON DAM, ND—Continued
(National Stream-Quality Accounting Network Station)

WATER-QUALITY RECORDS

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

REMARKS.--Quality assurance samples also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, wat unfltrd lab, Hach 2100AN NTU (99872)	UV absorbance, 254 nm, wat flt units /cm (50624)	UV absorbance, 280 nm, wat flt units /cm (61726)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specific conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specific conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
NOV 13...	1200	22,000	1.4	0.067	0.045	710	7.2	63	8.4	8.3	648	670	9.0
MAR 26...	1130	11,800	1.2	0.066	0.045	700	14.7	112	--e	8.1	639	687	4.5
MAY 22...	1000	19,800	1.7	0.063	0.043	714	12.3	106	7.7	8.1	613	667	13.0
JUN 24...	1000	19,000	1.4	0.064	0.043	710	11.1	105	7.7	8.2	603	655	17.0
AUG 01...	1000	17,500	1.1	0.067	0.046	721	8.4	83	8.0	8.1	599	654	26.0
AUG 28...	0940	16,000	3.3	0.070	0.049	712	7.2	73	7.8	8.2	588	637	22.0

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	Alkalinity, wat flt fxd end lab, mg/L as CaCO3 (29801)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Bicarbonate, wat flt incrm. titr., field, mg/L (00453)	Carbonate, wat flt incrm. titr., field, mg/L (00452)	Chloride, water, fltrd, mg/L (00940)
NOV 13...	6.6	210	50.6	20.8	3.89	2	60.1	38	E165	158	186	--	8.99
MAR 26...	0.6	210	51.8	20.3	3.81	2	53.6	35	168	158	192	--	7.91
MAY 22...	6.2	220	53.0	20.5	3.93	2	58.7	37	163	147	179	--	9.34
JUN 24...	9.5	210	51.2	20.6	4.03	2	54.4	35	163	164	--	--	9.58
AUG 01...	12.1	210	51.7	20.2	3.85	2	54.7	35	161	163	198	--	9.65
AUG 28...	13.0	220	53.3	20.9	4.37	2	53.3	34	166	162	196	0.0	9.59

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, fltrd, mg/L (00607)
NOV 13...	0.56	6.03	160	403	25,500	429	0.15	1.2	<0.015	--	0.030	<0.002	--
MAR 26...	0.58	6.33	159	399	13,500	425	0.23	0.22	0.029	--	0.044	E.002	0.20
MAY 22...	0.6	6.55	149	391	21,300	398	0.16	0.18	E.008	--	0.050	E.002	--
JUN 24...	0.7	6.75	150	397	20,600	401	0.20	0.24	0.021	--	0.059	<0.002	0.18
AUG 01...	0.7	6.93	150	396	19,100	404	0.22	0.20	E.008	0.10	0.108	0.013	--
AUG 28...	0.6	7.34	147	395	17,400	402	0.21	0.22	<0.015	--	0.165	<0.002	--

06338490 MISSOURI RIVER AT GARRISON DAM, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Organic nitrogen, water, unfltrd mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Organic carbon, suspdnt total, mg/L (00689)	Organic carbon, water, fltrd, mg/L (00681)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Arsenic water, fltrd, ug/L (01000)	Boron, water, fltrd, ug/L (01020)	Iron, water, fltrd, ug/L (01046)	Lithium water, fltrd, ug/L (01130)
NOV 13...	--	<0.007	<0.004	0.005	0.18	1.2	0.2	2.9	10.1	2.0	122	<10	45.5
MAR 26...	0.19	<0.007	0.005	0.005	0.27	0.26	<0.1	2.9	0.9	2.5	128	<10	45.4
MAY 22...	--	<0.007	E.003	0.024	0.21	0.23	0.2	2.7	1.8	2.2	141	<10	49.4
JUN 24...	0.22	<0.007	E.003	0.006	0.26	0.30	0.2	2.7	0.8*c	2.3	142	<8	50.8
AUG 01...	--	<0.007	0.005	0.006	0.33	0.31	0.1	3.0	0.8c	2.1	130	<8	48.2
AUG 28...	--	<0.007	E.002n	0.010	0.37	0.39	0.2	2.8	0.5c	2.2	128	<8	47.5

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)	Vanadium, water, fltrd, ug/L (01085)	2,6-Di-ethyl-aniline water fltrd 0.7u GF ug/L (82660)	CIAT, water, fltrd, ug/L (04040)	Acetochlor, water, fltrd, ug/L (49260)	Alachlor, water, fltrd, ug/L (46342)	alpha-HCH, water, fltrd, ug/L (34253)	Atrazine, water, fltrd, ug/L (39632)	Azin-phos-methyl, water, fltrd 0.7u GF ug/L (82686)	Ben-flur-alin, water, fltrd 0.7u GF ug/L (82673)	Butyl-ate, water, fltrd, ug/L (04028)	Car-baryl, water, fltrd 0.7u GF ug/L (82680)
NOV 13...	1.0	501	1.0	<0.006	E.004	<0.006	<0.004	<0.005	0.010	<0.050	<0.010	<0.002	<0.041
MAR 26...	1.1	504	3.1	<0.006	E.003	<0.006	<0.004	<0.005	0.009	<0.050	<0.010	<0.002	<0.041
MAY 22...	0.7	515	2.1	<0.006	<0.006	<0.006	<0.004	<0.005	<0.007	<0.050	<0.010	<0.002	<0.041
JUN 24...	0.9	502	1.4	<0.006	<0.006	<0.006	<0.004	<0.005	0.007	<0.050	<0.010	<0.002	<0.041
AUG 01...	0.8	510	1.1	<0.006	<0.006	<0.006	<0.004	<0.005	E.007n	<0.050	<0.010	<0.002	<0.041
AUG 28...	0.8	498	1.6	<0.006	<0.006	<0.006	<0.004	<0.005	0.007	<0.050	<0.010	<0.002	<0.041

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Carbo-furan, water, fltrd 0.7u GF ug/L (82674)	Chlor-pyrifos water, fltrd, ug/L (38933)	cis-Per-methrin water fltrd 0.7u GF ug/L (82687)	Cyana-zine, water, fltrd, ug/L (04041)	DCPA, water fltrd 0.7u GF ug/L (82682)	Diazi-non, water, fltrd, ug/L (39572)	Diel-drin, water, fltrd, ug/L (39381)	Disul-foton, water, fltrd 0.7u GF ug/L (82677)	EPTC, water, fltrd 0.7u GF ug/L (82668)	Ethal-flur-alin, water, fltrd 0.7u GF ug/L (82663)	Etho-prop, water, fltrd 0.7u GF ug/L (82672)	Fonofos water, fltrd, ug/L (04095)	Lindane water, fltrd, ug/L (39341)
NOV 13...	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	<0.005	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004
MAR 26...	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	<0.005	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004
MAY 22...	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	<0.005	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004
JUN 24...	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	<0.005	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004
AUG 01...	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	<0.005	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004
AUG 28...	<0.020	<0.005	<0.006	<0.018	<0.003	<0.005	<0.005	<0.02	<0.002	<0.009	<0.005	<0.003	<0.004

06338490 MISSOURI RIVER AT GARRISON DAM, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Linuron water fltrd 0.7u GF ug/L (82666)	Malathion, water, fltrd, ug/L (39532)	Methyl para- thion, water, fltrd 0.7u GF ug/L (82667)	Metola- chlor, water, fltrd, ug/L (39415)	Metri- buzin, water, fltrd, ug/L (82630)	Moli- nate, water, fltrd 0.7u GF ug/L (82671)	Naprop- amide, water, fltrd 0.7u GF ug/L (82684)	p,p'- DDE, water, fltrd, ug/L (34653)	Para- thion, water, fltrd, ug/L (39542)	Peb- ulate, water, fltrd 0.7u GF ug/L (82669)	Pendi- meth- alin, water, fltrd 0.7u GF ug/L (82683)	Phorate water fltrd 0.7u GF ug/L (82664)	Pron- amide, water, fltrd 0.7u GF ug/L (82676)
NOV 13...	<0.035	<0.027	<0.006	<0.013	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011	<0.004
MAR 26...	<0.035	<0.027	<0.006	E.004n	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011	<0.004
MAY 22...	<0.035	<0.027	<0.006	<0.013	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011	<0.004
JUN 24...	<0.035	<0.027	<0.006	<0.013	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011	<0.004
AUG 01...	<0.035	<0.027	<0.006	<0.013	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011	<0.004
28...	<0.035	<0.027	<0.006	<0.013	<0.006	<0.002	<0.007	<0.003	<0.010	<0.004	<0.022	<0.011	<0.004

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Propanil, water, fltrd, ug/L (04024)	Propanil, water, fltrd 0.7u GF ug/L (82679)	Propar- gite, water, fltrd 0.7u GF ug/L (82685)	Sima- zine, water, fltrd, ug/L (04035)	Tebu- thiuron water fltrd 0.7u GF ug/L (82670)	Terba- cil, water, fltrd 0.7u GF ug/L (82665)	Terbu- fos, water, fltrd 0.7u GF ug/L (82675)	Thio- bencarb water fltrd 0.7u GF ug/L (82681)	Tri- allate, water, fltrd 0.7u GF ug/L (82678)	Tri- flur- alin, water, fltrd 0.7u GF ug/L (82661)	Suspnd. sedi- ment, sieve diametr percent <.063mm (70331)	Sus- pended sedi- ment concen- tration mg/L (80154)	Sus- pended sedi- ment load, tons/d (80155)
NOV 13...	<0.010	<0.011	<0.02	<0.005	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009	--	--b	--
MAR 26...	<0.010	<0.011	<0.02	<0.005	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009	100	0.0	0.00
MAY 22...	<0.010	<0.011	<0.02	<0.005	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009	97	2	107
JUN 24...	<0.010	<0.011	<0.02	<0.005	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009	100	1	51
AUG 01...	<0.010	<0.011	<0.02	<0.005	<0.02	<0.034	<0.02	<0.005	0.003	<0.009	98	2	94
28...	<0.010	<0.011	<0.02	<0.005	<0.02	<0.034	<0.02	<0.005	<0.002	<0.009	99	2	87

Remark codes used in this table:

< -- Less than

E -- Estimated value

Value qualifier codes used in this table:

* -- Sample was warm when received

c -- See laboratory comment

n -- Below the NDV

Null value qualifier codes used in this table:

b -- Sample broken/spilled in shipment

e -- Required equipment not functional/avail

MISSOURI RIVER MAIN STEM

06338490 MISSOURI RIVER AT GARRISON DAM, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Dis- solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conduc- tance, wat un- f uS/cm 25 degC (00095)	Temper- ature, water, deg C (00010)	Loca- tion in X-sect. looking dwnstrm ft from l bank (00009)
NOV						
13...	1201	7.2	8.3	671	6.5	300
13...	1202	7.2	8.4	670	6.5	450
13...	1203	7.2	8.4	671	6.6	150
MAR						
26...	1131	14.7	7.2	687	0.6	187
26...	1132	14.7	7.4	690	0.7	329
26...	1133	14.5	7.5	620	0.7	66.0
MAY						
22...	1001	12.3	7.7	667	6.2	240
22...	1002	12.4	7.7	667	6.0	360
22...	1003	12.4	7.8	667	6.5	120
JUN						
24...	1001	11.1	7.7	655	9.5	100
24...	1002	11.0	7.5	654	9.9	200
24...	1003	10.8	7.8	655	9.6	300
AUG						
01...	1011	8.5	8.1	653	12.2	92.0
01...	1012	8.4	8.0	654	12.1	216
01...	1013	8.3	8.1	653	12.0	330
28...	0951	7.2	7.8	636	13.4	98.0
28...	0952	7.4	7.8	637	13.1	203
28...	0953	7.1	7.9	638	13.3	312

06339010 MISSOURI RIVER ABOVE STANTON, ND

LOCATION.--Lat 47°21'45", long 101°21'25", SE¹₄NE¹₄SE¹₄ sec.22, T.145 N., R.84 W., McLean County, Hydrologic Unit 10130101, on left bank 9 mi south of Riverdale and at mile 1,379.

DRAINAGE AREA.--181,400 mi², approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--October 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,600.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Stage regulated completely by releases from Garrison Dam (station 06338490) 13 mi upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 73.34 ft, Jan. 13, 2000; backwater from ice, may have been higher during subsequent period of missing winter record; minimum daily recorded, 62.07 ft, Sept. 18, 1991.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63.91	64.05	65.24	65.09	66.83	66.82	64.25	64.59	65.28	---	---	---
2	63.88	64.35	65.25	65.15	66.66	67.23	64.11	64.57	65.30	---	---	---
3	64.05	64.44	65.17	64.74	67.02	67.59	64.75	64.52	65.32	---	---	---
4	64.03	64.59	65.14	65.04	66.84	68.84	64.72	64.51	65.27	---	---	---
5	64.04	64.81	65.17	64.80	66.97	68.41	64.70	64.57	65.34	---	---	---
6	64.07	64.89	65.17	64.88	67.14	68.54	64.80	64.50	65.30	---	---	---
7	64.02	64.84	65.30	64.74	67.17	68.19	64.90	64.53	65.27	---	---	---
8	64.02	64.80	65.23	64.88	66.96	67.89	64.79	64.51	65.31	---	---	---
9	63.92	64.76	65.24	64.77	67.30	67.94	64.76	64.52	65.34	---	---	---
10	63.96	64.83	65.19	65.42	67.26	67.81	64.73	64.52	65.37	---	---	---
11	63.92	64.79	65.45	65.80	67.06	67.69	64.78	64.55	65.35	---	---	---
12	63.92	64.82	65.24	66.36	67.29	67.47	65.06	64.50	65.32	---	---	---
13	63.86	64.78	65.27	66.42	66.96	67.02	65.13	64.50	65.36	---	---	---
14	64.08	64.67	65.15	66.24	67.17	66.23	65.03	64.59	65.39	---	---	---
15	64.00	64.75	65.17	66.84	67.56	65.51	65.15	64.81	65.32	---	---	---
16	64.06	64.75	65.22	67.36	67.67	65.19	65.14	64.41	65.40	---	---	---
17	64.04	64.72	65.14	67.06	66.68	65.19	65.13	65.24	65.30	---	---	---
18	63.94	64.79	65.10	67.09	66.90	64.89	65.16	65.45	65.37	---	---	---
19	64.00	64.86	65.47	67.38	66.70	64.61	65.16	65.35	65.37	---	---	---
20	63.93	64.92	65.41	67.49	66.50	64.43	65.18	65.39	65.39	---	---	---
21	64.06	64.77	65.44	67.32	66.49	64.42	65.17	65.39	65.37	---	---	---
22	63.95	64.80	65.37	67.36	66.76	64.25	65.27	65.17	65.28	---	---	---
23	64.03	64.81	65.44	67.19	66.71	64.16	65.23	65.37	65.29	---	---	---
24	64.06	64.84	65.44	67.55	67.31	64.09	65.18	65.32	65.33	---	---	---
25	64.04	64.88	65.36	67.25	67.79	64.06	65.29	65.27	65.32	---	---	---
26	64.06	65.03	65.03	67.52	67.41	64.07	65.12	65.35	65.29	---	---	---
27	63.99	65.24	65.09	67.57	67.28	64.06	65.08	65.33	65.27	---	---	---
28	64.02	65.05	65.08	67.24	67.04	64.09	65.16	65.28	65.33	---	---	---
29	64.13	65.25	64.78	67.46	---	64.04	65.08	65.30	65.36	---	---	---
30	64.07	65.22	64.71	67.65	---	64.09	64.71	65.29	65.23	---	---	---
31	64.03	---	64.92	67.05	---	64.11	---	65.32	---	---	---	---
MEAN	64.00	64.80	65.21	66.41	67.05	65.90	64.96	64.92	65.32	---	---	---
MAX	64.13	65.25	65.47	67.65	67.79	68.84	65.29	65.45	65.40	---	---	---
MIN	63.86	64.05	64.71	64.74	66.49	64.04	64.11	64.41	65.23	---	---	---

06339100 KNIFE RIVER AT MANNING, ND

LOCATION.--Lat 47°14'10", long 102°46'10", in SE¹₄NW¹₄ sec.6, T.143 N., R.95 W., Dunn County, Hydrologic Unit 10130201, on left bank 50 ft downstream from bridge on State Highway 22 and 0.4 mi north of Manning.

DRAINAGE AREA.--205 mi², approximately.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 2,156.55 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.37	1.5	1.7	e1.1	e0.97	e0.88	8.8	4.0	2.4	e2.0	0.50	0.18
2	0.44	1.4	1.7	e1.3	e0.97	e0.86	8.2	4.0	2.5	e1.9	0.46	0.24
3	0.55	1.4	1.6	e1.0	e0.97	e0.84	7.9	4.0	2.5	e1.8	0.41	0.29
4	0.61	1.4	1.5	e1.4	e0.96	e0.82	7.1	3.9	2.8	e1.7	0.41	0.31
5	0.58	1.4	1.2	e1.6	e0.96	e0.79	7.5	4.7	3.0	e1.7	0.43	0.36
6	0.66	1.4	1.2	e1.6	e0.95	e0.77	7.1	6.6	2.7	e1.7	0.40	0.31
7	0.69	1.5	1.2	e1.6	e0.94	e0.74	7.9	7.9	2.5	1.6	0.36	0.29
8	0.77	1.6	1.3	e1.6	e0.94	e0.72	8.7	11	2.5	e1.7	0.34	0.25
9	0.69	1.7	1.2	e1.7	e0.94	e0.71	11	15	2.7	1.9	0.29	0.21
10	0.75	1.6	e1.1	e1.3	e0.93	e0.70	10	19	3.0	2.0	0.26	0.68
11	0.96	1.5	e1.1	e1.1	e0.93	e0.71	8.6	24	3.2	5.0	0.26	1.4
12	0.94	1.5	e1.1	e1.0	e0.93	e0.73	8.3	20	3.4	6.3	0.22	0.70
13	1.1	1.6	e1.0	e0.99	e0.94	e0.76	7.7	15	3.2	3.8	0.21	0.70
14	1.0	1.9	e1.1	e0.98	e0.94	e450	7.1	13	3.2	2.6	0.19	0.63
15	0.88	2.0	e1.3	e0.98	e0.96	e1,100	6.5	11	4.2	2.1	0.19	0.67
16	1.0	2.1	e1.3	e0.97	e0.96	e1,050	6.8	8.9	11	1.6	0.17	0.40
17	1.1	1.8	e1.4	e0.97	e0.96	e550	7.1	7.5	13	1.3	0.16	0.31
18	1.0	1.8	e1.5	e0.96	e0.96	e3,500	7.0	7.3	7.4	1.2	0.15	0.18
19	0.99	1.9	e1.4	e0.95	e0.95	e1,030	7.0	7.4	4.3	0.97	0.14	e0.14
20	1.2	1.9	e1.4	e0.94	e0.93	e90	6.8	6.2	3.1	0.87	0.13	e0.10
21	1.3	1.8	e1.5	e0.92	e0.93	e60	6.7	5.1	2.5	0.80	e0.12	0.12
22	1.4	1.7	e1.5	e0.91	e0.92	e50	6.0	4.4	2.1	0.72	0.14	0.17
23	1.9	1.8	e1.3	e0.91	e0.92	e40	5.7	4.5	1.9	0.64	0.11	0.18
24	2.8	1.8	e1.4	e0.92	e0.92	e30	5.3	3.9	2.0	0.62	0.12	0.17
25	1.9	1.8	e1.1	e0.93	e0.91	e25	5.0	3.4	2.2	0.68	0.12	0.16
26	1.6	1.6	e1.0	e0.94	e0.91	e20	4.8	3.2	2.3	0.94	0.13	0.16
27	1.6	1.6	e1.0	e0.94	e0.91	e15	4.6	2.9	2.3	0.72	0.13	0.27
28	1.6	1.6	e1.1	e0.95	e0.90	14	4.4	2.9	2.4	0.62	0.14	0.23
29	1.8	1.7	e1.3	e0.95	---	11	4.2	2.5	2.3	0.58	0.14	0.21
30	1.7	1.7	e1.4	e0.95	---	9.8	4.0	2.4	2.2	0.48	0.15	0.24
31	e1.6	---	e1.0	e0.95	---	9.0	---	2.3	---	0.45	0.15	---
TOTAL	35.48	50.0	39.9	34.31	26.31	8,063.83	207.8	237.9	104.8	50.99	7.13	10.26
MEAN	1.14	1.67	1.29	1.11	0.94	260	6.93	7.67	3.49	1.64	0.23	0.34
MAX	2.8	2.1	1.7	1.7	0.97	3,500	11	24	13	6.3	0.50	1.4
MIN	0.37	1.4	1.0	0.91	0.90	0.70	4.0	2.3	1.9	0.45	0.11	0.10
AC-FT	70	99	79	68	52	15,990	412	472	208	101	14	20

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2003, BY WATER YEAR (WY)

MEAN	3.85	1.87	1.37	3.06	16.1	88.9	48.1	15.3	16.8	11.8	2.82	3.99
MAX	54.1	8.43	3.39	30.5	89.5	399	485	104	91.5	100	32.6	68.5
(WY)	(1983)	(1999)	(1999)	(1974)	(1986)	(1972)	(1975)	(1970)	(1970)	(1997)	(1983)	(1978)
MIN	0.000	0.057	0.066	0.000	0.20	1.37	1.32	0.45	0.077	0.018	0.000	0.000
(WY)	(1991)	(1991)	(1991)	(1991)	(2001)	(1990)	(1990)	(1993)	(1992)	(1992)	(1988)	(1990)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1967 - 2003

ANNUAL TOTAL	2,944.09	8,868.71	
ANNUAL MEAN	8.07	24.3	17.9
HIGHEST ANNUAL MEAN			48.1 1975
LOWEST ANNUAL MEAN			0.90 1990
HIGHEST DAILY MEAN	540 Jun 11	3,500 Mar 18	3,500 Mar 21, 1997 and Mar 18, 2003
LOWEST DAILY MEAN	0.37 Oct 1	0.10 Sep 20	0.00 Sep 18, 1972
ANNUAL SEVEN-DAY MINIMUM	0.46 Sep 27	0.12 Aug 20	0.00 Aug 17, 1973
MAXIMUM PEAK FLOW		a3,800 Mar 18	a3,800 Mar 18, 2003
MAXIMUM PEAK STAGE		b17.63 Mar 18	b17.63 Mar 18, 2003
ANNUAL RUNOFF (AC-FT)	5,840	17,590	12,940
10 PERCENT EXCEEDS	11	8.0	20
50 PERCENT EXCEEDS	1.7	1.4	1.5
90 PERCENT EXCEEDS	0.70	0.26	0.14

a About
b Backwater from ice
e Estimated

06339100 KNIFE RIVER AT MANNING, ND—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 09...	1630	0.72	--	--	--	1,820	12.3	9.6	--	--	--	--	--
NOV 22...	1200	1.8	--	--	--	2,060	5.0	2.0	--	--	--	--	--
JAN 07...	1350	1.6	--	--	--	2,630	10.0	0.5	--	--	--	--	--
MAR 13...	1120	0.76	--	--	--	1,370	5.0	0.0	--	--	--	--	--
MAR 14...	1400	449	--	--	--	--	20.0	2.0	--	--	--	--	--
MAR 15...	1540	1,070	--	--	--	535	20.0	1.0	--	--	--	--	--
APR 01...	0930	9.0	7.6	8.0	991	1,010	-1.0	5.0	150	33.0	16.0	11.0	6
MAY 29...	1340	2.4	--	--	--	1,930	26.0	21.1	--	--	--	--	--
JUL 09...	1115	1.6	--	--	--	2,040	18.5	19.8	--	--	--	--	--
AUG 21...	0830	0.12	7.7	--e	2,270	2,290	15.5	20.5	230	37.9	32.1	9.90	14

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 22...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 14...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 15...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 01...	170	69	268	11.0	0.30	--	250	653	16.1	660	1.0	210	<1
MAY 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 21...	503	82	679	14.3	0.67	3.00	536	1,540	0.50	--	6.8	80	<1

KNIFE RIVER BASIN

06339100 KNIFE RIVER AT MANNING, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 09...	--	--	--	--	--	--
NOV 22...	--	--	--	--	--	--
JAN 07...	--	--	--	--	--	--
MAR 13...	--	--	--	--	--	--
14...	--	--	--	--	--	--
15...	--	--	--	--	--	--
APR 01...	10	100	<0.10	<1	<1	300
MAY 29...	--	--	--	--	--	--
JUL 09...	--	--	--	--	--	--
AUG 21...	50	<10	<0.20	4	2	550

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

06339500 KNIFE RIVER NEAR GOLDEN VALLEY, ND

LOCATION.--Lat 47°09'16", long 102°03'34", in NW¹₄NW¹₄ sec.2, T.142 N., R.90 W., Mercer County, Hydrologic Unit 10130201, on right bank 6 ft downstream from highway bridge, 4.5 mi downstream from Elm Creek, and 9 mi south of Golden Valley.

DRAINAGE AREA.--1,230 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1903 to November 1906, April 1907 to November 1915, April 1916 to October 1919, and October 1921 to September 1924 (published as "at Broncho" or "near Broncho"), and April 1943 to current year. Monthly discharge only for some periods published in WSP 1309.

REVISED RECORDS (WATER YEARS).--WSP 1006:0 Drainage area. WSP 1279: 1904, 1914-19(M), 1922-24(M), 1944.

GAGE.--Water-stage recorder. Datum of gage is 1,847.13 ft above National Geodetic Vertical Datum of 1929. See WSP 1729 or 1917 for history of changes prior to May 1, 1946.

REMARKS.--Records good except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e3.0	9.6	7.2	e5.0	e5.4	e5.1	e70	16	10	7.4	2.5	2.2
2	e2.3	9.1	7.1	e5.0	e5.3	e5.0	59	15	10	6.9	2.4	1.3
3	e2.2	9.0	6.5	e5.6	e5.1	e5.0	54	14	10	7.3	2.2	1.0
4	e2.0	9.0	5.9	6.0	e5.1	e4.9	52	14	8.9	8.2	2.4	1.4
5	e3.1	8.9	5.1	e6.4	e5.1	e4.8	46	15	8.2	7.9	2.4	1.4
6	3.5	8.8	5.1	e6.8	e5.1	e4.7	45	17	8.0	6.7	2.5	1.4
7	5.9	8.9	5.5	e7.0	e5.1	e4.6	43	17	8.3	6.0	2.6	1.5
8	3.3	8.9	5.6	e7.2	e5.1	e4.6	41	23	8.1	5.6	2.5	1.7
9	1.9	8.8	5.5	e7.4	e5.1	e4.6	40	41	8.6	6.1	2.7	1.8
10	2.9	8.9	5.5	e7.3	e5.1	e4.7	39	50	10	6.3	3.0	3.7
11	3.3	8.9	5.4	e7.2	e5.0	e4.7	38	91	14	5.9	3.2	8.9
12	3.7	8.9	5.6	e7.1	e5.0	e4.7	37	112	21	5.8	2.9	7.2
13	4.4	9.3	5.5	e7.0	e5.0	e4.8	39	123	15	4.8	2.6	9.6
14	4.9	9.9	5.6	e6.9	e5.0	e6.9	38	131	13	4.6	2.1	22
15	5.6	10	5.9	e6.8	e5.1	e517	34	115	12	4.4	1.6	20
16	5.5	10	6.0	e6.7	e5.1	e1,630	34	108	15	4.0	1.5	14
17	6.2	11	6.3	e6.5	e5.1	e2,400	34	86	35	3.8	1.4	10
18	6.8	10	6.8	e6.4	e5.1	e1,920	32	73	76	3.7	1.2	7.3
19	8.5	9.6	7.1	e6.2	e5.0	e1,430	30	61	107	6.3	1.2	5.6
20	7.4	9.4	7.0	e6.1	e5.0	e2,150	28	48	61	6.5	1.1	5.0
21	6.7	9.3	6.7	e5.9	e5.0	e1,610	29	41	43	5.2	0.92	4.1
22	8.0	11	e6.5	e5.8	e5.0	e975	30	37	33	4.6	0.87	5.3
23	8.2	10	e6.3	e5.6	e5.0	e450	29	32	26	3.9	0.88	6.6
24	8.0	7.4	e6.1	e5.5	e5.0	e250	28	29	19	3.5	0.83	5.3
25	8.3	7.9	5.7	e5.5	e5.1	226	30	24	17	3.4	0.89	4.6
26	8.5	7.4	5.3	e5.4	e5.1	233	28	21	14	3.2	0.67	4.4
27	9.1	7.1	e4.7	e5.5	e5.1	199	23	19	12	3.1	0.58	4.1
28	9.4	7.3	e5.1	e5.5	e5.1	176	21	17	11	3.0	0.46	4.4
29	11	7.7	5.7	e5.6	---	157	19	14	9.6	3.0	0.47	4.5
30	10	7.0	e5.9	e5.6	---	133	17	13	8.5	2.9	0.65	4.2
31	10	---	5.9	e5.5	---	e120	---	11	---	2.7	1.0	---
TOTAL	183.6	269.0	184.1	192.0	142.3	14,645.1	1,087	1,428	652.2	156.7	52.22	174.5
MEAN	5.92	8.97	5.94	6.19	5.08	472	36.2	46.1	21.7	5.05	1.68	5.82
MAX	11	11	7.2	7.4	5.4	2,400	70	131	107	8.2	3.2	22
MIN	1.9	7.0	4.7	5.0	5.0	4.6	17	11	8.0	2.7	0.46	1.0
AC-FT	364	534	365	381	282	29,050	2,160	2,830	1,290	311	104	346

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 2003, BY WATER YEAR (WY)

MEAN	16.3	11.2	7.23	8.87	41.0	345	296	87.1	138	47.7	33.3	14.8
MAX	245	69.7	23.0	140	299	1,729	2,448	1,031	1,193	255	725	97.5
(WY)	(1983)	(1983)	(1983)	(1974)	(1982)	(1972)	(1952)	(1970)	(1914)	(1969)	(1918)	(1978)
MIN	0.46	1.93	0.52	0.026	0.000	2.30	6.98	1.42	1.03	1.91	0.28	0.12
(WY)	(1993)	(1962)	(1962)	(1962)	(1959)	(1964)	(1981)	(1923)	(1961)	(1992)	(1959)	(1992)

KNIFE RIVER BASIN

06339500 KNIFE RIVER NEAR GOLDEN VALLEY, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1903 - 2003	
ANNUAL TOTAL	9,661.9		19,166.72			
ANNUAL MEAN	26.5		52.5		86.9	
HIGHEST ANNUAL MEAN					235	1982
LOWEST ANNUAL MEAN					5.38	1991
HIGHEST DAILY MEAN	1,210	Jun 12	2,400	Mar 17	10,300	Apr 17, 1950
LOWEST DAILY MEAN	1.9	Oct 9	0.46	Aug 28	0.00	Sep 6, 1905
ANNUAL SEVEN-DAY MINIMUM	2.3	Sep 17	0.65	Aug 24	0.00	Jan 22, 1959
MAXIMUM PEAK FLOW			a2,500	Mar 20	11,200	May 9, 1970
MAXIMUM PEAK STAGE			b16.74	Mar 16	c26.70	Mar 26, 1943
ANNUAL RUNOFF (AC-FT)	19,160		38,020		62,940	
10 PERCENT EXCEEDS	52		45		116	
50 PERCENT EXCEEDS	8.0		6.7		10	
90 PERCENT EXCEEDS	4.0		2.5		2.1	

- a About
- b Backwater from ice
- c From floodmark
- e Estimated

KNIFE RIVER BASIN

06339500 KNIFE RIVER NEAR GOLDEN VALLEY, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 09...	--	--	--	--	--	--
NOV 19...	--	--	--	--	--	--
JAN 16...	--	--	--	--	--	--
MAR 13...	--	--	--	--	--	--
17...	30	20	<0.10	<1	<1	230
24...	--	--	--	--	--	--
APR 23...	--	--	--	--	--	--
JUN 13...	--	--	--	--	--	--
JUL 16...	40	<10	<0.20	5	1	710
SEP 03...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

06340000 SPRING CREEK AT ZAP, ND

LOCATION.--Lat 47°17'10", long 101°55'31", in SE¹₄SE¹₄SW¹₄ sec.14, T.144 N., R.89 W., Mercer County, Hydrologic Unit 10130201, on left bank 250 ft downstream from Burlington Northern Railway bridge in Zap and 9 mi upstream from mouth.

DRAINAGE AREA.--549 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March to September 1924, October 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,819.39 ft above National Geodetic Vertical Datum of 1929. Mar. 4 to Sept. 30, 1924, non-recording gage at site 250 ft upstream at different datum. Oct. 1, 1945, to Sept. 30, 1947, nonrecording gage 250 ft upstream at datum 1.12 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow slightly regulated by Lake Ilo, 56 mi upstream, capacity 7,130 acre-ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known occurred in about 1902, from ice jam. Floods of February 1913 and March 1943 reached a stage of about 20 ft and 19.5 ft, respectively, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.6	e8.6	7.8	e5.3	e4.9	e5.4	44	14	11	7.1	4.8	3.5
2	6.8	8.2	7.6	e5.3	e4.9	e5.4	39	18	11	7.3	4.2	3.2
3	6.8	8.3	7.3	e5.3	e4.9	e5.4	36	15	12	8.5	4.1	3.3
4	6.8	e8.5	6.9	e5.4	e4.8	e5.3	32	14	11	9.6	4.9	3.2
5	7.0	8.7	e6.4	e5.5	e4.9	e5.3	29	16	11	8.8	6.9	3.4
6	7.5	9.3	e6.4	e5.5	e4.9	e5.3	29	19	11	8.0	7.9	3.5
7	7.6	9.4	e6.6	e5.6	e4.9	e5.2	29	20	12	8.1	6.1	3.4
8	7.6	e9.4	e6.5	e5.6	e5.0	e5.2	29	26	12	7.8	6.8	3.1
9	7.6	e9.5	e6.5	e5.7	e5.0	e5.2	30	42	11	9.1	7.7	3.1
10	7.5	e9.4	e6.6	e5.6	e5.1	e5.2	29	42	12	9.7	7.1	7.2
11	8.3	9.4	e6.5	e5.5	e5.1	e5.2	26	51	13	8.7	6.1	8.4
12	8.1	e9.3	e6.5	e5.4	e5.1	e5.2	25	43	16	7.8	4.9	6.9
13	7.8	9.2	e6.6	e5.2	e5.1	e5.6	23	38	13	7.3	4.2	6.3
14	7.8	9.6	e6.6	e5.1	e5.1	e8.5	26	46	13	7.9	3.7	5.5
15	7.7	e9.2	e6.6	e5.0	e5.2	e335	21	50	22	8.3	3.3	5.1
16	7.7	e10	e6.7	e5.0	e5.2	e1,480	21	67	18	7.8	3.4	4.9
17	7.8	e9.3	e6.7	e4.9	e5.2	e1,800	22	83	13	7.4	3.3	5.9
18	7.8	9.7	e6.7	e4.8	e5.2	e1,250	22	80	12	7.7	3.4	6.0
19	7.9	e9.0	e6.7	e4.8	e5.2	e690	21	78	9.6	8.2	3.4	4.2
20	7.8	e8.9	e6.6	e4.7	e5.2	e700	20	76	8.7	6.9	3.3	4.1
21	8.1	e8.8	e6.4	e4.7	e5.2	e500	18	73	8.5	5.5	3.4	3.9
22	8.7	e8.5	e6.2	e4.7	e5.2	e365	18	71	8.4	5.0	3.5	3.9
23	8.5	e8.3	e6.0	e4.7	e5.3	e240	16	57	8.8	5.0	3.4	3.9
24	8.5	e8.0	e5.8	e4.7	e5.3	165	15	37	8.5	4.5	3.5	3.8
25	8.6	7.8	e5.6	e4.8	e5.4	135	14	24	9.5	4.2	4.1	3.8
26	8.7	7.4	e5.5	e4.8	e5.4	114	14	19	9.9	4.7	3.9	4.2
27	9.2	7.6	e5.3	e4.9	e5.5	94	15	16	9.1	5.0	3.6	4.3
28	9.2	7.9	e5.2	e5.0	e5.5	75	14	14	8.9	4.9	3.3	4.5
29	9.8	8.0	e5.3	e5.0	---	63	13	12	8.3	5.0	3.2	4.9
30	e9.5	7.6	e5.4	e5.0	---	52	13	11	7.4	4.9	3.3	5.2
31	e9.1	---	e5.4	e5.0	---	48	---	11	---	4.9	3.4	---
TOTAL	248.4	262.8	196.9	158.5	143.7	8,183.4	703	1,183	339.6	215.6	138.1	136.6
MEAN	8.01	8.76	6.35	5.11	5.13	264	23.4	38.2	11.3	6.95	4.45	4.55
MAX	9.8	10	7.8	5.7	5.5	1,800	44	83	22	9.7	7.9	8.4
MIN	6.6	7.4	5.2	4.7	4.8	5.2	13	11	7.4	4.2	3.2	3.1
AC-FT	493	521	391	314	285	16,230	1,390	2,350	674	428	274	271

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 2003, BY WATER YEAR (WY)

MEAN	10.6	9.79	6.73	5.80	26.7	161	134	36.3	41.7	25.1	11.0	7.74
MAX	74.4	51.9	21.2	30.6	183	933	1,044	292	290	178	53.2	16.5
(WY)	(1983)	(1983)	(1973)	(1973)	(1996)	(1972)	(1952)	(1970)	(1971)	(1962)	(1990)	(1986)
MIN	1.76	2.88	0.80	0.000	0.000	3.39	9.41	5.77	3.10	1.84	0.96	1.10
(WY)	(1959)	(1962)	(1962)	(1959)	(1949)	(1949)	(1992)	(1992)	(1961)	(1961)	(1961)	(1958)

KNIFE RIVER BASIN

06340000 SPRING CREEK AT ZAP, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1924 - 2003	
ANNUAL TOTAL	5,623.6		11,909.6			
ANNUAL MEAN	15.4		32.6		39.8	
HIGHEST ANNUAL MEAN					99.5 1972	
LOWEST ANNUAL MEAN					6.95 1961	
HIGHEST DAILY MEAN	265	Jun 11	1,800	Mar 17	5,640	Apr 7, 1952
LOWEST DAILY MEAN	5.2	Dec 28	3.1	Sep 8	0.00	Jan 30, 1946
ANNUAL SEVEN-DAY MINIMUM	5.4	Dec 25	3.3	Sep 3	0.00	Jan 30, 1946
MAXIMUM PEAK FLOW			a2,000	Mar 17	6,130	Apr 7, 1952
MAXIMUM PEAK STAGE			b13.36	Mar 17	20.70	Mar 15, 1972
INSTANTANEOUS LOW FLOW					0.00	Jan 30, 1946
ANNUAL RUNOFF (AC-FT)	11,150		23,620		28,820	
10 PERCENT EXCEEDS	27		34		51	
50 PERCENT EXCEEDS	8.6		7.5		9.0	
90 PERCENT EXCEEDS	6.4		4.2		3.0	

a About

b Backwater from ice

c Estimated

KNIFE RIVER BASIN

06340000 SPRING CREEK AT ZAP, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
NOV 19...	--	--	--	--	--	--
JAN 16...	--	--	--	--	--	--
FEB 26...	--	--	--	--	--	--
MAR 17...	30	50	<0.10	<1	<1	230
APR 01...	--	--	--	--	--	--
APR 28...	--	--	--	--	--	--
JUN 13...	--	--	--	--	--	--
JUL 16...	60	60	<0.20	2	<1	1,180
SEP 03...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

06340500 KNIFE RIVER AT HAZEN, ND

LOCATION.--Lat 47°17'07", long 101°37'18", in SW¹₄SE¹₄ sec.18, T.144 N., R.86 W., Mercer County, Hydrologic Unit 10130201, on left bank at downstream side of highway bridge, 0.5 mi south of Hazen, and 3 mi upstream from Antelope Creek.

DRAINAGE AREA.--2,240 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October to November 1928, March 1929 to September 1933, August 1937 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1146: 1943. WSP 1279: 1930-31, 1932-33(M). WSP 1917: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,712.35 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 25, 1947, nonrecording gages at same site and datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. Slight regulation by Lake Ilo 81 mi upstream, capacity, 7,130 acre-ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--According to local residents, the floods of 1943 and 1950 were not exceeded during the period 1884 to 1942.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	e54	e46	e26	e16	e12	134	60	49	32	14	9.7
2	25	59	e45	e27	e15	e12	123	59	49	35	14	9.5
3	25	58	e43	e28	e14	e12	111	60	49	37	14	9.8
4	25	53	e40	e29	e14	e11	105	59	52	33	15	9.4
5	26	48	e37	e30	e13	e11	99	61	52	31	18	9.4
6	30	45	e36	e30	e13	e11	96	67	49	29	16	9.7
7	30	41	e38	e30	e13	e11	92	70	50	28	15	9.7
8	32	41	e38	e29	e12	e11	91	76	52	28	15	9.8
9	33	44	e37	e25	e12	e11	84	96	51	35	15	9.4
10	35	46	e37	e23	e12	e11	83	127	54	32	14	15
11	34	44	e37	e22	e12	e11	81	127	56	27	14	31
12	33	43	e38	e22	e12	e11	77	135	68	27	13	28
13	33	43	e38	e21	e12	e15	78	147	73	26	12	28
14	32	44	e39	e21	e12	e75	77	177	66	24	11	26
15	33	44	e39	e20	e12	e300	80	199	75	23	11	24
16	34	50	e38	e20	e12	e1,600	78	176	67	24	10	29
17	36	59	e37	e20	e13	e4,500	81	179	57	23	9.7	33
18	37	46	e35	e19	e14	e3,850	84	175	53	23	9.7	30
19	38	45	e34	e19	e13	e3,200	82	161	59	22	9.8	26
20	38	45	e33	e18	e12	e2,800	77	148	98	20	15	23
21	40	45	e32	e18	e12	e3,000	74	132	79	20	15	21
22	44	42	e30	e18	e11	e2,100	73	121	63	20	14	19
23	44	41	e29	e17	e11	e1,100	72	115	56	20	13	18
24	44	e40	e28	e17	e11	e615	69	104	54	19	13	16
25	45	e41	e27	e16	e12	496	67	87	51	18	13	16
26	51	e44	e25	e16	e12	389	66	76	44	17	12	16
27	52	48	e26	e15	e12	302	66	68	42	16	10	16
28	52	47	e27	e14	e12	238	65	63	38	16	9.1	16
29	52	46	e29	e14	---	187	63	59	35	15	9.3	16
30	e51	44	e29	e15	---	170	62	55	33	15	9.4	16
31	e50	---	e27	e16	---	144	---	52	---	14	9.6	---
TOTAL	1,160	1,390	1,074	655	351	25,216	2,490	3,291	1,674	749	392.6	549.4
MEAN	37.4	46.3	34.6	21.1	12.5	813	83.0	106	55.8	24.2	12.7	18.3
MAX	52	59	46	30	16	4,500	134	199	98	37	18	33
MIN	25	40	25	14	11	11	62	52	33	14	9.1	9.4

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2003, BY WATER YEAR (WY)

MEAN	38.9	32.2	22.7	20.2	95.0	694	499	161	222	116	48.5	34.1
MAX	365	223	83.1	145	927	3,228	4,293	1,530	1,041	979	215	143
(WY)	(1983)	(1983)	(1983)	(1974)	(1930)	(1943)	(1952)	(1970)	(1944)	(1938)	(1954)	(1978)
MIN	6.39	7.71	3.79	0.70	0.000	11.6	26.3	17.0	8.70	10.5	2.00	0.50
(WY)	(1962)	(1962)	(1962)	(1962)	(1962)	(1965)	(1981)	(1931)	(1961)	(1961)	(1933)	(1933)

KNIFE RIVER BASIN

06340500 KNIFE RIVER AT HAZEN, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1929 - 2003	
ANNUAL TOTAL	24,575		38,992.0		166	
ANNUAL MEAN	67.3		107		441	
HIGHEST ANNUAL MEAN					1943	
LOWEST ANNUAL MEAN					21.7	
HIGHEST DAILY MEAN	1,260	Jun 13	e4,500	Mar 17	22,400	Mar 27, 1943
LOWEST DAILY MEAN	18	Sep 20	9.1	Aug 28	0.00	Jan 21, 1933
ANNUAL SEVEN-DAY MINIMUM	19	Sep 19	9.5	Aug 28	0.00	Jan 21, 1933
MAXIMUM PEAK FLOW			a4,800	Mar 17	35,300	Jun 24, 1966
MAXIMUM PEAK STAGE			b18.18	Mar 17	27.01	Jun 24, 1966
INSTANTANEOUS LOW FLOW			9.1	Aug 28		
10 PERCENT EXCEEDS	120		101		250	
50 PERCENT EXCEEDS	39		33		33	
90 PERCENT EXCEEDS	22		12		10	

a About

b Backwater from ice

e Estimated

KNIFE RIVER BASIN

06340500 KNIFE RIVER AT HAZEN, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
NOV 18...	--	--	--	--	--	--
JAN 16...	--	--	--	--	--	--
FEB 26...	--	--	--	--	--	--
MAR 18...	10	80	<0.10	<1	<1	200
24...	--	--	--	--	--	--
APR 28...	--	--	--	--	--	--
JUN 13...	--	--	--	--	--	--
JUL 16...	--	--	--	--	--	--
SEP 03...	50	280	<0.20	4	2	1,020
30...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

06340700 MISSOURI RIVER NEAR STANTON, ND

LOCATION.--Lat 47°17'14", long 101°20'23", in SW¹₄ sec.16, T.144 N., R.84 W., Mercer County, Hydrologic Unit 10130101, on right bank 3 mi southeast of Stanton, 0.1 mi below Ft. Clark irrigation pumping station, 0.4 mi above the United Power Association power plant, and at mile 1,372.

DRAINAGE AREA.--182,000 mi², approximately.

GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,650.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Sept. 30, 1964, at datum 50.00 ft lower.

REMARKS.--Stage regulated completely by releases from Garrison Dam (station 06338490) 18 mi upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 24.56 ft, Feb. 22, 1965; minimum daily recorded, 8.30 ft, Nov. 1, 2001.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.66	9.72	11.18	10.89	14.34	---	---	10.45	11.46	11.54	11.43	11.36
2	9.47	10.01	11.23	11.17	14.09	---	10.19	10.41	11.47	11.52	11.44	11.36
3	9.71	10.15	---	10.53	14.10	---	10.92	10.40	11.50	11.47	11.45	11.18
4	9.73	10.31	---	10.78	13.81	---	10.86	10.36	11.44	11.44	11.45	10.95
5	9.72	10.58	---	10.69	14.07	---	10.79	10.48	11.53	11.53	11.39	10.98
6	9.75	10.69	11.06	10.60	---	---	10.85	10.35	11.46	11.47	11.37	10.97
7	9.70	10.68	11.25	10.59	14.16	---	11.02	10.38	---	11.48	11.44	10.91
8	9.71	10.67	---	10.58	---	---	10.85	10.37	---	11.46	11.44	10.85
9	9.62	10.63	11.15	10.37	---	---	10.76	10.37	---	11.57	11.39	10.96
10	9.62	10.66	11.15	11.17	---	---	10.73	10.37	11.50	11.46	11.41	10.97
11	9.59	10.60	11.30	---	14.37	12.84	10.77	10.41	11.48	11.50	11.33	10.83
12	9.58	10.58	11.17	11.99	14.47	12.86	11.03	10.40	11.43	11.45	11.37	10.87
13	9.48	10.65	11.23	12.31	14.35	12.63	11.16	10.43	11.49	11.42	11.36	10.76
14	9.74	10.56	11.10	12.21	14.41	12.49	11.06	10.47	11.53	11.43	11.36	11.05
15	9.61	10.67	11.13	13.12	14.18	12.28	11.20	10.80	11.48	11.39	11.43	10.71
16	9.69	10.67	11.22	13.70	14.57	12.32	11.19	10.24	11.55	11.50	11.34	10.08
17	9.72	10.62	11.11	---	14.11	12.41	11.14	11.24	11.45	11.56	11.33	9.80
18	9.58	10.63	10.96	13.76	14.24	11.99	11.18	11.57	11.52	11.51	11.42	9.56
19	9.66	10.62	11.05	13.85	13.93	11.33	11.20	11.42	11.51	11.50	11.39	9.57
20	9.60	10.73	10.95	13.91	13.59	10.95	11.22	11.43	11.53	11.50	11.36	9.84
21	9.78	10.61	11.06	13.97	13.55	10.88	11.18	11.53	11.52	11.51	11.32	9.88
22	9.59	10.64	10.98	---	---	10.71	11.28	11.30	11.40	11.50	11.41	---
23	9.67	10.57	11.12	---	---	10.31	---	11.52	11.40	11.57	11.38	9.73
24	9.72	10.64	---	---	---	10.11	11.17	11.51	11.46	11.38	11.42	9.70
25	9.69	10.78	---	---	---	10.05	11.29	11.46	11.44	11.44	11.39	9.71
26	9.70	10.92	---	---	14.45	10.05	11.10	11.53	11.43	11.52	11.33	9.67
27	9.67	11.19	10.75	---	14.26	9.99	11.05	11.53	11.41	11.47	11.17	9.64
28	9.70	10.95	10.70	14.86	13.96	10.0	---	11.46	11.48	11.56	11.36	9.67
29	9.82	11.09	10.68	14.75	---	9.92	---	11.48	11.54	11.46	11.38	9.82
30	9.77	11.10	10.56	14.85	---	---	10.72	11.47	11.48	11.42	11.25	9.74
31	9.69	---	10.89	14.49	---	---	---	11.50	---	11.48	11.41	---
MEAN	9.67	10.63	---	---	---	---	---	10.92	---	11.48	11.38	---
MAX	9.82	11.19	---	---	---	---	---	11.57	---	11.57	11.45	---
MIN	9.47	9.72	---	---	---	---	---	10.24	---	11.38	11.17	---

MISSOURI RIVER MAIN STEM

06340900 MISSOURI RIVER NEAR HENSLER, ND

LOCATION.--Lat 47°16'49", long 101°11'07", in SW¹₄ sec.22, T.144 N., R.83 W., McLean County, Hydrologic Unit 10130101, on left bank about 7.5 mi west of Washburn and at mile 1,362.

DRAINAGE AREA.--183,000 mi², approximately.

GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,640.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Sept. 30, 1964, at datum 40 ft lower.

REMARKS.--Stage regulated by releases from Garrison Dam (station 06338490) 28 mi upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 27.77 ft, Mar. 20, 1965; minimum daily recorded, 12.91 ft, Nov. 1, 2001.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.32	14.37	15.67	---	---	---	---	14.91	15.95	---	15.91	15.91
2	14.22	14.59	---	---	---	---	---	14.83	15.99	---	15.92	15.97
3	14.41	14.82	---	---	---	---	---	14.83	16.00	---	15.93	15.80
4	14.41	14.92	---	---	---	---	---	14.77	15.96	---	15.96	15.58
5	14.41	15.13	---	---	---	---	---	14.96	16.04	---	15.88	15.51
6	14.44	15.32	---	---	---	---	---	14.83	15.97	---	15.87	15.55
7	---	15.31	---	---	---	---	---	14.80	15.96	---	15.94	15.52
8	14.44	15.29	---	---	---	---	---	14.85	16.01	15.87	15.92	15.43
9	14.41	15.29	---	---	---	---	---	14.83	16.04	16.00	15.91	15.54
10	14.34	15.26	---	---	---	---	---	14.85	16.08	15.88	15.91	15.62
11	14.35	15.23	---	---	---	---	---	14.86	16.05	15.89	15.82	15.44
12	14.34	15.21	---	---	---	---	---	14.86	16.01	15.88	15.88	15.46
13	14.21	15.27	---	---	---	---	---	15.00	16.03	15.86	15.87	15.37
14	14.52	15.20	---	---	---	---	---	14.81	16.04	15.86	15.88	15.63
15	14.31	15.28	---	---	---	---	---	15.12	16.05	15.82	15.96	15.44
16	14.40	15.28	---	---	---	---	15.66	14.68	16.11	15.94	15.86	14.86
17	14.47	15.25	---	---	---	---	15.58	15.58	15.99	16.00	15.85	14.49
18	14.37	15.23	---	---	---	---	15.59	16.03	16.06	15.98	15.96	14.23
19	14.38	15.21	---	---	---	---	15.64	15.87	16.02	15.96	15.92	14.31
20	14.32	15.31	---	---	---	---	15.65	15.82	16.02	15.96	15.91	14.45
21	14.46	15.23	---	---	---	---	15.59	---	16.06	15.97	15.86	14.57
22	14.26	15.23	---	---	---	---	15.69	15.86	15.84	15.95	15.94	14.38
23	14.33	15.21	---	---	---	---	15.68	16.04	15.79	16.01	15.91	14.43
24	14.41	15.21	---	---	---	---	15.60	16.04	---	15.86	15.94	14.37
25	14.36	15.36	---	---	---	---	15.72	15.99	---	15.90	15.95	14.33
26	14.35	15.48	---	---	---	---	15.54	16.01	---	15.99	15.88	14.39
27	14.37	15.74	---	---	---	---	15.58	16.06	---	15.93	15.70	14.29
28	14.36	15.56	---	---	---	---	15.47	15.96	---	16.02	15.93	14.28
29	14.49	15.66	---	---	---	---	15.49	15.98	---	15.95	16.01	14.50
30	14.48	---	---	---	---	---	15.30	15.99	---	15.91	15.73	14.38
31	14.40	---	---	---	---	---	---	16.01	---	15.94	16.01	---
MEAN	---	---	---	---	---	---	---	---	---	---	15.90	15.00
MAX	---	---	---	---	---	---	---	---	---	---	16.01	15.97
MIN	---	---	---	---	---	---	---	---	---	---	15.70	14.23

06341000 MISSOURI RIVER AT WASHBURN, ND

LOCATION.--Lat 47°17'20", long 101°02'15", in SE¹₄SW¹₄ sec.14, T.144 N., R.82 W., McLean County, Hydrologic Unit 10130101, on left bank near municipal waterplant in Washburn and at mile 1,355.

DRAINAGE AREA.--184,000 mi², approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--August 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,640.00 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1964, at datum 40 ft lower.

REMARKS.--Stage regulated by releases from Garrison Dam (station 06338490) 35 mi upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 22.76 ft, Jan. 11, 1964; minimum daily recorded, 8.66 ft, Nov. 2, 2001.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.87	9.82	11.01	11.19	15.21	---	9.72	---	11.26	11.34	11.28	11.18
2	9.62	9.96	11.10	11.24	15.11	---	10.05	10.36	11.30	11.34	11.29	11.23
3	9.79	10.19	---	10.70	15.04	---	10.62	10.36	11.31	11.30	11.29	11.09
4	9.87	10.28	---	10.72	14.93	---	10.76	10.28	11.28	11.27	11.31	10.94
5	9.84	10.43	---	10.78	14.96	---	10.63	10.43	11.33	11.32	11.26	10.82
6	9.87	10.64	10.98	10.65	14.92	---	10.73	10.35	11.27	11.31	11.22	10.89
7	9.86	10.66	11.12	10.70	14.90	---	10.88	10.33	11.24	11.28	11.31	10.84
8	9.81	10.64	---	10.61	14.92	---	10.79	10.38	11.30	11.26	11.26	10.80
9	9.83	10.66	11.09	10.50	14.99	---	10.67	10.34	11.31	11.38	11.24	10.85
10	9.74	10.58	11.08	---	14.87	---	10.61	10.36	11.35	11.30	11.24	10.91
11	9.74	10.61	11.20	---	14.99	13.90	10.64	10.36	11.34	11.29	11.14	10.80
12	9.75	10.57	11.10	---	14.89	13.90	10.73	10.37	11.31	11.28	11.19	10.79
13	9.65	10.59	11.13	---	14.99	13.82	10.95	10.51	11.31	11.27	11.19	10.72
14	9.89	10.55	11.03	---	15.01	13.88	10.92	10.30	11.33	11.28	11.19	10.91
15	9.69	10.62	11.07	---	14.74	13.99	10.92	10.53	11.35	11.23	11.24	10.81
16	9.77	10.65	11.12	---	14.82	14.15	---	10.31	11.40	11.31	11.14	10.31
17	9.85	10.64	11.07	---	14.82	13.95	---	10.90	11.31	11.37	11.13	9.95
18	9.77	10.63	10.97	---	14.80	13.62	10.95	11.36	11.35	11.36	11.22	9.72
19	9.78	10.61	11.04	---	14.79	12.72	10.98	11.29	11.34	11.34	11.19	9.76
20	9.77	10.69	10.93	---	14.62	12.09	---	11.24	11.36	11.35	11.17	9.86
21	9.86	10.65	11.04	---	14.39	11.49	---	11.34	11.37	11.36	11.12	9.99
22	9.71	10.62	10.96	---	---	11.21	11.04	11.21	11.26	11.34	11.18	9.87
23	9.78	10.61	11.06	15.35	---	10.54	11.09	11.34	11.25	11.39	11.16	9.89
24	9.89	10.61	11.13	15.28	---	10.24	10.97	11.34	11.30	11.28	11.19	9.79
25	9.81	10.76	11.28	15.37	---	10.11	11.07	11.32	11.29	11.28	11.23	9.81
26	9.79	10.84	10.64	15.21	14.64	10.11	10.96	11.34	11.26	11.36	11.14	9.85
27	9.81	11.09	10.85	15.06	14.66	9.99	10.98	11.37	11.23	11.31	11.02	9.75
28	9.77	10.99	10.67	15.13	14.55	10.00	---	11.28	11.27	11.39	11.17	9.73
29	9.89	11.02	10.69	15.15	---	9.92	10.89	11.30	11.33	11.33	11.27	9.95
30	9.91	11.04	10.70	15.25	---	9.95	10.80	11.29	11.27	11.30	11.01	9.84
31	9.85	---	11.11	15.23	---	10.0	---	11.32	---	11.31	11.28	---
MEAN	9.80	10.61	---	---	---	---	---	---	11.31	11.32	11.20	10.39
MAX	9.91	11.09	---	---	---	---	---	---	11.40	11.39	11.31	11.23
MIN	9.62	9.82	---	---	---	---	---	---	11.23	11.23	11.01	9.72

TURTLE CREEK BASIN

06341410 TURTLE CREEK ABOVE WASHBURN, ND

LOCATION.--Lat 47°23'06", long 100°54'43", in NW¹₄NE¹₄ sec.18, T.145 N., R.80 W., McLean County, Hydrologic Unit 10130101, on right bank 250 ft downstream from bridge on county highway, 8.5 mi northeast of Washburn, and 8.8 mi south of Turtle Lake.

DRAINAGE AREA.--350 mi², approximately, of which 195 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1986 to September 2003 (discontinued).

GAGE.--Water-stage recorder. Elevation of gage is 1,780 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor. Water from the McClusky Canal is sometimes diverted into the stream at a point upstream from the gage.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	2.1	e0.36	e0.15	0.00	0.00	11	3.3	8.2	e30	13	3.3
2	2.6	e2.0	e0.32	e0.14	0.00	0.00	3.2	3.0	8.3	e29	12	3.7
3	2.8	e2.0	e0.30	e0.12	0.00	0.00	8.7	2.7	9.2	e29	11	3.3
4	2.7	e2.0	e0.30	e0.12	0.00	0.00	7.4	3.5	11	e30	12	3.4
5	2.6	e2.0	e0.30	e0.12	0.00	0.00	6.7	6.9	11	e28	15	3.7
6	4.1	e1.8	e0.32	e0.13	0.00	0.00	6.2	14	11	e28	15	4.6
7	4.4	e1.8	e0.32	e0.12	0.00	0.00	9.1	9.1	11	e28	14	4.7
8	3.8	e1.7	e0.32	e0.11	0.00	0.00	7.3	8.5	12	e28	12	4.3
9	3.3	e1.7	e0.32	e0.11	0.00	0.00	7.7	20	14	e28	11	3.6
10	3.2	e1.5	e0.31	e0.11	0.00	0.00	9.0	16	25	31	11	2.7
11	3.0	e1.2	e0.29	e0.11	0.00	0.00	12	12	e33	28	11	1.7
12	2.9	e1.1	e0.28	e0.10	0.00	0.00	8.1	8.2	e42	26	10	1.9
13	2.9	e0.98	e0.26	e0.10	0.00	0.00	6.6	16	e50	25	9.1	1.6
14	2.9	e0.90	e0.25	e0.10	0.00	e0.10	6.3	42	e65	24	8.3	1.4
15	3.0	e0.85	e0.23	e0.10	0.00	e10	5.9	19	e62	22	7.5	1.3
16	2.9	e0.79	e0.21	e0.10	0.00	e120	5.7	12	e57	21	6.7	1.3
17	2.9	e0.74	e0.20	e0.10	0.00	56	5.8	11	e52	20	6.3	1.3
18	3.0	e0.70	e0.18	e0.08	0.00	37	6.3	12	e48	20	5.7	2.0
19	3.0	e0.66	e0.17	e0.07	0.00	15	6.0	14	e45	19	5.2	2.2
20	2.9	e0.60	e0.17	e0.05	0.00	13	5.4	11	e41	18	5.0	2.3
21	2.8	e0.65	e0.16	e0.02	0.00	20	5.2	9.2	e39	16	4.4	2.1
22	2.7	e0.60	e0.16	e0.00	0.00	22	4.7	7.6	e40	16	4.1	2.1
23	2.5	e0.55	e0.16	0.00	0.00	21	4.6	9.6	e40	16	3.7	2.5
24	2.7	e0.48	e0.16	0.00	0.00	19	4.4	13	e40	15	3.3	3.0
25	2.8	e0.43	e0.17	0.00	0.00	15	4.2	11	e38	15	2.7	3.1
26	3.0	e0.38	e0.17	0.00	0.00	12	3.8	9.2	e36	14	2.7	2.9
27	3.0	e0.35	e0.18	0.00	0.00	11	3.4	8.6	e36	14	2.8	2.9
28	3.1	e0.37	e0.18	0.00	0.00	8.1	3.4	8.6	e34	14	3.1	2.8
29	2.8	e0.40	e0.18	0.00	---	9.2	3.4	8.3	e32	14	2.6	2.7
30	2.8	e0.38	e0.17	0.00	---	8.1	3.5	8.3	e32	14	3.0	2.5
31	2.6	---	e0.16	0.00	---	10	---	8.3	---	13	2.7	---
TOTAL	92.2	31.71	7.26	2.16	0.00	406.50	185.0	345.9	982.7	673	235.9	80.9
MEAN	2.97	1.06	0.23	0.070	0.000	13.1	6.17	11.2	32.8	21.7	7.61	2.70
MAX	4.4	2.1	0.36	0.15	0.00	120	12	42	65	31	15	4.7
MIN	2.5	0.35	0.16	0.00	0.00	0.00	3.2	2.7	8.2	13	2.6	1.3
AC-FT	183	63	14	4.3	0.00	806	367	686	1,950	1,330	468	160

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 2003, BY WATER YEAR (WY)

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
MEAN	13.4	6.95	1.54	0.39	4.12	33.1	20.5	17.2	21.5	20.4	13.1	11.6					
MAX	54.3	30.9	7.75	2.67	34.0	116	69.7	51.5	71.7	52.4	36.0	32.8					
(WY)	(1994)	(1993)	(2000)	(2000)	(1996)	(1987)	(1997)	(1996)	(2001)	(2001)	(2000)	(1993)					
MIN	0.092	0.043	0.000	0.000	0.000	0.22	0.28	0.069	0.009	0.000	0.033	2.31					
(WY)	(1990)	(1990)	(1990)	(1989)	(1989)	(1990)	(1990)	(1992)	(1989)	(1988)	(1991)	(1988)					

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1987 - 2003

ANNUAL TOTAL	2,314.04	3,043.23		
ANNUAL MEAN	6.34	8.34	13.7	
HIGHEST ANNUAL MEAN			29.3	1996
LOWEST ANNUAL MEAN			1.10	1990
HIGHEST DAILY MEAN	71	Jun 10	120	Mar 16
LOWEST DAILY MEAN	0.03	Feb 11	0.00	Jan 22
ANNUAL SEVEN-DAY MINIMUM	0.04	Feb 10	0.00	Jan 22
MAXIMUM PEAK FLOW			160	Mar 16
MAXIMUM PEAK STAGE			a5.26	Mar 16
ANNUAL RUNOFF (AC-FT)	4,590	6,040	9,930	
10 PERCENT EXCEEDS	17	25	36	
50 PERCENT EXCEEDS	2.7	3.0	4.0	
90 PERCENT EXCEEDS	0.08	0.00	0.00	

a Backwater from ice
e Estimated

TURTLE CREEK BASIN

06341410 TURTLE CREEK ABOVE WASHBURN, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia water, fltfd, mg/L as N (00608)	Nitrate water, fltfd, mg/L as N (00618)	Nitrite + nitrate water fltfd, mg/L as N (00631)	Nitrite water, fltfd, mg/L as N (00613)	Ortho- phos- phate, water, fltfd, mg/L as P (00671)	Boron, water, fltfd, ug/L (01020)	Iron, water, fltfd, ug/L (01046)
OCT 09...	1,330	<0.04	--	<0.06	<0.008	0.03	624	21
NOV 19...	1,410	<0.04	--	<0.06	<0.008	0.02	610	20
MAR 17...	--	--	--	--	--	--	--	--
27...	1,030	0.50	0.16	0.18	0.023	0.30	367	69
APR 14...	1,050	<0.04	--	<0.06	<0.008	0.11	486	26
MAY 27...	1,280	<0.04	--	<0.06	<0.008	0.12	255	31
JUN 12...	--	--	--	--	--	--	--	--
JUL 09...	--	--	--	--	--	--	--	--
AUG 20...	--	--	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

E -- Estimated value

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

06341800 PAINTED WOODS CREEK NEAR WILTON, ND

LOCATION.--Lat 47°16'30", long 100°47'30", in SW¹₄SW¹₄ sec.23, T.144 N., R.80 W., McLean County, Hydrologic Unit 10130101, on right bank 600 ft upstream from county highway bridge, 7 mi upstream from Yanktonai Creek, and 8 mi north of Wilton.

DRAINAGE AREA.--427 mi², approximately, of which about 310 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1957 to September 1981, August 1982 to September 2003 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 1,764.93 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Fish and Wildlife Service).

REMARKS.--Records fair except for estimated daily discharges, which are poor. Since the fall of 1982, Missouri River Basin water has been diverted into the stream at a point several miles upstream.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.3	7.4	e4.1	e3.3	e3.2	e2.6	e16	5.2	22	19	11	9.1
2	8.7	8.0	e3.9	e3.4	e3.1	e2.5	e16	5.6	21	19	11	9.1
3	7.9	8.3	e4.0	e3.4	e3.1	e2.5	e15	5.3	20	19	12	9.1
4	7.8	8.4	e3.9	e3.5	e3.0	e2.5	e14	5.2	21	20	12	9.1
5	9.3	8.6	e3.8	e3.5	e3.0	e2.4	e14	9.2	20	19	12	8.9
6	9.3	8.5	e3.8	e3.4	e2.9	e2.4	14	14	20	19	11	8.9
7	9.9	7.9	e3.9	e3.5	e2.9	e2.5	14	16	20	19	10	8.9
8	9.1	8.2	e3.8	e3.6	e2.9	e2.5	13	20	21	19	9.5	8.9
9	9.1	7.5	e3.8	e3.5	e2.9	e2.4	12	24	21	19	9.2	8.9
10	8.1	7.6	e3.9	e3.4	e2.8	e2.3	12	30	22	19	10	8.9
11	8.1	7.6	e4.0	e3.3	e2.8	e3.2	12	35	25	18	11	8.9
12	9.0	7.1	e4.1	e3.3	e2.9	e5.0	11	36	56	17	11	8.9
13	8.4	7.7	e4.0	e3.3	e2.9	e8.0	11	33	48	16	10	8.9
14	7.3	8.0	e4.0	e3.2	e2.8	e12	10	57	37	15	9.6	8.9
15	8.9	7.8	e4.0	e3.2	e2.8	e17	9.9	61	31	15	9.8	8.9
16	8.0	8.4	e3.9	e3.2	e2.8	e30	9.7	62	30	14	10	8.9
17	8.2	8.1	e3.8	e3.2	e2.9	e49	10	61	28	14	9.4	8.7
18	8.4	7.8	e3.8	e3.1	e2.8	e61	11	65	26	14	9.3	8.8
19	8.9	7.6	e3.7	e3.0	e2.8	e55	10	60	23	14	9.8	8.7
20	8.2	6.8	e3.6	e2.9	e2.7	e48	11	47	21	15	9.1	8.6
21	8.1	7.0	e3.6	e2.8	e2.7	e42	11	38	19	14	9.2	8.5
22	7.9	7.1	e3.6	e2.8	e2.6	e36	11	34	24	14	9.2	8.5
23	8.1	5.3	e3.5	e2.7	e2.6	e31	10	32	24	14	8.9	8.6
24	8.2	e5.2	e3.4	e2.8	e2.5	e28	10	32	24	13	9.5	8.7
25	8.1	e4.6	e3.3	e2.8	e2.5	e25	10	33	24	13	9.5	8.7
26	8.5	e4.3	e3.3	e2.9	e2.5	e22	10	29	23	14	8.9	8.7
27	8.6	e4.0	e3.3	e3.0	e2.6	e19	9.5	35	22	14	9.0	8.8
28	8.5	e4.1	e3.4	e3.1	e2.6	e18	9.3	43	22	13	9.1	8.5
29	8.6	e4.2	e3.5	e3.1	---	e18	6.4	34	21	13	9.1	8.5
30	7.8	e4.1	e3.4	e3.1	---	e17	7.3	30	20	13	9.0	8.5
31	7.5	---	e3.3	e3.2	---	e17	---	26	---	12	9.2	---
TOTAL	261.8	207.2	115.4	98.5	78.6	585.8	340.1	1,017.5	756	490	307.3	264.0
MEAN	8.45	6.91	3.72	3.18	2.81	18.9	11.3	32.8	25.2	15.8	9.91	8.80
MAX	9.9	8.6	4.1	3.6	3.2	61	16	65	56	20	12	9.1
MIN	7.3	4.0	3.3	2.7	2.5	2.3	6.4	5.2	19	12	8.9	8.5
AC-FT	519	411	229	195	156	1,160	675	2,020	1,500	972	610	524

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 2003, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
MEAN	19.6	19.4	16.6	14.9	21.8	84.7	66.3	38.7	27.9	33.3	26.9	17.5										
MAX	38.4	33.3	33.9	30.5	50.4	188	454	117	96.9	281	138	43.2										
(WY)	(1987)	(1990)	(1987)	(1990)	(2000)	(1997)	(1997)	(1999)	(2000)	(1993)	(1999)	(1986)										
MIN	0.16	2.44	2.58	0.61	0.004	11.6	8.20	1.08	2.37	1.43	0.22	1.52										
(WY)	(1989)	(1999)	(1999)	(1999)	(1997)	(2002)	(1989)	(1990)	(1990)	(1990)	(1983)	(1998)										

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1983 - 2003

ANNUAL TOTAL	4,276.8	4,522.2	
ANNUAL MEAN	11.7	12.4	32.4
HIGHEST ANNUAL MEAN			68.0
LOWEST ANNUAL MEAN			12.0
HIGHEST DAILY MEAN	90	Jun 24	1,350
LOWEST DAILY MEAN	3.3	Dec 25	0.00
ANNUAL SEVEN-DAY MINIMUM	3.4	Dec 25	0.00
MAXIMUM PEAK FLOW		a80	4,050
MAXIMUM PEAK STAGE		b5.08	9.64
ANNUAL RUNOFF (AC-FT)	8,480	8,970	23,460
10 PERCENT EXCEEDS	20	27	48
50 PERCENT EXCEEDS	10	8.9	21
90 PERCENT EXCEEDS	4.5	2.9	3.0

a About

b Backwater from ice

e Estimated

06341800 PAINTED WOODS CREEK NEAR WILTON, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Boron, water, fltrd, ug/L (01020)	Iron, water, fltrd, ug/L (01046)
OCT 09...	1,460	<0.04	--	<0.06	<0.008	<0.02	386	<10
NOV 19...	1,480	<0.04	--	<0.06	<0.008	<0.02	371	E6
JAN 27...	--	--	--	--	--	--	--	--
MAR 12...	--	--	--	--	--	--	--	--
MAR 17...	--	--	--	--	--	--	--	--
MAR 27...	811	0.08	0.32	0.33	0.014	0.28	196	101
APR 14...	1,000	<0.04	--	<0.06	<0.008	0.04	254	28
MAY 28...	1,660	E.03	--	<0.06	<0.008	0.12	9.0d	9d
JUL 09...	--	--	--	--	--	--	--	--
AUG 20...	--	--	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

E -- Estimated value

Value qualifier codes used in this table:

d -- Diluted sample: method hi range exceeded

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

MISSOURI RIVER MAIN STEM

06342020 MISSOURI RIVER AT PRICE, ND

LOCATION.--Lat 47°04'47", long 100°55'55", in NW¹₄ sec.34, T.142 N., R.81 W., Oliver County, Hydrologic Unit 10130101, on right bank 0.5 mi south of Price and at mile 1,338.

DRAINAGE AREA.--185,000 mi², approximately.

GAGE-HEIGHT RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,620.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Sept. 30, 1964, at datum 20 ft lower.

REMARKS.--Stage regulated by releases from Garrison Dam (station 06338490) 52 mi upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 30.12 ft, Jan. 22, 1967; minimum daily recorded, 16.84 ft, Nov. 2, 2001.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.17	18.07	19.30	19.88	23.80	23.15	18.28	19.03	19.73	19.81	19.88	19.87
2	18.03	18.12	19.36	20.46	23.77	22.74	18.28	18.90	19.78	19.83	19.89	19.90
3	18.06	18.44	19.40	19.38	23.71	22.82	18.74	18.91	19.79	19.85	19.89	19.79
4	18.21	18.53	19.36	19.00	23.69	22.68	19.19	18.84	19.77	19.88	19.88	19.67
5	18.20	18.65	19.32	19.14	23.58	22.80	19.03	18.94	19.78	19.85	19.89	19.51
6	18.22	18.93	19.27	18.96	23.64	22.82	19.08	18.91	19.77	19.92	19.82	19.59
7	18.23	18.96	19.34	19.01	23.60	22.87	19.22	18.82	19.70	19.87	19.87	19.53
8	18.14	18.96	19.34	18.89	23.62	22.79	19.23	18.91	19.75	19.86	19.87	19.50
9	18.17	18.96	19.38	18.90	23.65	22.65	19.14	18.85	19.76	19.97	19.88	19.51
10	18.06	18.85	19.36	18.93	23.62	22.63	19.05	18.88	19.81	19.99	19.86	19.59
11	18.05	18.94	19.43	20.01	23.67	22.52	19.05	18.83	19.81	19.89	19.80	19.54
12	18.03	18.88	19.43	23.19	23.57	22.52	19.11	18.85	19.80	19.89	19.82	19.48
13	17.97	18.86	19.40	23.59	23.66	22.52	19.38	18.99	19.76	19.89	19.84	19.45
14	18.07	18.87	19.34	23.61	23.66	22.39	19.43	18.84	19.78	19.88	19.83	19.54
15	18.04	18.87	19.35	23.56	23.54	22.54	19.38	18.94	19.84	19.83	19.85	19.57
16	18.04	18.93	19.36	24.05	23.39	22.80	19.50	19.03	19.85	19.89	19.83	19.22
17	18.14	18.93	19.38	24.35	23.52	23.11	19.50	19.08	19.80	19.96	19.79	18.79
18	18.09	18.90	19.27	24.17	23.44	23.27	19.47	19.77	19.78	20.09	19.87	18.63
19	18.03	18.86	19.25	24.14	23.48	22.92	19.50	19.87	19.81	20.04	19.87	18.54
20	18.06	18.91	19.23	24.17	23.38	22.57	19.53	19.76	19.82	20.03	19.86	18.59
21	18.05	18.95	19.28	24.13	23.18	22.51	19.51	19.83	19.84	20.00	19.81	18.70
22	18.01	18.85	19.28	24.04	23.14	22.79	19.57	19.79	19.75	19.98	19.84	18.66
23	18.00	18.87	19.50	23.90	23.13	21.93	19.63	19.78	19.72	19.93	19.84	18.61
24	18.14	18.83	20.03	23.78	22.85	20.06	19.56	19.84	19.76	19.93	19.85	18.53
25	18.09	18.95	19.97	24.00	23.16	18.90	19.56	19.83	19.76	19.84	19.92	18.57
26	18.06	19.02	19.95	23.75	23.34	18.63	19.58	19.79	19.73	19.93	19.83	18.55
27	18.10	19.31	20.18	23.53	23.29	18.37	19.53	19.87	19.72	19.89	19.77	18.49
28	18.03	19.35	19.11	23.60	23.23	18.39	19.39	19.79	19.73	19.95	19.82	18.43
29	18.13	19.25	19.01	23.64	---	18.35	19.45	19.78	19.80	19.92	19.90	18.59
30	18.16	19.33	19.05	23.72	---	18.33	19.45	19.79	19.77	19.87	19.73	18.55
31	18.11	---	19.16	23.83	---	18.40	---	19.80	---	19.88	19.89	---
MEAN	18.09	18.87	19.40	22.24	23.48	21.67	19.28	19.32	19.78	19.91	19.85	19.12
MAX	18.23	19.35	20.18	24.35	23.80	23.27	19.63	19.87	19.85	20.09	19.92	19.90
MIN	17.97	18.07	19.01	18.89	22.85	18.33	18.28	18.82	19.70	19.81	19.73	18.43

06342260 SQUARE BUTTE CREEK BELOW CENTER, ND

LOCATION.--Lat 47°03'25", long 101°11'35", in SE¹/₄ sec.4, T.141 N., R.83 W., Oliver County, Hydrologic Unit 10130101, on right bank at southeast corner of farmyard and 6 mi southeast of Center.

DRAINAGE AREA.--146 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 1,865 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated by Nelson Lake 1.5 mi upstream beginning Aug. 24, 1967, capacity 5,000 acre-ft. The capacity of Nelson Lake was increased to 10,000 acre-ft in Aug. 1975.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	1.4	e1.0	e1.2	e1.2	e1.0	1.5	e1.6	1.5	2.5	e1.8	e1.9
2	2.1	1.5	e1.0	e1.3	e1.1	e1.0	1.5	1.5	1.5	2.8	e1.6	e1.8
3	2.1	1.3	e1.1	e1.3	e1.1	e1.0	1.5	1.5	1.5	3.0	e1.8	e1.9
4	2.1	1.2	e1.1	e1.4	e1.0	e1.1	1.5	1.7	1.5	2.8	e1.7	e1.6
5	2.0	1.2	e1.3	e1.5	e1.0	e1.0	1.6	1.8	1.5	2.4	e1.8	e1.9
6	2.0	1.3	e1.2	e1.3	e1.0	e1.1	1.5	1.8	1.5	2.3	e1.5	e1.7
7	1.9	1.3	e1.2	e1.4	e1.0	e1.0	1.5	1.5	1.5	2.2	e1.8	e1.7
8	2.1	e1.3	e1.2	e1.5	e1.0	e0.99	1.6	1.7	1.5	2.1	e1.7	e1.8
9	2.0	1.5	e1.1	e1.4	e1.1	e0.98	1.5	1.7	1.6	2.2	e1.6	e2.0
10	1.9	1.5	e1.1	e1.3	e1.1	e0.98	1.5	1.5	1.7	2.1	e1.7	e2.7
11	1.9	1.5	e1.1	e1.2	e1.0	e0.99	1.5	1.5	2.1	1.9	1.9	e2.8
12	1.9	1.4	e1.1	e1.1	e1.0	e1.1	1.6	1.5	2.2	1.8	1.7	e2.6
13	1.9	1.0	e1.0	e1.1	e1.1	e1.6	1.9	1.8	2.5	1.7	1.6	e2.4
14	1.9	1.4	e1.0	e1.0	e1.1	e3.5	1.8	28	2.5	1.7	1.5	e2.2
15	1.9	1.4	e1.0	e1.0	e1.2	e7.0	1.7	51	2.3	1.7	1.6	e2.1
16	1.9	1.4	e1.0	e1.1	e1.1	e1.0	e1.7	58	2.1	1.5	1.6	e2.0
17	1.9	1.4	e1.1	e1.0	e1.1	e6.0	1.7	26	1.9	1.5	1.6	e2.0
18	1.8	1.1	e1.2	e1.1	e1.2	e4.5	1.6	12	1.9	1.7	e1.8	e1.9
19	1.8	e1.0	e1.1	e1.1	e1.3	e2.9	1.6	1.5	1.8	1.7	e1.8	e1.9
20	1.7	e1.0	e1.1	e1.1	e1.1	e1.9	1.6	1.4	1.7	1.8	1.6	e1.9
21	1.7	e1.0	e1.0	e1.1	e1.1	e1.6	1.7	1.4	1.8	e1.7	1.7	e1.8
22	1.7	e1.2	e1.0	e1.1	e1.1	e1.6	1.8	1.4	1.8	e1.9	1.7	e1.9
23	1.6	e1.1	e1.0	e1.0	e1.0	e1.8	1.6	1.5	1.7	e1.6	1.8	e1.8
24	1.6	e1.1	e1.0	e1.0	e1.0	e1.9	1.7	1.5	1.8	e1.6	1.8	e1.8
25	1.6	e1.0	e1.0	e1.1	e1.0	e2.0	1.6	1.5	1.8	e1.8	1.6	e1.9
26	1.5	e1.1	e1.2	e1.0	e1.1	e1.9	1.6	1.5	1.7	e1.8	1.5	e1.8
27	1.4	e1.1	e1.3	e1.1	e1.1	e1.8	1.6	1.5	1.7	e1.7	1.7	e1.9
28	1.5	e1.1	e1.2	e1.2	e1.1	e1.7	e1.6	1.5	1.7	e1.6	e1.8	e1.9
29	1.4	e1.1	e1.1	e1.1	---	e1.6	e1.6	1.5	1.7	e1.5	e1.7	e1.9
30	1.4	e1.0	e1.2	e1.1	---	e1.5	e1.6	1.5	2.1	e1.6	e1.9	e2.0
31	1.4	---	e1.2	e1.2	---	e1.5	---	1.5	---	e1.7	e1.6	---
TOTAL	55.7	36.9	34.2	36.4	30.3	68.54	48.3	215.3	54.1	59.9	52.5	59.5
MEAN	1.80	1.23	1.10	1.17	1.08	2.21	1.61	6.95	1.80	1.93	1.69	1.98
MAX	2.1	1.5	1.3	1.5	1.3	10	1.9	58	2.5	3.0	1.9	2.8
MIN	1.4	1.0	1.0	1.0	1.0	0.98	1.5	1.4	1.5	1.5	1.5	1.6
AC-FT	110	73	68	72	60	136	96	427	107	119	104	118

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2003, BY WATER YEAR (WY)

MEAN	1.57	1.46	1.39	1.36	7.06	53.7	35.3	9.33	6.68	9.94	2.96	1.64
MAX	2.98	2.99	3.35	2.10	109	216	223	47.8	65.0	175	34.5	3.64
(WY)	(1981)	(1983)	(1978)	(2001)	(1996)	(1987)	(1969)	(1995)	(1966)	(1993)	(1993)	(1980)
MIN	0.24	0.19	0.21	0.20	0.089	1.24	1.00	0.79	0.57	0.71	0.83	0.35
(WY)	(1968)	(1968)	(1968)	(1968)	(1966)	(1998)	(1998)	(1989)	(1989)	(1989)	(1982)	(1967)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1965 - 2003

ANNUAL TOTAL	573.3	751.64	
ANNUAL MEAN	1.57	2.06	11.1
HIGHEST ANNUAL MEAN			30.0 1969
LOWEST ANNUAL MEAN			0.86 1968
HIGHEST DAILY MEAN	4.0 Mar 27	58 May 16	2,670 Jul 18, 1969
LOWEST DAILY MEAN	1.0 Nov 13	0.98 Mar 9	0.00 Feb 14, 1966
ANNUAL SEVEN-DAY MINIMUM	1.0 Dec 19	1.0 Mar 5	0.00 Feb 14, 1966
MAXIMUM PEAK FLOW		82 May 16	9,700 Jun 24, 1966
MAXIMUM PEAK STAGE		3.12 May 16	14.35 Jun 24, 1966
INSTANTANEOUS LOW FLOW			0.00 Feb 14, 1966
ANNUAL RUNOFF (AC-FT)	1,140	1,490	8,030
10 PERCENT EXCEEDS	2.0	2.1	7.0
50 PERCENT EXCEEDS	1.7	1.6	1.5
90 PERCENT EXCEEDS	1.1	1.0	0.91

e Estimated

06342260 SQUARE BUTTE CREEK BELOW CENTER, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
NOV 07...	--	--	--	--	--	--
JAN 08...	--	--	--	--	--	--
FEB 19...	--	--	--	--	--	--
MAR 21...	--	--	--	--	--	--
APR 21...	50	280	<0.10	3	2	1,200
JUN 19...	--	--	--	--	--	--
JUL 17...	50	120	<0.20	3	3	1,200
AUG 18...	--	--	--	--	--	--
SEP 30...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

BURNT CREEK BASIN

06342450 BURNT CREEK NEAR BISMARCK, ND

LOCATION.--Lat 46°54'54", long 100°48'48", in SW¹₄NW¹₄ sec.29, T.140 N., R.80 W., Burleigh County, Hydrologic Unit 10130101, on right bank, upstream of county highway bridge, and 7 mi northwest of Bismarck.

DRAINAGE AREA.--108 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1967 to current year (seasonal records only since 1982).

GAGE.--Water-stage recorder. Elevation of gage is 1,690 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 227 ft³/s, Mar. 17, gage height, 6.74 ft, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	e0.20	e0.10	e4.5	2.9	2.1	0.84	0.00	0.00
2	---	---	---	---	e0.20	e0.09	e4.2	3.3	2.0	0.68	0.00	0.00
3	---	---	---	---	e0.19	e0.09	e3.9	2.5	2.3	0.57	0.00	0.00
4	---	---	---	---	e0.19	e0.09	3.6	2.8	3.0	0.54	0.00	0.00
5	---	---	---	---	e0.18	e0.08	2.9	5.3	5.0	0.44	0.00	0.00
6	---	---	---	---	e0.18	e0.08	2.8	14	5.1	0.41	0.00	0.00
7	---	---	---	---	e0.18	e0.08	2.7	18	4.9	1.5	0.00	0.00
8	---	---	---	---	e0.17	e0.07	2.7	17	5.8	1.1	0.00	0.00
9	---	---	---	---	e0.16	e0.07	2.9	21	4.6	0.71	0.00	0.00
10	---	---	---	---	e0.16	e0.07	3.5	25	4.0	0.59	0.00	0.00
11	---	---	---	---	e0.17	e0.06	3.3	20	3.1	0.50	0.00	0.00
12	---	---	---	---	e0.17	e0.06	2.9	14	3.4	0.42	0.00	0.00
13	---	---	---	---	e0.16	e0.06	2.9	11	4.0	0.30	0.00	0.00
14	---	---	---	---	e0.16	e1.0	3.0	19	4.5	0.24	0.00	0.00
15	---	---	---	---	e0.16	e6.5	2.7	27	3.3	0.18	0.00	0.00
16	---	---	---	---	e0.17	e27	3.1	17	2.6	0.17	0.00	0.00
17	---	---	---	---	e0.16	e205	4.1	13	2.1	0.11	0.00	0.00
18	---	---	---	---	e0.16	170	5.1	13	1.8	0.07	0.00	0.00
19	---	---	---	---	e0.15	131	6.2	16	1.5	0.06	0.00	0.00
20	---	---	---	---	e0.15	e75	6.4	14	1.2	e0.03	0.00	0.00
21	---	---	---	---	e0.14	e49	6.1	11	0.99	e0.02	0.00	0.00
22	---	---	---	---	e0.14	e30	5.3	7.9	0.82	e0.01	0.00	0.00
23	---	---	---	---	e0.13	e20	4.5	6.5	0.76	0.00	0.00	0.00
24	---	---	---	---	e0.12	e13	4.0	6.5	0.71	0.00	0.00	0.00
25	---	---	---	---	e0.11	e11	7.3	6.7	0.88	0.00	0.00	0.00
26	---	---	---	---	e0.11	e8.0	5.5	5.8	1.1	0.00	0.00	0.00
27	---	---	---	---	e0.11	e6.0	3.9	4.9	1.5	0.00	0.00	0.00
28	---	---	---	---	e0.10	e5.7	3.0	3.6	1.7	0.00	0.00	0.00
29	---	---	---	---	---	e5.2	3.0	3.0	1.4	0.00	0.00	0.00
30	---	---	---	---	---	e5.0	2.8	2.4	1.1	0.00	0.00	0.00
31	---	---	---	---	---	e4.5	---	2.2	---	0.00	0.00	---
TOTAL	---	---	---	---	4.38	773.90	118.8	336.3	77.26	9.49	0.00	0.00
MEAN	---	---	---	---	0.16	25.0	3.96	10.8	2.58	0.31	0.000	0.000
MAX	---	---	---	---	0.20	205	7.3	27	5.8	1.5	0.00	0.00
MIN	---	---	---	---	0.10	0.06	2.7	2.2	0.71	0.00	0.00	0.00
AC-FT	---	---	---	---	8.7	1,540	236	667	153	19	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2003, BY WATER YEAR (WY)

MEAN	0.31	0.26	0.10	0.054	12.5	44.8	30.7	4.99	3.02	3.69	1.24	0.39
MAX	1.97	1.19	0.66	0.45	87.2	170	256	15.0	17.2	72.0	18.1	4.80
(WY)	(1981)	(1981)	(1978)	(1979)	(2000)	(1987)	(1969)	(1995)	(2000)	(1993)	(1999)	(1999)
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(WY)	(1968)	(1968)	(1968)	(1968)	(1968)	(1990)	(1990)	(1990)	(1977)	(1973)	(1972)	(1970)

06342450 BURNT CREEK NEAR BISMARCK, ND—Continued

SUMMARY STATISTICS

WATER YEARS 1968 - 2003

ANNUAL MEAN	a7.57	
HIGHEST ANNUAL MEAN	a22.2	1969
LOWEST ANNUAL MEAN	a0.55	1977
HIGHEST DAILY MEAN	3,900	Apr 18, 1979
LOWEST DAILY MEAN	0.00	Oct 1, 1967
ANNUAL SEVEN-DAY MINIMUM	0.00	Oct 1, 1967
MAXIMUM PEAK FLOW	b10,000	Apr 18, 1979
MAXIMUM PEAK STAGE	16.93	Apr 18, 1979
ANNUAL RUNOFF (AC-FT)	a5,490	
10 PERCENT EXCEEDS	6.0	
50 PERCENT EXCEEDS	0.03	
90 PERCENT EXCEEDS	0.00	

a Based on complete water years only (1968-81)

b From rating curve extended above 2,200 ft³/s on basis of indirect measurement of peak flow at U.S. Highway 83

e Estimated

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfl lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
MAR 13...	0920	0.06	--	--	--	2,030	-1.0	0.0	--	--	--	--	--
MAR 27...	1525	6.0	--	--	--	650	8.0	2.0	--	--	--	--	--
APR 18...	0945	5.3	--	--	--	1,300	10.0	8.0	--	--	--	--	--
MAY 29...	1410	3.1	--	--	--	1,280	27.5	21.0	--	--	--	--	--
JUN 26...	1400	1.2	7.9	8.3	1,400	1,460	20.0	18.0	460	59.9	75.7	6.20	3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)
MAR 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 26...	169	44	448	7.6	0.25	4.02	350	940	2.95	3.1	<10	<1	120

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
MAR 13...	--	--	--	--	--
MAR 27...	--	--	--	--	--
APR 18...	--	--	--	--	--
MAY 29...	--	--	--	--	--
JUN 26...	30	<0.20	2	<1	720

Remark codes used in this table:
 < -- Less than

06342500 MISSOURI RIVER AT BISMARCK, ND

LOCATION.--Lat 46°48'51", long 100°49'17", in SE¹₄NW¹₄SE¹₄ sec.31, T.139 N., R.80 W., Burleigh County, Hydrologic Unit 10130101, on left bank 40 ft upstream from Bismarck City waterplant, 2,100 ft downstream from Burlington Northern Railway bridge, 1.6 mi northwest of Bismarck Post Office, 3.5 mi upstream from Heart River, and at mile 1,314.5.

DRAINAGE AREA.--186,400 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October to November 1927, April 1928 to current year. See WSP 1729 or 1917 for history of data prior to April 1928.

GAGE.--Water-stage recorder. Datum of gage is 1,618.28 ft above National Geodetic Vertical Datum of 1929, revised. See WSP 1729 or 1917 for history of changes prior to Sept. 30, 1937.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated by Lake Sakakawea (station 06338000), 75.4 mi upstream, since November 1953.

EXTREMES PRIOR TO COMPLETION OF GARRISON DAM.--Maximum discharge, 500,000 ft³/s, Apr. 6, 1952, gage height, 27.90 ft.

EXTREMES SINCE COMPLETION OF GARRISON DAM.--Since completion of Garrison Dam in 1953, maximum discharge, 68,900 ft³/s, July 13, 1975, gage height, 14.24 ft; maximum gage height, 14.58 ft, Dec. 18, 1979, backwater from ice.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 31.6 ft, Mar. 31, 1881, present site and datum.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14,200	14,500	e21,100	e19,000	e20,600	e24,200	14,900	18,600	22,900	22,500	22,500	22,000
2	14,300	14,500	e21,200	e19,600	e20,700	e24,000	13,900	16,700	22,700	22,900	22,300	21,800
3	13,700	15,400	e21,300	e20,100	e20,900	e23,600	15,100	16,300	22,900	23,000	22,300	21,900
4	14,300	16,200	e21,400	e19,400	e21,500	e23,600	18,100	16,200	23,000	22,800	22,300	20,700
5	14,500	16,900	e21,200	e19,200	e21,800	e23,200	18,600	16,300	22,700	22,400	22,600	19,600
6	14,600	17,900	21,400	e19,000	e22,000	e22,600	18,000	16,900	23,000	22,800	22,100	19,200
7	14,600	18,700	21,100	e18,700	e22,400	e22,600	18,700	16,400	22,600	22,700	22,000	19,300
8	14,500	18,700	21,600	e18,600	e22,800	e22,200	19,400	16,500	22,500	22,500	22,200	19,000
9	14,300	18,600	21,500	e18,400	e23,200	e21,500	18,800	16,800	22,700	22,500	22,200	18,600
10	14,200	18,600	21,500	e18,400	e23,600	e21,200	18,100	16,500	23,000	23,100	22,100	19,600
11	14,000	18,600	21,500	e18,500	e24,000	e20,800	17,700	16,600	23,000	22,600	22,000	20,100
12	14,000	18,600	22,100	e19,300	e24,100	e20,400	17,800	16,400	23,200	22,600	21,500	18,900
13	14,000	18,400	21,700	e19,600	e24,300	e20,500	18,900	16,600	22,800	22,400	21,700	18,800
14	13,700	18,500	21,900	e19,200	e24,400	e20,000	20,100	17,500	22,800	22,400	21,700	18,500
15	14,400	18,400	21,400	e19,000	e24,700	e19,100	19,800	16,600	23,100	22,400	21,800	19,500
16	14,000	18,600	21,400	e18,800	e24,600	e19,000	20,200	17,800	23,100	22,200	22,000	18,300
17	14,200	18,700	21,700	e19,100	e24,300	e18,500	20,800	16,800	23,200	22,600	21,400	15,400
18	14,400	18,600	21,500	e19,100	e24,400	e17,700	20,400	20,700	22,700	23,000	21,500	14,200
19	14,000	18,600	21,300	e19,300	e24,500	e17,100	20,500	23,200	22,900	22,900	22,000	13,700
20	14,100	18,600	21,600	e19,400	e24,500	e16,300	20,600	22,900	22,800	22,800	22,000	13,900
21	14,000	18,800	21,500	e19,600	e24,400	e15,800	20,700	22,700	23,000	22,800	21,800	14,500
22	14,400	18,600	e21,000	e19,800	e24,500	e15,400	20,500	23,100	23,100	22,800	21,400	14,800
23	13,900	18,800	e20,900	e19,500	e24,700	e15,200	21,000	22,400	22,500	22,700	21,700	14,200
24	14,200	18,700	e21,100	e19,000	e24,500	e14,600	21,100	23,200	22,500	22,900	21,700	14,200
25	14,500	18,800	e21,300	e19,200	e24,800	e14,300	20,600	23,000	22,900	22,400	22,000	14,100
26	14,300	19,100	e20,700	e19,800	e24,800	e14,300	21,100	22,800	22,700	22,400	21,900	14,100
27	14,300	e19,600	e19,700	e19,800	e24,400	e14,300	20,500	23,100	22,400	22,800	21,400	14,000
28	14,200	e20,800	e19,100	e19,200	e24,400	e14,400	20,400	23,200	22,300	22,600	20,800	13,700
29	14,200	e21,100	e18,800	e19,200	---	e14,600	19,900	22,800	22,500	22,900	21,700	13,800
30	14,700	e21,100	e18,900	e20,200	---	e14,500	20,000	22,900	22,700	22,600	21,900	14,400
31	14,800	---	19,100	e20,700	---	e14,400	---	22,800	---	22,400	20,900	---
TOTAL	441,500	551,000	651,500	597,700	659,800	579,900	576,200	604,300	684,200	702,400	677,400	514,800
MEAN	14,240	18,370	21,020	19,280	23,560	18,710	19,210	19,490	22,810	22,660	21,850	17,160
MAX	14,800	21,100	22,100	20,700	24,800	24,200	21,100	23,200	23,200	23,100	22,600	22,000
MIN	13,700	14,500	18,800	18,400	20,600	14,300	13,900	16,200	22,300	22,200	20,800	13,700
AC-FT	875,700	1,093,000	1,292,000	1,186,000	1,309,000	1,150,000	1,143,000	1,199,000	1,357,000	1,393,000	1,344,000	1,021,000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 2003, BY WATER YEAR (WY)

MEAN	21,140	21,230	20,700	22,700	24,820	22,420	21,240	22,700	24,320	25,260	25,050	22,110
MAX	48,180	43,240	31,690	32,350	34,840	34,370	40,370	42,030	43,540	64,610	57,010	45,060
(WY)	(1998)	(1998)	(1970)	(1969)	(1969)	(1972)	(1972)	(1972)	(1975)	(1975)	(1975)	(1997)
MIN	8,399	8,155	7,890	6,519	5,883	6,317	10,420	9,234	8,445	10,840	9,271	8,121
(WY)	(1963)	(1963)	(1955)	(1955)	(1956)	(1955)	(1993)	(1963)	(1960)	(1960)	(1962)	(1962)

MISSOURI RIVER MAIN STEM

06342500 MISSOURI RIVER AT BISMARCK, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1954 - 2003 ^c	
ANNUAL TOTAL	6,177,400		7,240,700		22,800	
ANNUAL MEAN	16,920		19,840		35,630	1975
HIGHEST ANNUAL MEAN					14,320	1960
LOWEST ANNUAL MEAN					68,800	Jul 13, 1975
HIGHEST DAILY MEAN	23,300	Aug 31	24,800	Feb 25	4,000	Mar 25, 1955
LOWEST DAILY MEAN	10,200	May 25	13,700	Oct 3	4,860	Mar 21, 1955
ANNUAL SEVEN-DAY MINIMUM	10,400	May 19	14,000	Sep 23	68,900	Jul 13, 1975
MAXIMUM PEAK FLOW			a25,000	Feb 25	b14.80	Jan 13, 1983
MAXIMUM PEAK STAGE			b10.91	Feb 14		
INSTANTANEOUS LOW FLOW			13,700	Oct 3		
ANNUAL RUNOFF (AC-FT)	12,250,000		14,360,000		16,520,000	
10 PERCENT EXCEEDS	22,200		23,000		34,000	
50 PERCENT EXCEEDS	14,600		20,700		21,900	
90 PERCENT EXCEEDS	11,900		14,400		12,000	

a About

b Backwater from ice

c Since completion of Garrison Dam

e Estimated

06342500 MISSOURI RIVER AT BISMARCK, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1969 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
MAY 07...	1330	15,800	8.5	8.3	642	--e	18.0	12.8	210	50.0	21.0	4.60	2
JUN 04...	1210	22,900	--	--	--	594	17.5	11.5	--	--	--	--	--
JUL 10...	1110	22,800	7.8	8.3	647	633	23.0	16.5	220	52.5	20.9	3.50	2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
MAY 07...	56.0	36	166	10.0	0.60	--	160	402	18,000	423	2.0	20	1
JUN 04...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 10...	56.3	36	165	9.6	0.56	6.92	154	397	24,900	--	2.0	<10	<1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
MAY 07...	50	20	<0.10	3	1	560
JUN 04...	--	--	--	--	--	--
JUL 10...	50	<10	<0.20	3	<1	510

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

06343500 E.A. PATTERSON LAKE NEAR DICKINSON, ND

LOCATION.--Lat 46°52'11", long 102°49'37", in NE $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.8, T.139 N., R.96 W., Stark County, Hydrologic Unit 10130202, at left edge of spillway and 2 mi southwest of Dickinson.

DRAINAGE AREA.--400 mi², approximately.

MONTHEND-ELEVATION AND CONTENTS RECORDS

PERIOD OF RECORD.--May 1950 to current year. Prior to October 1958, published as Dickinson Reservoir near Dickinson.

GAGE.--Water-stage recorder. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to Jan. 4, 1961, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earth-ll dam; storage began May 23, 1950; dam completed Aug. 9, 1950. Total capacity is 24,600 acre-ft at maximum pool, elevation, 2,428.9 ft. Dead storage is 1,000 acre-ft below lowest point of outlet, elevation, 2,404.0 ft. Conservation storage is 9,100 acre-ft between elevations 2,404.0 ft and 2,420.0 ft, crest of spillway. The crest of the spillway was raised 3.5 ft in 1981 from 2,416.5 ft. Figures given herein represent total contents based on capacity table dated 1991. The reservoir is for food control, irrigation, and municipal supply.

COOPERATION.--Records furnished by U.S. Bureau of Reclamation. Extremes are those observed.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 11,590 acre-ft, June 9, 1982, elevation, 2,421.13 ft; minimum since initial filling of reservoir, 2,080 acre-ft, Feb. 8, 1993, elevation, 2,408.08 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents 9,450 acre-ft, Mar. 15, elevation, 2,420.68 ft; minimum, 6,080 acre-ft, Aug. 16-17, elevation, 2,417.63 ft.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 -----	2,418.00	6,440	--
Oct. 31 -----	2,417.77	6,220	-220
Nov. 30 -----	2,417.84	6,280	+60
Dec. 31 -----	2,417.95	6,390	+110
CAL YR 2002	--	--	-1,170
Jan. 31 -----	2,418.04	6,480	+90
Feb. 28 -----	2,418.19	6,630	+150
Mar. 31 -----	2,420.15	8,790	+2,160
Apr. 30 -----	2,420.02	8,640	-150
May 31 -----	2,420.00	8,610	-30
June 30 -----	2,418.49	6,930	-1,680
July 31 -----	2,418.02	6,460	-470
Aug. 31 -----	2,417.87	6,310	-150
Sept. 30 -----	2,417.94	6,380	+70
WTR YR 2003	--	--	-60

06343500 E.A. PATTERSON LAKE NEAR DICKINSON, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971, 1975, 1980 to current year.

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth to bottom of sampling intrval meters (82048)	Depth to top of sampling intrval meters (82047)	Color, water, fltrd, Pt-Co units (00080)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfl lab, uS/cm 25 degC (90095)	Hard-ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-ium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)
OCT 07...	1040	1.0	1.0	E150	8.4	1,450	250	50.7	31.0	9.90	6	231	65
FEB 19...	1105	1.5	1.0	25	8.3	1,810	340	64.3	43.2	11.7	7	289	64
JUN 06...	1020	1.1	0.90	50	7.8	E584	100	22.7	11.6	8.69	3	76.9	59
SEP 04...	1205	1.0	1.0	100d	8.3	904	180	37.7	19.8	12.1	4	135	61

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti-tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, fltrd, mg/L (00666)
OCT 07...	E260	7.58	0.36	8.8	504	--	1,060	<0.04	--	<0.06	<0.008	0.07	0.10
FEB 19...	338	9.64	0.38	5.7	633	1,260	1,340	0.23	--	0.19	E.006	0.08	0.10
JUN 06...	123	4.94	0.2	6.8	157	368	388	0.33	1.02	1.19	0.170	0.04	0.05
SEP 04...	197	6.86	0.3	8.1	263	602	626	0.15	--	0.22	E.006n	<0.18d	0.06

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Boron, water, fltrd, ug/L (01020)
OCT 07...	322
FEB 19...	386
JUN 06...	106
SEP 04...	184

Remark codes used in this table:
 < -- Less than
 E -- Estimated value

Value qualifier codes used in this table:
 d -- Diluted sample: method hi range exceeded
 n -- Below the NDV

06343500 E.A. PATTERSON LAKE NEAR DICKINSON, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth of lake, maximum meters (85310)	Reservoir depth, feet (72025)	Ice thickness, meters (82131)	Sampling depth, meters (00098)	Transparency Secchi disc, inches (00077)	Wind direction, clockwise from north, degrees (00036)	Wind speed, mph (00035)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfiltered uS/cm 25 degC (00095)
OCT													
07...	1030	5.5	--	--	0.00	18.0	275	7.0	700	10.6	101	8.3	1,420
07...	1031	--	--	--	0.50	--	--	--	--	10.4	--	8.3	1,420
07...	1032	--	--	--	1.0	--	--	--	--	10.4	--	8.3	1,420
07...	1033	--	--	--	2.0	--	--	--	--	10.3	--	8.3	1,420
07...	1034	--	--	--	3.0	--	--	--	--	10.3	--	8.3	1,420
07...	1035	--	--	--	4.0	--	--	--	--	10.2	--	8.3	1,420
07...	1036	--	--	--	5.0	--	--	--	--	10.2	--	8.3	1,420
07...	1037	--	--	--	5.5	--	--	--	--	10.2	--	8.3	1,420
FEB													
19...	1055	6.7	--	0.50	0.00	184	0.0	<5.0	703	15.4	118	8.0	1,890
19...	1056	--	--	--	1.0	--	--	--	--	14.6	--	8.0	1,870
19...	1057	--	--	--	2.0	--	--	--	--	13.8	--	8.0	1,880
19...	1058	--	--	--	3.0	--	--	--	--	13.6	--	8.0	1,890
19...	1059	--	--	--	4.0	--	--	--	--	13.0	--	7.9	1,980
19...	1100	--	--	--	5.0	--	--	--	--	9.1	--	7.7	2,090
19...	1101	--	--	--	6.0	--	--	--	--	9.2	--	7.7	2,320
19...	1102	--	--	--	6.7	--	--	--	--	7.5	--	7.6	2,360
JUN													
06...	1010	7.3	--	--	0.00	8.40	285	11	705	6.2	68	7.5	618
06...	1011	--	--	--	0.50	--	--	--	--	6.2	--	7.5	618
06...	1012	--	--	--	1.0	--	--	--	--	6.2	--	7.5	618
06...	1013	--	--	--	2.0	--	--	--	--	6.2	--	7.5	619
06...	1014	--	--	--	4.0	--	--	--	--	6.1	--	7.5	619
06...	1016	--	--	--	6.0	--	--	--	--	6.1	--	7.5	619
06...	1017	--	--	--	7.3	--	--	--	--	0.6	--	7.2	627
SEP													
04...	1155	--	6.2	--	0.00	0.36	150	<5.0	708	6.9	80	7.8	947
04...	1156	--	--	--	0.50	--	--	--	--	6.5	--	7.8	947
04...	1157	--	--	--	1.0	--	--	--	--	6.3	--	7.8	946
04...	1158	--	--	--	2.0	--	--	--	--	6.6	--	7.9	950
04...	1159	--	--	--	3.2	--	--	--	--	6.2	--	7.9	956
04...	1200	--	--	--	4.5	--	--	--	--	6.1	--	7.9	962
04...	1201	--	--	--	5.4	--	--	--	--	5.9	--	7.8	969
04...	1202	--	--	--	6.2	--	--	--	--	5.7	--	7.8	970

06343500 E.A. PATTERSON LAKE NEAR DICKINSON, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)
OCT		
07...	12.0	9.5
07...	--	9.5
07...	--	9.5
07...	--	9.4
07...	--	9.4
07...	--	9.4
07...	--	9.4
07...	--	9.4
FEB		
19...	4.0	1.0
19...	--	2.4
19...	--	2.8
19...	--	3.0
19...	--	3.0
19...	--	3.0
19...	--	2.8
19...	--	2.9
JUN		
06...	15.0	16.0
06...	--	16.0
06...	--	16.0
06...	--	15.9
06...	--	15.9
06...	--	15.9
06...	--	15.1
SEP		
04...	28.0	18.9
04...	--	18.8
04...	--	18.7
04...	--	18.5
04...	--	18.4
04...	--	18.3
04...	--	18.2
04...	--	18.1

Remark codes used in this table:
 < -- Less than

HEART RIVER BASIN

06344600 GREEN RIVER NEAR NEW HRADEC, ND

LOCATION.--Lat 47°01'40", long 103°03'10", on line between secs.13 and 14, T.141 N., R.98 W., Billings County, Hydrologic Unit 10130202, on left bank above county highway bridge and 8 mi west of New Hradec.

DRAINAGE AREA.--152 mi², approximately.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 2,510 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS--Records good except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.36	0.74	0.68	e0.64	e0.66	e0.58	5.1	1.4	1.3	3.4	0.30	0.06
2	0.84	0.69	0.72	e0.69	e0.64	e0.58	4.4	1.5	1.6	3.0	0.20	0.05
3	0.90	0.70	0.71	e0.66	e0.63	e0.59	3.6	1.3	2.0	1.1	0.11	0.04
4	0.51	0.73	0.61	e0.74	e0.62	e0.57	4.6	1.1	2.0	0.59	0.07	0.03
5	0.50	0.75	0.45	e0.78	e0.62	e0.57	4.5	1.3	2.0	0.49	0.05	0.03
6	0.59	0.77	0.44	e0.82	e0.62	e0.57	4.5	2.4	1.6	0.45	0.05	0.02
7	0.59	0.81	0.49	e0.86	e0.62	e0.55	4.5	3.8	1.4	0.43	0.09	0.02
8	0.63	0.85	0.50	e0.88	e0.61	e0.55	4.5	3.4	1.4	0.39	0.10	0.01
9	0.60	0.95	0.55	e0.87	e0.60	e0.55	4.4	4.8	2.4	0.54	0.18	0.00
10	0.58	0.93	0.59	e0.87	e0.60	e0.54	4.6	9.5	2.9	7.2	0.18	0.03
11	0.61	0.90	0.58	e0.85	e0.61	e0.54	4.2	9.8	2.4	8.9	0.12	0.13
12	0.57	0.92	0.58	e0.81	e0.61	e0.60	3.5	9.2	2.3	3.5	0.11	0.21
13	0.53	0.96	0.54	e0.77	e0.60	e1.0	3.1	8.0	2.6	1.5	0.08	0.36
14	0.54	1.0	0.59	e0.76	e0.60	e40	2.9	5.8	3.8	0.60	0.06	0.40
15	0.51	1.1	0.62	e0.74	e0.60	e800	2.6	4.3	4.6	0.30	0.04	0.30
16	0.56	1.1	0.72	e0.73	e0.61	e900	2.7	3.1	4.5	0.28	0.03	0.23
17	0.61	1.0	0.71	e0.71	e0.61	e700	2.8	2.2	4.3	0.29	0.01	0.20
18	0.67	0.99	0.69	e0.71	e0.61	e3,000	3.3	2.0	4.2	0.24	0.00	0.19
19	0.72	0.95	0.65	e0.70	e0.60	458	3.3	3.2	4.3	0.20	0.06	0.18
20	0.72	0.91	e0.65	e0.70	e0.59	136	3.1	3.1	4.5	0.20	0.14	0.18
21	0.75	0.91	e0.66	e0.70	e0.58	99	3.1	2.6	4.7	0.20	0.29	0.23
22	0.84	0.92	e0.62	e0.70	e0.58	66	3.0	2.3	4.6	0.20	0.22	0.26
23	0.79	0.84	e0.60	e0.72	e0.58	46	2.8	2.0	4.6	0.21	0.18	0.26
24	0.78	0.69	e0.58	e0.72	e0.58	31	2.6	1.8	4.6	0.25	0.14	0.26
25	0.78	0.65	e0.57	e0.73	e0.58	20	2.3	1.5	5.5	0.33	0.10	0.26
26	0.81	0.66	e0.57	e0.71	e0.58	15	2.2	1.5	5.5	0.40	0.07	0.30
27	0.86	0.65	e0.59	e0.70	e0.58	11	2.0	1.4	5.6	0.46	0.06	0.29
28	0.93	0.68	e0.60	e0.69	e0.58	8.7	1.8	1.6	5.7	0.50	0.06	0.27
29	1.0	0.75	e0.63	e0.69	---	6.7	1.5	1.4	5.1	0.47	0.06	0.25
30	0.99	0.72	e0.69	e0.68	---	6.2	1.5	1.2	4.2	0.43	0.07	0.25
31	0.87	---	e0.67	e0.67	---	e5.9	---	1.2	---	0.36	0.06	---
TOTAL	21.54	25.22	18.85	23.00	16.90	6,357.29	99.0	99.7	106.2	37.41	3.29	5.30
MEAN	0.69	0.84	0.61	0.74	0.60	205	3.30	3.22	3.54	1.21	0.11	0.18
MAX	1.0	1.1	0.72	0.88	0.66	3,000	5.1	9.8	5.7	8.9	0.30	0.40
MIN	0.36	0.65	0.44	0.64	0.58	0.54	1.5	1.1	1.3	0.20	0.00	0.00
AC-FT	43	50	37	46	34	12,610	196	198	211	74	6.5	11

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 2003, BY WATER YEAR (WY)

MEAN	3.05	1.70	0.99	1.31	8.45	64.3	38.9	16.8	19.4	11.9	3.49	1.65
MAX	47.7	10.6	3.40	14.3	67.4	323	314	141	101	123	29.5	21.1
(WY)	(1983)	(1999)	(1999)	(1974)	(1983)	(1972)	(1975)	(1970)	(1970)	(1964)	(1981)	(1986)
MIN	0.076	0.31	0.13	0.000	0.000	0.33	0.71	0.60	0.067	0.000	0.000	0.000
(WY)	(1993)	(1993)	(1993)	(1993)	(1993)	(1964)	(1990)	(1992)	(1988)	(1988)	(1988)	(1994)

06344600 GREEN RIVER NEAR NEW HRADEC, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1964 - 2003	
ANNUAL TOTAL	1,515.11		6,813.70			
ANNUAL MEAN	4.15		18.7		14.3	
HIGHEST ANNUAL MEAN					35.9 1972	
LOWEST ANNUAL MEAN					0.74 1992	
HIGHEST DAILY MEAN	307	Jun 10	3,000	Mar 18	3,000	Mar 18, 2003
LOWEST DAILY MEAN	0.31	Aug 5	0.00	Aug 18	0.00	May 25, 1964
ANNUAL SEVEN-DAY MINIMUM	0.36	Jul 2	0.02	Sep 4	0.00	May 31, 1964
MAXIMUM PEAK FLOW			a4,000	Mar 18	4,120	May 9, 1970
MAXIMUM PEAK STAGE			b,c17.14	Mar 18	b19.58	Mar 21, 1997
INSTANTANEOUS LOW FLOW					0.00	May 25, 1964
ANNUAL RUNOFF (AC-FT)	3,010		13,510		10,360	
10 PERCENT EXCEEDS	6.6		4.6		13	
50 PERCENT EXCEEDS	0.86		0.70		1.1	
90 PERCENT EXCEEDS	0.47		0.18		0.20	

a About

b Backwater from ice

c From surveyed floodmark

e Estimated

06344600 GREEN RIVER NEAR NEW HRADEC, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 02...	--	--	--	--	--	--
NOV 14...	--	--	--	--	--	--
JAN 09...	--	--	--	--	--	--
MAR 16...	20	60	0.10	<1	<1	70
21...	--	--	--	--	--	--
27...	--	--	--	--	--	--
APR 23...	--	--	--	--	--	--
JUN 05...	--	--	--	--	--	--
JUL 08...	30	20	<0.20	4	1	360
AUG 20...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

HEART RIVER BASIN

06345500 HEART RIVER NEAR RICHARDTON, ND

LOCATION.--Lat 46°44'44", long 102°18'30", in NE¹₄NW¹₄ sec.29, T.138 N., R.92 W., Stark County, Hydrologic Unit 10130202, on right bank 50 ft upstream from bridge on State Highway 8, 0.5 mi downstream from Plum Creek, and 9.5 mi south of Richardton.

DRAINAGE AREA.--1,240 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1903 to September 1922, April 1943 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS (WATER YEARS).--WSP 1209: Drainage area. WSP 1239: 1906, 1918(M), 1947(M).

GAGE.--Water-stage recorder. Datum of gage is 2,153.67 ft above National Geodetic Vertical Datum of 1929. May 18, 1903, to Sept. 30, 1922, nonrecording gage at 3 sites in 1 mi reach below present site at different datums. Apr. 14, 1943, to July 7, 1947, nonrecording gage at present site and datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. Flow is regulated by E.A. Patterson Lake (station 06343500), 85 river miles upstream, since 1950. Some diversions for irrigation and water supply at low flow.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 5, 1938, reached a stage of about 26 ft, from information by local residents, discharge, 16,000 ft³/s; flood of Mar. 25, 1943, reached a stage of 24.2 ft from floodmarks, discharge, 11,700 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	15	12	e10	e7.8	e10	93	29	18	40	8.0	5.7
2	11	15	10	e10	e8.6	e9.7	85	26	19	39	8.1	5.4
3	11	13	10	e11	e9.1	e9.5	77	24	18	39	8.2	5.3
4	11	12	11	e11	e9.7	e9.5	70	28	18	30	8.0	5.1
5	12	12	9.8	e13	e10	e9.5	66	28	18	20	8.0	5.5
6	14	12	9.4	e13	e10	e9.0	63	29	20	16	7.8	5.7
7	18	12	9.3	e14	e10	e8.5	62	30	20	13	8.6	5.3
8	19	13	9.6	e14	e10	e8.1	60	35	20	13	8.8	4.8
9	20	17	10	e14	e11	e8.0	57	49	44	13	9.1	4.2
10	18	17	9.7	e11	e11	e8.0	54	64	49	12	8.9	8.4
11	18	17	9.7	e10	e11	e8.0	52	e67	66	11	14	17
12	17	16	9.6	e9.0	e11	e15	49	70	75	11	14	35
13	17	16	9.7	e7.9	e11	e60	45	71	87	13	11	56
14	20	14	e10	e7.8	e11	e250	43	81	73	14	9.7	29
15	21	14	e9.8	e7.9	e11	e1,090	42	83	62	12	9.1	20
16	22	14	e12	e7.8	e11	e2,900	42	78	59	11	8.8	16
17	22	14	e12	e7.5	e11	e2,500	45	70	58	9.7	7.9	13
18	22	14	e13	e7.4	e11	e3,500	46	63	56	9.7	7.4	12
19	22	14	e13	e7.5	e11	e6,500	51	58	53	13	8.6	10
20	21	13	e12	e7.7	e12	e3,400	47	53	50	12	8.9	9.2
21	21	13	e11	e7.7	e12	1,670	44	47	49	11	10	8.3
22	23	13	e11	e7.7	e11	995	40	42	49	9.9	38	9.1
23	24	13	e11	e7.9	e11	701	38	38	49	9.3	48	9.2
24	23	11	e10	e8.0	e11	481	36	35	50	9.0	32	8.0
25	23	11	e9.8	e7.9	e11	373	35	31	53	8.4	22	7.6
26	22	11	e8.9	e7.8	e11	280	34	29	55	7.8	16	8.1
27	19	11	e8.6	e7.7	e10	215	33	27	58	7.9	12	8.2
28	17	12	e8.7	e7.6	e10	170	30	23	51	8.5	9.8	7.4
29	19	12	e9.6	e7.6	---	137	29	21	48	8.5	8.5	7.4
30	16	12	e10	e7.5	---	116	30	19	43	7.9	7.5	7.2
31	16	---	e10	e7.5	---	102	---	19	---	7.9	6.6	---
TOTAL	570	403	320.2	286.4	295.2	25,552.8	1,498	1,367	1,388	447.5	393.3	353.1
MEAN	18.4	13.4	10.3	9.24	10.5	824	49.9	44.1	46.3	14.4	12.7	11.8
MAX	24	17	13	14	12	6,500	93	83	87	40	48	56
MIN	11	11	8.6	7.4	7.8	8.0	29	19	18	7.8	6.6	4.2
AC-FT	1,130	799	635	568	586	50,680	2,970	2,710	2,750	888	780	700

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 2003, BY WATER YEAR (WY)

	17.0	13.8	9.11	8.89	44.8	379	317	101	164	68.3	29.8	11.9
MEAN	17.0	13.8	9.11	8.89	44.8	379	317	101	164	68.3	29.8	11.9
MAX	240	114	52.5	112	643	2,125	2,160	1,318	1,225	584	401	86.4
(WY)	(1983)	(1983)	(1983)	(1973)	(1982)	(1945)	(1950)	(1970)	(1906)	(1969)	(1909)	(1986)
MIN	0.10	1.93	1.00	0.000	0.000	1.66	5.77	2.78	0.37	0.40	0.000	0.000
(WY)	(1961)	(1961)	(1920)	(1962)	(1950)	(1964)	(1905)	(1992)	(1961)	(1919)	(1991)	(1958)

06345500 HEART RIVER NEAR RICHARDTON, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1903 - 2003	
ANNUAL TOTAL	12,446.4		32,874.5			
ANNUAL MEAN	34.1		90.1		97.8	
HIGHEST ANNUAL MEAN					316	1982
LOWEST ANNUAL MEAN					5.18	1961
HIGHEST DAILY MEAN	2,260	Jun 11	6,500	Mar 19	17,000	Apr 17, 1950
LOWEST DAILY MEAN	5.0	Aug 19	4.2	Sep 9	0.00	Jul 26, 1903
ANNUAL SEVEN-DAY MINIMUM	5.7	Aug 16	5.1	Sep 3	0.00	Jul 26, 1903
MAXIMUM PEAK FLOW			6,700	Mar 19	23,400	Apr 16, 1950
MAXIMUM PEAK STAGE			20.00	Mar 19	28.05	Apr 16, 1950
INSTANTANEOUS LOW FLOW			4.2	Sep 9	0.00	Jul 26, 1903
ANNUAL RUNOFF (AC-FT)	24,690		65,210		70,840	
10 PERCENT EXCEEDS	35		63		125	
50 PERCENT EXCEEDS	16		13		12	
90 PERCENT EXCEEDS	9.0		7.9		2.0	

e Estimated

06345500 HEART RIVER NEAR RICHARDTON, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 01...	--	--	--	--	--	--
NOV 12...	--	--	--	--	--	--
JAN 08...	--	--	--	--	--	--
MAR 17...	--	--	--	--	--	--
MAR 28...	--	--	--	--	--	--
APR 24...	40	40	<0.10	3	1	1,100
MAY 28...	--	--	--	--	--	--
JUL 10...	30	<10	<0.20	5	<1	720
AUG 21...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

06345780 HEART RIVER ABOVE LAKE TSCHIDA NEAR GLEN ULLIN, ND

LOCATION.--Lat 46°39'25", Long 102°04'44", in SW¹₄NE¹₄ sec.30, T.137 N., R.90 W., Grant County, Hydrologic Unit 10130202, on right bank 100 ft downstream from bridge on county road and 16 mi south and 1 mi west of Hebron.

DRAINAGE AREA.--1,530 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,090 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow is regulated by E.A. Patterson Lake (station 06343500) about 90 river mi upstream from station, and some diversions for irrigation and water supply at low flow.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	23	16	e11	e14	e11	102	40	27	48	5.9	8.4
2	13	22	14	e12	e14	e11	90	40	29	45	4.7	7.6
3	13	21	13	e13	e14	e10	81	38	28	42	4.3	6.1
4	14	20	12	e14	e14	e10	73	44	26	42	5.1	5.4
5	15	19	11	e15	e14	e10	66	41	26	36	6.4	5.2
6	15	18	12	e17	e14	e10	62	42	26	26	7.7	5.1
7	15	18	12	e18	e14	e10	61	41	26	20	9.3	4.9
8	20	19	11	e20	e14	e10	60	50	29	16	10	4.0
9	24	19	12	e19	e15	e10	57	78	28	16	10	3.7
10	26	21	13	e19	e15	e10	54	100	50	14	9.7	10
11	25	22	14	e17	e15	e10	51	116	60	12	7.9	25
12	23	22	14	e16	e15	e11	49	129	87	11	e7.7	19
13	23	22	14	e14	e15	e62	48	120	98	10	e7.0	28
14	23	22	15	e13	e15	e121	46	121	119	12	e6.4	74
15	23	20	16	e13	e15	e707	43	129	96	15	e5.8	42
16	29	20	16	e13	e15	e1,980	46	127	79	13	e5.1	30
17	29	19	18	e13	e15	3,720	49	119	73	9.6	e4.7	25
18	28	19	19	e13	e14	3,110	e60	102	69	7.8	e4.3	21
19	27	20	18	e13	e15	5,690	e66	89	64	6.7	4.3	18
20	27	20	16	e13	e14	4,780	e72	75	59	6.2	4.2	15
21	28	19	14	e13	e14	e2,000	e58	65	57	10	e4.1	13
22	30	19	12	e13	e13	e1,520	52	58	55	8.9	e4.0	11
23	31	18	e12	e13	e13	e1,250	47	55	56	7.5	7.6	9.7
24	31	16	e12	e13	e13	e951	44	49	57	6.1	57	8.4
25	32	18	e11	e13	e12	e675	41	42	60	5.3	41	7.5
26	32	16	e10	e13	e12	e327	39	38	59	4.7	30	6.7
27	31	17	e9.6	e13	e12	243	41	37	63	4.7	21	6.1
28	29	17	e10	e13	e11	195	46	35	67	6.0	17	6.3
29	26	17	e11	e13	---	160	43	31	57	6.1	14	6.4
30	24	12	e11	e14	---	133	42	28	53	5.8	12	5.3
31	21	---	e11	e14	---	115	---	26	---	5.8	11	---
TOTAL	740	575	409.6	441	390	27,862	1,689	2,105	1,683	479.2	349.2	437.8
MEAN	23.9	19.2	13.2	14.2	13.9	899	56.3	67.9	56.1	15.5	11.3	14.6
MAX	32	23	19	20	15	5,690	102	129	119	48	57	74
MIN	13	12	9.6	11	11	10	39	26	26	4.7	4.0	3.7
AC-FT	1,470	1,140	812	875	774	55,260	3,350	4,180	3,340	950	693	868

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2003, BY WATER YEAR (WY)

MEAN	22.7	22.2	14.5	10.7	39.8	387	132	82.1	116	74.2	48.3	13.6
MAX	104	95.3	57.7	25.2	205	1,587	582	391	394	265	252	44.2
(WY)	(1999)	(1999)	(1999)	(1996)	(1996)	(1997)	(1997)	(1995)	(2001)	(1993)	(1995)	(1995)
MIN	2.23	6.52	4.14	0.32	3.41	18.5	9.90	6.20	7.21	3.16	0.050	0.10
(WY)	(1992)	(1991)	(1993)	(1991)	(1989)	(1990)	(1992)	(1992)	(1992)	(1989)	(1991)	(1991)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1988 - 2003

ANNUAL TOTAL	15,922.8	37,160.8	
ANNUAL MEAN	43.6	102	81.4
HIGHEST ANNUAL MEAN			229
LOWEST ANNUAL MEAN			9.17
HIGHEST DAILY MEAN	1,750	Jun 12	5,690
LOWEST DAILY MEAN	3.9	Aug 18	3.7
ANNUAL SEVEN-DAY MINIMUM	5.0	Aug 16	4.4
MAXIMUM PEAK FLOW			6,050
MAXIMUM PEAK STAGE			17.90
INSTANTANEOUS LOW FLOW			3.7
ANNUAL RUNOFF (AC-FT)	31,580	73,710	59,000
10 PERCENT EXCEEDS	66	78	120
50 PERCENT EXCEEDS	20	18	18
90 PERCENT EXCEEDS	10	6.9	3.7

a About

b Backwater from ice

e Estimated

06345780 HEART RIVER ABOVE LAKE TSCHIDA NEAR GLEN ULLIN, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1988 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 01...	1120	13	--	--	--	1,480	9.5	11.3	--	--	--	--	--
NOV 12...	1255	24	--	--	--	1,720	3.5	0.5	--	--	--	--	--
JAN 08...	0945	19	--	--	--	2,010	3.0	0.0	--	--	--	--	--
MAR 05...	1505	10	--	--	--	2,030	1.0	0.5	--	--	--	--	--
17...	1610	3,420	--e	8.0	813	835	1.5	0.2	150	29.0	18.0	14.0	4
26...	1230	301	--	--	--	605	14.5	4.1	--	--	--	--	--
APR 21...	1415	58	--	--	--	1,320	21.0	12.3	--	--	--	--	--
JUN 06...	1305	26	--	--	--	1,660	18.5	17.3	--	--	--	--	--
JUL 10...	1540	14	--	--	--	1,210	27.0	23.1	--	--	--	--	--
AUG 18...	1430	4.3	8.1	8.2	1,670	1,660	34.0	27.5	330	53.9	47.1	13.9	7

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 08...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 05...	--	--	--	--	--	--	--	--	--	--	--	--	--
17...	110	59	156	4.5	0.20	--	260	530	5,000	541	2.0	200	1
26...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 21...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 18...	288	64	358	15.3	0.56	9.65	524	1,160	13.4	--	3.8	20	<1

HEART RIVER BASIN

06345780 HEART RIVER ABOVE LAKE TSCHIDA NEAR GLEN ULLIN, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 01...	--	--	--	--	--	--
NOV 12...	--	--	--	--	--	--
JAN 08...	--	--	--	--	--	--
MAR 05...	--	--	--	--	--	--
17...	10	70	0.10	<1	2	310
26...	--	--	--	--	--	--
APR 21...	--	--	--	--	--	--
JUN 06...	--	--	--	--	--	--
JUL 10...	--	--	--	--	--	--
AUG 18...	50	<10	<0.20	8	4	920

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

06346000 LAKE TSCHIDA NEAR GLEN ULLIN, ND

LOCATION.--Lat 46°35'43", long 101°48'34", in SW¹/₄ NE¹/₄ sec.13, T.136 N., R.89 W., Grant County, Hydrologic Unit 10130202, 10 mi upstream from Heart Butte Creek and 14 mi north of Elgin.

DRAINAGE AREA.--1,710 mi², approximately.

MONTHEND-ELEVATION AND CONTENTS RECORDS

PERIOD OF RECORD.--August 1949 to current year. Prior to October 1957, published as Heart Butte Reservoir near Glen Ullin.

GAGE.--Water-stage recorder. Datum of gage is at National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation).

REMARKS.--Reservoir is formed by earth-ll dam; storage began Sept. 29, 1949; dam completed Dec. 9, 1949. Total capacity is 430,000 acre-ft at maximum pool, elevation, 2,118.2 ft. Dead storage is 6,750 acre-ft below lowest point of outlet, elevation, 2,030.0 ft. Active conservation storage is 69,030 acre-ft between elevations 2,030.0 ft and 2,064.5 ft, crest of spillway. Figures given herein represent total contents based on capacity table dated August 1992.

Controlled releases are through 4 by 5 ft slide gate. The spillway is uncontrolled "glory hole" type and discharges through a conduit 14 ft in diameter. The reservoir is for food control, irrigation, and incidental water supply.

COOPERATION.--Records furnished by U.S. Bureau of Reclamation. Extremes are those observed.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 174,000 acre-ft, Apr. 9, 1952, elevation, 2,086.23 ft; minimum since first reaching spillway level, 32,820 acre-ft, Oct. 25, 1991, elevation, 2,049.00 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 87,810 acre-ft, Mar. 20, elevation, 2,070.32 ft; minimum, 52,070 acre-ft, Oct. 2, elevation, 2,059.62 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 -----	2,059.66	52,190	--
Oct. 31 -----	2,060.03	53,260	+1,070
Nov. 30 -----	2,060.28	53,990	+730
Dec. 31 -----	2,060.54	54,760	+770
CAL YR 2002	--	--	-200
Jan. 31 -----	2,060.65	55,080	+320
Feb. 28 -----	2,060.76	55,410	+330
Mar. 31 -----	2,065.80	71,500	+16,090
Apr. 30 -----	2,064.87	68,370	-3,130
May 31 -----	2,064.87	68,370	0
June 30 -----	2,064.81	68,170	-200
July 31 -----	2,062.58	60,970	-7,200
Aug. 31 -----	2,060.86	55,710	-5,260
Sept. 30 -----	2,060.71	55,260	-450
WTR YR 2003	--	--	+3,070

06346000 LAKE TSCHIDA NEAR GLEN ULLIN, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971, 1980 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth to bottom of sampling intrval meters (82048)	Depth to top of sampling intrval meters (82047)	Color, water, fltrd, Pt-Co units (00080)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfltrd lab, uS/cm 25 degC (90095)	Hard-ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)
OCT 07...	1225	1.0	1.0	E62	8.4	1,400	340	61.8	45.3	10.0	5	195	55
FEB 19...	1155	1.5	1.0	15	8.3	1,600	380	67.1	51.9	11.6	5	212	54
JUN 06...	1300	1.1	0.90	30	8.1	1,080	230	43.1	30.2	10.1	4	140	55
SEP 04...	1350	1.0	1.0	45d	8.4	1,140	270	49.9	34.5	12.4	4	155	55

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti-tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, fltrd, mg/L (00666)
OCT 07...	E268	10.6	0.34	6.3	506	--	1,040	E.04	0.08	0.09	0.008	0.05	0.06
FEB 19...	296	12.2	0.35	6.4	573	1,110	1,170	0.13	--	0.11	E.004	0.03	0.04
JUN 06...	197	8.63	0.3	5.2	333	691	735	0.32	0.59	0.63	0.042	0.05	0.06
SEP 04...	225	10.2	0.3	5.8	361d	765	802	0.08	--	0.12	E.005n	<0.18d	0.04

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Boron, water, fltrd, ug/L (01020)
OCT 07...	321
FEB 19...	352
JUN 06...	196
SEP 04...	235

Remark codes used in

this table:

< -- Less than

E -- Estimated

value

Value qualifier codes used in this table:

d -- Diluted

sample: method hi

range exceeded

n -- Below the

NDV

06346000 LAKE TSCHIDA NEAR GLEN ULLIN, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth of lake, maximum meters (85310)	Ice thickness, feet (82130)	Sampling depth, meters (00098)	Transparency Secchi disc, inches (00077)	Wind direction, clkwise from north, degrees (00036)	Wind speed, mph (00035)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT													
07...	1212	13	--	0.00	28.8	285	8.0	709	9.2	92	8.2	1,400	13.5
07...	1213	--	--	0.50	--	--	--	--	9.1	--	8.2	1,400	--
07...	1214	--	--	1.0	--	--	--	--	9.1	--	8.2	1,400	--
07...	1215	--	--	2.0	--	--	--	--	9.1	--	8.2	1,400	--
07...	1216	--	--	4.0	--	--	--	--	9.0	--	8.2	1,400	--
07...	1217	--	--	6.0	--	--	--	--	9.0	--	8.2	1,400	--
07...	1218	--	--	8.0	--	--	--	--	9.0	--	8.2	1,400	--
07...	1219	--	--	10.0	--	--	--	--	9.0	--	8.2	1,400	--
07...	1220	--	--	12.0	--	--	--	--	8.9	--	8.2	1,400	--
07...	1221	--	--	13.1	--	--	--	--	8.8	--	8.2	1,400	--
FEB													
19...	1145	14	22.0	0.00	182	0.0	<5.0	712	14.8	111	8.2	1,660	8.5
19...	1146	--	--	1.0	--	--	--	--	14.4	--	8.2	1,660	--
19...	1147	--	--	2.0	--	--	--	--	14.3	--	8.2	1,660	--
19...	1148	--	--	4.0	--	--	--	--	14.1	--	8.2	1,650	--
19...	1149	--	--	6.0	--	--	--	--	13.4	--	8.1	1,640	--
19...	1150	--	--	8.0	--	--	--	--	12.0	--	8.1	1,680	--
19...	1151	--	--	10.0	--	--	--	--	8.5	--	7.9	1,720	--
19...	1152	--	--	12.0	--	--	--	--	9.1	--	7.8	1,790	--
19...	1153	--	--	13.6	--	--	--	--	9.0	--	7.8	1,820	--
JUN													
06...	1245	15	--	0.00	73.2	300	15	712	8.7	96	8.1	1,100	19.5
06...	1246	--	--	0.50	--	--	--	--	8.7	--	8.1	1,100	--
06...	1247	--	--	1.0	--	--	--	--	8.7	--	8.1	1,100	--
06...	1248	--	--	2.0	--	--	--	--	8.7	--	8.1	1,100	--
06...	1249	--	--	4.0	--	--	--	--	8.7	--	8.1	1,100	--
06...	1250	--	--	6.0	--	--	--	--	8.6	--	8.1	1,100	--
06...	1251	--	--	8.0	--	--	--	--	8.6	--	8.1	1,100	--
06...	1252	--	--	10.0	--	--	--	--	8.4	--	8.0	1,100	--
06...	1253	--	--	12.0	--	--	--	--	7.4	--	7.9	1,110	--
06...	1254	--	--	14.0	--	--	--	--	6.0	--	7.7	1,120	--
06...	1255	--	--	14.7	--	--	--	--	4.8	--	7.6	1,120	--
SEP													
04...	1335	13	--	0.00	27.0	190	10	717	7.1	84	8.1	1,170	29.0
04...	1336	--	--	0.50	--	--	--	--	7.0	--	8.2	1,170	--
04...	1337	--	--	1.1	--	--	--	--	7.0	--	8.1	1,170	--
04...	1338	--	--	2.5	--	--	--	--	6.9	--	8.1	1,170	--
04...	1339	--	--	4.0	--	--	--	--	6.9	--	8.1	1,170	--
04...	1340	--	--	5.1	--	--	--	--	6.8	--	8.1	1,180	--
04...	1341	--	--	6.7	--	--	--	--	6.8	--	8.1	1,180	--
04...	1342	--	--	8.2	--	--	--	--	6.8	--	8.1	1,180	--
04...	1343	--	--	9.7	--	--	--	--	6.8	--	8.1	1,170	--
04...	1344	--	--	11.4	--	--	--	--	6.0	--	8.1	1,180	--
04...	1345	--	--	12.8	--	--	--	--	5.2	--	8.0	1,180	--
04...	1346	--	--	13.1	--	--	--	--	5.0	--	8.0	1,180	--

HEART RIVER BASIN

06346000 LAKE TSCHIDA NEAR GLEN ULLIN, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, water, deg C (00010)
OCT	
07...	12.1
07...	12.1
07...	12.1
07...	12.1
07...	12.1
07...	12.1
07...	12.1
07...	12.1
07...	12.0
07...	12.0
FEB	
19...	0.6
19...	1.0
19...	1.4
19...	1.7
19...	2.4
19...	2.7
19...	3.3
19...	3.3
19...	3.4
JUN	
06...	16.5
06...	16.6
06...	16.6
06...	16.6
06...	16.6
06...	16.5
06...	16.5
06...	16.0
06...	14.5
06...	12.7
06...	12.5
SEP	
04...	20.4
04...	20.4
04...	20.4
04...	20.3
04...	20.3
04...	20.3
04...	20.3
04...	20.3
04...	20.3
04...	20.0
04...	20.0
04...	20.0

Remark codes used in
this table:

< -- Less than

06347000 ANTELOPE CREEK NEAR CARSON, ND

LOCATION.--Lat 46°32'43", long 101°38'42", in NE¹₄NE¹₄NW¹₄ sec.5, T.135 N., R.87 W., Grant County, Hydrologic Unit 10130203, on right bank 90 ft upstream from bridge on county road and 9 mi northwest of Carson.

DRAINAGE AREA.--221 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1948 to October 1975, February 1999 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,960 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to June 23, 1958, wire weight gage at site 1 mile upstream and June 24, 1958, to Sept. 30, 1975, 1.15 miles upstream at datum 14 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are fair.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 50 ft³/s, Mar. 20, gage height, unknown; maximum gage height, 6.12 ft, Feb. 3, backwater from ice; no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	e0.30	e0.23	e7.7	5.8	2.6	1.4	0.00	0.00
2	---	---	---	---	e0.30	e0.29	e6.6	5.4	2.3	1.6	0.00	0.00
3	---	---	---	---	e0.28	e0.35	e6.4	5.2	3.1	0.94	0.00	0.00
4	---	---	---	---	e0.26	e0.38	e6.2	5.5	4.2	0.79	0.00	0.00
5	---	---	---	---	e0.25	e0.47	e6.3	8.6	3.5	0.64	0.00	0.00
6	---	---	---	---	e0.24	e0.47	e5.8	8.8	3.0	0.46	0.00	0.00
7	---	---	---	---	e0.23	e0.43	5.5	7.9	2.9	0.35	0.00	0.00
8	---	---	---	---	e0.22	e0.43	5.8	9.6	3.0	0.35	0.00	0.00
9	---	---	---	---	e0.22	e0.43	e5.8	14	4.1	0.41	0.00	0.00
10	---	---	---	---	e0.21	e0.72	5.7	14	5.4	0.46	0.00	0.00
11	---	---	---	---	e0.21	e1.4	5.7	12	4.9	0.63	0.00	0.00
12	---	---	---	---	e0.22	e2.5	5.5	10	4.4	0.60	0.00	0.11
13	---	---	---	---	e0.25	e5.5	6.4	12	3.9	0.44	0.00	0.07
14	---	---	---	---	e0.24	e14	6.3	13	3.5	0.69	0.00	0.09
15	---	---	---	---	e0.23	e23	6.5	10	3.2	0.44	0.00	0.10
16	---	---	---	---	e0.25	e30	7.2	8.7	3.3	0.27	0.00	0.12
17	---	---	---	---	e0.30	e37	10	8.8	3.0	0.17	0.00	0.29
18	---	---	---	---	e0.32	e41	8.9	9.9	2.7	0.24	0.00	1.2
19	---	---	---	---	e0.32	e46	9.1	11	2.2	0.27	0.00	1.3
20	---	---	---	---	e0.32	e48	9.5	9.7	1.6	0.22	0.00	0.97
21	---	---	---	---	e0.31	e39	9.6	8.2	1.4	0.17	0.00	0.89
22	---	---	---	---	e0.30	26	7.0	7.6	1.2	0.25	0.00	0.88
23	---	---	---	---	e0.29	21	6.5	7.6	1.3	0.24	0.00	0.74
24	---	---	---	---	e0.29	17	6.3	9.2	1.9	0.17	0.00	0.59
25	---	---	---	---	e0.28	19	e6.5	8.0	3.4	e0.12	0.00	0.87
26	---	---	---	---	e0.27	e18	6.8	6.8	3.4	e0.10	0.00	0.68
27	---	---	---	---	e0.25	12	6.3	---	2.8	0.00	0.00	0.89
28	---	---	---	---	e0.23	9.4	5.9	5.8	2.3	0.00	0.00	0.70
29	---	---	---	---	---	e9.3	5.4	4.9	1.8	0.00	0.00	0.75
30	---	---	---	---	---	e9.7	5.7	3.1	1.7	0.00	0.00	0.51
31	---	---	---	---	---	e9.1	---	1.6	---	0.00	0.00	---
TOTAL	---	---	---	---	7.39	442.10	202.9	---	88.0	12.42	0.00	11.75
MEAN	---	---	---	---	0.26	14.3	6.76	---	2.93	0.40	0.000	0.39
MAX	---	---	---	---	0.32	48	10	---	5.4	1.6	0.00	1.3
MIN	---	---	---	---	0.21	0.23	5.4	---	1.2	0.00	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 2003, BY WATER YEAR (WY)

MEAN	1.36	2.10	1.45	2.11	7.01	49.7	56.4	23.7	22.2	12.5	3.78	1.16
MAX	6.44	9.41	5.79	32.6	65.1	183	422	208	96.3	155	52.2	6.40
(WY)	(1973)	(1973)	(2000)	(1973)	(1999)	(1951)	(1950)	(1970)	(1971)	(1969)	(1952)	(1955)
MIN	0.000	0.32	0.15	0.000	0.000	1.48	2.00	1.56	1.84	0.003	0.000	0.000
(WY)	(1960)	(1960)	(1962)	(1950)	(1949)	(1965)	(1961)	(1961)	(1959)	(1961)	(1958)	(1948)

06347000 ANTELOPE CREEK NEAR CARSON, ND—Continued

SUMMARY STATISTICS

WATER YEARS 1948 - 2003

ANNUAL MEAN	a15.6	
HIGHEST ANNUAL MEAN	a47.1	1952
LOWEST ANNUAL MEAN	a2.78	1961
HIGHEST DAILY MEAN	4,400	Apr 17, 1950
LOWEST DAILY MEAN	0.00	Aug 24, 1948
ANNUAL SEVEN-DAY MINIMUM	0.00	Aug 24, 1948
MAXIMUM PEAK FLOW	b11,100	Apr 16, 1950
MAXIMUM PEAK STAGE	c17.95	Apr 16, 1950
10 PERCENT EXCEEDS	18	
50 PERCENT EXCEEDS	1.5	
90 PERCENT EXCEEDS	0.00	

a Based on complete water years only (1949-75, 2000)

b From rating curve extended above 1,100 ft³/s on basis of slope-area measurement of peak flow at former site, 1 mi upstream

c From floodmark at former site, 1 mi upstream

e Estimated

06347000 ANTELOPE CREEK NEAR CARSON, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1999 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 07...	1520	1.6	--	--	--	724	13.0	9.2	--	--	--	--	--
MAR 18...	1245	41	--	--	--	469	1.5	0.1	--	--	--	--	--
APR 02...	1150	6.6	8.3	8.3	773	790	0.0	3.2	270	51.0	34.0	8.90	2
APR 25...	1335	7.3	--	--	--	1,080	19.5	14.8	--	--	--	--	--
JUN 09...	1255	4.0	--	--	--	1,040	20.5	18.2	--	--	--	--	--
JUL 11...	1450	0.40	--	--	--	970	21.5	23.0	--	--	--	--	--
AUG 25...	1410	0.00	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue on evap. at wat fltr mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)
OCT 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 02...	73.0	36	238	<0.1	0.30	190	500	502	2.0	90	<1	40	30
APR 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 25...	--	--	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
OCT 07...	--	--	--	--
MAR 18...	--	--	--	--
APR 02...	<0.10	<1	1	520
APR 25...	--	--	--	--
JUN 09...	--	--	--	--
JUL 11...	--	--	--	--
AUG 25...	--	--	--	--

Remark codes used in this table:

< -- Less than

HEART RIVER BASIN

06347500 BIG MUDDY CREEK NEAR ALMONT, ND

LOCATION.--Lat 46°41'40", long 101°28'01", in NE¹₄NE¹₄SE¹₄ sec.12, T.137 N., R.86 W., Morton County, Hydrologic Unit 10130203, on left bank 50 ft downstream from county highway bridge, 2 mi downstream from Hailstone Creek, 3 mi southeast of Almont, and 12 mi upstream from mouth.

DRAINAGE AREA.--456 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to September 1970, October 1970 to September 1973 (annual maximum discharge), February 1991 to current year (seasonal records only since February 1991).

GAGE.--Water-stage recorder. Elevation of gage is 1,864 ft above National Geodetic Vertical Datum of 1929, by barometer. Prior to Sept. 5, 1952, nonrecording gage at same site and datum.

REMARKS.--Records good except for estimated daily discharges, which are poor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 621 ft³/s, Mar. 17, gage height, 10.81 ft; minimum daily discharge recorded, 0.2 ft³/s, Aug. 25.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	e3.5	e3.2	17	4.1	4.9	1.7	1.5	0.68
2	---	---	---	---	e3.5	e3.2	16	4.2	3.8	1.7	1.5	0.70
3	---	---	---	---	e3.4	e3.2	14	4.3	4.6	1.7	1.3	0.60
4	---	---	---	---	e3.4	e3.2	12	4.6	6.3	1.6	1.0	0.46
5	---	---	---	---	e3.3	e3.1	10	6.4	8.6	1.5	0.78	0.45
6	---	---	---	---	e3.3	e3.0	9.3	7.0	6.0	1.5	0.67	0.82
7	---	---	---	---	e3.3	e3.0	9.1	6.1	4.3	1.5	0.78	0.83
8	---	---	---	---	e3.2	e2.9	8.4	6.9	3.6	1.4	0.91	0.72
9	---	---	---	---	e3.2	e2.9	7.5	11	3.2	2.0	0.83	0.49
10	---	---	---	---	e3.2	e2.8	6.7	14	3.5	2.8	0.77	0.92
11	---	---	---	---	e3.3	e2.8	6.1	17	3.6	1.4	0.66	1.4
12	---	---	---	---	e3.4	e2.8	5.5	28	3.5	1.3	0.70	1.2
13	---	---	---	---	e3.4	e5.0	5.0	24	3.2	e1.4	0.74	0.94
14	---	---	---	---	e3.4	e4.0	4.9	24	3.0	e1.5	0.68	0.64
15	---	---	---	---	e3.3	e150	4.8	24	2.7	e1.2	0.63	0.73
16	---	---	---	---	e3.4	442	5.3	17	2.9	e1.1	0.60	0.71
17	---	---	---	---	e3.4	589	6.8	16	2.7	e1.2	0.37	0.61
18	---	---	---	---	e3.3	421	6.2	15	2.3	e1.3	0.37	0.67
19	---	---	---	---	e3.3	283	6.5	13	2.2	e1.4	0.45	0.50
20	---	---	---	---	e3.2	197	6.1	12	2.0	e1.2	0.42	0.43
21	---	---	---	---	e3.0	143	7.4	11	2.0	e1.0	0.22	0.29
22	---	---	---	---	e2.9	116	7.2	9.4	1.9	e1.1	e0.21	0.22
23	---	---	---	---	e2.9	94	5.9	8.9	1.8	e1.0	e0.21	e0.24
24	---	---	---	---	e2.8	67	5.4	8.9	1.9	e0.90	0.22	e0.27
25	---	---	---	---	e3.0	55	5.2	11	2.2	0.90	0.20	e0.28
26	---	---	---	---	e3.2	42	5.0	9.7	2.3	1.2	0.29	e0.29
27	---	---	---	---	e3.3	34	5.0	6.8	2.3	1.3	0.52	e0.29
28	---	---	---	---	e3.3	28	4.6	5.3	1.9	1.2	0.77	e0.29
29	---	---	---	---	---	23	4.3	4.8	1.8	1.1	0.74	e0.28
30	---	---	---	---	---	20	4.2	4.6	1.7	0.91	0.67	e0.28
31	---	---	---	---	---	18	---	4.0	---	1.1	0.66	---
TOTAL	---	---	---	---	91.1	2,803.1	221.4	343.0	96.7	42.11	20.37	17.23
MEAN	---	---	---	---	3.25	90.4	7.38	11.1	3.22	1.36	0.66	0.57
MAX	---	---	---	---	3.5	589	17	28	8.6	2.8	1.5	1.4
MIN	---	---	---	---	2.8	2.8	4.2	4.0	1.7	0.90	0.20	0.22
AC-FT	---	---	---	---	181	5,560	439	680	192	84	40	34

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2003, BY WATER YEAR (WY)

MEAN	1.20	1.60	1.33	1.08	19.7	146	145	45.4	38.7	41.9	8.35	2.97
MAX	2.61	3.19	2.48	4.59	220	909	1,160	540	405	1,042	75.4	15.2
(WY)	(1952)	(1952)	(1952)	(1947)	(1995)	(1997)	(1950)	(1970)	(1966)	(1993)	(1998)	(1953)
MIN	0.39	0.58	0.35	0.065	0.000	0.73	1.48	1.01	0.43	0.042	0.12	0.35
(WY)	(1962)	(1961)	(1949)	(1949)	(1966)	(1965)	(1992)	(1961)	(1961)	(1961)	(1961)	(1991)

06347500 BIG MUDDY CREEK NEAR ALMONT, ND—Continued

SUMMARY STATISTICS

WATER YEARS 1946 - 2003

ANNUAL MEAN	a37.0	
HIGHEST ANNUAL MEAN	a112	1950
LOWEST ANNUAL MEAN	a1.41	1961
HIGHEST DAILY MEAN	15,000	Apr 17, 1950
LOWEST DAILY MEAN	0.00	Jan 28, 1946
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 28, 1946
MAXIMUM PEAK FLOW	20,200	Apr 17, 1950
MAXIMUM PEAK STAGE	30.99	Jul 23, 1993
ANNUAL RUNOFF (AC-FT)	a26,790	
10 PERCENT EXCEEDS	31	
50 PERCENT EXCEEDS	1.7	
90 PERCENT EXCEEDS	0.40	

a Based on complete water years only (1946-70)

e Estimated

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1991 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 07...	1255	2.0	--	--	--	1,930	11.0	8.5	--	--	--	--	--
FEB 13...	1445	3.4	--	--	--	2,710	6.0	0.2	--	--	--	--	--
MAR 18...	1040	432	8.5	8.0	622	621	0.9	0.3	95	18.0	12.0	15.0	4
MAR 25...	1130	54	--	--	--	988	7.5	0.8	--	--	--	--	--
APR 29...	1155	4.3	--	--	--	2,140	15.0	13.8	--	--	--	--	--
JUN 09...	1515	3.0	--	--	--	2,430	21.0	18.3	--	--	--	--	--
JUL 11...	1240	1.4	--	--	--	2,360	18.0	21.5	--	--	--	--	--
AUG 29...	1200	0.75	8.5	8.8	2,480	2,470	15.0	18.3	220	26.6	36.3	9.20	18

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	88.0	63	122	<0.1	0.10	--	180	387	--	415	2.0	440	1
MAR 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 29...	590	85	873	7.8	1.23	6.99	519	1,710	3.49	--	18.5	100	<1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
OCT 07...	--	--	--	--	--	--
FEB 13...	--	--	--	--	--	--
MAR 18...	20	70	0.10	<1	1	190
MAR 25...	--	--	--	--	--	--
APR 29...	--	--	--	--	--	--
JUN 09...	--	--	--	--	--	--
JUL 11...	--	--	--	--	--	--
AUG 29...	70	20	<0.20	7	3	600

Remark codes used in this table:

< -- Less than

06348300 HEART RIVER AT STARK BRIDGE NEAR JUDSON, ND

LOCATION.--Lat 46°42'12", long 101°12'49", in SE¹₄SW¹₄ sec.6, T.137 N., R.83 W., Morton County, Hydrologic Unit 10130203, on right bank 50 ft upstream from county bridge and 9.5 mi southeast of Judson.

DRAINAGE AREA.--2,930 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1986 to September 1988 (annual maximum discharges only), October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,720 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated by Lake Tschida (06346000) since 1949.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	38	29	e18	e15	e13	514	81	72	22	75	41
2	20	36	33	e18	e15	e13	454	68	69	19	65	50
3	20	35	28	e18	e15	e12	400	63	65	15	59	49
4	19	35	e28	e18	e14	e12	356	58	71	55	59	54
5	18	35	e27	e18	e14	e13	325	67	68	71	53	46
6	22	29	e27	e18	e14	e14	297	83	65	71	53	34
7	22	22	e26	e17	e14	e14	270	85	60	60	57	29
8	20	22	e25	e17	e14	e15	246	88	56	39	66	23
9	22	22	e25	e17	e14	e17	230	103	57	53	68	28
10	21	22	e24	e17	e14	e19	214	106	54	44	59	41
11	19	23	e23	e17	e14	e20	198	139	56	40	60	56
12	22	21	e22	e17	e14	e23	183	138	57	25	60	55
13	21	26	e22	e17	e13	e32	168	145	55	14	53	63
14	20	24	e21	e17	e13	e56	156	149	51	6.7	45	52
15	20	23	e21	e17	e13	e133	149	144	53	23	35	43
16	20	24	e20	e16	e13	e396	148	143	51	56	27	34
17	20	29	e20	e16	e13	e872	147	137	53	63	27	33
18	20	25	e20	e16	e13	e872	146	138	55	79	28	35
19	21	23	e20	e16	e13	e716	148	146	57	74	32	31
20	19	23	e19	e16	e13	e1,320	138	145	55	62	33	27
21	22	23	e19	e16	e13	3,460	134	142	44	51	41	26
22	24	23	e19	e16	e13	3,190	127	125	38	61	43	26
23	28	22	e18	e15	e13	2,770	119	117	33	62	41	25
24	25	19	e18	e15	e13	2,140	113	117	38	69	45	23
25	24	24	e18	e15	e13	1,640	103	121	54	56	48	22
26	24	33	e18	e15	e13	1,300	99	113	56	50	49	22
27	24	32	e18	e15	e13	1,060	99	101	57	60	54	21
28	24	30	e18	e15	e13	898	92	89	55	61	52	20
29	25	30	e18	e15	---	763	94	83	42	72	46	20
30	23	25	e18	e15	---	663	90	80	28	85	38	19
31	30	---	e18	e15	---	584	---	72	---	77	34	---
TOTAL	679	798	680	508	379	23,050	5,957	3,386	1,625	1,595.7	1,505	1,048
MEAN	21.9	26.6	21.9	16.4	13.5	744	199	109	54.2	51.5	48.5	34.9
MAX	30	38	33	18	15	3,460	514	149	72	85	75	63
MIN	18	19	18	15	13	12	90	58	28	6.7	27	19

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 2003, BY WATER YEAR (WY)

MEAN	62.7	45.1	33.4	25.5	95.8	662	374	195	144	233	143	66.5
MAX	254	131	94.9	59.0	578	3,050	2,468	800	484	1,479	674	192
(WY)	(1995)	(1999)	(1999)	(1996)	(1995)	(1997)	(1997)	(1995)	(2001)	(1993)	(1998)	(1995)
MIN	12.3	14.1	7.07	0.34	4.19	37.1	15.0	16.3	14.5	28.8	19.7	11.7
(WY)	(1993)	(1989)	(1991)	(1991)	(1993)	(1990)	(1990)	(1992)	(1990)	(1990)	(1992)	(1992)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1989 - 2003

ANNUAL TOTAL	17,649	41,210.7		
ANNUAL MEAN	48.4	113	174	
HIGHEST ANNUAL MEAN			569	1997
LOWEST ANNUAL MEAN			22.3	1990
HIGHEST DAILY MEAN	167	Jul 6	3,460	Mar 21
LOWEST DAILY MEAN	18	Oct 5	6.7	Jul 14
ANNUAL SEVEN-DAY MINIMUM	18	Dec 23	13	Feb 26
MAXIMUM PEAK FLOW			3,700	Mar 21
MAXIMUM PEAK STAGE			10.47	Mar 21
10 PERCENT EXCEEDS	79		146	325
50 PERCENT EXCEEDS	48		32	49
90 PERCENT EXCEEDS	21		15	12

a About

b Backwater from ice

c Maximum recorded

e Estimated

06348300 HEART RIVER AT STARK BRIDGE NEAR JUDSON, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1988 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfl lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 09...	1325	23	--	--	--	1,620	18.0	10.0	--	--	--	--	--
NOV 18...	1455	27	--	--	--	1,510	13.5	3.7	--	--	--	--	--
DEC 27...	1515	18	--	--	--	2,150	3.0	0.1	--	--	--	--	--
FEB 26...	1400	13	--	--	--	1,950	0.0	0.1	--	--	--	--	--
MAR 25...	1420	1,600	8.3	7.9	907	960	16.0	4.0	210	37.0	28.0	13.0	4
APR 29...	1340	94	--	--	--	1,260	17.0	15.3	--	--	--	--	--
JUN 13...	1350	56	--	--	--	1,400	26.5	23.3	--	--	--	--	--
JUL 11...	1050	45	--	--	--	1,300	16.5	19.6	--	--	--	--	--
AUG 27...	1455	58	8.0	8.6	1,330	1,330	32.5	24.0	320	57.7	42.1	11.8	5

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 26...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 25...	120	54	168	18.0	0.30	--	290	607	2,700	622	1.0	90	1
APR 29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 27...	203	57	274	11.3	0.31	5.47	420	911	144	--	1.8	<10	<1

06348300 HEART RIVER AT STARK BRIDGE NEAR JUDSON, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 09...	--	--	--	--	--	--
NOV 18...	--	--	--	--	--	--
DEC 27...	--	--	--	--	--	--
FEB 26...	--	--	--	--	--	--
MAR 25...	40	20	<0.10	1	<1	460
APR 29...	--	--	--	--	--	--
JUN 13...	--	--	--	--	--	--
JUL 11...	--	--	--	--	--	--
AUG 27...	40	<10	<0.20	4	3	770

Remark codes used in this table:

< -- Less than

06348500 SWEETBRIAR CREEK NEAR JUDSON, ND

LOCATION.--Lat 46°51'06", long 101°15'10", in SW¹₄ sec.14, T.139 N., R.84 W., Morton County, Hydrologic Unit 10130203, on right bank 40 ft downstream from bridge on county highway, 2 mi northeast of Judson, and 16 mi upstream from mouth.

DRAINAGE AREA.--157 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1951 to September 1979, June 2002 to current year (seasonal records only 2002-2003).

REVISED RECORDS.--WSP 1439: 1955(M).

GAGE.--Water-stage recorder. Datum of gage is 1,886.42 ft above National Geodetic Vertical Datum of 1929. Prior to July 20, 1955, nonrecording gage 80 ft upstream at same datum.

REMARKS.--Records fair. Flow regulated by Sweetbriar Reservoir 2 mi upstream since April 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 12.5 ft, Apr. 17, 1950, from floodmarks at present site, discharge, 5,910 ft³/s from rating curve extended above 2,000 ft³/s on basis of contracted-opening measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 393 ft³/s, Mar. 18, gage height, 4.78 ft; minimum daily, 0.70 ft³/s, Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	e1.0	e1.0	8.0	1.7	2.9	1.2	e6.0	e1.1
2	---	---	---	---	e0.95	e0.95	7.1	1.8	3.0	1.2	e30	e1.0
3	---	---	---	---	e0.95	e0.95	6.7	1.9	3.5	1.3	e70	e1.1
4	---	---	---	---	e0.90	e0.95	6.2	2.2	4.2	1.2	e75	e1.0
5	---	---	---	---	e0.90	e1.0	5.5	2.7	3.7	0.98	e60	e1.2
6	---	---	---	---	e0.90	e0.95	5.0	3.4	4.2	0.92	e48	e1.1
7	---	---	---	---	e0.90	e1.0	4.5	3.3	3.5	1.0	e30	e1.0
8	---	---	---	---	e0.90	e0.96	4.4	4.2	3.1	1.2	e22	e1.0
9	---	---	---	---	e0.95	e0.94	4.2	9.9	2.8	1.4	e17	e1.5
10	---	---	---	---	e0.95	e0.92	4.5	11	3.4	1.2	e13	e1.7
11	---	---	---	---	e0.90	e0.92	3.6	9.8	3.1	1.2	e10	e1.6
12	---	---	---	---	e0.90	e1.0	3.1	8.1	3.8	1.2	e8.0	e1.5
13	---	---	---	---	e0.94	e6.0	3.1	10	2.2	1.1	e7.0	e1.4
14	---	---	---	---	e0.95	e15	3.2	15	2.0	1.0	e6.0	e1.2
15	---	---	---	---	e0.96	e40	3.0	12	2.0	1.1	e30	e1.2
16	---	---	---	---	e1.0	e100	3.4	14	2.0	e1.1	e70	e1.1
17	---	---	---	---	e0.98	228	3.5	17	1.9	e1.1	e130	e1.1
18	---	---	---	---	e0.98	249	3.2	17	1.6	e1.3	e140	e1.1
19	---	---	---	---	e1.0	78	4.1	14	1.3	e1.3	e100	e1.0
20	---	---	---	---	e1.1	45	3.8	9.2	1.2	e1.4	e70	e1.0
21	---	---	---	---	e1.0	30	3.1	8.1	1.2	e1.3	e50	e0.98
22	---	---	---	---	e1.0	31	2.8	7.1	1.2	e1.5	e42	e0.94
23	---	---	---	---	e1.0	32	2.5	6.8	0.96	e1.2	25	e0.90
24	---	---	---	---	e0.95	28	2.7	7.4	1.2	e1.2	16	e0.86
25	---	---	---	---	e0.95	24	2.5	5.5	1.5	e1.4	11	e0.83
26	---	---	---	---	e0.95	22	2.3	4.5	1.2	e1.4	9.6	e0.80
27	---	---	---	---	e1.0	18	3.7	6.9	1.1	e1.3	7.2	e0.78
28	---	---	---	---	e1.0	e14	2.1	6.5	1.00	e1.2	3.7	e0.76
29	---	---	---	---	---	12	1.7	5.5	1.1	e1.1	1.6	e0.73
30	---	---	---	---	---	10	1.7	6.2	1.1	e1.2	0.93	e0.70
31	---	---	---	---	---	9.0	---	3.2	---	e1.3	1.0	---
TOTAL	---	---	---	---	26.86	1,002.54	115.2	235.9	66.96	37.50	1,110.03	32.18
MEAN	---	---	---	---	0.96	32.3	3.84	7.61	2.23	1.21	35.8	1.07
MAX	---	---	---	---	1.1	249	8.0	17	4.2	1.5	140	1.7
MIN	---	---	---	---	0.90	0.92	1.7	1.7	0.96	0.92	0.93	0.70

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2003, BY WATER YEAR (WY)

MEAN	0.87	0.77	0.64	0.39	2.50	51.6	48.7	12.6	7.74	3.55	2.64	1.67
MAX	9.76	4.21	3.44	1.07	31.9	317	336	106	60.4	25.2	35.8	19.1
(WY)	(1978)	(1967)	(1967)	(1978)	(1954)	(1978)	(1952)	(1970)	(1953)	(1957)	(2003)	(1977)
MIN	0.094	0.28	0.22	0.055	0.000	0.42	0.66	0.42	0.21	0.15	0.000	0.020
(WY)	(1962)	(1974)	(1962)	(1962)	(1962)	(1969)	(1965)	(1977)	(1965)	(1961)	(1959)	(1959)

06348500 SWEETBRIAR CREEK NEAR JUDSON, ND—Continued

SUMMARY STATISTICS

WATER YEARS 1951 - 2003

ANNUAL MEAN	a11.3	
HIGHEST ANNUAL MEAN	a33.9	1978
LOWEST ANNUAL MEAN	a0.41	1965
HIGHEST DAILY MEAN	2,930	Apr 7, 1969
LOWEST DAILY MEAN	0.00	Jan 28, 1954
ANNUAL SEVEN-DAY MINIMUM	a0.00	Feb 15, 1956
MAXIMUM PEAK FLOW	4,200	Apr 7, 1969
MAXIMUM PEAK STAGE	11.28	Apr 7, 1969
INSTANTANEOUS LOW FLOW	0.00	Jan 28, 1954
10 PERCENT EXCEEDS	7.6	
50 PERCENT EXCEEDS	0.58	
90 PERCENT EXCEEDS	0.14	

a Based on complete water years only (1952-79)

e Estimated

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 2002 to current year.

REMARKS.--Quality assurance samples also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 11...	1125	1.1	--	--	--	1,970	11.5	10.0	--	--	--	--	--
FEB 13...	1145	0.94	--	--	--	2,140	-2.0	0.1	--	--	--	--	--
APR 02...	1440	7.3	8.5	8.0	971	998	-1.0	2.2	190	34.0	26.0	12.0	4
MAY 01...	1440	1.7	--	--	--	1,850	20.0	14.1	--	--	--	--	--
JUN 11...	1115	3.0	--	--	--	1,820	17.5	17.0	--	--	--	--	--
JUL 16...	1120	1.1	--	--	--	1,900	27.0	23.8	--	--	--	--	--
AUG 29...	1520	1.4	8.4	8.7	2,010	2,010	19.5	19.0	380	52.7	60.4	13.8	8

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue sum of constituents mg/L (70301)	Residue water, fltrd, sum of constituents mg/L (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 02...	140	59	196	5.1	0.20	--	320	655	12.9	657	1.0	90	1
MAY 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 16...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 29...	366	67	418	10.6	0.26	<2.00	670	1,430	5.54	--	10.8	20	<1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
OCT 11...	--	--	--	--	--	--
FEB 13...	--	--	--	--	--	--
APR 02...	20	90	<0.10	<1	<1	450
MAY 01...	--	--	--	--	--	--
JUN 11...	--	--	--	--	--	--
JUL 16...	--	--	--	--	--	--
AUG 29...	60	30	<0.20	2	3	880

Remark codes used in this table:
 < -- Less than

06349000 HEART RIVER NEAR MANDAN, ND

LOCATION.--Lat 46°50'02", long 100°58'27", in NW¹₄NE¹₄ sec.25, T.139 N., R.82 W., Morton County, Hydrologic Unit 10130203, on left bank near downstream wingwall of bridge on county highway, 3 mi west of Mandan, and 4 mi downstream from Sweetbriar Creek.

DRAINAGE AREA.--3,310 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to September 1924, March 1928 to June 1933, August 1937 to current year. Published as "at Sunny" 1924, 1928-33.

REVISED RECORDS.--WSP 926: 1938. WSP 1209: Drainage area. WSP 1239: 1924, 1928-29, 1948.

GAGE.--Water-stage recorder. Datum of gage is 1,638.70 ft above National Geodetic Vertical Datum of 1929 and 1,623.03 ft above Burlington Northern Railway datum. See WSP 1729 or 1917 for history of changes prior to June 30, 1958.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated by Lake Tschida (station 06346000), 105 mi upstream, since 1949. Some diversions above station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	28	30	e19	e14	e9.3	800	102	e118	34	58	29
2	21	28	36	e19	e13	e9.5	726	90	e117	20	54	30
3	21	34	36	e18	e13	e9.7	653	78	121	9.8	48	37
4	23	36	e32	e18	e13	e10	583	73	111	5.8	49	43
5	24	36	e30	e18	e12	e11	e544	73	111	15	57	51
6	26	43	e29	e18	e12	e11	e490	78	106	67	42	45
7	24	37	e28	e18	e12	e12	e460	96	98	64	55	33
8	27	33	e27	e18	e12	e13	e430	120	86	57	72	29
9	25	30	e26	e18	e12	e14	e390	143	79	53	79	28
10	24	28	e25	e18	e11	e16	e340	171	80	43	86	37
11	25	27	e24	e17	e11	e18	e319	174	72	46	64	49
12	24	27	e24	e17	e11	e21	294	215	78	45	71	53
13	21	29	e23	e17	e11	e28	271	223	75	36	60	50
14	24	30	e22	e17	e11	e46	245	259	73	29	53	54
15	24	31	e22	e17	e11	e96	224	269	71	9.0	45	54
16	23	31	e21	e17	e11	e256	214	258	69	16	44	45
17	25	27	e21	e16	e11	e692	218	264	65	26	31	41
18	24	31	e20	e16	e10	e1,270	207	267	57	50	28	41
19	23	33	e20	e16	e10	e1,060	211	267	57	54	31	37
20	23	30	e20	e16	e10	e1,500	206	259	57	59	100	37
21	26	29	e20	e15	e9.5	e3,000	190	251	56	53	131	35
22	28	29	e20	e15	e9.5	e5,000	182	237	46	46	103	31
23	29	27	e19	e14	e9.5	e4,000	169	215	39	47	107	29
24	27	26	e19	e14	e9.3	e3,000	158	210	37	44	64	27
25	32	24	e19	e14	e9.1	2,320	142	199	39	52	49	25
26	28	28	e19	e14	e9.3	1,990	127	207	50	52	54	25
27	24	30	e19	e14	e9.3	e1,680	119	210	59	39	51	25
28	26	35	e19	e14	e9.1	e1,360	111	187	62	40	58	23
29	29	36	e19	e14	---	1,150	104	e174	63	45	60	22
30	29	31	e19	e14	---	1,010	107	e150	47	47	50	22
31	26	---	e19	e14	---	894	---	e118	---	64	39	---
TOTAL	778	924	727	504	305.6	30,506.5	9,234	5,637	2,199	1,267.6	1,893	1,087
MEAN	25.1	30.8	23.5	16.3	10.9	984	308	182	73.3	40.9	61.1	36.2
MAX	32	43	36	19	14	5,000	800	269	121	67	131	54
MIN	21	24	19	14	9.1	9.3	104	73	37	5.8	28	22
AC-FT	1,540	1,830	1,440	1,000	606	60,510	18,320	11,180	4,360	2,510	3,750	2,160

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 2003, BY WATER YEAR (WY)

MEAN	57.2	44.1	26.7	18.0	108	949	871	327	333	236	98.7	64.9
MAX	337	383	155	145	1,046	4,029	5,885	3,610	1,925	2,433	763	231
(WY)	(1995)	(1983)	(1983)	(1983)	(1930)	(1997)	(1950)	(1970)	(1941)	(1993)	(1998)	(1995)
MIN	5.41	6.95	0.21	0.000	0.000	0.28	25.2	18.5	23.4	11.3	3.65	1.43
(WY)	(1940)	(1938)	(1938)	(1938)	(1940)	(1965)	(1990)	(1992)	(1961)	(1990)	(1932)	(1932)

HEART RIVER BASIN

06349000 HEART RIVER NEAR MANDAN, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1924 - 2003	
ANNUAL TOTAL	21,392		55,062.7		263	
ANNUAL MEAN	58.6		151		898	
HIGHEST ANNUAL MEAN					1982	
LOWEST ANNUAL MEAN					1990	
HIGHEST DAILY MEAN	189	Jul 7	5,000	Mar 22	28,400	Apr 18, 1950
LOWEST DAILY MEAN	19	Dec 23	5.8	Jul 4	0.00	Aug 20, 1929
ANNUAL SEVEN-DAY MINIMUM	19	Dec 23	9.3	Feb 23	0.00	Feb 1, 1930
MAXIMUM PEAK FLOW			a5,000	Mar 22	a30,500	Apr 19, 1950
MAXIMUM PEAK STAGE			b13.38	Mar 22	25.75	Apr 4, 1952
ANNUAL RUNOFF (AC-FT)	42,430		109,200		190,500	
10 PERCENT EXCEEDS	111		253		416	
50 PERCENT EXCEEDS	53		35		51	
90 PERCENT EXCEEDS	24		13		6.0	

a About

b Backwater from ice

e Estimated

06349000 HEART RIVER NEAR MANDAN, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946-50, 1971-76, 1978 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 09...	1055	26	--	--	--	1,720	8.5	5.8	--	--	--	--	--
NOV 22...	1530	29	--	--	--	1,620	16.0	3.6	--	--	--	--	--
JAN 02...	1340	19	--	--	--	2,170	1.0	0.0	--	--	--	--	--
FEB 27...	1450	9.3	--	--	--	2,150	0.5	0.1	--	--	--	--	--
MAR 19...	1520	1,040	8.4	--e	718	630	3.0	2.0	120	22.0	15.0	14.0	4
APR 02...	1720	712	--	--	--	1,020	-1.5	3.5	--	--	--	--	--
APR 11...	1230	319	--	--	--	962	15.5	9.5	--	--	--	--	--
MAY 01...	1210	101	--	--	--	1,320	19.5	13.5	--	--	--	--	--
JUN 13...	1030	73	--	--	--	1,500	23.0	19.5	--	--	--	--	--
JUL 14...	1350	30	--	--	--	1,430	--	--	--	--	--	--	--
AUG 29...	1700	63	8.3	8.6	1,480	1,480	19.5	21.0	330	53.9	46.1	12.2	6

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic, water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 22...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 02...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB 27...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 19...	100	62	131	14.0	0.10	--	220	463	1,300	463	2.0	360	2
APR 02...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 11...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 14...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 29...	237	60	299	13.3	0.32	4.59	471	1,010	172	--	2.1	<10	<1

HEART RIVER BASIN

06349000 HEART RIVER NEAR MANDAN, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 09...	--	--	--	--	--	--
NOV 22...	--	--	--	--	--	--
JAN 02...	--	--	--	--	--	--
FEB 27...	--	--	--	--	--	--
MAR 19...	10	30	<0.10	<1	<1	260
APR 02...	--	--	--	--	--	--
APR 11...	--	--	--	--	--	--
MAY 01...	--	--	--	--	--	--
JUN 13...	--	--	--	--	--	--
JUL 14...	--	--	--	--	--	--
AUG 29...	50	<10	<0.20	4	2	800

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

06349215 LONG LAKE CREEK ABOVE LONG LAKE NEAR MOFFIT, ND

LOCATION.--Lat 46°37'59", long 100°14'29", in NE¹₄NE¹₄NW¹₄ sec.4, T.136 N., R.76 W., Emmons County, Hydrologic Unit 10130103, on left bank 2.5 mi upstream from Long Lake and 4.5 mi southeast of Moffit.

DRAINAGE AREA.--280 mi² approximately, revised (based on information provided by U.S. Fish and Wildlife Service).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,720 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	e6.5	e5.0	e3.4	e3.3	e2.5	22	11	16	40	2.1	0.94
2	1.3	e6.3	e5.0	e3.5	e3.2	e2.5	20	12	15	32	1.6	0.89
3	1.3	e6.8	e4.9	e3.5	e3.2	e2.4	34	12	15	27	1.4	0.89
4	1.3	e7.2	e4.8	e3.6	e3.1	e2.4	22	15	16	23	1.3	0.90
5	1.7	e7.2	e4.7	e3.6	e3.1	e2.4	17	16	16	20	1.2	0.84
6	1.7	7.3	e4.5	e3.5	e3.0	e2.5	18	21	16	19	1.2	0.93
7	1.5	7.2	e4.7	e3.6	e3.0	e2.5	17	24	16	18	1.1	0.88
8	1.6	7.3	e4.6	e3.8	e3.0	e2.4	16	29	17	16	1.1	0.93
9	1.8	7.4	e4.5	e3.7	e2.9	e2.4	15	32	18	15	1.1	0.89
10	2.4	7.4	e4.5	e3.6	e2.8	e2.3	15	35	16	13	1.2	1.3
11	2.5	7.4	e4.6	e3.6	e2.9	e2.3	14	37	16	11	1.1	1.0
12	2.5	7.4	e4.7	e3.5	e2.9	e2.3	14	39	18	10	1.2	0.94
13	3.1	7.7	e4.7	e3.4	e2.9	e2.4	13	38	18	9.2	1.1	0.91
14	3.4	7.8	e4.6	e3.4	e2.8	e3.2	13	36	18	8.3	1.0	0.87
15	3.2	7.8	e4.5	e3.4	e2.8	e7.0	12	37	17	7.4	1.0	0.86
16	3.3	7.4	e4.5	e3.3	e2.8	e17	12	35	16	7.1	1.0	0.88
17	3.5	8.0	e4.4	e3.3	e2.9	e32	12	35	15	7.6	1.0	0.91
18	3.9	7.8	e4.3	e3.3	e2.8	e59	14	37	13	7.8	0.97	0.91
19	4.9	7.4	e4.1	e3.2	e2.8	106	19	46	12	7.7	0.94	0.86
20	4.6	7.3	e4.0	e3.0	e2.7	85	21	e67	12	7.5	0.90	0.85
21	5.0	e6.9	e3.8	e2.9	e2.6	56	24	e58	12	7.1	0.86	0.86
22	5.9	e6.7	e3.7	e2.9	e2.5	44	25	e52	16	6.7	0.92	0.83
23	6.2	e6.4	e3.5	e2.8	e2.5	41	24	e47	27	6.0	0.90	0.82
24	e6.3	e6.3	e3.4	e2.9	e2.5	36	23	41	156	5.4	0.88	0.77
25	e6.8	e6.1	e3.2	e2.9	e2.5	34	20	36	123	4.8	0.83	0.82
26	e7.4	e6.0	e3.3	e3.0	e2.6	35	18	32	116	4.4	0.82	0.82
27	7.8	e5.9	e3.4	e3.1	e2.6	41	16	27	103	3.9	0.82	0.77
28	7.7	e5.6	e3.5	e3.2	e2.5	24	15	24	81	3.4	0.85	0.77
29	7.5	e5.3	e3.6	e3.2	---	28	14	21	60	2.9	0.85	0.74
30	e7.2	e5.1	e3.5	e3.2	---	24	12	19	48	2.6	0.92	0.74
31	e6.9	---	e3.4	e3.3	---	23	---	17	---	2.3	0.94	---
TOTAL	125.9	206.9	129.9	102.6	79.2	726.5	531	988	1,058	356.1	33.10	26.32
MEAN	4.06	6.90	4.19	3.31	2.83	23.4	17.7	31.9	35.3	11.5	1.07	0.88
MAX	7.8	8.0	5.0	3.8	3.3	106	34	67	156	40	2.1	1.3
MIN	1.3	5.1	3.2	2.8	2.5	2.3	12	11	12	2.3	0.82	0.74
AC-FT	250	410	258	204	157	1,440	1,050	1,960	2,100	706	66	52

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 2003, BY WATER YEAR (WY)

MEAN	5.94	6.85	5.41	3.79	8.64	108	88.0	39.9	24.2	37.6	12.3	5.23
MAX	15.2	15.7	14.4	8.48	42.0	367	730	179	90.3	220	39.4	14.2
(WY)	(1999)	(1999)	(1999)	(2001)	(1996)	(1997)	(1997)	(1999)	(2001)	(1993)	(1993)	(1999)
MIN	0.24	0.34	0.22	0.053	0.000	3.67	5.74	2.19	0.63	0.32	0.12	0.15
(WY)	(1993)	(1991)	(1991)	(1991)	(1997)	(1991)	(1990)	(1992)	(1992)	(1989)	(1990)	(1990)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1989 - 2003

ANNUAL TOTAL	2,705.7	4,363.52	
ANNUAL MEAN	7.41	12.0	29.0
HIGHEST ANNUAL MEAN			112 1997
LOWEST ANNUAL MEAN			3.06 1992
HIGHEST DAILY MEAN	53 Mar 29	156 Jun 24	3,200 Mar 29, 1997
LOWEST DAILY MEAN	1.2 Jul 7	0.74 Sep 29	0.00 Dec 30, 1990
ANNUAL SEVEN-DAY MINIMUM	1.3 Jul 4	0.78 Sep 24	0.00 Jan 11, 1997
MAXIMUM PEAK FLOW		202 Jun 24	3,200 Mar 29, 1997
MAXIMUM PEAK STAGE		2.50 Jun 24	12.99 Mar 29, 1997
INSTANTANEOUS LOW FLOW		0.74 Sep 29	0.00 Dec 30, 1990
ANNUAL RUNOFF (AC-FT)	5,370	8,660	21,000
10 PERCENT EXCEEDS	18	32	50
50 PERCENT EXCEEDS	5.4	4.7	6.9
90 PERCENT EXCEEDS	1.7	0.93	0.40

e Estimated

06349215 LONG LAKE CREEK ABOVE LONG LAKE NEAR MOFFIT, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1988 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfl lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 08...	1330	1.6	--	--	--	1,390	11.0	8.5	--	--	--	--	--
NOV 18...	1540	7.9	--	--	--	1,400	6.5	2.5	--	--	--	--	--
JAN 28...	1035	3.2	--	--	--	1,800	-6.0	0.5	--	--	--	--	--
MAR 14...	1145	3.1	--	--	--	805	7.0	0.1	--	--	--	--	--
MAR 18...	1500	54	--	--	--	880	3.0	0.5	--	--	--	--	--
MAR 25...	1350	37	--	--	--	950	7.7	0.1	--	--	--	--	--
APR 17...	1215	12	--	--	--	940	7.0	6.5	--	--	--	--	--
MAY 20...	1150	67	--	--	--	410	11.5	9.0	--	--	--	--	--
JUN 25...	1430	113	7.9	7.8	816	--e	21.0	16.0	200	35.1	27.9	10.9	3
AUG 21...	1330	0.80	8.1	8.3	1,080	1,070	24.5	23.5	290	58.2	35.2	12.1	4

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Residue sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Arsenic, water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium, water, fltrd, ug/L (01130)
OCT 08...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 14...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 17...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 20...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 25...	107	52	278	3.0	0.29	10.8	144	497	154	5.4	80	<1	150
AUG 21...	159	53	459	8.8	0.43	25.6	141	691	1.55	17.3	<10	<1	160

06349215 LONG LAKE CREEK ABOVE LONG LAKE NEAR MOFFIT, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 08...	--	--	--	--	--
NOV 18...	--	--	--	--	--
JAN 28...	--	--	--	--	--
MAR 14...	--	--	--	--	--
18...	--	--	--	--	--
25...	--	--	--	--	--
APR 17...	--	--	--	--	--
MAY 20...	--	--	--	--	--
JUN 25...	250	<0.20	1	<1	240
AUG 21...	70	<0.20	3	2	370

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

APPLE CREEK BASIN

06349500 APPLE CREEK NEAR MENOKEN, ND

LOCATION.--Lat 46°47'40", long 100°39'25", in NW¹₄NE¹₄ sec.9, T.138 N., R.79 W., Burleigh County, Hydrologic Unit 10130103, on left bank 75 ft downstream from bridge on county highway, 4 mi upstream from Hay Creek, 6.3 mi west of Menoken, and 6.4 mi east of Bismarck.

DRAINAGE AREA.--1,680 mi², approximately, of which about 500 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March to June 1905, October 1945 to current year. Published as "near Bismarck" 1905.

REVISED RECORDS.--WSP 1209: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,638.61 ft above National Geodetic Vertical Datum of 1929. See WSP 1729 or 1917 for history of changes prior to Sept. 30, 1953.

REMARKS.--Records good except for estimated daily discharges, which are fair.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	e2.6	3.9	e3.2	e3.1	e2.4	18	7.6	18	2.7	0.75	0.16
2	1.0	e2.7	e3.8	e3.3	e3.0	e2.3	18	7.0	17	2.4	1.0	0.16
3	1.2	e2.9	3.7	e3.3	e3.0	e2.3	11	6.2	17	1.2	1.7	0.16
4	1.5	e3.1	3.6	e3.4	e2.9	e2.3	8.8	6.8	16	1.9	1.6	0.16
5	1.6	e3.2	3.5	e3.4	e2.9	e2.2	12	11	16	2.5	1.4	0.15
6	2.3	e3.4	3.5	e3.3	e2.8	e2.2	13	15	16	3.2	0.95	0.15
7	2.1	3.5	3.6	e3.4	e2.8	e2.3	13	16	15	3.8	0.67	0.15
8	2.0	3.6	3.6	e3.5	e2.8	e2.3	13	21	14	3.7	0.53	0.15
9	2.0	3.7	3.6	e3.4	e2.7	e2.2	8.9	29	14	3.7	0.45	0.21
10	2.0	3.8	3.7	e3.3	e2.6	e2.2	1.7	46	15	3.4	0.41	0.83
11	2.1	3.9	3.7	e3.2	e2.6	e2.1	1.2	56	16	3.0	0.37	1.3
12	2.0	3.9	3.8	e3.2	e2.7	e2.1	4.0	63	17	3.1	0.34	1.2
13	1.9	e3.9	3.7	e3.2	e2.7	e2.2	7.0	73	16	3.0	0.29	1.1
14	2.4	e3.8	3.7	e3.1	e2.6	e3.3	7.5	84	15	2.8	0.26	0.94
15	2.2	e3.9	e3.7	e3.1	e2.6	e6.4	6.8	78	13	2.5	0.24	0.90
16	2.6	4.0	e3.7	e3.1	e2.6	e9.0	7.0	81	11	2.1	0.24	0.88
17	2.5	4.0	e3.6	e3.1	e2.7	e15	8.1	84	9.6	2.1	0.24	0.90
18	2.4	4.0	e3.6	e3.1	e2.6	e24	8.6	104	8.0	2.1	0.25	0.97
19	2.3	4.0	e3.6	e2.9	e2.6	e42	10	99	7.3	2.1	0.25	0.93
20	2.6	4.0	e3.5	e2.8	e2.5	e60	10	92	6.3	1.9	0.23	0.92
21	2.8	3.9	e3.5	e2.7	e2.5	e105	10	81	6.0	1.7	0.21	0.92
22	e2.6	4.0	e3.5	e2.7	e2.4	e155	10	69	5.8	1.5	0.20	0.90
23	e2.8	3.9	e3.4	e2.6	e2.4	e160	11	63	5.4	1.4	0.19	0.87
24	2.9	3.8	e3.3	e2.7	e2.3	126	12	57	5.1	1.2	0.17	0.81
25	3.0	3.7	e3.2	e2.7	e2.3	100	11	48	6.5	1.1	0.16	0.77
26	3.1	3.6	e3.2	e2.8	e2.3	69	10	39	6.1	1.1	0.16	0.76
27	3.4	3.6	e3.3	e2.8	e2.4	e58	10	34	5.2	0.93	0.16	0.77
28	3.3	3.7	e3.3	e3.0	e2.4	47	9.2	29	4.4	0.95	0.16	0.73
29	e2.9	3.9	e3.4	e3.0	---	29	8.5	25	3.7	0.96	0.16	0.71
30	e2.6	3.9	e3.3	e3.0	---	30	8.0	22	3.3	0.91	0.16	0.70
31	e2.5	---	e3.2	e3.1	---	18	---	20	---	0.85	0.16	---
TOTAL	71.8	109.9	109.7	95.4	73.8	1,085.8	287.3	1,466.6	328.7	65.80	14.06	20.26
MEAN	2.32	3.66	3.54	3.08	2.64	35.0	9.58	47.3	11.0	2.12	0.45	0.68
MAX	3.4	4.0	3.9	3.5	3.1	160	18	104	18	3.8	1.7	1.3
MIN	1.0	2.6	3.2	2.6	2.3	2.1	1.2	6.2	3.3	0.85	0.16	0.15
AC-FT	142	218	218	189	146	2,150	570	2,910	652	131	28	40

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2003, BY WATER YEAR (WY)

MEAN	6.44	5.24	3.78	2.35	12.8	116	203	80.5	43.9	29.5	17.3	9.02
MAX	67.6	40.1	30.8	15.2	316	557	1,606	1,038	346	372	292	130
(WY)	(2000)	(2000)	(1998)	(2000)	(2000)	(1987)	(1997)	(1950)	(1953)	(1993)	(1999)	(1999)
MIN	0.047	0.062	0.057	0.040	0.095	0.99	0.53	0.23	0.066	0.025	0.030	0.030
(WY)	(1991)	(1990)	(1992)	(1977)	(1975)	(1977)	(1990)	(1977)	(1977)	(1977)	(1991)	(1990)

06349500 APPLE CREEK NEAR MENOKEN, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1946 - 2003	
ANNUAL TOTAL	3,484.56		3,729.12			
ANNUAL MEAN	9.55		10.2		44.2	
HIGHEST ANNUAL MEAN					268	1997
LOWEST ANNUAL MEAN					0.31	1990
HIGHEST DAILY MEAN	63	Apr 5	160	Mar 23	5,590	Apr 18, 1950
LOWEST DAILY MEAN	0.51	Sep 6	0.15	Sep 5	0.00	Aug 25, 1946
ANNUAL SEVEN-DAY MINIMUM	0.57	Sep 3	0.15	Sep 2	0.00	Aug 25, 1946
MAXIMUM PEAK FLOW			a200	Mar 23	6,750	Apr 18, 1950
MAXIMUM PEAK STAGE			b7.49	Mar 20	17.46	Apr 19, 1979
ANNUAL RUNOFF (AC-FT)	6,910		7,400		31,990	
10 PERCENT EXCEEDS	33		20		78	
50 PERCENT EXCEEDS	5.1		3.2		2.5	
90 PERCENT EXCEEDS	1.3		0.72		0.14	

- a About
- b Backwater from ice
- e Estimated

06349500 APPLE CREEK NEAR MENOKEN, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 04...	--	--	--	--	--	--
NOV 20...	--	--	--	--	--	--
JAN 28...	--	--	--	--	--	--
MAR 13...	--	--	--	--	--	--
19...	50	90	<0.10	<1	<1	280
31...	--	--	--	--	--	--
APR 17...	--	--	--	--	--	--
JUN 02...	--	--	--	--	--	--
JUL 08...	160	70	<0.20	4	2	730
AUG 19...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

06349580 HAY CREEK AT 43RD AVENUE NEAR BISMARCK, ND

LOCATION.--Lat 46°51'10", long 100°45'30", in NW¹₄NW¹₄NE¹₄ sec.22, T.139 N., R.80 W., Burleigh County, Hydrologic Unit 10130103, on left bank on downstream side of bridge on 43rd Avenue north of Bismarck and approximately 0.5 mi east of Highway 83.

DRAINAGE AREA.--To be determined.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,730 ft from topographic map.

REMARKS.--Records poor. Records for water year October 2001 to September 2002 also are included in this report.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 12.0 ft³/s, Mar. 15; minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e0.00	e0.15	e0.00	e0.35	e0.00	e0.00	e0.00
2	---	---	---	---	---	e0.00	e0.15	e0.00	e0.15	e0.00	e0.00	e0.00
3	---	---	---	---	---	e0.00	e0.14	e0.00	e0.10	e0.10	e0.00	e0.00
4	---	---	---	---	---	e0.00	e0.13	e0.00	e0.10	e0.00	e0.00	e0.00
5	---	---	---	---	---	e0.00	e0.12	e0.00	e0.10	e0.00	e0.00	e0.00
6	---	---	---	---	---	e0.00	e0.11	e0.10	e0.10	e0.00	e0.00	e0.00
7	---	---	---	---	---	e0.00	e0.10	e0.00	e0.10	e0.00	e0.00	e0.00
8	---	---	---	---	---	e0.00	e0.10	e0.00	e0.10	e0.00	e0.00	e0.00
9	---	---	---	---	---	e0.00	e0.10	e0.00	e0.10	e0.00	e0.00	e0.00
10	---	---	---	---	---	e0.00	e0.10	e0.00	e0.10	e0.00	e0.00	e0.00
11	---	---	---	---	---	e0.00	e0.10	e0.00	e0.10	e0.00	e0.00	e0.00
12	---	---	---	---	---	e0.00	e0.10	e0.00	e0.10	e0.00	e0.00	e0.00
13	---	---	---	---	---	e0.00	e0.10	e3.0	e0.10	e0.00	e0.00	e0.00
14	---	---	---	---	---	e0.00	e0.10	e8.0	e0.10	e0.00	e0.00	e0.00
15	---	---	---	---	---	e12	e0.10	e3.5	e0.10	e0.00	e0.00	e0.00
16	---	---	---	---	---	e8.0	e0.10	e3.2	e0.10	e0.00	e0.00	e0.00
17	---	---	---	---	---	e5.0	e0.11	e2.3	e0.10	e0.00	e0.00	e0.00
18	---	---	---	---	---	e2.0	e0.10	e3.8	e0.10	e0.00	e0.00	e0.00
19	---	---	---	---	---	e1.5	e0.10	e3.0	e0.10	e0.00	e0.00	e0.00
20	---	---	---	---	---	e0.60	e0.10	e2.0	e0.10	e0.00	e0.00	e0.00
21	---	---	---	---	---	e0.50	e0.10	e1.2	e0.10	e0.00	e0.00	e0.00
22	---	---	---	---	---	e0.40	e0.10	e0.85	e0.10	e0.00	e0.00	e0.00
23	---	---	---	---	---	e0.35	e0.10	e0.82	e0.10	e0.00	e0.00	e0.00
24	---	---	---	---	---	e0.28	e0.10	e0.75	e0.20	e0.00	e0.00	e0.00
25	---	---	---	---	---	e0.26	e0.00	e0.62	e0.15	e0.00	e0.00	e0.00
26	---	---	---	---	---	e0.24	e0.00	e0.60	e0.10	e0.00	e0.00	e0.00
27	---	---	---	---	---	e0.22	e0.00	e0.65	e0.10	e0.00	e0.00	e0.00
28	---	---	---	---	---	e0.19	e0.00	e0.60	e0.10	e0.00	e0.00	e0.00
29	---	---	---	---	---	e0.17	e0.00	e0.55	e0.00	e0.00	e0.00	e0.00
30	---	---	---	---	---	e0.16	e0.00	e0.50	e0.00	e0.00	e0.00	e0.00
31	---	---	---	---	---	e0.16	---	e0.40	---	e0.00	e0.00	---
MEAN	---	---	---	---	---	1.03	0.087	1.18	0.11	0.003	0.000	0.000
MAX	---	---	---	---	---	12	0.15	8.0	0.35	0.10	0.00	0.00
MIN	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	---	---	---	---	---	64	5.2	72	6.4	0.2	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2003, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	1.03	0.087	1.18	0.056	0.012	0.005	0.000
MAX	---	---	---	---	---	1.03	0.087	1.18	0.11	0.022	0.010	0.000
(WY)	---	---	---	---	---	(2003)	(2003)	(2003)	(2003)	(2002)	(2002)	(2002)
MIN	---	---	---	---	---	1.03	0.087	1.18	0.004	0.003	0.000	0.000
(WY)	---	---	---	---	---	(2003)	(2003)	(2003)	(2002)	(2003)	(2003)	(2002)

SUMMARY STATISTICS

WATER YEARS 2002- 2003

HIGHEST DAILY MEAN	12	Mar 15, 2003
LOWEST DAILY MEAN	0.00	Jun 1, 2002
ANNUAL SEVEN-DAY MINIMUM	0.00	Jun 1, 2002
MAXIMUM PEAK FLOW	12	Mar 14, 2003

e Estimated

06349580 HAY CREEK AT 43RD AVENUE NEAR BISMARCK, ND—Continued

LOCATION.--Lat 46°51'10", long 100°45'30", in NW¹₄NW¹₄NE¹₄ sec.22, T.139 N., R.80 W., Burleigh County, Hydrologic Unit 10130103, on left bank on downstream side of bridge on 43rd Avenue north of Bismarck and approximately 0.5 mi east of Highway 83.

DRAINAGE AREA.--To be determined.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,730 ft from topographic map.

REMARKS.--Records poor.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 0.47 ft³/s, June 19; minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.10	e0.00
2	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
3	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
4	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
5	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
6	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
7	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
8	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.10	e0.00
9	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
10	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
11	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
12	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
13	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
14	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
15	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
16	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
17	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
18	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
19	---	---	---	---	---	---	---	---	e0.13	e0.00	e0.00	e0.00
20	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
21	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
22	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
23	---	---	---	---	---	---	---	---	e0.00	e0.10	e0.00	e0.00
24	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
25	---	---	---	---	---	---	---	---	e0.00	e0.10	e0.00	e0.00
26	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
27	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
28	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
29	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
30	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
31	---	---	---	---	---	---	---	---	---	e0.47	e0.10	---
MEAN	---	---	---	---	---	---	---	---	0.004	0.022	0.010	0.000
MAX	---	---	---	---	---	---	---	---	0.13	0.47	0.10	0.00
MIN	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00
AC-FT	---	---	---	---	---	---	---	---	0.3	1.3	0.6	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2002, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	---	---	---	0.004	0.022	0.010	0.000
MAX	---	---	---	---	---	---	---	---	0.004	0.022	0.010	0.000
(WY)	---	---	---	---	---	---	---	---	(2002)	(2002)	(2002)	(2002)
MIN	---	---	---	---	---	---	---	---	0.004	0.022	0.010	0.000
(WY)	---	---	---	---	---	---	---	---	(2002)	(2002)	(2002)	(2002)

e Estimated

06349580 HAY CREEK AT 43RD AVENUE NEAR BISMARCK, ND—Continued

SUSPENDED SEDIMENT LOAD, TONS PER DAY
 WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
2	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
3	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
4	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
5	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
6	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
7	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
8	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
9	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
10	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
11	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
12	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
13	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
14	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
15	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
16	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
17	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
18	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
19	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
20	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
21	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
22	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
23	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
24	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
25	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
26	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
27	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
28	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
29	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
30	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
31	---	---	---	---	---	---	---	---	---	0.1	0.0	---
TOTAL	---	---	---	---	---	---	---	---	0.0	0.1	0.0	0.0
MAX	---	---	---	---	---	---	---	---	0.00	0.10	0.00	0.00
MIN	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00

06349590 HAY CREEK AT DIVIDE AVENUE IN BISMARCK, ND

LOCATION.--Lat 46°49'24", long 100°44'13", in SW¹₄SE¹₄SE¹₄ sec.26, T.139 N., R.80 W., Burleigh County, Hydrologic Unit 10130103, on left downstream side of walkway bridge, 300 ft downstream of Divide Avenue in east Bismarck.

DRAINAGE AREA.--To be determined.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,670 ft from topographic map.

REMARKS.--Records poor. Records for water year October 2001 to September 2002 also are included in this report.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 25 ft³/s, Mar. 15; minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e0.00	e0.39	e0.10	e0.10	e0.15	e0.00	e0.00
2	---	---	---	---	---	e0.00	e0.38	e0.10	e0.10	e0.17	e0.00	e0.00
3	---	---	---	---	---	e0.00	e0.35	e0.10	e0.10	e0.20	e0.00	e0.00
4	---	---	---	---	---	e0.00	e0.33	e0.10	e0.10	e0.15	e0.00	e0.00
5	---	---	---	---	---	e0.00	e0.32	e0.10	e0.10	e0.12	e0.00	e0.00
6	---	---	---	---	---	e0.00	e0.32	e0.10	e0.10	e0.11	e0.00	e0.00
7	---	---	---	---	---	e0.00	e0.31	e0.10	e0.10	e0.10	e0.00	e0.00
8	---	---	---	---	---	e0.00	e0.30	e0.10	e0.10	e0.10	e0.00	e0.00
9	---	---	---	---	---	e0.00	e0.28	e0.10	e0.10	e0.10	e0.00	e0.00
10	---	---	---	---	---	e0.00	e0.27	e0.10	e0.10	e0.10	e0.00	e1.2
11	---	---	---	---	---	e0.00	e0.25	e0.10	e0.10	e0.00	e0.00	e16
12	---	---	---	---	---	e0.00	e0.23	e0.10	e0.10	e0.00	e0.00	e5.0
13	---	---	---	---	---	e0.00	e0.20	e0.10	e0.10	e0.00	e0.00	e2.6
14	---	---	---	---	---	e1.0	e0.22	e20	e0.40	e0.00	e0.00	e1.5
15	---	---	---	---	---	e25	e0.35	e10	e0.40	e0.00	e0.00	e1.2
16	---	---	---	---	---	e17	e0.32	e5.0	e0.39	e0.00	e0.00	e1.1
17	---	---	---	---	---	e9.0	e0.25	e4.0	e0.38	e0.00	e0.00	e0.92
18	---	---	---	---	---	e6.8	e0.22	e3.5	e0.37	e0.00	e0.00	e0.88
19	---	---	---	---	---	e3.8	e0.20	e3.0	e0.36	e0.00	e0.00	e0.78
20	---	---	---	---	---	e2.5	e0.17	e3.0	e0.36	e0.00	e0.00	e0.72
21	---	---	---	---	---	e2.0	e0.16	e2.5	e0.35	e0.00	e0.00	e0.68
22	---	---	---	---	---	e1.7	e0.15	e2.3	e0.35	e0.00	e0.00	e0.62
23	---	---	---	---	---	e1.4	e0.13	e2.0	e0.35	e0.00	e0.00	e0.57
24	---	---	---	---	---	e1.1	e0.11	e1.9	e0.40	e0.00	e0.00	e0.49
25	---	---	---	---	---	e0.90	e0.10	e0.95	e0.35	e0.00	e0.00	e0.43
26	---	---	---	---	---	e0.75	e0.10	e0.10	e0.30	e0.00	e0.00	e0.44
27	---	---	---	---	---	e0.60	e0.10	e0.10	e0.25	e0.00	e0.00	e0.42
28	---	---	---	---	---	e0.55	e0.10	e0.10	e0.23	e0.00	e0.00	e0.40
29	---	---	---	---	---	e0.50	e0.10	e0.10	e0.18	e0.00	e0.00	e0.40
30	---	---	---	---	---	e0.45	e0.10	e0.10	e0.15	e0.00	e0.00	e0.38
31	---	---	---	---	---	e0.40	---	e0.10	---	e0.00	e0.00	---
TOTAL	---	---	---	---	---	75.45	6.81	60.05	6.87	1.30	0.00	36.73
MEAN	---	---	---	---	---	2.43	0.23	1.94	0.23	0.042	0.000	1.22
MAX	---	---	---	---	---	25	0.39	20	0.40	0.20	0.00	16
MIN	---	---	---	---	---	0.00	0.10	0.10	0.10	0.00	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2003, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	2.43	0.23	1.94	0.23	4.30	1.11	0.97
MAX	---	---	---	---	---	2.43	0.23	1.94	0.23	8.57	2.21	1.22
(WY)	---	---	---	---	---	(2003)	(2003)	(2003)	(2003)	(2002)	(2002)	(2003)
MIN	---	---	---	---	---	2.43	0.23	1.94	0.23	0.042	0.000	0.72
(WY)	---	---	---	---	---	(2003)	(2003)	(2003)	(2002)	(2003)	(2003)	(2002)

SUMMARY STATISTICS

WATER YEARS 2002-2003

HIGHEST DAILY MEAN	170	Jul 9, 2002
LOWEST DAILY MEAN	0.00	Mar 1, 2003
ANNUAL SEVEN-DAY MINIMUM	0.00	Mar 1, 2003
MAXIMUM PEAK FLOW	170	Jul 9, 2002

e Estimated

06349590 HAY CREEK AT DIVIDE AVENUE IN BISMARCK, ND—Continued

LOCATION.--Lat 46°49'24", long 100°44'13", in SW¹₄SE¹₄ sec.26, T.139 N., R.80 W., Burleigh County, Hydrologic Unit 10130103, on left downstream side of walkway bridge, 300 ft downstream of Divide Avenue in east Bismarck.

DRAINAGE AREA.--To be determined.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,670 ft from topographic map.

REMARKS.--Records poor.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 170 ft³/s, July 9; minimum daily discharge, 0.20 ft³/s, June 1-11.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	e0.20	e0.28	e1.0	e4.0
2	---	---	---	---	---	---	---	---	e0.20	e0.27	e1.1	e2.8
3	---	---	---	---	---	---	---	---	e0.20	e0.27	e1.1	e1.7
4	---	---	---	---	---	---	---	---	e0.20	e1.0	e1.0	e1.2
5	---	---	---	---	---	---	---	---	e0.20	e0.92	e1.1	e1.1
6	---	---	---	---	---	---	---	---	e0.20	e0.73	e1.1	e0.92
7	---	---	---	---	---	---	---	---	e0.20	e0.68	e1.1	e0.78
8	---	---	---	---	---	---	---	---	e0.20	e0.60	e2.0	e0.72
9	---	---	---	---	---	---	---	---	e0.20	e170	e12	e0.65
10	---	---	---	---	---	---	---	---	e0.20	e40	e5.0	e0.60
11	---	---	---	---	---	---	---	---	e0.20	e9.0	e4.0	e0.56
12	---	---	---	---	---	---	---	---	e0.21	e4.0	e3.0	e0.48
13	---	---	---	---	---	---	---	---	e0.21	e3.8	e2.0	e0.46
14	---	---	---	---	---	---	---	---	e0.22	e3.7	e1.3	e0.42
15	---	---	---	---	---	---	---	---	e0.22	e3.5	e0.90	e0.41
16	---	---	---	---	---	---	---	---	e0.23	e2.9	e0.73	e0.40
17	---	---	---	---	---	---	---	---	e0.23	e2.6	e0.60	e0.39
18	---	---	---	---	---	---	---	---	e0.23	e2.3	e0.49	e0.38
19	---	---	---	---	---	---	---	---	e0.23	e2.2	e0.47	e0.37
20	---	---	---	---	---	---	---	---	e0.23	e1.8	e0.45	e0.36
21	---	---	---	---	---	---	---	---	e0.22	e1.7	e0.41	e0.34
22	---	---	---	---	---	---	---	---	e0.23	e1.6	e0.39	e0.33
23	---	---	---	---	---	---	---	---	e0.23	e1.5	e0.37	e0.32
24	---	---	---	---	---	---	---	---	e0.26	e1.5	e0.37	e0.31
25	---	---	---	---	---	---	---	---	e0.26	e1.4	e0.36	e0.30
26	---	---	---	---	---	---	---	---	e0.28	e1.4	e0.35	e0.29
27	---	---	---	---	---	---	---	---	e0.28	e1.3	e0.35	e0.27
28	---	---	---	---	---	---	---	---	e0.29	e1.3	e0.35	e0.25
29	---	---	---	---	---	---	---	---	e0.30	e1.2	e0.35	e0.25
30	---	---	---	---	---	---	---	---	e0.30	e1.1	e2.0	e0.25
31	---	---	---	---	---	---	---	---	---	e1.0	e4.8	---
TOTAL	---	---	---	---	---	---	---	---	6.86	265.55	68.54	21.61
MEAN	---	---	---	---	---	---	---	---	0.23	8.57	2.21	0.72
MAX	---	---	---	---	---	---	---	---	0.30	170	20	4.0
MIN	---	---	---	---	---	---	---	---	0.20	0.27	0.35	0.25

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2002, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	---	---	---	0.23	8.57	2.21	0.72
MAX	---	---	---	---	---	---	---	---	0.23	8.57	2.21	0.72
(WY)	---	---	---	---	---	---	---	---	(2002)	(2002)	(2002)	(2002)
MIN	---	---	---	---	---	---	---	---	0.23	8.57	2.21	0.72
(WY)	---	---	---	---	---	---	---	---	(2002)	(2002)	(2002)	(2002)

e Estimated

06349590 HAY CREEK AT DIVIDE AVENUE IN BISMARCK, ND—Continued

SUSPENDED SEDIMENT LOAD, TONS PER DAY
 WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.20
2	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.10
3	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
4	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
5	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
6	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
7	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
8	---	---	---	---	---	---	---	---	e0.00	e367	e5.2	e0.00
9	---	---	---	---	---	---	---	---	e0.00	e21	e1.9	e0.00
10	---	---	---	---	---	---	---	---	e0.00	e1.0	e0.30	e0.00
11	---	---	---	---	---	---	---	---	e0.00	e0.20	e0.20	e0.00
12	---	---	---	---	---	---	---	---	e0.00	e0.20	e0.10	e0.00
13	---	---	---	---	---	---	---	---	e0.00	e0.20	e0.10	e0.00
14	---	---	---	---	---	---	---	---	e0.00	e0.20	e0.00	e0.00
15	---	---	---	---	---	---	---	---	e0.00	e0.10	e0.00	e0.00
16	---	---	---	---	---	---	---	---	e0.00	e0.10	e0.00	e0.00
17	---	---	---	---	---	---	---	---	e0.00	e0.10	e0.00	e0.00
18	---	---	---	---	---	---	---	---	e0.00	e0.10	e0.00	e0.00
19	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
20	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
21	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
22	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
23	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
24	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
25	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
26	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
27	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
28	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
29	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
30	---	---	---	---	---	---	---	---	e0.00	e0.00	e0.00	e0.00
31	---	---	---	---	---	---	---	---	---	e0.00	e0.30	---
TOTAL	---	---	---	---	---	---	---	---	0.00	390.20	8.10	0.30
MAX	---	---	---	---	---	---	---	---	0.00	367	5.2	0.20
MIN	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00

e Estimated

06349600 HAY CREEK AT MAIN AVENUE IN BISMARCK, ND

LOCATION.--Lat 46°48'27", long 100°43'59", in NE¹₄NE¹₄NE¹₄ sec.2, T.138 N., R.80 W., Burleigh County, Hydrologic Unit 10130103, on left bank, 150 ft downstream from bridge on Main Avenue in Bismarck.

DRAINAGE AREA.--To be determined.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,660 ft from topographic map.

REMARKS.--Records poor. Records for water year October 2001 to September 2002 also are included in this report.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 40 ft³/s, Mar. 15; minimum daily discharge, no flow for many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	e0.00	e1.9	e1.1	e2.1	e0.95	e0.00	e0.00
2	---	---	---	---	---	e0.00	e1.8	e1.1	e2.0	e0.93	e0.00	e0.00
3	---	---	---	---	---	e0.00	e1.8	e1.1	e1.9	e1.1	e0.00	e0.00
4	---	---	---	---	---	e0.00	e1.8	e1.5	e1.8	e1.0	e0.00	e0.00
5	---	---	---	---	---	e0.00	e1.6	e1.4	e1.7	e0.92	e0.00	e0.00
6	---	---	---	---	---	e0.00	e1.5	e1.3	e1.6	e0.88	e0.00	e0.00
7	---	---	---	---	---	e0.00	e1.5	e1.3	e1.6	e0.86	e0.00	e0.00
8	---	---	---	---	---	e0.00	e1.5	e1.3	e1.6	e0.85	e0.00	e0.00
9	---	---	---	---	---	e0.00	e1.4	e1.3	e1.6	e0.80	e0.00	e0.00
10	---	---	---	---	---	e0.00	e1.4	e1.2	e1.5	e0.76	e0.00	e0.00
11	---	---	---	---	---	e0.00	e1.4	e1.2	e1.5	e0.75	e0.00	e6.4
12	---	---	---	---	---	e0.00	e1.4	e1.2	e1.5	e0.70	e0.00	e21
13	---	---	---	---	---	e0.00	e1.3	e25	e1.5	e0.64	e0.00	e14
14	---	---	---	---	---	e0.00	e1.3	e27	e1.5	e0.61	e0.00	e5.1
15	---	---	---	---	---	e40	e1.3	e17	e1.4	e0.57	e0.00	e3.3
16	---	---	---	---	---	e30	e2.0	e13	e1.4	e0.52	e0.00	e1.8
17	---	---	---	---	---	e21	e1.9	e14	e1.3	e0.46	e0.00	e1.6
18	---	---	---	---	---	e18	e1.7	e18	e1.3	e0.42	e0.00	e1.6
19	---	---	---	---	---	e16	e1.6	e13	e1.2	e0.38	e0.00	e1.3
20	---	---	---	---	---	e14	e1.6	e9.2	e1.2	e0.30	e0.00	e1.2
21	---	---	---	---	---	e11	e1.4	e6.8	e1.1	e0.26	e0.00	e1.2
22	---	---	---	---	---	e9.5	e1.3	e5.0	e1.1	e0.21	e0.00	e1.1
23	---	---	---	---	---	e8.5	e1.2	e4.4	e1.0	e0.18	e0.00	e1.1
24	---	---	---	---	---	e7.0	e1.2	e4.3	e1.3	e0.16	e0.00	e1.0
25	---	---	---	---	---	e5.5	e1.2	e3.5	e1.2	e0.12	e0.00	e1.0
26	---	---	---	---	---	e5.0	e1.2	e3.1	e1.1	e0.11	e0.00	e1.0
27	---	---	---	---	---	e4.3	e1.2	e3.0	e1.0	e0.10	e0.00	e0.93
28	---	---	---	---	---	e3.3	e1.2	e2.8	e1.0	e0.10	e0.00	e0.95
29	---	---	---	---	---	e2.4	e1.1	e2.6	e0.98	e0.10	e0.00	e0.92
30	---	---	---	---	---	e2.3	e1.1	e2.4	e0.96	e0.00	e0.00	e0.82
31	---	---	---	---	---	e2.1	---	e2.2	---	e0.00	e0.00	---
TOTAL	---	---	---	---	---	199.90	43.8	191.3	41.94	15.74	0.00	67.32
MEAN	---	---	---	---	---	6.45	1.46	6.17	1.40	0.51	0.000	2.24
MAX	---	---	---	---	---	40	2.0	27	2.1	1.1	0.00	21
MIN	---	---	---	---	---	0.00	1.1	1.1	0.96	0.00	0.00	0.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2003, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	6.45	1.46	6.17	6.27	8.68	2.10	1.90
MAX	---	---	---	---	---	6.45	1.46	6.17	11.2	16.8	4.19	2.24
(WY)	---	---	---	---	---	(2003)	(2003)	(2003)	(2002)	(2002)	(2002)	(2003)
MIN	---	---	---	---	---	6.45	1.46	6.17	1.40	0.51	0.000	1.57
(WY)	---	---	---	---	---	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2002)

SUMMARY STATISTICS

WATER YEARS 2002-2003

HIGHEST DAILY MEAN	200	Jul 9, 2002
LOWEST DAILY MEAN	0.00	Mar 1, 2003
ANNUAL SEVEN-DAY MINIMUM	0.00	Mar 1, 2003
MAXIMUM PEAK FLOW	200	Jul 9, 2002

e Estimated

06349600 HAY CREEK AT MAIN AVENUE IN BISMARCK, ND—Continued

SUSPENDED SEDIMENT LOAD, TONS PER DAY
 WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	e0.1
12	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	e2.2
13	---	---	---	---	---	0.0	0.0	e3.4	0.0	0.0	0.0	e0.8
14	---	---	---	---	---	0.0	0.0	e3.9	0.0	0.0	0.0	e0.1
15	---	---	---	---	---	e70	0.0	e1.3	0.0	0.0	0.0	0.0
16	---	---	---	---	---	e20	0.0	e0.7	0.0	0.0	0.0	0.0
17	---	---	---	---	---	e5.0	0.0	e0.3	0.0	0.0	0.0	0.0
18	---	---	---	---	---	e3.0	0.0	e0.1	0.0	0.0	0.0	0.0
19	---	---	---	---	---	e1.0	0.0	0.0	0.0	0.0	0.0	0.0
20	---	---	---	---	---	e0.8	0.0	0.0	0.0	0.0	0.0	0.0
21	---	---	---	---	---	e0.5	0.0	0.0	0.0	0.0	0.0	0.0
22	---	---	---	---	---	e0.1	0.0	0.0	0.0	0.0	0.0	0.0
23	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	---	---	---	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	---	---	---	---	---	0.0	---	0.0	---	0.0	0.0	---
TOTAL	---	---	---	---	---	100.4	0.0	9.7	0.0	0.0	0.0	3.2
MAX	---	---	---	---	---	70	0.00	3.9	0.00	0.00	0.00	2.2
MIN	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00

e Estimated

06349600 HAY CREEK AT MAIN AVENUE IN BISMARCK, ND—Continued

LOCATION.--Lat 46°48'27", long 100°43'59", in NE¹₄NE¹₄NE¹₄ sec.2, T.138 N.,R.80 W., Burleigh County, Hydrologic Unit 10130103, on left bank, 150 ft downstream from bridge on Main Avenue in Bismarck.

DRAINAGE AREA.--To be determined.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 2002 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,660 ft from topographic map.

REMARKS.--Records poor.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 200 ft³/s, July 9; minimum daily discharge, 0.62 ft³/s, Aug. 25-29 and Sept. 29-30.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	e0.64	0.83	e5.2	e8.2
2	---	---	---	---	---	---	---	---	e0.64	0.80	e5.0	e6.1
3	---	---	---	---	---	---	---	---	e0.65	0.80	e4.6	e5.0
4	---	---	---	---	---	---	---	---	e0.64	0.80	e4.6	e2.9
5	---	---	---	---	---	---	---	---	e0.66	1.82	e4.4	e2.1
6	---	---	---	---	---	---	---	---	e0.66	1.61	e4.0	e1.8
7	---	---	---	---	---	---	---	---	e0.66	1.32	e4.6	e1.6
8	---	---	---	---	---	---	---	---	e0.68	1.23	e31	e1.3
9	---	---	---	---	---	---	---	---	e0.68	200	e14	e1.2
10	---	---	---	---	---	---	---	---	e0.68	100	e10	e1.1
11	---	---	---	---	---	---	---	---	e0.68	43	e5.2	e1.0
12	---	---	---	---	---	---	---	---	e0.68	19	e3.7	e1.0
13	---	---	---	---	---	---	---	---	e0.70	17	e3.0	e0.92
14	---	---	---	---	---	---	---	---	e0.70	16	e2.3	e0.90
15	---	---	---	---	---	---	---	---	e0.72	14	e1.6	e0.92
16	---	---	---	---	---	---	---	---	e0.73	12	e1.4	e0.90
17	---	---	---	---	---	---	---	---	e75	9.8	e1.3	e0.90
18	---	---	---	---	---	---	---	---	e80	8.3	e1.2	e0.88
19	---	---	---	---	---	---	---	---	e80	7.6	e1.2	e0.85
20	---	---	---	---	---	---	---	---	e80	7.2	e1.1	e0.81
21	---	---	---	---	---	---	---	---	e0.80	6.4	e1.0	e0.73
22	---	---	---	---	---	---	---	---	e0.76	6.4	e0.97	e0.70
23	---	---	---	---	---	---	---	---	e0.83	6.0	e0.88	e0.67
24	---	---	---	---	---	---	---	---	e0.88	5.8	e0.72	e0.66
25	---	---	---	---	---	---	---	---	e0.90	5.6	e0.62	e0.65
26	---	---	---	---	---	---	---	---	e0.90	5.0	e0.62	e0.65
27	---	---	---	---	---	---	---	---	e0.89	4.8	e0.62	e0.64
28	---	---	---	---	---	---	---	---	e0.92	4.6	e0.62	e0.64
29	---	---	---	---	---	---	---	---	e0.94	4.6	e0.62	e0.62
30	---	---	---	---	---	---	---	---	e0.93	5.0	e4.4	e0.62
31	---	---	---	---	---	---	---	---	---	5.0	e9.5	---
TOTAL	---	---	---	---	---	---	---	---	334.55	522.31	129.97	46.96
MEAN	---	---	---	---	---	---	---	---	11.2	16.8	4.19	1.57
MAX	---	---	---	---	---	---	---	---	80	200	31	8.2
MIN	---	---	---	---	---	---	---	---	0.64	0.80	0.62	0.62

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2002, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	---	---	---	11.2	16.8	4.19	1.57
MAX	---	---	---	---	---	---	---	---	11.2	16.8	4.19	1.57
(WY)	---	---	---	---	---	---	---	---	(2002)	(2002)	(2002)	(2002)
MIN	---	---	---	---	---	---	---	---	11.2	16.8	4.19	1.57
(WY)	---	---	---	---	---	---	---	---	(2002)	(2002)	(2002)	(2002)

e Estimated

06349600 HAY CREEK AT MAIN AVENUE IN BISMARCK, ND—Continued

SUSPENDED SEDIMENT LOAD, TONS PER DAY
 WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.2
2	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.1
3	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
4	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
5	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
6	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
7	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
8	---	---	---	---	---	---	---	---	0.0	0.0	5.5	0.0
9	---	---	---	---	---	---	---	---	0.0	0.0	0.8	0.0
10	---	---	---	---	---	---	---	---	0.0	594	0.3	0.0
11	---	---	---	---	---	---	---	---	0.0	105	0.1	0.0
12	---	---	---	---	---	---	---	---	0.0	12	0.0	0.0
13	---	---	---	---	---	---	---	---	0.0	1.7	0.0	0.0
14	---	---	---	---	---	---	---	---	0.0	1.2	0.0	0.0
15	---	---	---	---	---	---	---	---	0.0	1.1	0.0	0.0
16	---	---	---	---	---	---	---	---	0.0	0.7	0.0	0.0
17	---	---	---	---	---	---	---	---	0.0	0.5	0.0	0.0
18	---	---	---	---	---	---	---	---	0.0	0.3	0.0	0.0
19	---	---	---	---	---	---	---	---	0.0	0.2	0.0	0.0
20	---	---	---	---	---	---	---	---	0.0	0.1	0.0	0.0
21	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
22	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
23	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
24	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
25	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
26	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
27	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
28	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
29	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
30	---	---	---	---	---	---	---	---	0.0	0.0	0.0	0.0
31	---	---	---	---	---	---	---	---	---	0.0	0.3	---
TOTAL	---	---	---	---	---	---	---	---	0.0	716.8	7.0	0.3
MAX	---	---	---	---	---	---	---	---	0.00	594	5.5	0.20
MIN	---	---	---	---	---	---	---	---	0.00	0.00	0.00	0.00

MISSOURI RIVER MAIN STEM

06349700 MISSOURI RIVER NEAR SCHMIDT, ND

LOCATION.--Lat 46°39'22", long 100°44'18", in SW¹₄NE¹₄ sec.26, T.137 N., R.80 W., Morton County, Hydrologic Unit 10130102, on right bank 2 mi southeast of abandoned townsite of Schmidt, 13 mi southeast of Mandan, and at mile 1,298.

DRAINAGE AREA.--191,700 mi², approximately.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--September 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,600.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Stage regulated by releases from Garrison Dam (station 06338490) 91.1 mi upstream and by backwater from Lake Oahe.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 23.56 ft, Dec. 9, 1976; minimum daily recorded, 7.92 ft, May 30, 1967.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.31	13.40	15.06	19.24	19.46	18.72	13.88	14.66	15.34	15.24	15.32	15.12
2	13.36	13.37	15.06	21.17	19.41	18.63	13.57	14.16	15.30	15.31	15.29	15.10
3	13.16	13.48	15.11	22.35	19.31	18.43	13.70	13.96	15.35	15.36	15.30	15.16
4	13.28	13.76	15.16	22.32	19.20	18.33	14.29	13.95	15.37	15.36	15.28	14.99
5	13.41	13.91	15.42	21.45	19.03	18.14	14.63	13.94	15.33	15.27	15.33	14.77
6	13.43	14.13	15.31	20.24	18.89	18.11	14.48	14.06	15.36	15.30	15.29	14.60
7	13.44	14.39	14.99	18.68	18.84	---	14.54	14.01	15.30	15.34	15.20	14.65
8	13.42	14.49	15.06	17.18	18.79	---	14.69	13.96	15.23	15.30	15.25	14.54
9	13.35	14.47	15.05	15.96	18.77	---	14.66	14.09	15.27	15.30	15.26	14.47
10	13.34	14.51	15.08	16.75	18.82	17.81	14.53	14.04	15.32	15.38	15.25	14.63
11	13.24	14.45	15.06	17.46	18.76	17.98	14.38	14.07	15.35	15.34	15.21	14.80
12	13.22	14.48	15.15	17.61	18.79	17.92	14.35	14.02	15.38	15.30	15.09	14.60
13	13.22	14.43	15.12	18.28	18.73	17.91	14.48	14.03	15.34	15.29	15.08	14.53
14	13.15	14.43	15.11	18.82	18.79	17.86	14.78	14.30	15.28	15.28	15.10	14.48
15	13.35	14.42	15.03	19.00	18.84	17.84	14.83	14.04	15.32	15.25	15.12	14.62
16	13.25	14.44	15.00	19.05	18.70	18.04	14.84	14.17	15.37	15.21	15.15	14.56
17	13.28	14.47	15.06	19.52	18.65	18.64	14.99	14.18	15.38	15.28	15.08	13.95
18	13.36	14.43	15.06	19.80	18.73	19.22	14.97	14.62	15.30	15.37	15.04	13.48
19	13.31	14.42	14.98	19.85	18.73	19.41	14.95	15.38	15.26	15.39	15.13	13.20
20	13.30	14.40	15.06	19.85	18.78	19.01	14.95	15.46	15.22	15.36	15.14	13.16
21	13.29	14.47	15.03	19.85	18.73	18.88	14.95	15.34	15.28	15.35	15.14	13.24
22	13.36	14.47	15.14	19.79	18.47	18.99	14.90	15.41	15.35	15.36	15.06	13.37
23	13.25	14.42	15.07	19.61	18.50	19.17	14.91	15.32	15.26	15.34	15.09	13.26
24	13.25	14.45	15.29	19.49	18.40	18.88	15.01	15.39	15.22	15.37	15.10	13.21
25	13.38	14.43	15.70	19.36	18.26	18.47	14.91	15.39	15.33	15.33	15.13	13.16
26	13.35	14.55	16.15	19.47	18.68	18.36	14.95	15.31	15.30	15.28	15.17	13.17
27	13.32	14.69	17.13	19.41	18.74	18.39	14.92	15.36	15.25	15.37	15.06	13.17
28	13.33	14.95	18.49	19.29	18.76	16.22	14.91	15.42	15.22	15.36	14.93	13.07
29	13.32	14.96	18.47	19.29	---	14.44	14.76	15.32	15.23	15.41	15.05	13.03
30	13.42	14.99	17.86	19.32	---	13.97	14.79	15.32	15.28	15.38	15.16	13.24
31	13.47	---	17.60	19.40	---	13.86	---	15.33	---	15.33	14.96	---
MEAN	13.32	14.36	15.61	19.32	18.81	---	14.65	14.65	15.30	15.33	15.15	14.04
MAX	13.47	14.99	18.49	22.35	19.46	---	15.01	15.46	15.38	15.41	15.33	15.16
MIN	13.15	13.37	14.98	15.96	18.26	---	13.57	13.94	15.22	15.21	14.93	13.03

06350000 CANNONBALL RIVER AT REGENT, ND

LOCATION.--Lat 46°25'36", long 102°33'05", in NE¹₄NE¹₄ sec.13, T.134 N., R.95 W., Hettinger County, Hydrologic Unit 10130204, on right bank 400 ft from bridge on county highway and 0.3 mi north of Regent.

DRAINAGE AREA.--580 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,422.90 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges, which are fair.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since 1914, 26.1 ft, Apr. 16, 1950, from floodmarks, discharge, 20,300 ft³/s, on basis of slope-area measurement at site 4 mi downstream.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	4.1	3.2	e2.2	e1.8	e3.0	25	7.0	6.0	3.1	0.80	0.97
2	3.0	4.1	3.1	e2.3	e2.1	e3.0	21	6.7	6.0	2.9	0.78	0.95
3	3.2	4.0	e3.0	e2.4	e2.1	e2.9	19	6.5	5.9	2.6	0.77	0.80
4	3.2	3.9	e2.8	e2.6	e2.0	e2.9	18	7.1	5.6	2.4	2.6	0.75
5	3.5	4.0	2.7	e2.8	e2.0	2.9	16	9.1	5.3	2.4	3.7	0.72
6	3.8	4.1	2.5	e2.8	e1.9	3.1	16	11	5.3	2.2	4.2	0.74
7	4.0	4.3	2.6	e3.0	e2.0	2.9	14	11	5.2	2.0	3.6	0.81
8	4.0	4.1	2.6	e3.1	e2.1	2.8	13	10	5.0	2.4	2.8	0.68
9	3.7	4.0	2.6	e3.1	e2.2	2.7	13	12	5.1	4.4	2.9	0.61
10	3.7	3.8	2.7	e3.0	e2.3	2.7	12	14	5.8	3.6	2.8	2.0
11	4.2	3.8	2.7	e2.7	e2.4	2.7	11	14	5.9	2.7	2.4	5.1
12	3.9	3.8	2.8	e2.3	e2.3	2.7	11	14	5.9	2.1	2.0	5.9
13	3.5	3.7	2.7	e2.2	e2.3	2.9	10	15	5.2	2.0	1.8	5.3
14	3.4	3.8	2.8	e2.1	e2.2	4.4	9.7	15	4.9	1.8	1.7	6.6
15	4.4	4.0	2.9	e1.7	e2.4	e15	9.2	27	4.9	1.7	1.4	5.6
16	4.2	3.9	e2.9	e1.7	e2.5	e100	10	25	5.0	1.4	1.1	4.5
17	4.7	3.7	e2.9	e1.5	e2.6	e300	11	23	5.0	1.3	0.92	4.1
18	4.4	3.6	e2.8	e1.4	e2.7	e250	11	19	4.7	1.4	0.75	3.7
19	4.1	3.4	e2.8	e1.4	e2.8	e330	11	17	4.3	1.4	0.82	3.1
20	4.0	3.4	e2.7	e1.3	e2.9	e405	11	15	3.9	1.1	0.83	2.8
21	4.1	3.4	e2.6	e1.3	e3.0	e286	10	14	3.6	1.1	0.77	2.9
22	4.3	3.6	e2.1	e1.2	e3.0	e239	9.3	12	3.6	1.1	1.0	3.0
23	4.2	3.6	e2.0	e1.2	e3.1	e160	8.6	10	3.4	1.1	1.4	2.7
24	4.2	3.2	e1.9	e1.2	e3.1	95	11	9.2	3.7	0.98	1.3	2.6
25	4.9	2.9	e1.8	e1.2	e3.1	48	9.2	8.2	4.2	0.84	1.2	2.6
26	5.0	2.7	e1.9	e1.3	e3.0	39	8.4	7.4	4.0	0.73	0.98	2.6
27	5.0	3.0	e1.9	e1.3	e3.0	29	7.9	7.0	4.0	0.67	0.89	2.3
28	4.9	3.2	e2.0	e1.4	e3.0	25	7.5	6.9	3.7	0.71	0.89	2.3
29	4.8	3.4	e2.0	e1.5	---	19	6.9	6.4	3.2	0.84	0.84	2.3
30	4.4	3.1	e1.9	e1.5	---	17	7.0	5.8	3.0	0.87	0.90	2.2
31	4.1	---	e2.0	e1.7	---	22	---	5.6	---	0.95	0.95	---
TOTAL	125.7	109.6	77.9	60.4	69.9	2,420.6	357.7	370.9	141.3	54.79	49.79	81.23
MEAN	4.05	3.65	2.51	1.95	2.50	78.1	11.9	12.0	4.71	1.77	1.61	2.71
MAX	5.0	4.3	3.2	3.1	3.1	405	25	27	6.0	4.4	4.2	6.6
MIN	2.9	2.7	1.8	1.2	1.8	2.7	6.9	5.6	3.0	0.67	0.75	0.61
AC-FT	249	217	155	120	139	4,800	709	736	280	109	99	161

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2003, BY WATER YEAR (WY)

MEAN	8.70	5.90	4.14	4.90	22.5	137	115	61.1	76.2	25.9	16.8	4.97
MAX	124	51.6	15.7	63.2	393	963	1,128	523	512	331	299	20.4
(WY)	(1983)	(1983)	(1983)	(1973)	(1982)	(1978)	(1952)	(1972)	(1957)	(1969)	(1981)	(1986)
MIN	1.25	1.87	0.52	0.000	0.000	3.23	3.80	2.94	1.57	0.69	0.67	0.70
(WY)	(1961)	(1961)	(1951)	(1952)	(1959)	(1964)	(1961)	(1992)	(1990)	(2002)	(1959)	(1960)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1951 - 2003

ANNUAL TOTAL	1,621.28	3,919.81	
ANNUAL MEAN	4.44	10.7	40.3
HIGHEST ANNUAL MEAN			168 1982
LOWEST ANNUAL MEAN			3.11 1992
HIGHEST DAILY MEAN	20 Apr 22	405 Mar 20	7,880 Mar 27, 1978
LOWEST DAILY MEAN	0.23 Jul 26	0.61 Sep 9	0.00 Dec 5, 1950
ANNUAL SEVEN-DAY MINIMUM	0.25 Jul 21	0.73 Sep 3	0.00 Dec 5, 1950
MAXIMUM PEAK FLOW		490 Mar 20	10,000 Mar 27, 1978
MAXIMUM PEAK STAGE		a7.57 Mar 16	a21.01 Mar 21, 1997
ANNUAL RUNOFF (AC-FT)	3,220	7,770	29,220
10 PERCENT EXCEEDS	9.1	13	44
50 PERCENT EXCEEDS	3.9	3.1	5.0
90 PERCENT EXCEEDS	0.83	1.1	1.5

a Backwater from ice
e Estimated

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-66, 1971 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 04...	1255	3.3	--	--	--	2,220	10.0	10.5	--	--	--	--	--
NOV 15...	1350	3.8	--	--	--	1,830	1.5	2.5	--	--	--	--	--
JAN 10...	0905	3.1	--	--	--	1,940	-17.0	0.0	--	--	--	--	--
MAR 06...	1140	2.9	--	--	--	2,000	-5.0	0.0	--	--	--	--	--
MAR 26...	1545	44	8.2	8.0	870	888	11.0	4.3	190	37.0	23.0	12.0	4
APR 24...	1240	7.9	--	--	--	1,620	16.5	12.5	--	--	--	--	--
JUN 03...	1300	5.9	--	--	--	2,610	19.5	17.5	--	--	--	--	--
JUL 07...	1525	2.2	--	--	--	2,230	25.5	23.0	--	--	--	--	--
AUG 22...	1320	0.94	8.2	8.8	2,140	2,140	27.0	22.5	340	41.2	57.0	9.70	10

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat fltrd mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 04...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 15...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 26...	110	54	131	<0.1	0.20	--	310	571	--	592	1.0	200	1
APR 24...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 22...	414	72	414	14.7	0.53	2.22	727	1,510	3.85	--	5.2	10	<1

06350000 CANNONBALL RIVER AT REGENT, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 04...	--	--	--	--	--	--
NOV 15...	--	--	--	--	--	--
JAN 10...	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--
MAR 26...	20	140	<0.10	<1	<1	450
APR 24...	--	--	--	--	--	--
JUN 03...	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--
AUG 22...	60	20	<0.20	5	5	1,010

Remark codes used in this table:

< -- Less than

06351200 CANNONBALL RIVER NEAR RALEIGH, ND

LOCATION.--Lat 46°07'37", long 101°19'58", in SW¹₄SW¹₄NW¹₄ sec.33, T.131 N., R.85 W., Grant County, Hydrologic Unit 10130204, on left bank at upstream side of bridge on State Highway 31 and 20 miles south of Raleigh.

DRAINAGE AREA.--1,640 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 2001 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,890 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge about 15,000 ft³/sec, Mar. 20, 1997, gage height, 16 ft, from high-water mark, was probably higher in 1950.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	7.9	e11	e5.1	e5.1	e5.0	97	23	17	2.9	0.00	0.00
2	0.00	7.5	e11	e5.1	e5.0	e5.0	81	22	16	2.7	0.00	0.00
3	0.00	7.8	e11	e5.1	e5.0	e5.2	72	21	17	2.3	0.00	0.00
4	0.00	8.2	e11	e5.1	e5.0	e5.2	64	22	20	2.2	0.00	0.00
5	0.02	8.4	e11	e5.1	e5.0	e5.0	60	62	18	2.2	0.00	0.00
6	0.05	9.2	e11	e5.0	e5.0	e5.0	51	28	24	2.4	0.00	0.00
7	0.10	11	e11	e5.0	e5.0	e5.0	43	23	18	2.4	0.02	0.00
8	0.13	14	e11	e5.0	e5.0	e5.0	39	30	16	2.4	0.07	0.00
9	0.16	13	e11	e5.0	e5.0	e4.9	44	41	13	2.2	0.16	0.00
10	0.16	14	e11	e5.0	e5.0	e5.0	43	31	13	1.7	0.06	0.34
11	0.11	13	e11	e5.0	e5.0	e5.0	41	25	12	1.5	0.00	2.4
12	0.14	13	e11	e5.0	e5.0	e6.0	38	25	15	1.3	0.01	1.1
13	0.19	11	e11	e5.0	e5.0	e11	36	28	13	1.3	0.00	0.47
14	0.14	11	e11	e5.0	e5.0	e18	35	29	12	1.1	0.00	0.25
15	0.13	10	e11	e5.0	e5.0	e30	33	31	11	0.88	0.00	0.26
16	0.29	10	e10	e5.0	e5.0	e40	34	29	11	0.77	0.00	0.22
17	0.28	10	e9.3	e5.0	e5.0	e70	37	28	11	0.57	0.00	0.17
18	0.31	9.7	e8.7	e5.0	e5.0	e140	33	30	10	0.42	0.00	2.0
19	0.37	11	e8.2	e5.0	e5.0	e180	35	41	8.9	0.28	0.00	1.2
20	0.46	11	e7.5	e5.0	e5.0	314	33	35	8.0	0.16	0.00	0.65
21	0.58	11	e6.9	e5.0	e5.0	719	33	31	7.4	0.16	0.00	0.42
22	0.99	12	e6.2	e5.0	e5.0	1,290	32	28	7.6	0.12	e0.00	0.25
23	0.55	12	e5.7	e5.0	e5.0	922	30	28	16	0.01	e0.00	0.03
24	0.52	12	e5.3	e5.0	e5.0	681	29	41	15	0.00	e0.00	0.00
25	2.1	13	e5.1	e5.0	e5.0	518	27	34	32	0.03	e0.00	0.00
26	6.3	13	e5.1	e5.0	e5.0	386	26	27	7.6	0.00	0.00	0.00
27	5.4	12	e5.1	e5.0	e5.0	291	24	24	5.6	0.01	0.00	0.00
28	5.8	12	e5.1	e5.0	e5.0	217	23	25	4.6	0.01	0.00	0.00
29	9.7	11	e5.1	e5.0	---	160	24	23	4.0	0.01	0.00	0.00
30	11	e11	e5.1	e5.0	---	128	24	20	3.7	0.00	0.00	0.00
31	9.1	---	e5.1	e5.0	---	108	---	18	---	0.00	0.00	---
MEAN	1.78	11.0	8.66	5.02	5.00	203	40.7	29.1	12.9	1.03	0.010	0.33
MAX	11	14	11	5.1	5.1	1,290	97	62	32	2.9	0.16	2.4
MIN	0.00	7.5	5.1	5.0	5.0	4.9	23	18	3.7	0.00	0.00	0.00
AC-FT	109	654	533	308	278	12,460	2,420	1,790	768	64	0.6	19

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2003, BY WATER YEAR (WY)

MEAN	7.63	12.5	10.9	8.57	8.64	360	111	29.0	35.1	57.0	32.2	3.85
MAX	13.5	14.0	13.2	12.1	12.3	853	254	34.8	86.9	154	93.5	10.8
(WY)	(2002)	(2002)	(2002)	(2002)	(2002)	(2001)	(2001)	(2001)	(2001)	(2001)	(2001)	(2001)
MIN	1.78	11.0	8.66	5.02	5.00	24.1	37.9	22.9	5.52	1.03	0.010	0.33
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2002)	(2002)	(2002)	(2002)	(2003)	(2003)	(2003)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 2001 - 2003

ANNUAL MEAN	13.0	26.8	20.7			
HIGHEST ANNUAL MEAN			26.8			
LOWEST ANNUAL MEAN			14.6			
HIGHEST DAILY MEAN	76	Jul 25	1,290	Mar 22	2,600	Mar 13, 2001
LOWEST DAILY MEAN	0.00	Sep 6	0.00	Oct 1	0.00	Sep 6, 2002
ANNUAL SEVEN-DAY MINIMUM	0.00	Sep 26	0.00	Jul 30	0.00	Sep 26, 2002
MAXIMUM PEAK FLOW			1,520	Mar 21	a3,000	Mar 12, 2001
MAXIMUM PEAK STAGE			6.92	Mar 21	b12.45	Mar 12, 2001
ANNUAL RUNOFF (AC-FT)	9,410	19,410	15,010			
10 PERCENT EXCEEDS	32	35	33			
50 PERCENT EXCEEDS	11	5.1	11			
90 PERCENT EXCEEDS	0.28	0.00	0.03			

a About

b Backwater from ice

e Estimated

CANNONBALL RIVER BASIN

06351200 CANNONBALL RIVER NEAR RALEIGH, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 08...	--	--	--	--	--
NOV 19...	--	--	--	--	--
DEC 26...	--	--	--	--	--
FEB 28...	--	--	--	--	--
MAR 18...	30	0.10	<1	<1	500
31...	--	--	--	--	--
APR 28...	--	--	--	--	--
JUN 10...	--	--	--	--	--
JUL 14...	--	--	--	--	--
30...	--	--	--	--	--
AUG 25...	--	--	--	--	--

Remark codes used in this table:

< -- Less than

06352000 CEDAR CREEK NEAR HAYNES, ND

LOCATION.--Lat 46°09'15", long 102°28'25", in W¹₂ sec.20, T.131 N., R.94 W., Adams County, Hydrologic Unit 10130205, on left bank 30 ft downstream from bridge on State Highway 8 and 12.5 mi north of Haynes.

DRAINAGE AREA.--553 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,472.90 ft above National Geodetic Vertical Datum of 1929 (North Dakota Highway Department benchmark). Prior to May 20, 1951, nonrecording gage on former bridge 400 ft upstream at same datum.

REMARKS.--Records good.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 17, 1950, reached a stage of about 23 ft; discharge, 26,900 ft³/s, by slope-area measurement at site 9 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	1.9	1.5	e1.8	e1.4	e2.2	19	4.3	3.6	e1.5	0.47	0.06
2	1.1	1.8	1.5	e2.0	e1.8	e2.2	17	4.1	3.0	e1.4	0.49	0.07
3	1.1	1.8	1.5	e2.2	e1.8	e2.1	15	3.8	2.9	e1.4	0.46	0.06
4	1.2	1.8	1.6	e2.3	e1.7	e2.0	13	3.6	2.9	e1.4	0.72	0.09
5	1.3	1.8	2.0	e2.7	e1.7	e2.0	13	4.0	2.7	e1.3	0.73	0.09
6	1.8	1.7	1.9	e2.9	e1.7	e2.0	12	4.9	2.7	e1.2	0.68	0.12
7	2.0	1.7	1.7	e3.0	e1.8	e2.0	9.7	5.4	2.5	e1.0	0.61	0.20
8	2.0	1.8	1.8	e3.0	e1.9	e2.0	8.7	4.9	2.5	0.86	0.50	0.21
9	2.1	1.8	1.7	e2.9	e2.0	e2.0	7.5	5.1	2.3	0.88	0.63	0.20
10	2.4	1.7	1.7	e2.8	e2.0	e2.0	6.9	6.8	2.3	0.88	0.55	1.5
11	1.9	1.7	1.7	e2.3	e2.1	e2.0	6.8	8.5	2.3	0.76	0.41	3.8
12	1.7	1.7	1.7	e1.8	e2.1	e2.2	6.3	11	2.3	0.70	0.24	4.9
13	1.7	1.7	1.7	e1.7	e2.1	e2.6	6.0	12	2.3	0.69	0.09	3.7
14	1.9	1.7	1.7	e1.5	e2.1	e8.6	5.8	13	2.1	0.66	0.05	2.3
15	1.7	1.7	1.7	e1.3	e2.1	e15	5.2	13	2.0	0.61	0.04	1.7
16	1.7	1.7	1.7	e1.1	e2.4	e20	5.7	13	2.0	0.52	0.03	1.2
17	1.7	1.7	1.8	e0.99	e2.4	e41	7.3	13	2.0	0.51	0.04	1.2
18	1.8	1.7	1.7	e0.95	e2.4	e71	7.3	14	2.0	0.59	0.04	1.3
19	1.8	1.6	1.6	e0.95	e2.5	e95	7.0	14	1.8	0.64	0.05	1.1
20	1.8	1.5	e1.5	e0.93	e2.6	e127	6.5	13	1.6	0.71	0.06	1.1
21	1.8	1.5	e1.4	e0.92	e2.7	e163	5.8	12	1.3	0.75	0.05	1.0
22	2.0	1.5	e1.4	e0.87	e2.7	243	5.8	12	1.1	0.83	0.05	1.0
23	2.1	1.5	e1.4	e0.88	e2.7	208	5.8	10	1.0	0.84	0.04	0.77
24	2.0	1.5	e1.4	e0.85	e2.7	133	5.7	9.4	1.0	0.79	0.04	0.46
25	1.8	1.5	e1.4	e0.86	e2.7	90	5.5	8.7	1.2	0.72	0.03	0.45
26	1.9	1.5	e1.4	e0.92	e2.6	64	5.2	7.7	1.3	0.69	0.03	0.68
27	1.9	1.5	e1.4	e0.91	e2.5	47	4.8	6.6	1.5	0.57	0.02	0.65
28	1.8	1.6	e1.5	e0.97	e2.3	36	4.5	6.1	1.5	0.63	0.03	0.52
29	2.0	1.6	e1.5	e1.1	---	29	4.5	5.2	1.4	0.54	0.04	0.58
30	2.1	1.4	e1.7	e1.2	---	25	4.5	4.4	e1.4	0.50	0.05	0.58
31	2.0	---	e1.7	e1.3	---	22	---	4.0	---	0.55	0.06	---
TOTAL	55.2	49.6	49.9	49.90	61.5	1,464.9	237.8	257.5	60.5	25.62	7.33	31.59
MEAN	1.78	1.65	1.61	1.61	2.20	47.3	7.93	8.31	2.02	0.83	0.24	1.05
MAX	2.4	1.9	2.0	3.0	2.7	243	19	14	3.6	1.5	0.73	4.9
MIN	1.1	1.4	1.4	0.85	1.4	2.0	4.5	3.6	1.0	0.50	0.02	0.06
AC-FT	109	98	99	99	122	2,910	472	511	120	51	15	63

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2003, BY WATER YEAR (WY)

MEAN	4.64	5.07	3.62	4.28	14.6	121	109	54.0	52.7	17.4	10.4	3.50
MAX	43.2	54.4	20.4	59.4	242	837	1,159	522	339	177	94.1	21.7
(WY)	(1983)	(1983)	(1983)	(1973)	(1982)	(1978)	(1952)	(1975)	(1964)	(1969)	(1981)	(1995)
MIN	0.25	0.60	0.22	0.000	0.000	1.05	1.58	1.66	0.77	0.000	0.000	0.000
(WY)	(1961)	(1962)	(1962)	(1962)	(1962)	(1964)	(1961)	(1961)	(1956)	(1961)	(1959)	(1960)

CANNONBALL RIVER BASIN

06352000 CEDAR CREEK NEAR HAYNES, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1951 - 2003	
ANNUAL TOTAL	1,128.48		2,351.34			
ANNUAL MEAN	3.09		6.44		33.4	
HIGHEST ANNUAL MEAN					122	1972
LOWEST ANNUAL MEAN					1.04	1961
HIGHEST DAILY MEAN	15	Jul 6	243	Mar 22	7,060	Apr 8, 1952
LOWEST DAILY MEAN	0.36	Jul 27	0.02	Aug 27	0.00	Jan 29, 1957
ANNUAL SEVEN-DAY MINIMUM	0.41	Jul 22	0.03	Aug 23	0.00	Jul 26, 1959
MAXIMUM PEAK FLOW			258	Mar 22	7,870	Apr 7, 1952
MAXIMUM PEAK STAGE			7.61	Mar 22	a22.05	Mar 28, 1978
ANNUAL RUNOFF (AC-FT)	2,240		4,660		24,180	
10 PERCENT EXCEEDS	7.0		9.5		40	
50 PERCENT EXCEEDS	2.2		1.8		3.5	
90 PERCENT EXCEEDS	0.76		0.50		0.68	

a Backwater from ice

e Estimated

06352000 CEDAR CREEK NEAR HAYNES, ND—Continued

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 04...	1450	1.1	--	--	--	2,100	13.5	9.5	--	--	--	--	--
NOV 13...	1650	1.7	--	--	--	1,750	12.0	5.0	--	--	--	--	--
JAN 09...	1700	2.9	--	--	--	2,490	-9.5	0.0	--	--	--	--	--
MAR 06...	1445	2.1	--	--	--	3,030	-5.0	0.0	--	--	--	--	--
MAR 18...	1725	82	8.2	7.8	1,070	1,120	0.5	0.1	270	48.0	36.0	13.0	3
APR 01...	1635	19	--	--	--	1,430	15.5	11.1	--	--	--	--	--
APR 22...	1605	5.9	--	--	--	1,740	17.5	14.3	--	--	--	--	--
JUN 03...	1515	3.2	--	--	--	2,960	15.5	17.4	--	--	--	--	--
JUN 13...	1330	2.4	--	--	--	2,310	25.5	22.5	--	--	--	--	--
JUL 07...	1205	1.1	--	--	--	2,240	24.0	21.5	--	--	--	--	--
AUG 26...	1340	0.03	9.2	9.3	2,120	2,120	31.5	27.5	380	23.1	77.6	15.6	9

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
OCT 04...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 09...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	130	50	182	16.0	<0.10	--	380	732	165	751	2.0	130	1
APR 01...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 22...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 03...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 13...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
AUG 26...	412	69	486	14.7	0.43	2.45	704	1,540	0.11	--	16.3	50	<1

CANNONBALL RIVER BASIN

06352000 CEDAR CREEK NEAR HAYNES, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 04...	--	--	--	--	--	--
NOV 13...	--	--	--	--	--	--
JAN 09...	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--
MAR 18...	40	100	<0.10	<1	<1	640
APR 01...	--	--	--	--	--	--
APR 22...	--	--	--	--	--	--
JUN 03...	--	--	--	--	--	--
JUN 13...	--	--	--	--	--	--
JUL 07...	--	--	--	--	--	--
AUG 26...	100	70	<0.20	5	3	350

Remark codes used in this table:

< -- Less than

06353000 CEDAR CREEK NEAR RALEIGH, ND

LOCATION.--Lat 46°05'30", long 101°20'00", in NE¹₄SE¹₄ sec.8, T.130 N., R.85 W., Grant County, Hydrologic Unit 10130205, on left bank at upstream side of bridge on N.D. Highway 31, 6 mi upstream from mouth, and 19 mi south of Raleigh.

DRAINAGE AREA.--1,750 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to September 1939, March 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,881.23 ft above National Geodetic Vertical Datum of 1929. Prior to June 6, 1962, nonrecording gage at same site and datum, and June 6, 1962, to Sept. 7, 1972, at site 1 mi upstream at datum 9.58 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since 1950, about 18 ft, Apr. 18, 1950; discharge 45,000 ft³/s, on basis of slope-area measurement 5 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.36	0.07	e0.11	e0.09	e1.0	78	11	13	1.8	0.00	0.00
2	0.00	0.35	0.08	e0.12	e2.0	e0.76	65	11	14	1.3	0.00	0.00
3	0.00	0.34	0.07	e0.12	e1.6	e0.76	58	10	17	1.0	0.00	0.00
4	0.00	0.38	e0.08	e0.17	e1.8	e0.77	50	11	21	1.0	0.00	0.00
5	0.01	0.42	e0.08	e0.19	e1.2	e0.77	44	37	15	0.88	0.00	0.00
6	0.02	0.42	e0.08	e0.22	e0.91	e0.77	40	29	25	0.65	0.00	0.00
7	0.03	0.44	e0.08	e0.33	e0.72	e0.77	36	26	16	0.46	0.00	0.00
8	0.04	0.49	e0.08	e0.34	e0.56	e0.77	34	26	12	0.42	0.00	0.00
9	0.04	0.49	e0.09	e0.33	e0.58	e0.77	31	39	12	0.46	0.00	0.00
10	0.04	0.53	e0.11	e0.33	e0.66	e0.77	28	61	11	0.33	0.00	0.00
11	0.04	0.78	0.12	e0.27	e0.58	e0.77	26	43	13	0.24	0.00	0.00
12	0.05	0.75	0.12	e0.25	e0.57	e0.77	24	29	59	0.21	0.00	0.00
13	0.05	0.66	0.11	e0.11	e0.62	e1.4	22	24	27	0.10	0.00	0.00
14	0.04	0.64	0.13	e0.10	e0.96	e13	19	20	16	0.03	0.00	0.04
15	0.05	0.58	0.14	e0.06	e0.94	e102	18	19	9.9	0.01	0.00	2.6
16	0.06	0.52	e0.14	e0.09	e1.2	e51	21	19	e7.9	0.01	0.00	0.00
17	0.10	0.45	e0.14	e0.11	e1.5	e30	27	19	e6.4	0.00	0.00	0.00
18	0.11	0.23	e0.15	e0.11	e1.8	e109	29	22	e4.8	0.00	0.00	0.00
19	0.14	0.19	e0.15	e0.08	e2.0	e90	27	25	2.7	0.00	0.00	0.00
20	0.18	0.19	e0.14	e0.11	e2.1	e75	23	22	2.1	0.00	0.00	0.00
21	0.22	0.20	e0.14	e0.09	e2.0	e60	20	19	2.0	0.00	0.00	0.00
22	0.41	0.18	e0.13	e0.14	e2.0	e50	18	22	2.3	0.00	0.00	0.00
23	0.48	0.15	e0.12	e0.19	e2.0	e45	17	19	23	0.00	0.00	0.00
24	0.49	0.14	e0.11	e0.16	e1.9	e129	16	21	13	0.00	0.00	0.00
25	0.47	0.10	e0.10	e0.14	e1.7	e152	15	18	41	0.00	0.00	0.00
26	0.47	0.09	e0.09	e0.26	e1.5	187	15	17	25	0.00	0.00	0.00
27	0.53	0.09	e0.09	e0.46	e1.2	224	13	15	14	0.00	0.00	0.00
28	0.52	0.09	e0.09	e0.21	e1.0	182	12	14	7.4	0.00	0.00	0.00
29	0.58	0.08	e0.09	e0.21	---	132	12	18	4.7	0.00	0.00	0.00
30	0.48	0.07	e0.09	e0.16	---	104	12	16	3.0	0.00	0.00	0.00
31	0.41	---	e0.09	e0.13	---	90	---	14	---	0.00	0.00	---
TOTAL	6.06	10.40	3.30	5.70	35.69	1,835.85	850	696	440.2	8.90	0.00	2.64
MEAN	0.20	0.35	0.11	0.18	1.27	59.2	28.3	22.5	14.7	0.29	0.000	0.088
MAX	0.58	0.78	0.15	0.46	2.1	224	78	61	59	1.8	0.00	2.6
MIN	0.00	0.07	0.07	0.06	0.09	0.76	12	10	2.0	0.00	0.00	0.00
AC-FT	12	21	6.5	11	71	3,640	1,690	1,380	873	18	0.00	5.2

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2003, BY WATER YEAR (WY)

MEAN	10.6	9.51	7.03	10.8	42.5	377	251	164	93.8	69.1	21.1	8.25
MAX	66.4	48.8	31.3	217	664	2,368	1,526	1,043	605	545	96.9	76.5
(WY)	(1978)	(1983)	(1983)	(1973)	(1982)	(1997)	(1997)	(1975)	(1964)	(1993)	(1984)	(1995)
MIN	0.000	0.000	0.000	0.000	0.000	0.25	0.35	0.89	1.82	0.25	0.000	0.000
(WY)	(1965)	(1964)	(1964)	(1964)	(1964)	(1964)	(1991)	(1992)	(2002)	(1990)	(1974)	(1939)

CANNONBALL RIVER BASIN

06353000 CEDAR CREEK NEAR RALEIGH, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1939 - 2003	
ANNUAL TOTAL	2,103.51		3,894.74			
ANNUAL MEAN	5.76		10.7		90.5	
HIGHEST ANNUAL MEAN					369	1997
LOWEST ANNUAL MEAN					1.91	1991
HIGHEST DAILY MEAN	26	Jul 25	224	Mar 27	11,900	Mar 24, 1997
LOWEST DAILY MEAN	0.00	Jul 6	0.00	Oct 1	0.00	Aug 1, 1939
ANNUAL SEVEN-DAY MINIMUM	0.00	Jul 11	0.00	Jul 17	0.00	Aug 20, 1939
MAXIMUM PEAK FLOW			a252	Mar 27	14,600	Mar 24, 1997
MAXIMUM PEAK STAGE			b3.62	Mar 15	b17.05	Mar 24, 1997
ANNUAL RUNOFF (AC-FT)	4,170		7,730		65,580	
10 PERCENT EXCEEDS	19		27		151	
50 PERCENT EXCEEDS	1.0		0.41		9.7	
90 PERCENT EXCEEDS	0.01		0.00		0.00	

a Gage height, 2.85 ft

b Backwater from ice

e Estimated

CANNONBALL RIVER BASIN

06353000 CEDAR CREEK NEAR RALEIGH, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
NOV 19...	--	--	--	--	--
DEC 26...	--	--	--	--	--
FEB 28...	--	--	--	--	--
MAR 18...	70	0.10	<1	1	470
31...	--	--	--	--	--
APR 28...	--	--	--	--	--
JUN 10...	--	--	--	--	--
JUL 14...	--	--	--	--	--
AUG 25...	--	--	--	--	--

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

06354000 CANNONBALL RIVER AT BREIEN, ND

LOCATION.--Lat 46°22'34", long 100°56'04", in sec.36, T.134 N., R.82 W., Morton County, Hydrologic Unit 10130206, on left bank at downstream side of bridge on State Highway 6, 1,100 ft downstream from Dogtooth Creek, and 0.6 mi southeast of Breien.

DRAINAGE AREA.--4,100 mi², approximately.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 786: 1934. WSP 1146: 1943. WSP 1279: 1936-37(M), 1947(M). WSP 1509: 1955(M).

GAGE.--Water-stage recorder. Datum of gage is 1,673.54 ft above National Geodetic Vertical Datum of 1929. From June 12, 1973, to July 1, 1985, at site 450 ft downstream. Prior to June 12, 1973, at site 50 ft upstream at datum 3.00 ft higher. June 13, 1973, to April 8, 1980, at datum 2.00 ft higher.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Some storage in several small lakes above station.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	13	e9.5	e8.4	e5.2	e2.4	195	42	41	21	0.12	0.00
2	1.8	14	e9.4	e8.4	e5.1	e2.4	171	41	42	17	0.15	0.00
3	1.9	14	e9.3	e8.4	e4.9	e2.4	148	39	42	13	0.08	0.00
4	1.7	14	e9.3	e8.3	e4.7	e2.4	135	39	56	12	0.02	0.00
5	2.1	14	e9.2	e8.4	e4.5	e2.4	123	50	84	11	0.14	0.00
6	3.3	16	e9.1	e8.4	e4.2	e2.4	113	92	104	9.0	0.22	0.00
7	2.9	16	e8.9	e8.5	e3.9	e2.4	100	86	83	7.3	0.30	0.00
8	2.8	16	e9.0	e8.5	e3.7	e2.4	89	74	71	6.7	0.22	0.00
9	3.3	e17	e9.2	e8.4	e3.6	e2.4	79	107	48	7.3	0.10	0.00
10	3.6	e17	e9.9	e8.4	e3.5	e2.4	76	131	43	6.5	0.02	0.00
11	3.9	e16	e11	e8.3	e3.3	e2.4	78	137	40	5.5	0.00	0.00
12	3.9	e16	e11	e8.3	e3.2	e2.5	72	122	163	5.0	0.00	0.00
13	e4.0	e16	e12	e8.2	e3.0	e4.0	67	98	126	4.4	0.00	0.00
14	e4.0	e16	e12	e8.1	e2.9	e10	64	109	67	4.1	0.00	0.20
15	e4.0	e16	e11	e8.0	e2.9	e40	60	81	47	3.5	0.00	0.33
16	e4.1	e16	e11	e7.7	e2.7	e120	61	67	36	e3.3	0.00	0.22
17	e4.1	e16	e11	e7.5	e2.7	e100	77	67	29	e2.9	0.00	0.17
18	e4.1	e15	e11	e7.4	e2.5	e120	83	73	24	e2.7	0.00	0.42
19	4.2	e15	e10	e7.2	e2.5	e250	80	99	21	e2.6	0.00	0.38
20	4.2	e15	e10	e6.9	e2.5	e280	79	97	18	e2.4	0.00	0.27
21	4.6	e15	e10	e6.7	e2.5	e400	73	98	15	e2.2	0.00	0.18
22	6.0	e14	e9.9	e6.5	e2.5	e800	67	80	17	e2.0	0.00	0.22
23	6.4	e14	e9.7	e6.4	e2.4	1,350	62	72	93	e1.8	0.00	0.17
24	6.9	e13	e9.5	e6.3	e2.4	873	58	77	95	e1.6	0.00	0.01
25	7.5	e11	e9.2	e6.2	e2.4	766	56	75	187	e1.4	0.00	0.02
26	7.1	e10	e8.9	e6.2	e2.4	633	53	75	151	e1.2	0.00	0.00
27	7.1	e10	e8.8	e6.1	e2.3	544	48	61	75	e0.97	0.00	0.09
28	7.5	e10	e8.7	e5.8	e2.4	476	47	53	49	e0.73	0.00	0.08
29	8.0	e9.8	e8.6	e5.7	---	376	46	48	37	e0.52	0.00	0.01
30	8.0	e9.6	e8.5	e5.4	---	284	44	44	28	e0.41	0.00	0.01
31	14	---	e8.4	e5.3	---	230	---	44	---	0.24	0.00	---
TOTAL	148.8	424.4	303.0	228.3	90.8	7,684.9	2,504	2,378	1,932	160.27	1.37	2.78
MEAN	4.80	14.1	9.77	7.36	3.24	248	83.5	76.7	64.4	5.17	0.044	0.093
MAX	14	17	12	8.5	5.2	1,350	195	137	187	21	0.30	0.42
MIN	1.7	9.6	8.4	5.3	2.3	2.4	44	39	15	0.24	0.00	0.00
AC-FT	295	842	601	453	180	15,240	4,970	4,720	3,830	318	2.7	5.5

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 2003, BY WATER YEAR (WY)

MEAN	34.6	28.7	17.4	15.9	75.5	886	841	341	366	196	67.2	32.7
MAX	281	238	98.8	342	1,058	5,428	10,070	2,399	2,384	1,409	459	267
(WY)	(1978)	(1983)	(1999)	(1973)	(1982)	(1997)	(1950)	(1975)	(1937)	(1969)	(1999)	(1977)
MIN	0.21	0.63	0.38	0.000	0.000	3.29	17.1	6.48	3.10	0.17	0.044	0.010
(WY)	(1961)	(1961)	(1935)	(1941)	(1935)	(1965)	(1961)	(1992)	(1936)	(1936)	(2003)	(1974)

CANNONBALL RIVER BASIN

06354000 CANNONBALL RIVER AT BREIEN, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1934 - 2003	
ANNUAL TOTAL	10,214.69		15,858.62			
ANNUAL MEAN	28.0		43.4		242	
HIGHEST ANNUAL MEAN					994 1950	
LOWEST ANNUAL MEAN					9.90 1961	
HIGHEST DAILY MEAN	347	Jul 5	1,350	Mar 23	63,100	Apr 19, 1950
LOWEST DAILY MEAN	0.07	Sep 8	0.00	Aug 11	0.00	Jan 11, 1935
ANNUAL SEVEN-DAY MINIMUM	0.46	Sep 3	0.00	Aug 11	0.00	Jan 11, 1935
MAXIMUM PEAK FLOW			a1,780	Mar 23	b94,800	Apr 19, 1950
MAXIMUM PEAK STAGE			c6.81	Mar 22	d22.30	Apr 19, 1950
ANNUAL RUNOFF (AC-FT)	20,260		31,460		175,600	
10 PERCENT EXCEEDS	74		97		402	
50 PERCENT EXCEEDS	17		8.4		29	
90 PERCENT EXCEEDS	1.8		0.01		0.80	

a Gage height, 6.65 ft

b From rating extended above 16,000 ft³/s on basis of indirect measurement

c Backwater from ice

d From floodmark

e Estimated

CANNONBALL RIVER BASIN

06354000 CANNONBALL RIVER AT BREIEN, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Mercury water, fltrd, ug/L (71890)	Molyb- denum, water, fltrd, ug/L (01060)	Selen- ium, water, fltrd, ug/L (01145)	Stront- ium, water, fltrd, ug/L (01080)
OCT 08...	--	--	--	--
NOV 20...	--	--	--	--
DEC 30...	--	--	--	--
FEB 27...	--	--	--	--
MAR 24...	<0.10	<1	1	370
APR 11...	--	--	--	--
30...	--	--	--	--
JUN 12...	--	--	--	--
19...	--	--	--	--
JUL 15...	--	--	--	--
30...	--	--	--	--
AUG 27...	--	--	--	--

Remark codes used in this table:

< -- Less than

06354580 BEAVER CREEK BELOW LINTON, ND

LOCATION.--Lat 46°16'07", long 100°15'05", in NW¹₄NW¹₄SW¹₄ sec.7, T.132 N., R.76 W., Emmons County, Hydrologic Unit 10130104, on left bank 25 ft upstream from bridge on county road, 0.7 mi west of Linton, and 0.5 mi downstream from Spring Creek.

DRAINAGE AREA.--765 mi², of which about 100 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1989 to current year. Records for August 1949 to September 1989 at site 1.5 mi upstream published as "at Linton, ND" (station 06354500) are not equivalent because of difference in drainage area.

GAGE.--Water-stage recorder and artificial control. Elevation of gage is 1,690 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.73	e4.5	e4.1	e2.3	e1.6	e1.4	49	32	28	42	e2.9	e0.84
2	0.64	e4.4	e4.0	e2.2	e1.6	e1.4	41	31	28	33	e2.6	e0.82
3	0.43	e4.7	e3.9	e2.2	e1.6	e1.4	34	29	28	27	e2.3	e0.80
4	0.59	e5.0	e3.8	e2.2	e1.5	e1.4	30	35	27	25	e2.1	e0.80
5	0.87	e5.2	e3.7	e2.2	e1.5	e1.4	24	52	27	23	e1.9	e0.80
6	1.2	e5.2	e3.6	e2.1	e1.5	e1.4	27	47	27	20	e1.8	e0.80
7	1.3	e5.3	e3.5	e2.1	e1.5	e1.3	23	54	25	19	e1.6	e0.80
8	0.87	e5.2	e3.3	e2.1	e1.5	e1.3	21	62	26	24	e1.4	e0.80
9	1.1	e5.1	e3.3	e2.0	e1.4	e1.3	21	71	27	24	e1.3	e0.83
10	0.95	e5.2	e3.5	e2.0	e1.4	e1.3	21	69	30	20	e1.4	e1.1
11	1.1	e5.3	e3.6	e1.9	e1.4	e1.3	21	67	34	17	e1.4	e0.95
12	1.4	e5.4	e3.5	e1.9	e1.4	e1.3	21	78	72	16	e1.3	e0.90
13	1.5	e5.5	e3.4	e1.9	e1.4	e1.6	21	80	48	14	e1.2	e0.88
14	1.5	e5.6	e3.3	e1.8	e1.5	e2.0	20	78	61	13	e1.1	e0.87
15	1.8	e5.6	e3.3	e1.8	e1.5	e1.0	19	79	80	14	e1.1	e0.90
16	1.9	e5.6	e3.2	e1.8	e1.5	e5.0	23	74	65	12	e1.0	e1.0
17	2.1	e5.5	e3.0	e1.8	e1.5	e1.32	30	72	57	12	e0.95	e1.2
18	2.3	5.8	e2.9	e1.7	e1.5	172	29	72	53	12	e0.90	e1.4
19	2.4	5.8	e2.8	e1.6	e1.5	230	34	71	45	11	e0.85	e1.5
20	2.5	5.6	e2.7	e1.6	e1.4	191	45	70	34	10	e0.82	e1.7
21	2.6	5.5	e2.6	e1.6	e1.4	185	55	73	28	9.6	e0.80	e1.5
22	2.5	e5.3	e2.5	e1.5	e1.4	158	63	73	27	8.8	e0.77	1.6
23	2.6	e5.1	e2.4	e1.5	e1.4	135	63	69	40	7.6	e0.76	1.9
24	2.6	e4.9	e2.3	e1.5	e1.4	121	59	64	53	7.7	e0.75	1.7
25	e3.0	e4.7	e2.2	e1.5	e1.4	102	54	60	51	6.1	e0.74	2.4
26	e3.6	e4.6	e2.2	e1.4	e1.4	95	50	54	46	6.0	e0.75	3.3
27	e4.1	e4.5	e2.3	e1.5	e1.4	89	46	50	48	5.4	e0.74	2.7
28	e4.6	e4.4	e2.3	e1.5	e1.4	74	38	45	52	e4.8	e0.76	3.9
29	e4.8	e4.3	e2.4	e1.6	---	52	34	41	53	e4.1	e0.79	4.8
30	e4.7	e4.2	e2.3	e1.6	---	56	33	35	51	e3.6	e0.82	5.2
31	e4.6	---	e2.3	e1.6	---	58	---	31	---	e3.2	e0.85	---
TOTAL	66.88	153.0	94.2	56.0	40.9	1,929.8	1,049	1,818	1,271	454.9	38.45	48.69
MEAN	2.16	5.10	3.04	1.81	1.46	62.3	35.0	58.6	42.4	14.7	1.24	1.62
MAX	4.8	5.8	4.1	2.3	1.6	230	63	80	80	42	2.9	5.2
MIN	0.43	4.2	2.2	1.4	1.4	1.3	19	29	25	3.2	0.74	0.80
AC-FT	133	303	187	111	81	3,830	2,080	3,610	2,520	902	76	97

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 2003, BY WATER YEAR (WY)

	12.3	13.1	10.3	6.94	37.3	227	243	73.7	51.9	67.0	30.3	15.5
MEAN	12.3	13.1	10.3	6.94	37.3	227	243	73.7	51.9	67.0	30.3	15.5
MAX	26.5	35.3	34.6	15.9	206	693	1,840	231	194	330	174	73.8
(WY)	(2000)	(1999)	(1999)	(2000)	(1996)	(1997)	(1997)	(1999)	(1996)	(1993)	(1993)	(1999)
MIN	0.16	0.31	0.36	0.30	1.32	5.05	6.32	2.76	1.25	0.80	0.12	0.063
(WY)	(1991)	(1991)	(1991)	(1991)	(1991)	(1991)	(1991)	(1992)	(1992)	(1992)	(1990)	(1991)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1990 - 2003

ANNUAL TOTAL	5,718.92	7,020.82	
ANNUAL MEAN	15.7	19.2	65.7
HIGHEST ANNUAL MEAN			237
LOWEST ANNUAL MEAN			4.76
HIGHEST DAILY MEAN	146	Apr 2	230
LOWEST DAILY MEAN	0.14	Sep 25	0.43
ANNUAL SEVEN-DAY MINIMUM	0.37	Sep 3	0.75
MAXIMUM PEAK FLOW			258
MAXIMUM PEAK STAGE			6.09
INSTANTANEOUS LOW FLOW			0.43
ANNUAL RUNOFF (AC-FT)	11,340	13,930	47,630
10 PERCENT EXCEEDS	57	59	120
50 PERCENT EXCEEDS	5.2	3.6	13
90 PERCENT EXCEEDS	0.60	0.98	0.95

e Estimated

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
OCT 08...	1140	0.78	--	--	--	1,230	9.0	10.5	--	--	--	--	--
NOV 18...	1240	5.6	--	--	--	1,400	7.0	2.0	--	--	--	--	--
JAN 31...	1200	1.6	--	--	--	1,550	14.0	0.5	--	--	--	--	--
MAR 14...	1230	2.0	--	--	--	1,280	11.5	0.0	--	--	--	--	--
MAR 18...	1220	1.6	--	--	--	630	2.0	0.5	--	--	--	--	--
MAR 25...	1150	118	--	--	--	530	7.5	0.1	--	--	--	--	--
APR 16...	1215	22	--	--	--	760	1.5	8.0	--	--	--	--	--
MAY 30...	1120	34	--	--	--	1,090	19.0	19.0	--	--	--	--	--
JUN 25...	1130	54	7.6	7.9	1,060	943	20.0	16.5	310	63.0	38.0	12.5	3
AUG 21...	1045	0.82	8.0	8.2	1,300	1,300	23.5	22.5	430	88.8	50.3	17.1	3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Arsenic, water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium, water, fltrd, ug/L (01130)
OCT 08...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 31...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 14...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 16...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 30...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN 25...	124	45	329	9.4	0.18	23.4	242	688	103	7.1	10	<1	160
AUG 21...	150	42	394	31.3	0.21	19.6	296	872	1.98	12.5	<10	<1	180

06354580 BEAVER CREEK BELOW LINTON, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 08...	--	--	--	--	--
NOV 18...	--	--	--	--	--
JAN 31...	--	--	--	--	--
MAR 14...	--	--	--	--	--
18...	--	--	--	--	--
25...	--	--	--	--	--
APR 16...	--	--	--	--	--
MAY 30...	--	--	--	--	--
JUN 25...	30	<0.20	2	<1	400
AUG 21...	420	<0.20	3	3	540

Remark codes used in this table:

< -- Less than

MISSOURI-OAHE RIVER BASIN
06439980 LAKE OAHE NEAR PIERRE, SD

LOCATION.--Lat 44°27'30", long 100°23'29", in NE¹/₄ sec.1, T.111 N., R.80 W., 5th principal meridian, Hughes County, Hydrologic Unit 10130105, in Pier A of Control Tower No. 1 of powerhouse intake structure of dam on Missouri River, 6.0 mi northwest of Pierre, 7.1 mi upstream from Bad River, and at mile 1,072.3.

DRAINAGE AREA.--243,500 mi², approximately.

PERIOD OF RECORD.--August 1958 to current year (monthend contents only). Prior to October 1967, published as Oahe Reservoir near Pierre.

GAGE.--Water-stage recorder. Elevations listed to NGVD of 1929. Prior to Jan. 14, 1958, nonrecording gages at various locations upstream from outlet works, Jan. 14, 1959, to Sept. 30, 1962, recorder in Tower No. 1 of outlet works, all at same datum.

REVISED RECORDS.--WDR SD-88-1: September monthend elevation.

REMARKS.--Reservoir is formed by an earthfill dam; storage began in August 1958. Maximum capacity, 23,338,000 acre-ft below elevation 1,620.0 ft (top of spillway gates). Normal maximum, 22,240,000 acre-ft below 1,617.0 ft, of which about 2,390,000 acre-ft is designated for flood control. Inactive storage, 5,451,000 acre-ft below elevation 1,540.0 ft. Dead storage, 1,970 acre-ft below elevation 1,425.0 ft (invert of lowest outlet tunnel). Figures given herein represent elevations at powerhouse intake structure and total contents adjusted for wind effect.

The spillway consists of a gated chute with flat crest at elevation 1,596.5 ft, 8 gates, 50 by 23.5 ft each; design capacity, 300,000 ft³/s. The outlet works consist of 7 turbines with a generating capacity of 85,000 kilowatts each. Water is used for flood control, navigation, power, and incidental uses.

COOPERATION.--Records of elevation and contents provided by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 22,764,000 acre-ft, May 14, 1986, affected by wind; maximum elevation, 1,618.71 ft, June 25, 1995; minimum since initial filling, 11,932,000 acre-ft, Sept. 30, 2003.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 13,685,000 acre-ft, May 25; minimum contents, 11,932,000 acre-ft, Sept. 30.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 -----	1,586.39	13,112,000	--
Oct. 31 -----	1,585.12	12,844,000	-268,000
Nov. 30 -----	1,583.44	12,495,000	-349,000
Dec. 31 -----	1,584.33	12,790,000	+295,000
CAL YR 2002		--	-3,425,000
Jan. 31 -----	1,585.31	12,887,000	+97,000
Feb. 28 -----	1,587.15	13,304,000	+417,000
Mar. 31 -----	1,588.15	13,558,000	+254,000
Apr. 30 -----	1,587.45	13,364,000	-194,000
May 31 -----	1,588.67	13,660,000	+296,000
June 30 -----	1,587.42	13,437,000	-223,000
July 31 -----	1,586.48	13,137,000	-300,000
Aug. 31 -----	1,584.36	12,691,000	-446,000
Sept. 30 -----	1,581.00	11,932,000	-759,000
WTR YR 2003		--	-1,180,000

06468170 JAMES RIVER NEAR GRACE CITY, ND

LOCATION.--Lat 47°33'29", long 98°51'45", in NW¹₄NW¹₄ sec.17, T.147 N., R.64 W., Foster County, Hydrologic Unit 10160001, on left bank on upstream side of county highway bridge and 2.5 mi northwest of Grace City.

DRAINAGE AREA.--1,060 mi², approximately, of which about 650 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1968 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,457.60 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.18	1.4	e0.90	e0.20	e0.10	e0.00	e130	13	36	e70	102	e6.0
2	0.16	1.5	e0.80	e0.20	e0.10	e0.00	e150	12	34	e72	95	e4.7
3	0.23	1.5	e0.70	e0.25	e0.10	e0.00	e130	11	32	e75	89	e4.7
4	0.09	1.6	e0.60	e0.25	e0.10	e0.00	e170	20	29	e80	84	4.9
5	0.08	1.7	e0.60	e0.20	e0.10	e0.00	151	24	28	e85	83	4.7
6	0.39	1.8	e0.70	e0.20	e0.10	e0.00	123	27	27	e90	81	4.5
7	0.57	1.7	e0.70	e0.25	e0.10	e0.00	121	26	28	e100	77	4.2
8	0.39	1.7	e0.60	e0.30	e0.10	e0.00	127	28	29	e110	e70	4.0
9	0.47	1.8	e0.70	e0.30	e0.10	e0.00	125	31	29	e130	e65	3.7
10	0.55	e1.7	e0.70	e0.25	e0.00	e0.00	112	34	30	e220	e60	3.8
11	0.36	e1.6	e0.70	e0.20	e0.00	e0.00	99	40	29	332	e50	3.6
12	0.16	e1.6	e0.70	e0.20	e0.00	e0.00	86	45	34	321	e42	4.2
13	0.35	e1.5	e0.70	e0.20	e0.00	e0.00	70	48	45	297	e42	4.1
14	0.34	e1.4	e0.60	e0.20	e0.00	e0.00	60	48	48	287	e44	3.9
15	0.35	e1.4	e0.60	e0.20	e0.00	e0.14	54	43	45	287	e42	4.1
16	0.48	e1.4	e0.60	e0.20	e0.00	e0.40	51	38	39	286	e38	4.1
17	0.56	e1.2	e0.50	e0.20	e0.00	e1.0	51	37	41	271	e34	4.0
18	0.67	e1.1	e0.50	e0.20	e0.00	e2.4	54	48	45	258	e30	4.1
19	0.70	e1.0	e0.50	e0.20	e0.00	e5.2	51	57	45	245	e26	4.3
20	0.96	e1.0	e0.50	e0.20	e0.00	e15	47	66	42	233	e23	4.1
21	0.97	e1.0	e0.50	e0.20	e0.00	e24	42	72	37	218	e23	3.5
22	1.0	e1.0	e0.50	e0.10	e0.00	e34	38	71	36	202	e26	3.2
23	1.1	e0.90	e0.40	e0.10	e0.00	e50	33	69	42	189	e24	3.3
24	1.1	e0.90	e0.30	e0.10	e0.00	e70	29	67	49	180	e22	2.5
25	1.2	e1.0	e0.30	e0.10	e0.00	e100	25	66	50	164	e20	2.9
26	1.2	e1.0	e0.30	e0.10	e0.00	e135	23	62	49	152	e18	2.6
27	1.5	e1.0	e0.30	e0.10	e0.00	e140	16	56	56	143	e16	2.7
28	1.7	e1.0	e0.30	e0.10	e0.00	e170	17	53	59	135	e14	2.8
29	1.7	e1.0	e0.30	e0.10	---	e140	16	48	64	127	e12	2.8
30	1.6	e0.90	e0.25	e0.10	---	e150	14	40	e67	118	e10	2.7
31	1.6	---	e0.20	e0.10	---	e160	---	40	---	110	e8.0	---
TOTAL	22.71	39.30	16.55	5.60	0.90	1,197.14	2,215	1,340	1,224	5,587	1,370.0	114.7
MEAN	0.73	1.31	0.53	0.18	0.032	38.6	73.8	43.2	40.8	180	44.2	3.82
MAX	1.7	1.8	0.90	0.30	0.10	170	170	72	67	332	102	6.0
MIN	0.08	0.90	0.20	0.10	0.00	0.00	14	11	27	70	8.0	2.5
AC-FT	45	78	33	11	1.8	2,370	4,390	2,660	2,430	11,080	2,720	228

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2003, BY WATER YEAR (WY)

	2001	2001	2001	1994	1981	1995	1997	1997	2000	2000	1993	2000
(WY)	(1977)	(1977)	(1977)	(1969)	(1969)	(1969)	(1977)	(1991)	(1973)	(1973)	(1988)	(1976)
MEAN	6.62	9.54	2.36	0.66	3.09	132	281	87.1	38.0	59.2	31.3	10.9
MAX	70.7	130	21.0	4.22	49.9	724	1,854	446	335	750	498	156
MIN	0.000	0.000	0.000	0.000	0.000	0.000	0.29	0.18	0.11	0.022	0.000	0.000

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1968 - 2003

ANNUAL TOTAL	3,072.88	13,132.90	
ANNUAL MEAN	8.42	36.0	55.6
HIGHEST ANNUAL MEAN			200
LOWEST ANNUAL MEAN			0.21
HIGHEST DAILY MEAN	61	Jun 12	332
LOWEST DAILY MEAN	0.08	Oct 5	0.00
ANNUAL SEVEN-DAY MINIMUM	0.23	Sep 30	0.00
MAXIMUM PEAK FLOW			336
MAXIMUM PEAK STAGE			6.79
ANNUAL RUNOFF (AC-FT)	6,100	26,050	40,250
10 PERCENT EXCEEDS	34	119	97
50 PERCENT EXCEEDS	2.4	3.9	1.3
90 PERCENT EXCEEDS	0.50	0.10	0.00

a Ice jam
e Estimated

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)
MAR 26...	1115	135	720	7.9	7.4	673	691	6.5	0.3	220	40.0	28.0	21.0
JUL 30...	1000	120	--	7.7	8.1	884	898	22.1	23.0	340	58.0	47.2	13.0

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat fltrd mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)
MAR 26...	2	53.0	32	140	21.0	0.10	--	180	427	167	459	3.0	140
JUL 30...	2	85.7	34	298	7.4	0.15	33.6	159	551	189	--	6.4	30

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
MAR 26...	1	50	110	0.10	<1	<1	260
JUL 30...	<1	50	50	<0.20	<1	1	310

Remark codes used in this table:

< -- Less than

06468250 JAMES RIVER ABOVE ARROWWOOD LAKE NEAR KENSAL, ND

LOCATION.--Lat 47°23'59", long 98°47'50", in SW¹₄SW¹₄ sec.2, T.145 N., R.64 W., Foster County, Hydrologic Unit 10160001, on right bank 20 ft upstream from bridge.

DRAINAGE AREA.--1,200 mi², approximately, of which about 750 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,440 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	e3.0	e2.0	e1.4	e1.9	e0.00	157	30	44	52	100	14
2	2.0	3.0	e2.0	e1.4	e1.8	e0.00	138	27	43	54	93	12
3	1.9	3.1	e2.0	e1.6	e1.8	e0.00	135	24	40	53	86	12
4	2.3	3.0	e2.2	e1.8	e1.8	e0.00	143	33	40	51	81	10
5	2.1	3.2	e2.1	e1.8	e1.7	e0.00	166	45	40	54	86	7.5
6	3.1	3.2	e2.1	e2.0	e1.6	e0.00	156	46	36	56	82	6.9
7	3.5	e3.2	e2.0	e2.2	e1.6	e0.00	119	47	37	51	76	6.3
8	3.5	e3.2	e2.0	e2.4	e1.4	e0.00	111	48	39	50	72	4.9
9	3.0	e3.2	e1.9	e2.4	e1.2	e0.00	113	57	35	71	68	4.1
10	3.1	e3.2	e1.8	e2.3	e1.0	e0.00	117	66	41	100	67	4.1
11	3.2	e3.1	e1.8	e2.3	e0.80	e0.00	112	69	39	141	61	5.1
12	2.9	e3.1	e1.7	e2.3	e0.60	e0.00	98	65	40	277	54	5.0
13	2.8	e3.0	e1.7	e2.3	e0.40	e0.00	88	67	42	355	48	5.5
14	3.1	e2.9	e1.7	e2.2	e0.30	e0.00	85	75	44	369	45	5.1
15	2.8	e2.9	e1.8	e2.2	e0.24	e5.0	78	70	46	362	48	5.0
16	2.9	e2.9	e1.7	e2.2	e0.22	e20	73	63	48	359	47	5.0
17	3.0	e2.7	e1.7	e2.2	e0.19	e15	59	68	48	363	41	5.7
18	3.3	e2.6	e1.7	e2.2	e0.17	e15	63	74	44	353	38	6.5
19	3.1	e2.5	e1.8	e2.2	e0.15	e20	68	81	42	338	35	5.6
20	3.4	e2.5	e1.8	e2.2	e0.13	e25	72	77	36	321	31	4.9
21	3.4	e2.5	e2.0	e2.2	e0.11	e35	64	77	34	297	28	5.1
22	3.4	e2.5	e1.8	e2.0	e0.10	e50	56	80	46	269	25	4.8
23	3.3	e2.4	e2.0	e2.0	e0.00	62	52	77	47	240	25	4.5
24	3.2	e2.4	e1.9	e2.1	e0.00	73	51	76	46	210	34	4.2
25	3.1	e2.5	e1.8	e2.1	e0.00	128	49	73	49	193	37	3.7
26	3.1	e2.5	e1.7	e2.1	e0.00	139	43	64	48	180	30	4.1
27	3.2	e2.3	e1.6	e2.2	e0.00	128	37	60	50	159	26	3.9
28	e3.2	e2.2	e1.6	e2.0	e0.00	137	39	61	52	140	24	4.3
29	e3.2	e2.1	e1.8	e1.8	---	150	36	56	51	127	23	3.9
30	e3.1	e2.0	e1.8	e1.8	---	138	31	54	53	116	19	3.5
31	e3.1	---	e1.7	e1.9	---	147	---	51	---	108	16	---
TOTAL	92.8	82.9	57.2	63.8	19.21	1,287.00	2,609	1,861	1,300	5,869	1,546	177.2
MEAN	2.99	2.76	1.85	2.06	0.69	41.5	87.0	60.0	43.3	189	49.9	5.91
MAX	3.5	3.2	2.2	2.4	1.9	150	166	81	53	369	100	14
MIN	1.9	2.0	1.6	1.4	0.00	0.00	31	24	34	50	16	3.5
AC-FT	184	164	113	127	38	2,550	5,170	3,690	2,580	11,640	3,070	351

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 2003, BY WATER YEAR (WY)

MEAN	12.7	20.6	6.97	2.17	3.00	212	430	131	56.3	106	77.6	24.7
MAX	77.3	157	47.5	10.6	19.4	781	2,188	625	305	814	688	175
(WY)	(2001)	(2001)	(1995)	(1995)	(1998)	(1995)	(1997)	(1997)	(2000)	(2000)	(1993)	(2000)
MIN	0.000	0.000	0.000	0.000	0.000	0.21	2.59	2.24	0.077	0.000	0.000	0.000
(WY)	(1989)	(1989)	(1989)	(1989)	(1989)	(1990)	(1991)	(1991)	(1991)	(1991)	(1988)	(1988)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1986 - 2003

ANNUAL TOTAL	4,973.0	14,965.11	
ANNUAL MEAN	13.6	41.0	90.4
HIGHEST ANNUAL MEAN			245 1997
LOWEST ANNUAL MEAN			0.52 1991
HIGHEST DAILY MEAN	76 May 13	369 Jul 14	4,400 Apr 5, 1997
LOWEST DAILY MEAN	1.6 Sep 22	0.00 Feb 23	0.00 Oct 1, 1985
ANNUAL SEVEN-DAY MINIMUM	1.7 Dec 12	0.00 Feb 23	0.00 Oct 1, 1985
MAXIMUM PEAK FLOW		373 Jul 14	a4,700 Apr 5, 1997
MAXIMUM PEAK STAGE		5.22 Jul 14	a,b13.00 Apr 5, 1997
ANNUAL RUNOFF (AC-FT)	9,860	29,680	65,520
10 PERCENT EXCEEDS	50	112	200
50 PERCENT EXCEEDS	4.7	5.1	5.1
90 PERCENT EXCEEDS	2.0	1.4	0.00

a About
b Backwater from ice
c Estimated

06468250 JAMES RIVER ABOVE ARROWWOOD LAKE NEAR KENSAL, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1985 to current year.

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfl lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)
OCT 09...	1000	3.0	--	9.5	--	8.4	8.2	1,060	1,090	7.3	7.0	370	58.2
NOV 06...	1630	3.1	721	15.1	113	8.6	8.3	1,200	1,250	0.5	1.0	420	65.6
DEC 16...	1455	1.7	--	--	--	--	--	--	1,430	0.1	0.5	--	--
JAN 28...	1145	1.7	--	11.4	--	7.8	7.7	2,140	2,210	-15.0	0.1	760	137
FEB 05...	1315	1.7	--	--	--	--	--	--	2,000	-15.0	0.2	--	--
MAR 20...	1300	23	--	13.3	--	8.1	7.8	1,140	1,180	4.5	0.3	390	71.6
MAR 25...	1700	162	--	--	--	--	--	--	630	7.8	0.5	--	--
APR 15...	1710	74	719	11.9	115	9.5	8.9	850	911	13.9	11.1	310	54.1
MAY 28...	1115	62	729	8.4	93	8.4	8.2	1,350	1,360	27.0	18.1	580	106
JUN 24...	1640	44	720	7.9	92	8.3	8.3	1,210	1,250	18.0	19.7	470	79.9
JUL 29...	1745	126	724	7.3	93	7.8	8.1	831	863	29.5	24.8	320	56.0
AUG 25...	1350	38	--	--	--	--e	8.7	903	940	31.0	22.2	330	56.7

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)
OCT 09...	53.9	12.2	2	102	37	E324	21.6	0.22	14.5	256	--	--	760
NOV 06...	62.6	12.1	2	114	36	E354	24.9	0.22	9.9	295	--	--	854
DEC 16...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 28...	103	18.6	4	224	38	729	55.9	0.31	32.5	480	1,490	7.49	1,590
FEB 05...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 20...	51.0	15.7	3	115	38	352	33.8	0.15	15.3	235	751	49.4	796
MAR 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 15...	41.9	23.0	2	76.8	33	183	15.3	0.17	E.2n	281	602	125	630
MAY 28...	77.7	20.0	2	105	27	325	21.7	0.2	12.9	407	946	165	985
JUN 24...	66.1	18.3	2	107	32	337	19.3	0.2	19.6	329	842	99.8	840
JUL 29...	43.0	12.1	2	76.9	33	293	9.55	<0.2	31.8	158	564	200	589
AUG 25...	46.4	12.4	2	78.6	33	343	11.4	0.2	12.1	186	611	68.0	668

06468250 JAMES RIVER ABOVE ARROWWOOD LAKE NEAR KENSAL, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd, mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, fltrd, mg/L (00607)	Organic nitrogen, water, unfltrd, mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd, mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd, mg/L (00600)
OCT 09...	1.4	--	0.09	--	E.04	0.008	1.3	--	E.02	0.04	--	--	--
NOV 06...	1.4	--	0.05	--	<0.06	<0.008	1.3	--	<0.02	<0.04	--	--	--
DEC 16...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 28...	1.6	--	E.03	--	<0.06	<0.008	--	--	0.02	0.06	--	--	--
FEB 05...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 20...	1.4	2.2	0.20	0.35	0.36	0.013	1.2	2.0	0.25	0.28	0.43	1.8	2.6
MAR 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 15...	1.5	2.6	<0.04	--	<0.06	<0.008	--	--	<0.02	0.05	0.29	--	--
MAY 28...	1.3	--	<0.04	--	<0.06	<0.008	--	--	0.05	0.07	--	--	--
JUN 24...	1.7	2.7	0.09	--	<0.06	<0.008	1.6	2.6	0.21	0.25	0.44	--	--
JUL 29...	1.3	2.2	<0.04	--	<0.06	<0.008	--	--	0.29	0.32	0.49	--	--
AUG 25...	1.6	--	<0.04	--	<0.06	<0.008	--	--	0.30	0.35	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Arsenic water, fltrd, ug/L (01000)	Arsenic water, unfltrd, ug/L (01002)	Boron, water, fltrd, ug/L (01020)	Iron, water, fltrd, ug/L (01046)	Manganese, water, fltrd, ug/L (01056)	Mercury, water, fltrd, ug/L (71890)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd, ug/L (01147)	2,4-D methyl ester, water, fltrd, ug/L (50470)	2,4-D water, fltrd, ug/L (39732)	2,4-DB water, fltrd, 0.7u GF, ug/L (38746)	CIAT, water, fltrd, ug/L (04040)	CEAT, water, fltrd, ug/L (04038)
OCT 09...	E2	--	167	E7	82.4	E.01	<3	--	--	--	--	--	--
NOV 06...	E2	--	172	E8	106	<0.02	<3	--	--	--	--	--	--
DEC 16...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 28...	E2	--	270	16	146	--b	<3	--	--	--	--	--	--
FEB 05...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 20...	E1	E1	159	42	154	0.04	<3	<3	--	--	--	--	--
MAR 25...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR 15...	3	4	105	16	61.2	E.02	<3	<3	--	--	--	--	--
MAY 28...	4	--	158	E6	30.3	E.02	<3	--	<0.009	0.04	<0.02	<0.03	<0.04
JUN 24...	6	7	155	9	30.3	E.01	<3	<3	--	--	--	--	--
JUL 29...	6.5	6	156	20	15.6	0.02	E.4	<3	--	--	--	--	--
AUG 25...	7.2	--	166	12	8.1	0.02	<0.5	--	--	--	--	--	--

06468250 JAMES RIVER ABOVE ARROWWOOD LAKE NEAR KENSAL, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Tebu- thiuron water fltrd 0.7u GF ug/L (82670)	Terba- cil, water, fltrd, ug/L (04032)	Tri- zine screen, wat unfl ELISA, ug/L as atrazin (34757)	Tri- benuron water, fltrd, ug/L (61159)	Tri- clopyr, water, fltrd 0.7u GF ug/L (49235)	Suspnd. sedi- ment, sieve diametr percent <.063mm (70331)	Sus- pended sedi- ment concen- tration mg/L (80154)	Sus- pended sedi- ment load, tons/d (80155)	2,4-D screen total ug/L (99906)
OCT 09...	--	--	<0.1	--	--	100	38	0.30	<0.070
NOV 06...	--	--	<0.1	--	--	96	5	0.04	<0.700
DEC 16...	--	--	--	--	--	--	--	--	--
JAN 28...	--	--	0.1	--	--	--	--	--	0.700
FEB 05...	--	--	--	--	--	--	--	--	--
MAR 20...	--	--	0.1	--	--	92	15	0.93	0.850
MAR 25...	--	--	--	--	--	--	--	--	--
APR 15...	--	--	0.1	--	--	20	240	48	1.00
MAY 28...	E.005	<0.010	0.1	--u	<0.02	97	61	10	<0.700
JUN 24...	--	--	0.1	--	--	99	36	4.3	0.730
JUL 29...	--	--	0.3	--	--	96	66	22	0.980
AUG 25...	--	--	0.2	--	--	95	73	7.4	<0.700

Remark codes used in this table:

< -- Less than
E -- Estimated value

Value qualifier codes used in this table:

n -- Below the NDV

Null value qualifier codes used in this table:

b -- Sample broken/spilled in shipment
e -- Required equipment not functional/avail
u -- Unable to determine-matrix interference

06468500 JAMES RIVER NEAR PINGREE, ND

LOCATION.--Lat 47°08'30", long 98°47'00", in SW¹₄SW¹₄ sec.3, T.142 N., R.64 W., Stutsman County, Hydrologic Unit 10160001, on right bank 500 ft upstream from dam at outlet of DePuy Marsh, 6.5 mi southeast of Pingree, and 6.25 mi northeast of Buchanan.

DRAINAGE AREA.--1,670 mi², approximately, of which about 900 mi² is probably noncontributing.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-60, 1962, 1965, 1979-89, 1993 to current year.

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)
OCT 08...	1500	--	--	11.9	--	8.7	8.2	1,180	1,210	8.0	10.0	380	62.7
NOV 07...	1100	--	706	13.4	108	8.3	8.1	1,530	1,590	14.0	2.8	490	82.6
JAN 28...	1300	0.00	--	--	--	--	--	--	--	--	--	--	--
MAR 20...	1700	--	--	11.6	--	8.3	7.8	554	598	6.6	2.4	200	42.0
APR 17...	1100	--	725	14.3	118	--e	8.6	764	803	1.9	4.9	240	28.9
MAY 28...	1600	--	729	9.8	114	8.8	8.3	998	1,010	30.0	20.3	360	56.6
JUN 24...	1515	--	721	6.8	80	8.5	8.4	1,170	1,190	17.5	20.5	410	64.1
JUL 29...	1400	--	724	9.2	116	8.4	8.6	1,200	1,230	30.0	24.3	430	65.0
AUG 25...	1450	--	--	--	--	8.6	9.1	947	982	33.4	24.4	330	48.6

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, fltrd, mg/L as N (00623)
OCT 08...	55.0	12.8	3	124	40	E264	26.9	0.19	23.5	354	--	876	1.6
NOV 07...	68.9	10.2	3	155	40	E258	41.2	0.19	17.7	530	--	1,150	1.4
JAN 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 20...	22.2	6.72	1	44.9	32	131	13.5	0.11	14.2	135	361	385	1.2
APR 17...	40.0	12.9	2	85.0	42	184	20.8	0.13	<0.2	221	519	562	1.6
MAY 28...	53.2	16.8	2	93.0	35	237	22.2	0.2	7.9	268	661	705	1.5
JUN 24...	60.3	18.0	3	119	38	309	25.9	0.2	15.6	311d	803	788	2.5
JUL 29...	64.1	18.8	2	118	36	283	24.1	0.2	28.7	347	837	876	1.5
AUG 25...	50.4	15.7	2	90.7	36	300	15.1	0.2	26.8	237	665	698	1.8

06468500 JAMES RIVER NEAR PINGREE, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, fltrd, mg/L (00607)	Organic nitrogen, water, unfltrd mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Arsenic water, fltrd, ug/L (01000)
OCT 08...	--	<0.04	--	<0.06	<0.008	--	--	0.08	0.10	--	--	--	3
NOV 07...	--	E.04	--	<0.06	<0.008	--	--	0.04	0.05	--	--	--	E2
JAN 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 20...	1.9	0.49	0.60	0.63	0.023	0.70	1.4	0.16	0.19	0.31	1.8	2.5	E2
APR 17...	3.5	<0.04	--	<0.06	<0.008	--	--	<0.02	0.04	0.52	--	--	4
MAY 28...	--	<0.04	--	<0.06	<0.008	--	--	0.13	0.18	--	--	--	6
JUN 24...	2.3	0.44	0.12	0.14	0.017	2.0	1.9	0.40	0.56	0.55	2.6	2.4	6
JUL 29...	2.1	<0.04	--	<0.06	<0.008	--	--	0.28	0.30	0.55	--	--	9.2
AUG 25...	--	<0.04	--	E.05n	<0.008	--	--	0.27	0.31	--	--	--	12.0

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Arsenic water unfltrd ug/L (01002)	Boron, water, fltrd, ug/L (01020)	Iron, water, fltrd, ug/L (01046)	Manganese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Selenium, water, fltrd, ug/L (01145)	Selenium, water, unfltrd ug/L (01147)	2,4-D methyl ester, water, fltrd, ug/L (50470)	2,4-D water, fltrd, ug/L (39732)	2,4-DB water, fltrd, 0.7u GF ug/L (38746)	CIAT, water, fltrd, ug/L (04040)	CEAT, water, fltrd, ug/L (04038)	OIET, water, fltrd, ug/L (50355)
OCT 08...	--	142	<10	15.3	0.05	<3	--	--	--	--	--	--	--
NOV 07...	--	183	<10	184	<0.02	<3	--	--	--	--	--	--	--
JAN 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 20...	2	90	29	234	0.07	<3	<3	--	--	--	--	--	--
APR 17...	4	90	<10	12.1	E.01	<3	<3	--	--	--	--	--	--
MAY 28...	--	144	E5	24.5	E.01	<3	--	<0.009	<0.02	<0.02	<0.03	<0.04	<0.008
JUN 24...	8	174	13	709	<0.02	<3	<3	--	--	--	--	--	--
JUL 29...	9	178	E6	29.5	0.02	E.4	<3	--	--	--	--	--	--
AUG 25...	--	173	E6n	9.9	0.03	E.5n	--	--	--	--	--	--	--

06468500 JAMES RIVER NEAR PINGREE, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Terbacil, water, fltrd, ug/L (04032)	Triazine screen, wat unf ELISA, ug/L as atrazin (34757)	Tri-benuron water, fltrd, ug/L (61159)	Tri-clopyr, water, fltrd 0.7u GF ug/L (49235)	Suspnd. sedi-ment, sieve diametr <.063mm (70331)	Sus-pended sedi-ment concen-tration mg/L (80154)	2,4-D screen total ug/L (99906)
OCT 08...	--	0.1	--	--	97	80	<0.700
NOV 07...	--	0.2	--	--	98	22	<0.700
JAN 28...	--	--	--	--	--	--	--
MAR 20...	--	<0.1	--	--	97	44	<0.700
APR 17...	--	0.1	--	--	95	57	<0.700
MAY 28...	<0.010	0.1	--u	<0.02	97	27	0.740
JUN 24...	--	0.1	--	--	100	75	0.700
JUL 29...	--	0.2	--	--	98	82	0.950
AUG 25...	--	0.2	--	--	98	49	1.12

Remark codes used in this table:

- < -- Less than
- E -- Estimated value

Value qualifier codes used in this table:

- d -- Diluted sample: method hi range exceeded
- n -- Below the NDV

Null value qualifier codes used in this table:

- e -- Required equipment not functional/avail
- u -- Unable to determine-matrix interference

06469000 JAMESTOWN RESERVOIR NEAR JAMESTOWN, ND

LOCATION.--Lat 46°55'50", long 98°42'23", in SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.24, T.140 N., R.64 W., Stutsman County, Hydrologic Unit 10160001, on left bank in control house below Jamestown Dam on James River, 1.7 mi north of Jamestown Post Office, and 3.3 mi upstream from Pipestem Creek.

DRAINAGE AREA.--1,760 mi², approximately, of which about 1,010 mi² is probably noncontributing.

MONTH-END-ELEVATION AND CONTENTS RECORDS

PERIOD OF RECORD.--November 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft above sea level; gage readings have been converted to sea level. From June 22, 1959, to June 3, 1971, site was located 0.2 mi upstream at same datum. Prior to June 22, 1959, nonrecording gages at different locations. Water-stage recorder discontinued July 15, 1999.

REMARKS.--Reservoir is formed by earth-fill dam, completed Oct. 1, 1953. Closure made May 7, 1953, and filling of dead storage started. Gates initially closed Feb. 8, 1954. Usable capacity, 229,470 acre-ft between elevations 1,400 ft, sill of outlet, and 1,454 ft, crest of spillway. Dead storage below elevation 1,400 ft, 820 acre-ft. Maximum design pool, 389,000 acre-ft, elevation, 1,464.6 ft. Figures given herein represent total contents based on capacity table dated Oct. 1, 1965. Reservoir is used for flood control and municipal supply. Elevations are adjusted for wind effect.

COOPERATION.--Records furnished by the U.S. Bureau of Reclamation. Elevations affected by wind.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 124,900 acre-ft, May 2, 1997, elevation, 1,445.80 ft; minimum since initial filling of reservoir, 14,420 acre-ft, Mar. 1, 1993, elevation, 1,420.90 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 35,040 acre-ft, May 22, elevation, 1,432.47 ft; minimum, 26,950 acre-ft, Feb. 17 and Mar. 5, elevation, 1,428.83 ft.

MONTH-END ELEVATION AND CONTENTS, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 -----	1,430.21	29,780	--
Oct. 31 -----	1,429.41	28,110	-1,670
Nov. 30 -----	1,428.98	27,240	-870
Dec. 31 -----	1,428.98	27,240	0
CAL YR 2002	--	--	-1,280
Jan. 31 -----	1,428.88	27,040	-200
Feb. 28 -----	1,428.85	26,990	-50
Mar. 31 -----	1,429.42	28,130	+1,140
Apr. 30 -----	1,430.93	31,360	+3,230
May 31 -----	1,432.24	34,460	+3,100
June 30 -----	1,431.15	31,860	-2,600
July 31 -----	1,430.86	31,200	-660
Aug. 31 -----	1,430.63	30,700	-500
Sept. 30 -----	1,430.23	29,820	-880
WTR YR 2003	--	--	+40

06469400 PIPESTEM CREEK NEAR PINGREE, ND

LOCATION.--Lat 47°10'03", long 98°58'07", in NE¹₄NE¹₄NW¹₄ sec.31, T.143 N., R.65 W., Stutsman County, Hydrologic Unit 10160002, on right bank on downstream side of State Highway 36 bridge and 3 mi west of Pingree.

DRAINAGE AREA.--700 mi², of which about 440 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1973 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,500.63 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges, which are fair.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.20	0.07	e0.20	e0.28	e0.22	e0.00	114	13	47	26	4.8	0.16
2	0.21	0.06	e0.19	e0.29	e0.19	e0.00	97	13	44	25	3.6	0.10
3	0.21	0.06	e0.18	e0.31	e0.13	e0.00	76	11	43	24	3.4	0.11
4	0.17	0.06	e0.18	e0.31	e0.11	e0.00	67	18	40	22	3.0	0.10
5	0.10	0.06	e0.19	e0.30	e0.09	e0.00	65	27	36	19	3.5	0.06
6	0.14	0.05	e0.19	e0.31	e0.08	e0.00	74	32	34	17	2.7	0.08
7	0.11	0.05	e0.18	e0.32	e0.06	e0.00	65	35	30	16	2.2	0.14
8	0.05	0.05	e0.20	e0.34	e0.05	e0.00	55	42	30	14	1.8	0.07
9	0.04	0.06	e0.25	e0.32	e0.05	e0.00	48	53	28	21	1.9	0.04
10	0.04	0.09	e0.30	e0.30	e0.04	e0.00	47	64	34	21	1.9	0.05
11	0.07	0.10	e0.35	e0.28	e0.04	e0.00	38	72	32	19	1.4	0.12
12	0.07	0.11	e0.40	e0.27	e0.03	e0.02	34	75	36	16	1.1	0.09
13	0.06	0.12	e0.44	e0.26	e0.03	e0.10	33	80	33	16	0.87	0.10
14	0.08	0.13	e0.47	e0.25	e0.03	e0.40	30	89	29	15	0.66	0.11
15	0.07	0.13	e0.47	e0.24	e0.02	e1.5	25	99	26	13	0.55	0.03
16	0.08	0.12	e0.46	e0.24	e0.02	e7.0	20	96	24	11	0.48	0.04
17	0.09	0.14	e0.45	e0.24	e0.02	e29	19	100	23	10	0.31	0.08
18	0.13	0.15	e0.43	e0.24	e0.02	e27	18	109	22	9.9	0.25	0.13
19	0.14	0.15	e0.43	e0.24	e0.02	e20	21	125	18	9.6	0.20	0.14
20	0.16	0.15	e0.34	e0.25	e0.01	e19	22	122	10	9.6	0.15	0.09
21	0.17	0.15	e0.33	e0.25	e0.01	e25	16	110	17	9.9	0.13	0.17
22	0.17	0.13	e0.33	e0.25	e0.01	e40	16	105	25	16	0.20	0.18
23	0.15	e0.15	e0.31	e0.24	e0.01	e56	15	102	20	13	0.20	0.12
24	0.15	e0.14	e0.29	e0.24	e0.00	e123	18	97	18	14	0.23	0.17
25	0.15	e0.13	e0.28	e0.24	e0.00	150	18	87	17	17	0.21	0.23
26	0.13	e0.14	e0.29	e0.25	e0.00	168	17	77	17	17	0.18	0.12
27	0.12	e0.17	e0.29	e0.26	e0.00	162	18	71	20	11	0.27	0.09
28	0.12	e0.20	e0.29	e0.25	e0.00	162	15	62	27	8.7	0.10	0.07
29	0.14	e0.22	e0.29	e0.25	---	137	13	58	26	7.3	0.17	0.09
30	0.13	e0.21	e0.28	e0.25	---	126	14	58	27	9.8	0.18	0.24
31	0.09	---	e0.28	e0.24	---	128	---	50	---	7.5	0.26	---
TOTAL	3.74	3.55	9.56	8.31	1.29	1,381.02	1,128	2,152	833	465.3	36.90	3.32
MEAN	0.12	0.12	0.31	0.27	0.046	44.5	37.6	69.4	27.8	15.0	1.19	0.11
MAX	0.21	0.22	0.47	0.34	0.22	168	114	125	47	26	4.8	0.24
MIN	0.04	0.05	0.18	0.24	0.00	0.00	13	11	10	7.3	0.10	0.03
AC-FT	7.4	7.0	19	16	2.6	2,740	2,240	4,270	1,650	923	73	6.6

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2003, BY WATER YEAR (WY)

MEAN	9.16	9.36	4.27	1.11	5.68	137	184	60.4	33.2	49.8	23.7	14.6
MAX	133	86.9	29.1	9.72	45.9	572	1,300	414	252	389	190	153
(WY)	(1995)	(2001)	(1995)	(2000)	(1998)	(1995)	(1997)	(1999)	(2001)	(1993)	(1999)	(1994)
MIN	0.000	0.000	0.000	0.000	0.000	0.003	0.096	0.038	0.017	0.000	0.000	0.000
(WY)	(1974)	(1977)	(1977)	(1974)	(1974)	(1991)	(1991)	(1977)	(1977)	(1985)	(1976)	(1976)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1974 - 2003

ANNUAL TOTAL	4,323.82	6,025.99	
ANNUAL MEAN	11.8	16.5	44.5
HIGHEST ANNUAL MEAN			149
LOWEST ANNUAL MEAN			0.035
HIGHEST DAILY MEAN	89	168	2,760
LOWEST DAILY MEAN	0.04	0.00	0.00
ANNUAL SEVEN-DAY MINIMUM	0.06	0.00	0.00
MAXIMUM PEAK FLOW		204	3,400
MAXIMUM PEAK STAGE		6.72	11.70
INSTANTANEOUS LOW FLOW		0.00	
ANNUAL RUNOFF (AC-FT)	8,580	11,950	32,200
10 PERCENT EXCEEDS	59	57	89
50 PERCENT EXCEEDS	2.0	0.29	2.2
90 PERCENT EXCEEDS	0.10	0.05	0.00

e Estimated

WATER-QUALITY RECORDS

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

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
NOV 07...	1230	0.05	--	--	--	1,560	14.0	3.3	--	--	--	--	--
DEC 18...	1500	0.43	--	--	--	1,860	1.0	2.3	--	--	--	--	--
JAN 28...	1325	0.25	--	--	--	2,150	-15.0	0.7	--	--	--	--	--
MAR 20...	1545	19	--	--	--	811	7.5	0.4	--	--	--	--	--
MAR 25...	1415	126	8.1	7.7	754	763	7.7	0.9	250	51.0	31.0	22.0	1
APR 17...	1320	18	--	--	--	1,090	4.0	7.5	--	--	--	--	--
MAY 28...	1505	60	--	--	--	1,560	28.5	20.2	--	--	--	--	--
JUL 10...	1905	24	--	--	--	1,550	24.3	23.1	--	--	--	--	--
JUL 29...	1115	6.8	8.1	8.4	1,620	1,640	21.9	22.4	570	94.7	81.1	13.8	3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat fltrd mg/L (70300)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)
NOV 07...	--	--	--	--	--	--	--	--	--	--	--	--	--
DEC 18...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 20...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAR 25...	48.0	27	124	15.0	0.10	--	240	481	185	543	4.0	140	<1
APR 17...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY 28...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 10...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL 29...	159	37	341	16.5	0.20	13.3	524	1,100	20.3	--	9.3	10	<1

06469400 PIPESTEM CREEK NEAR PINGREE, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
NOV 07...	--	--	--	--	--	--
DEC 18...	--	--	--	--	--	--
JAN 28...	--	--	--	--	--	--
MAR 20...	--	--	--	--	--	--
MAR 25...	60	140	0.10	<1	2	290
APR 17...	--	--	--	--	--	--
MAY 28...	--	--	--	--	--	--
JUL 10...	--	--	--	--	--	--
JUL 29...	120	150	<0.20	2	<1	540

Remark codes used in this table:
 < -- Less than

06469820 PIPESTEM RESERVOIR NEAR JAMESTOWN, ND

LOCATION.--Lat 46°57'44", long 98°45'11", in NW¹/₄NW¹/₄ sec.10, T.140 N., R.64 W., Stutsman County, Hydrologic Unit 10160002, on left bank in control house above Pipestem Dam, 2.5 mi northwest of Jamestown Post Office, and 3.5 mi upstream from James River.

DRAINAGE AREA.--1,010 mi², approximately, of which about 610 mi² is probably noncontributing.

MONTHEND-ELEVATION AND CONTENTS RECORDS

PERIOD OF RECORD.--March 1974 to current year. Prior to October 1991, records are available from the U.S. Army Corps of Engineers.

GAGE.--Water-stage recorder. Datum of gage is at National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by earth-fill dam; storage began in July 1973; dam completed in 1973. Total capacity is 147,000 acre-ft at maximum pool, elevation 1,496.3 ft. Figures given herein represent total contents based on capacity table for the 1990 survey. The reservoir is used for flood control, fish and wildlife, and recreation.

COOPERATION.--Records furnished by Bureau of Reclamation. Elevations affected by wind.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 103,820 acre-ft, May 10, 1997, elevation, 1,487.01 ft; minimum contents, 6,730 acre-ft, Feb. 17, 1993, elevation, 1,439.65 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 17,880 acre-ft, May 24, elevation, 1,449.53 ft; minimum contents, 8,940 acre-ft, Jan. 28, elevation, 1,441.31 ft.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30 -----	1,442.46	9,920	--
Oct. 31 -----	1,442.52	9,970	+50
Nov. 30 -----	1,442.56	10,010	+40
Dec. 31 -----	1,442.56	10,010	0
CAL YR 2002	--	--	-110
Jan. 31 -----	1,442.54	9,990	-20
Feb. 28 -----	1,442.53	9,980	-10
Mar. 31 -----	1,445.14	12,540	+2,560
Apr. 30 -----	1,446.05	13,540	+1,000
May 31 -----	1,449.26	17,510	+3,970
June 30 -----	1,447.74	15,550	-1,960
July 31 -----	1,444.11	11,480	-4,070
Aug. 31 -----	1,442.54	9,990	-1,490
Sept. 30 -----	1,442.16	9,650	-340
WTR YR 2003	--	--	-270

06470000 JAMES RIVER AT JAMESTOWN, ND

LOCATION.--Lat 46°53'23", long 98°40'54", in NW¹₄NE¹₄ sec.6, T.139 N., R.63 W., Stutsman County, Hydrologic Unit 10160003, on left bank 200 ft upstream from Interstate 94 bridge at southeast corner of Jamestown and 3 mi downstream from Pipestem Creek.

DRAINAGE AREA.--2,820 mi², approximately, of which about 1,650 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1928 to September 1933, March to May 1935, August 1937 to September 1939, April 1943 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 1239: 1938(M). WSP 1917: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,373.27 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1949, to Sept. 30, 1965, at former bridge 0.5 mi upstream at datum 2.00 ft higher. See WSP 1729 or 1917 for history of changes prior to Oct. 1, 1949.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated by Arrowwood, Jim, and Pipestem Lakes, and Jamestown Reservoir, combined capacity, 393,000 acre-ft. Regulation by Jamestown Reservoir (station 06469000) 6 mi upstream since 1953 and by Pipestem Lake, capacity 147,000 acre-ft, since 1973.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	36	2.3	e3.0	e1.5	e1.6	20	18	271	188	165	47
2	30	32	2.3	e2.9	e1.4	e1.5	19	18	272	193	166	47
3	31	33	2.1	e3.0	e1.3	e1.5	18	18	252	197	168	36
4	32	33	2.1	e2.9	e1.2	e1.6	20	44	253	203	160	16
5	32	33	2.0	e2.8	e1.2	e1.8	20	46	250	202	177	33
6	47	32	2.1	e2.8	e1.1	e1.9	19	50	253	202	197	41
7	33	33	2.0	e2.9	e1.3	e1.8	19	29	250	200	198	41
8	31	33	2.0	e3.0	e1.3	e1.8	19	28	250	181	193	40
9	31	33	2.0	e2.9	e1.3	e2.2	19	51	252	160	165	40
10	32	34	2.1	e3.2	e1.3	e2.4	20	34	258	134	161	37
11	33	34	2.0	e2.8	e1.3	e2.5	19	35	254	125	159	44
12	33	33	2.1	e2.6	e1.3	e2.6	20	27	257	124	159	46
13	32	35	2.2	e2.5	e1.4	e2.7	19	50	254	125	139	47
14	32	34	2.3	e2.4	e1.4	e3.2	19	97	256	126	111	45
15	31	22	2.3	e2.3	e1.4	e1.4	19	73	258	126	110	54
16	32	6.9	2.5	e2.2	e1.6	e5.4	22	92	265	125	110	71
17	33	3.6	2.6	e2.1	e1.6	e4.0	26	149	262	126	106	79
18	33	2.4	3.0	e2.1	e1.8	e4.8	23	157	213	168	103	75
19	32	2.2	3.2	e2.1	e2.3	e4.2	29	142	141	231	100	72
20	33	2.1	3.3	e1.9	e2.1	e3.8	24	130	179	242	99	72
21	32	2.3	3.3	e1.8	e2.0	e3.3	21	139	192	220	97	72
22	32	2.3	e3.2	e1.7	e1.8	e4.2	20	218	195	196	87	73
23	32	2.3	e3.1	e1.6	e1.6	e4.0	19	275	203	159	75	59
24	32	2.5	e3.0	e1.7	e1.4	e3.8	18	274	197	144	74	71
25	32	2.4	e2.9	e1.8	e1.5	37	16	264	205	141	64	77
26	32	2.3	e2.8	e1.9	e1.6	35	18	263	187	137	50	94
27	33	2.3	e2.7	e2.1	e1.7	35	19	258	190	137	48	94
28	34	2.2	e2.6	e2.0	e1.7	32	19	268	185	137	50	95
29	34	2.1	e2.6	e1.9	---	32	18	269	183	137	48	94
30	33	2.4	e2.7	e1.7	---	21	18	270	184	149	48	95
31	33	---	e2.8	e1.6	---	20	---	270	---	165	47	---
TOTAL	1,012	530.3	78.2	72.2	42.4	630.1	599	4,056	6,821	5,100	3,634	1,807
MEAN	32.6	17.7	2.52	2.33	1.51	20.3	20.0	131	227	165	117	60.2
MAX	47	36	3.3	3.2	2.3	54	29	275	272	242	198	95
MIN	30	2.1	2.0	1.6	1.1	1.5	16	18	141	124	47	16
AC-FT	2,010	1,050	155	143	84	1,250	1,190	8,050	13,530	10,120	7,210	3,580

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2003, BY WATER YEAR (WY)

MEAN	68.8	36.5	11.6	5.66	11.6	83.4	273	235	178	120	97.2	79.7
MAX	946	568	144	47.9	111	731	2,434	2,559	1,266	1,024	761	908
(WY)	(1994)	(2001)	(2001)	(1995)	(1930)	(1966)	(1950)	(1950)	(1997)	(1995)	(1995)	(1993)
MIN	0.29	0.35	0.66	0.29	0.60	1.74	1.00	1.06	1.27	0.67	0.23	0.20
(WY)	(1990)	(1939)	(1939)	(1991)	(1939)	(1944)	(1939)	(1939)	(1931)	(1933)	(1933)	(1933)

JAMES RIVER BASIN

06470000 JAMES RIVER AT JAMESTOWN, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1928 - 2003	
ANNUAL TOTAL	13,406.2		24,382.2		100	
ANNUAL MEAN	36.7		66.8		521	
HIGHEST ANNUAL MEAN					1997	
LOWEST ANNUAL MEAN					2.38	
HIGHEST DAILY MEAN	154	May 8	275	May 23	6,170	May 13, 1950
LOWEST DAILY MEAN	2.0	Dec 5	1.1	Feb 6	0.00	Jun 28, 1933
ANNUAL SEVEN-DAY MINIMUM	2.0	Dec 5	1.2	Feb 3	0.00	Oct 26, 1989
MAXIMUM PEAK FLOW			334	May 23	6,390	May 13, 1950
MAXIMUM PEAK STAGE			5.68	May 23	a15.82	May 13, 1950
INSTANTANEOUS LOW FLOW					0.00	Jun 28, 1933
ANNUAL RUNOFF (AC-FT)	26,590		48,360		72,540	
10 PERCENT EXCEEDS	102		201		304	
50 PERCENT EXCEEDS	27		32		9.0	
90 PERCENT EXCEEDS	2.9		1.8		1.3	

a Site and datum then in use

e Estimated

JAMES RIVER BASIN

06470000 JAMES RIVER AT JAMESTOWN, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
NOV 07...	--	--	--	--	--	--
DEC 19...	--	--	--	--	--	--
JAN 28...	--	--	--	--	--	--
MAR 11...	--	--	--	--	--	--
21...	--	--	--	--	--	--
25...	90	480	0.10	1	2	340
APR 17...	--	--	--	--	--	--
MAY 20...	--	--	--	--	--	--
JUL 11...	--	--	--	--	--	--
AUG 08...	80	710	<0.20	3	2	400
25...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

06470500 JAMES RIVER AT LAMOURE, ND

LOCATION.--Lat 46°21'20", long 98°18'15", in NE¹₄NE¹₄ sec.11, T.133 N., R.61 W., LaMoure County, Hydrologic Unit 10160003, on left bank 80 ft downstream from bridge on State Highway 13, 0.5 mi west of LaMoure, and 12 mi upstream from Cottonwood Creek.

DRAINAGE AREA.--4,390 mi², approximately, of which about 2,600 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to July 1903 (gage-height record only), April 1950 to current year. Gage-height records for 1902-11 are contained in reports of the National Oceanic and Atmospheric Administration.

REVISED RECORDS.--WSP 1917: Drainage area.

GAGE.--Water-stage recorder and rubble-masonry control. Datum of gage is 1,290.00 ft above National Geodetic Vertical Datum of 1929. See WSP 1729 or 1917 for history of changes prior to Apr. 19, 1950.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated by Arrowwood, Jim, and Pipestem Lakes and Jamestown Reservoir, combined capacity, 393,000 acre-ft. Regulation by Jamestown Reservoir (station 06469000) 85 mi upstream since 1953 and by Pipestem Lake, capacity 147,000 acre-ft, since 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Prior to flood of Apr. 14, 1969, a long-time resident said that the flood of May 16, 1950, was the highest since 1881, with stage in either 1942 or 1943 being almost as high owing to large ice jam.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e60	77	e29	21	13	13	91	47	310	e390	163	83
2	e58	46	e27	22	14	13	79	44	309	373	174	87
3	e59	52	24	22	15	13	65	38	311	327	182	84
4	e59	53	22	23	14	12	59	57	313	297	182	81
5	e60	58	20	24	14	12	44	74	304	e280	186	83
6	e65	57	19	24	14	12	44	78	302	e277	188	76
7	e70	58	18	25	13	12	50	97	297	e272	182	64
8	e75	61	18	25	14	11	53	120	303	e263	197	57
9	e68	61	18	27	13	12	50	150	304	e244	212	60
10	e65	63	18	26	13	12	53	168	312	e217	215	60
11	e67	56	18	24	13	11	47	183	304	214	201	66
12	e65	58	19	21	13	11	43	196	337	194	183	63
13	e63	57	20	19	12	11	47	213	316	175	173	68
14	e63	52	21	18	13	12	50	234	307	175	169	67
15	e62	54	23	17	13	16	47	224	301	162	170	69
16	e63	49	24	16	13	27	49	283	295	155	147	69
17	e64	54	26	16	14	41	53	414	296	147	131	77
18	e64	67	28	16	14	84	54	378	298	146	126	181
19	e63	58	28	15	14	138	61	410	286	144	125	153
20	e64	e52	28	15	14	176	65	480	260	180	e125	160
21	e63	e45	26	15	15	163	61	495	214	255	e125	158
22	e63	e40	26	14	15	145	61	437	205	252	e125	148
23	e63	e34	26	13	15	144	58	363	223	237	e122	141
24	e63	e32	25	12	14	151	57	357	255	225	119	150
25	e63	e34	24	12	14	158	55	388	287	204	111	127
26	e62	e30	23	11	13	139	48	395	297	183	107	135
27	e63	e28	22	11	12	140	58	372	e320	170	98	126
28	e64	e27	22	12	12	127	48	355	e340	167	100	144
29	e65	e26	22	12	---	91	45	332	e360	166	89	168
30	e64	e27	23	12	---	73	48	336	e380	166	87	172
31	e64	---	22	12	---	82	---	307	---	163	86	---
TOTAL	1,974	1,466	709	552	380	2,062	1,643	8,025	8,946	6,820	4,600	3,177
MEAN	63.7	48.9	22.9	17.8	13.6	66.5	54.8	259	298	220	148	106
MAX	75	77	29	27	15	176	91	495	380	390	215	181
MIN	58	26	18	11	12	11	43	38	205	144	86	57
AC-FT	3,920	2,910	1,410	1,090	754	4,090	3,260	15,920	17,740	13,530	9,120	6,300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 2003, BY WATER YEAR (WY)

MEAN	110	67.7	27.4	16.3	21.3	192	437	352	269	216	147	121
MAX	1,008	574	168	75.1	135	1,202	3,209	3,114	1,399	1,165	894	939
(WY)	(1994)	(2001)	(2001)	(1995)	(2000)	(1966)	(1997)	(1950)	(2001)	(1995)	(1995)	(1993)
MIN	5.32	8.42	6.83	3.69	1.90	4.57	18.0	12.4	8.10	1.93	3.20	2.56
(WY)	(1991)	(1962)	(1989)	(1959)	(1959)	(1969)	(1991)	(1977)	(1973)	(1973)	(1961)	(1990)

JAMES RIVER BASIN

06470500 JAMES RIVER AT LAMOURE, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1950 - 2003	
ANNUAL TOTAL	24,982.3		40,354		161	
ANNUAL MEAN	68.4		111		786	
HIGHEST ANNUAL MEAN					1997	
LOWEST ANNUAL MEAN					1990	
HIGHEST DAILY MEAN	368	Jul 22	495	May 21	6,420	Apr 14, 1969
LOWEST DAILY MEAN	9.5	Jan 6	11	Jan 26	0.00	Jul 15, 1973
ANNUAL SEVEN-DAY MINIMUM	10	Jan 5	11	Mar 7	0.01	Jul 17, 1973
MAXIMUM PEAK FLOW			522	May 21	6,800	Apr 14, 1969
MAXIMUM PEAK STAGE			8.38	May 21	16.17	Apr 14, 1969
INSTANTANEOUS LOW FLOW					0.00	Jul 15, 1973
ANNUAL RUNOFF (AC-FT)	49,550		80,040		116,400	
10 PERCENT EXCEEDS	172		299		465	
50 PERCENT EXCEEDS	55		63		31	
90 PERCENT EXCEEDS	13		14		7.4	

e Estimated

JAMES RIVER BASIN

06470500 JAMES RIVER AT LAMOURE, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lead, water, fltred, ug/L (01049)	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
NOV 07...	--	--	--	--	--	--	--
DEC 30...	--	--	--	--	--	--	--
JAN 29...	--	--	--	--	--	--	--
MAR 12...	--	--	--	--	--	--	--
APR 24...	--	--	--	--	--	--	--
MAY 01...	--	--	--	--	--	--	--
MAY 16...	<1	70	240	<0.10	3	1	390
MAY 19...	--	--	--	--	--	--	--
JUL 10...	--	--	--	--	--	--	--
AUG 06...	<1	80	60	0.22	3	2	430
SEP 05...	--	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

Null value qualifier codes used in this table:

e -- Required equipment not functional/avail

06470800 BEAR CREEK NEAR OAKES, ND

LOCATION.--Lat 46°13'31", long 98°04'17", in NE¹₄NE¹₄ sec.28, T.132 N., R.59 W., Dickey County, Hydrologic Unit 10160003, on right bank 80 ft downstream from bridge on ND Highway 13, 6 mi north, and 1 mi east of Oakes.

DRAINAGE AREA.--357 mi², of which about 255 mi² is noncontributing, revised.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,291.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1, 1975, reached a stage of 15.00 ft present datum, from floodmark, discharge 4,590 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.10	1.1	e0.44	e0.50	e0.00	e0.00	3.8	e3.9	e23	52	4.3	0.22
2	0.10	1.1	e0.43	e0.50	e0.00	e0.00	5.6	e3.7	e19	47	3.8	0.20
3	0.10	1.1	e0.42	e0.50	e0.00	e0.00	5.8	e3.6	e15	42	3.1	0.15
4	0.50	1.1	e0.41	e0.50	e0.00	e0.00	5.7	e4.0	e14	39	2.7	0.09
5	0.90	1.1	e0.40	e0.50	e0.00	e0.00	5.2	e5.0	e13	36	2.4	0.08
6	1.2	4.4	e0.40	e0.50	e0.00	e0.00	5.2	e6.8	e12	34	2.1	0.07
7	1.2	3.6	e0.41	e0.50	e0.00	e0.00	4.7	e8.2	e12	31	1.7	0.05
8	1.1	1.4	e0.42	e0.49	e0.00	e0.00	4.8	e10	e12	29	1.4	0.03
9	1.0	e1.1	e0.43	e0.46	e0.00	e0.00	4.2	e14	e13	29	1.3	0.01
10	1.1	e1.0	e0.43	e0.42	e0.00	e0.00	3.9	e18	e14	27	1.3	0.01
11	1.3	e0.95	e0.43	e0.36	e0.00	e0.00	4.1	e26	e15	25	1.1	0.03
12	1.4	e0.90	e0.43	e0.32	e0.00	e0.00	4.0	e34	e17	23	0.91	0.03
13	1.3	e0.85	e0.44	e0.30	e0.00	0.71	3.4	e39	19	21	0.72	0.09
14	1.4	e0.80	e0.44	e0.27	e0.00	1.1	3.8	e42	21	19	0.57	0.07
15	1.3	e0.78	e0.45	e0.26	e0.00	2.5	4.1	e44	28	18	0.48	0.06
16	1.0	e0.75	e0.45	e0.25	e0.00	15	e4.5	e44	27	16	0.42	0.05
17	0.87	e0.72	e0.46	e0.23	e0.00	e15	e4.8	e56	25	14	0.34	0.10
18	0.87	e0.70	e0.46	e0.22	e0.00	e10	e5.2	e68	21	14	0.30	0.18
19	0.83	e0.65	e0.46	e0.21	e0.00	5.2	e5.4	e85	17	13	0.26	0.16
20	1.0	e0.62	e0.46	e0.20	e0.00	5.6	e5.6	e88	14	22	0.25	0.16
21	1.1	e0.60	e0.47	e0.18	e0.00	14	e5.4	e94	11	21	0.22	0.17
22	1.1	e0.58	e0.47	e0.15	e0.00	8.0	e5.2	e96	13	15	0.17	0.17
23	1.2	e0.56	e0.48	e0.12	e0.00	9.1	e5.0	e90	16	12	0.14	0.14
24	1.2	e0.54	e0.48	e0.08	e0.00	9.2	e4.8	e80	21	10	0.14	0.16
25	1.2	e0.52	e0.48	e0.04	e0.00	7.1	e4.6	e70	29	8.8	0.11	0.10
26	1.2	e0.50	e0.48	e0.00	e0.00	7.6	e4.4	e60	60	7.7	0.10	0.15
27	1.1	e0.48	e0.49	e0.00	e0.00	8.0	e4.3	e52	80	6.8	0.12	0.12
28	1.2	e0.47	e0.49	e0.00	e0.00	5.1	e4.2	e46	80	6.3	0.34	0.11
29	1.4	e0.46	e0.49	e0.00	---	e3.0	e4.1	e38	68	6.0	0.40	0.11
30	1.2	e0.45	e0.50	e0.00	---	e2.2	e4.0	e32	58	5.6	0.33	0.08
31	1.2	---	e0.50	e0.00	---	e2.3	---	e26	---	5.0	0.27	---
TOTAL	31.67	29.88	14.00	8.06	0.00	130.71	139.8	1,287.2	787	655.2	31.79	3.15
MEAN	1.02	1.00	0.45	0.26	0.000	4.22	4.66	41.5	26.2	21.1	1.03	0.10
MAX	1.4	4.4	0.50	0.50	0.00	15	5.8	96	80	52	4.3	0.22
MIN	0.10	0.45	0.40	0.00	0.00	0.00	3.4	3.6	11	5.0	0.10	0.01
AC-FT	63	59	28	16	0.00	259	277	2,550	1,560	1,300	63	6.2

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 2003, BY WATER YEAR (WY)

MEAN	2.25	2.36	2.93	0.54	0.98	39.7	83.7	25.2	12.6	19.2	4.69	3.41
MAX	32.9	45.1	66.7	10.7	11.3	142	679	168	142	179	60.7	32.8
(WY)	(1999)	(1999)	(1999)	(1999)	(1998)	(1987)	(1997)	(1999)	(1998)	(1993)	(1993)	(1999)
MIN	0.000	0.000	0.000	0.000	0.000	0.032	0.11	0.000	0.005	0.000	0.000	0.000
(WY)	(1977)	(1977)	(1977)	(1977)	(1977)	(1981)	(1985)	(1981)	(1977)	(1977)	(1977)	(1977)

JAMES RIVER BASIN

06470800 BEAR CREEK NEAR OAKES, ND—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1977 - 2003	
ANNUAL TOTAL	821.41		3,118.46			
ANNUAL MEAN	2.25		8.54		16.5	
HIGHEST ANNUAL MEAN					74.3	1997
LOWEST ANNUAL MEAN					0.042	1977
HIGHEST DAILY MEAN	53	Jul 19	96	May 22	1,490	Jun 28, 1998
LOWEST DAILY MEAN	0.03	Sep 22	0.00	Jan 26	0.00	Oct 1, 1976
ANNUAL SEVEN-DAY MINIMUM	0.05	Sep 21	0.00	Jan 26	0.00	Oct 1, 1976
MAXIMUM PEAK FLOW			a100	May 22	1,730	Jun 28, 1998
MAXIMUM PEAK STAGE			(b)		c13.24	Apr 3, 1997
ANNUAL RUNOFF (AC-FT)	1,630		6,190		11,940	
10 PERCENT EXCEEDS	5.3		27		35	
50 PERCENT EXCEEDS	0.67		1.0		0.27	
90 PERCENT EXCEEDS	0.19		0.00		0.00	

- a About
- b Unknown
- c Backwater from ice
- e Estimated

06470800 BEAR CREEK NEAR OAKES, ND—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
NOV 06...	--	--	--	--	--	--
DEC 30...	--	--	--	--	--	--
JAN 29...	--	--	--	--	--	--
MAR 12...	--	--	--	--	--	--
24...	--	--	--	--	--	--
31...	90	680	0.10	<1	2	420
APR 16...	--	--	--	--	--	--
MAY 19...	--	--	--	--	--	--
JUN 03...	--	--	--	--	--	--
JUL 09...	--	--	--	--	--	--
AUG 06...	90	90	<0.20	1	2	580
SEP 04...	--	--	--	--	--	--

Remark codes used in this table:
 < -- Less than

06470830 JAMES RIVER AT OAKES, ND

LOCATION.--Lat 46°08'20", long 98°06'55", in NW¹₄NE¹₄NE¹₄ sec.30, T.131 N., R.59 W., Dickey County, Hydrologic Unit 10160003, on left bank 10 ft downstream from bridge 1.0 mi west of Oakes.

DRAINAGE AREA.--5,320 mi², of which about 3,300 mi² is probably noncontributing.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,200.00 ft above National Geodetic Vertical Datum of 1929. Flow regulated by Jamestown Reservoir (station 06469000).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 98.77 ft, Apr. 4, 1997; minimum, 88.11 ft, Sept. 4, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum gage height recorded, 92.08 ft, May 21; minimum recorded, 89.35 ft, Oct. 30.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89.78	89.80	---	---	---	90.68	---	89.92	91.19	91.80	90.18	90.02
2	89.75	89.82	---	---	---	90.68	---	89.97	91.17	91.76	90.15	89.98
3	89.84	89.83	---	---	---	90.71	---	90.16	---	91.55	90.16	89.77
4	89.68	89.84	---	---	---	90.72	---	90.17	---	91.48	90.26	89.86
5	89.86	89.85	---	---	---	90.73	---	90.22	---	91.37	90.24	89.86
6	89.74	---	---	---	---	90.77	---	90.43	---	91.27	90.23	89.83
7	---	---	---	---	---	90.78	---	90.47	---	91.08	90.27	89.93
8	89.83	---	---	---	---	90.81	---	90.50	---	90.91	90.33	89.96
9	89.92	---	---	---	---	90.82	---	90.53	---	90.86	90.38	90.05
10	---	---	---	---	---	90.83	---	90.60	---	90.73	90.41	90.10
11	---	---	---	---	---	90.85	---	90.37	---	90.66	90.45	90.08
12	---	---	---	---	---	---	---	90.57	---	90.64	90.53	90.04
13	---	---	---	---	---	---	---	90.65	---	90.74	90.65	90.04
14	---	---	---	---	---	---	---	90.75	---	90.67	90.69	89.97
15	---	---	---	---	---	---	---	90.95	---	90.50	90.58	89.93
16	---	---	---	---	---	---	---	91.16	---	90.50	90.36	89.88
17	---	---	---	---	---	---	---	91.29	---	90.33	90.34	90.02
18	---	---	---	---	---	---	---	91.63	---	90.33	90.34	89.86
19	---	---	---	---	---	---	---	91.53	---	90.35	90.31	90.02
20	---	---	---	---	---	---	---	91.68	---	90.32	90.29	90.04
21	89.70	---	---	---	---	---	89.87	91.94	---	90.36	90.06	90.04
22	89.66	---	---	---	---	---	90.00	91.98	---	90.43	90.04	90.00
23	89.77	---	---	---	---	---	90.13	91.94	---	90.64	90.08	90.09
24	89.87	---	---	---	---	---	90.02	91.82	90.84	90.82	89.98	89.97
25	89.93	---	---	---	---	---	89.99	91.70	90.86	90.74	89.99	90.06
26	89.88	---	---	---	---	---	90.20	91.67	91.08	90.56	89.95	89.92
27	89.95	---	---	---	---	---	90.19	91.68	91.18	90.50	90.00	89.84
28	90.08	---	---	---	90.66	---	89.99	91.53	91.40	90.46	90.03	89.86
29	89.62	---	---	---	---	---	90.00	91.54	91.53	90.49	89.85	89.84
30	89.65	---	---	---	---	---	89.92	91.26	91.67	90.39	89.91	89.87
31	89.76	---	---	---	---	---	---	91.19	---	90.27	89.94	---
MEAN	---	---	---	---	---	---	---	91.03	---	90.76	90.23	89.96
MAX	---	---	---	---	---	---	---	91.98	---	91.80	90.69	90.10
MIN	---	---	---	---	---	---	---	89.92	---	90.27	89.85	89.77

JAMES RIVER BASIN

06470875 DAKOTA LAKE NEAR LUDDEN, ND

LOCATION.--Lat 45°56'52", long 98°10'29", in SE¹₄NE¹₄ sec.34, T.129 N., R.60 W., Dickey County, Hydrologic Unit 10160003, on left bank, 10 ft upstream from dam, 4.5 mi southwest of Ludden and 0.8 mi upstream from North Dakota-South Dakota state line.

DRAINAGE AREA.--5,480 mi², of which about 3,300 mi² are probably noncontributing.

GAGE HEIGHT RECORDS

PERIOD OF RECORD.--August 2002 to current year. (Formerly published as streamflow gage James River at Dakota Lake Dam near Ludden, ND).

GAGE.--Water-stage recorder. Datum of gage is 1,280.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Gage heights are affected by wind.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum gage height, 17.86 ft, Apr. 6, 1997.

EXTREMES FOR CURRENT YEAR.--Maximum gage height recorded, 11.62 ft, July 3 (affected by wind); minimum gage height recorded, 8.67 ft, Apr. 13 (affected by wind).

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.63	9.53	9.50	9.50	9.42	9.39	---	9.54	10.45	10.75	9.94	9.50
2	9.61	9.55	9.50	9.50	9.43	9.39	9.97	9.44	10.45	10.86	9.92	9.60
3	9.49	9.57	9.49	9.50	9.44	9.39	9.75	9.18	10.38	10.96	9.87	9.74
4	9.75	9.57	9.48	9.50	9.44	9.38	9.65	9.48	10.46	10.84	9.82	9.55
5	9.51	9.58	9.47	9.51	9.45	9.38	9.56	9.76	10.48	10.71	9.92	9.56
6	9.74	9.59	9.46	9.50	9.44	9.38	9.53	9.79	10.52	10.64	9.94	9.59
7	9.48	9.57	9.46	9.50	9.43	9.38	9.59	9.81	10.48	10.58	9.88	9.45
8	9.68	9.64	9.45	9.51	9.42	9.38	9.40	9.83	10.45	10.47	9.83	9.38
9	9.54	9.64	9.44	9.52	9.42	9.37	9.26	10.11	10.33	10.39	9.91	9.23
10	9.53	9.82	9.44	9.52	9.41	9.36	9.62	10.24	10.49	10.35	10.02	9.23
11	9.55	9.58	9.44	9.52	9.41	9.37	9.59	10.28	10.35	10.32	10.02	9.44
12	9.76	9.58	9.45	9.51	9.40	9.40	9.35	9.97	10.42	10.20	9.95	9.60
13	9.59	9.61	9.45	9.51	9.39	9.39	8.99	9.98	10.45	9.98	9.83	9.71
14	9.73	9.62	9.45	9.50	9.39	9.37	9.64	10.15	10.41	10.13	9.80	9.72
15	9.65	9.63	9.46	9.50	9.38	9.37	9.79	10.08	10.39	10.15	9.94	9.67
16	9.60	9.56	9.47	9.49	9.38	9.42	9.78	10.00	10.40	10.03	10.02	9.66
17	9.61	9.49	9.48	9.48	9.38	9.48	9.42	10.26	10.53	10.07	9.90	9.58
18	9.74	9.61	9.51	9.47	9.39	9.57	9.54	10.41	10.50	9.98	9.83	9.80
19	9.59	9.66	9.52	9.46	9.39	9.64	9.68	10.84	10.31	9.91	9.79	9.66
20	9.68	9.70	9.52	9.46	9.40	9.68	9.75	10.70	9.97	10.05	9.78	9.70
21	9.66	9.82	9.52	9.45	9.41	9.70	9.59	10.65	9.99	10.08	9.90	9.75
22	9.69	9.60	9.53	9.45	9.42	9.74	9.47	10.91	10.52	10.08	9.69	9.79
23	9.58	9.71	9.53	9.43	9.42	9.82	9.35	10.90	10.54	10.02	9.56	9.66
24	9.52	9.54	9.53	9.42	9.42	9.91	9.55	10.92	10.54	9.99	9.72	9.82
25	9.53	9.50	9.52	9.41	9.42	9.97	9.60	10.84	10.54	10.11	9.71	9.62
26	9.63	9.50	9.52	9.41	9.40	9.97	9.32	10.72	10.43	10.16	9.71	9.83
27	9.56	9.50	9.52	9.42	9.39	10.02	9.53	10.69	10.48	10.06	9.56	9.79
28	9.46	9.50	9.52	9.41	9.38	9.97	9.64	10.77	10.63	10.00	9.61	9.70
29	9.96	9.51	9.52	9.41	---	9.92	9.56	10.56	10.75	9.94	9.74	9.73
30	9.67	9.50	9.50	9.41	---	9.91	9.55	10.83	10.78	9.98	9.63	9.69
31	9.52	---	9.49	9.42	---	---	---	10.53	---	9.96	9.61	---
MEAN	9.62	9.59	9.49	9.47	9.41	---	---	10.26	10.45	10.25	9.82	9.62
MAX	9.96	9.82	9.53	9.52	9.45	---	---	10.92	10.78	10.96	10.02	9.83
MIN	9.46	9.49	9.44	9.41	9.38	---	---	9.18	9.97	9.91	9.56	9.23

06470878 JAMES RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 45°56'10", long 98°10'26", in SE¹₄SE¹₄ sec. 34, T.129 N., R.60 W., Dickey County, Hydrologic Unit 10160003, at bridge on North Dakota-South Dakota state line road 6.5 mi south and 1 mi west from Ludden.

DRAINAGE AREA.--5,480 mi², approximately, revised, of which about 3,300 mi² is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 2001 to current year. October 1981 to September 2001 equivalent discharge site formerly published as James River at Dakota Lake Dam near Ludden. October 1981 to September 1999 (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 1,200 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges, which are fair.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	42	35	33	16	e11	e220	64	489	637	175	36
2	65	46	34	32	e16	e11	247	36	485	698	161	67
3	35	52	31	32	e16	e11	139	14	451	753	138	115
4	127	51	30	33	e16	e10	90	48	484	686	112	47
5	38	54	27	34	e16	e10	59	167	499	616	161	49
6	124	55	25	33	e16	e10	49	181	520	573	174	57
7	33	51	25	33	e15	e10	70	191	496	536	143	26
8	92	72	24	34	e15	e10	27	202	483	462	117	16
9	47	70	22	35	e13	e10	4.5	338	414	413	163	3.0
10	43	156	22	35	e13	e10	101	399	498	391	222	16
11	64	54	23	34	e12	e10	74	415	424	372	217	32
12	126	54	23	33	e12	e10	27	269	460	307	186	64
13	58	64	23	31	11	e10	1.2	277	478	195	128	101
14	118	66	23	30	11	e10	112	355	453	270	113	105
15	78	69	25	30	9.8	e12	182	324	437	282	182	86
16	63	48	27	29	10	e18	177	286	444	217	228	83
17	66	34	30	28	10	e33	29	409	518	238	169	77
18	120	61	35	25	e10	e62	68	480	501	192	135	146
19	59	80	37	23	11	e87	126	686	392	159	117	85
20	90	100	38	23	e12	e109	162	612	221	230	113	100
21	82	157	38	22	e13	e119	84	593	228	244	172	126
22	93	58	40	20	e13	e141	46	723	508	244	81	141
23	56	106	40	19	e13	e187	26	722	517	214	39	88
24	41	44	40	17	e13	237	67	730	516	197	91	158
25	44	34	38	16	e12	265	87	686	518	262	87	72
26	69	35	37	15	e12	260	36	624	448	289	88	166
27	54	35	38	16	e11	283	72	609	479	237	48	145
28	34	34	38	16	e11	255	105	653	568	205	67	104
29	225	37	39	15	---	226	71	542	641	174	109	115
30	92	36	33	16	---	216	66	682	657	193	63	98
31	41	---	30	16	---	e199	---	529	---	184	58	---
TOTAL	2,353	1,855	970	808	358.8	2,852	2,624.7	12,846	14,227	10,670	4,057	2,524.0
MEAN	75.9	61.8	31.3	26.1	12.8	92.0	87.5	414	474	344	131	84.1
MAX	225	157	40	35	16	283	247	730	657	753	228	166
MIN	33	34	22	15	9.8	10	1.2	14	221	159	39	3.0
AC-FT	4,670	3,680	1,920	1,600	712	5,660	5,210	25,480	28,220	21,160	8,050	5,010

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 2003, BY WATER YEAR (WY)

MEAN	200	141	65.2	28.7	30.1	330	813	606	464	390	305	243
MAX	867	613	239	77.1	88.1	853	4,617	2,316	1,447	1,181	1,143	1,003
(WY)	(1994)	(2001)	(2001)	(1995)	(2000)	(1995)	(1997)	(1997)	(1997)	(1995)	(1993)	(1999)
MIN	1.86	0.20	0.28	0.056	0.62	26.0	33.4	9.92	2.12	0.015	0.000	0.011
(WY)	(1989)	(1991)	(1991)	(1991)	(1989)	(1990)	(1990)	(1990)	(1988)	(1988)	(1988)	(1990)

06470878 JAMES RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1982 - 2003 ^a	
ANNUAL TOTAL	39,043.7		56,145.5			
ANNUAL MEAN	107		154		302	
HIGHEST ANNUAL MEAN					969 1997	
LOWEST ANNUAL MEAN					10.3 1990	
HIGHEST DAILY MEAN	425	Jul 22	753	Jul 3	7,500	Apr 6, 1997
LOWEST DAILY MEAN	2.2	Sep 17	1.2	Apr 13	0.00	Oct 8, 1981
ANNUAL SEVEN-DAY MINIMUM	23	Dec 8	10	Mar 4	0.00	Jul 10, 1985
MAXIMUM PEAK FLOW			1,130	Jul 3	7,500	Apr 6, 1997
MAXIMUM PEAK STAGE			(b)	Jul 3	c98.04	Apr 6, 1997
ANNUAL RUNOFF (AC-FT)	77,440		111,400		218,800	
10 PERCENT EXCEEDS	262		483		954	
50 PERCENT EXCEEDS	72		70		91	
90 PERCENT EXCEEDS	34		13		0.60	

a Historic discharge data, water years 1982-2003, from equivalent station, James River at Dakota Lake Dam near Ludden, ND (06470875)

b Unknown

c From high-water mark at current gage location

e Estimated

06470878 JAMES RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Lithium water, fltred, ug/L (01130)	Mangan- ese, water, fltred, ug/L (01056)	Mercury water, fltred, ug/L (71890)	Molyb- denum, water, fltred, ug/L (01060)	Selen- ium, water, fltred, ug/L (01145)	Stront- ium, water, fltred, ug/L (01080)
OCT 09...	--	--	--	--	--	--
NOV 06...	--	--	--	--	--	--
DEC 30...	--	--	--	--	--	--
JAN 29...	--	--	--	--	--	--
MAR 12...	--	--	--	--	--	--
24...	--	--	--	--	--	--
31...	50	220	0.10	1	1	260
APR 16...	--	--	--	--	--	--
MAY 20...	--	--	--	--	--	--
JUL 09...	--	--	--	--	--	--
AUG 07...	80	1,550	0.82	3	<1	470
SEP 04...	--	--	--	--	--	--

Remark codes used in this table:

< -- Less than

06471200 MAPLE RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE—Continued

SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1957 - 2003	
ANNUAL TOTAL	631.80		4,210.96			
ANNUAL MEAN	1.73		11.5		a25.5	
HIGHEST ANNUAL MEAN					116	1997
LOWEST ANNUAL MEAN					b0.000	1959
HIGHEST DAILY MEAN	18	Jun 25	169	May 22	5,500	Apr 11, 1969
LOWEST DAILY MEAN	0.00	Jul 14	0.00	Oct 1	c0.00	Oct 1, 1956
ANNUAL SEVEN-DAY MINIMUM	0.00	Jul 14	0.00	Oct 1	0.00	Oct 1, 1956
MAXIMUM PEAK FLOW			175	May 22	d5,930	Apr 11, 1969
MAXIMUM PEAK STAGE			5.50	May 22	f16.19	Mar 29, 1997
ANNUAL RUNOFF (AC-FT)	1,250		8,350		18,500	
10 PERCENT EXCEEDS	6.4		45		36	
50 PERCENT EXCEEDS	0.23		0.00		0.10	
90 PERCENT EXCEEDS	0.00		0.00		0.00	

a Median of annual mean discharges, 16 ft³/s

b Also 1988 and 1990

c No flow for long periods in most years

d Gage height, 16.05 ft, backwater from ice

e Estimated

f Backwater from ice

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the U.S. Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at crest-stage partial-record stations are presented in a table of annual maximum discharge and stage. Discharge measurements made at miscellaneous sites for both low flows and high flows are given in a second table.

Crest-stage partial-record stations

The following table contains annual maximum discharges 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 for which the annual maximum has been determined.

Annual maximum discharge at crest-stage stations

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Water year 2003 maximum			Period of record maximum		
					Date	Gage height (feet)	Discharge (ft ³ /s)	Date	Gage height (feet)	Discharge (ft ³ /s)
RED RIVER OF THE NORTH BASIN										
05056017	Mauvais Coulee tributary above Brumba pool near Rock Lake, ND	Lat 48°43'29", Long 99°15'47", in NE ¹ / ₄ NE ¹ / ₄ SE ¹ / ₄ sec.36, T.161 N., R.67 W., Towner County, Hydrologic Unit 09020201, on State Highway 281, 1 mi west and 4.8 mi south of Rock Lake.	7.1	1998-2003	¹ 03-23-03	² 42.30	¹ 15	05-12-99 04-05-01	44.44 ² 45.69	210 --
05056900	Sheyenne River tributary near Cooperstown, ND	Lat 47°27'25", long 98°00'25", in NW ¹ / ₄ NW ¹ / ₄ NW ¹ / ₄ sec.24, T.146 N., R.58 W., Griggs County, Hydrologic Unit 09020203, on county highway, 1.4 mi north of State Highway 200 and 5 mi east of Cooperstown.	15.2	1959-73 1995-2003	05-05-03	^{3,4} 800.15	62	04-01-69	⁴ 809.80	1,000
05057100	Baldhill Creek near Binford, ND	Lat 47°33'56", long 98°22'56", in SE ¹ / ₄ SW ¹ / ₄ SE ¹ / ₄ sec.12, T.147 N., R.61 W., Griggs County, Hydrologic Unit 09020203, approximately 1.5 mi west of Binford on State Highway 65.	--	1996-2003	03-20-03 ¹ 08-23-03	² 17.0 ⁵ 17.54	¹ 25 --	03-29-99	18.58	140
05059678	Unnamed tributary south of Tower City, ND	Lat 46°53'28", long 97°41'40", in SE ¹ / ₄ SW ¹ / ₄ sec.36, T.140 N., R.56 W., Barnes County, Hydrologic Unit 09020205, 2 mi southwest of Tower City.	--	2000-03	05-19-03 06-25-03	41.11 41.69	65 (⁷)	¹ 04-08-01	43.88	⁶ 400

Annual maximum discharge at crest-stage stations--Continued

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Water year 2003 maximum			Period of record maximum		
					Date	Gage height (feet)	Discharge (ft ³ /s)	Date	Gage height (feet)	Discharge (ft ³ /s)
RED RIVER OF THE NORTH BASIN--Continued										
05060470	Rush River near Hunter, ND	Lat 47°09'07", long 97°20'22", in SE ¹ / ₄ SW ¹ / ₄ SW ¹ / ₄ sec.36, T.143 N., R.53 W., Cass County, Hydrologic Unit 09020204, on county highway, 2 mi south and 5.75 mi west of Hunter.	22.1	1996-2003	06-25-03	18.65	80	04-07-01	18.73	⁶ 250
05065810	Middle Branch Goose River tributary near Pickert, ND	Lat 47°25'03", long 97°42'30", in SE ¹ / ₄ SE ¹ / ₄ sec.36, T.146 N., R.56 W., Steele County, Hydrologic Unit 09020109, on county highway 11, 5 mi southeast of Pickert.	--	1996-2003	05-05-03	35.58	135	06-20-00 04-07-01	³ 39 36.98	-- 310
05082500	Red River of the North at Grand Forks, ND	Lat 47°56'34", long 97°03'10", in SW ¹ / ₄ NE ¹ / ₄ sec.33, T.152 N., R.50 W., Grand Forks County, Hydrologic Unit 09020301, on left bank 2.3 mi downstream from Red Lake River (previous site of Red River at Grand Forks).	30,100	1882-1983# 1987-2003	06-28-03 06-29-03	(⁸) 24.04	17,000 (¹⁰)	04-18-97	(⁹)	137,000
05083580	Middle Branch Forest River tributary near Adams, ND	Lat 48°22'10", long 98°09'00", in NW ¹ / ₄ NW ¹ / ₄ NE ¹ / ₄ sec.6, T.156 N., R.58 W., Walsh County, Hydrologic Unit 09020308, approximately 3 mi south and 3.4 mi west of Adams.	--	1999-2003	03-17-03	41.29	¹ 30	04-08-99 04-06-01	42.52 43.04	⁶ 100 (²)
05090025	Willow Creek near Hensel, ND	Lat 48°39'50", long 97°38'39", in SE ¹ / ₄ NE ¹ / ₄ SE ¹ / ₄ sec.19, T.160 N., R.54 W., Pembina County, Hydrologic Unit 09020310, approximately 1.8 mi south and 1 mi east of Hensel.	--	1999-2003	03-30-03	14.15	¹ 60	06-10-02	16.11	⁶ 100

Annual maximum discharge at crest-stage stations--Continued

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Water year 2003 maximum			Period of record maximum		
					Date	Gage height (feet)	Dis-charge (ft ³ /s)	Date	Gage height (feet)	Dis-charge (ft ³ /s)
RED RIVER OF THE NORTH BASIN--Continued										
05099340	Unnamed tributary near Langdon, ND	Lat 48°41'43", long 98°27'30", in NW ¹ / ₄ SW ¹ / ₄ NW ¹ / ₄ sec.12, T.160 N., R.61 W., Cavalier County, Hydrologic Unit 09020313, on county road, 4.25 mi south and 5 mi west of Langdon.	--	1996-2003	03-16-03 03-31-03	² 19.10 17.72	-- 25	04-97 03-28-98	⁽⁸⁾ 21.48	⁶ 370 --
05100450	Tongue River near Osnabrock, ND	Lat 48°43'25", long 98°09'19", in SE ¹ / ₄ NE ¹ / ₄ SE ¹ / ₄ sec.33, T.161 N., R.58 W., Cavalier County, Hydrologic Unit 09020313, approximately 3.5 mi north of Osnabrock.	--	1996-2003	05-19-03	15.00	45	¹ 04-08-01 07-09-02	² 18.51 17.17	-- ⁶ 200
05113520	Long Creek tributary near Crosby, ND	Lat 48°50'11", long 103°19'19", on north line sec.30, T.162 N., R.97 W., Divide County, Hydrologic Unit 09010001, 0.5 mi west of State Highway 42 and 5 mi south of Crosby.	0.40	1960-73 1995-2003	03-16-03	² 5.36	¹ 30	06-69	7.15	65
05116100	Souris River tributary near Burlington, ND	Lat 48°18'04", long 101°25'13", in SW ¹ / ₄ sec.25, T.156 N., R.84 W., Ward County, Hydrologic Unit 09010001, at culvert on county highway, 1.8 mi north of Burlington.	0.13	1959-73 1995-2003	⁽⁸⁾	¹¹ 2.0	¹² 3.40	03-25-97	8.22	⁶ 67
05116135	Tasker Coulee tributary near Kenaston, ND	Lat 48°37'59", long 102°07'30", in NE ¹ / ₄ NE ¹ / ₄ sec.2, T.159 N., R.89 W., Ward County, Hydrologic Unit 09010002, at culvert on gravel road 1.5 mi northwest of Kenaston.	4.62	1996-2003	03-15-03	1,293.27	¹ 100	04-10-96	1,295.70	450

Annual maximum discharge at crest-stage stations--Continued

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Water year 2003 maximum			Period of record maximum		
					Date	Gage height (feet)	Discharge (ft ³ /s)	Date	Gage height (feet)	Discharge (ft ³ /s)
RED RIVER OF THE NORTH BASIN--Continued										
05119410	Bonnes Coulee near Velva, ND	Lat 48°03'30", long 100°57'00", in NE ¹ / ₄ SW ¹ / ₄ sec.21, T.153 N., R.80 W., McHenry County, Hydrologic Unit 09010001, at culvert on U.S. Highway 52, 0.5 mi west of Velva.	53.0	1962-1965 1971-73 1976-77 1987-2003	03-23-03	⁸	⁶ 50	07-27-93	6.71	⁶ 1,000
05120180	Wintering River tributary near Kongsberg, ND	Lat 47°51'45", long 100°45'33", in NE ¹ / ₄ NE ¹ / ₄ NE ¹ / ₄ sec.34, T.151 N., R.79 W., McHenry County, Hydrologic Unit 09010003, at culvert on gravel road 1 mi north and 1.9 mi east of Kongsberg.	1.54	1998-2003	03-23-03	¹³ 8.41	¹³ 3.0	06-14-99	11.18	⁶ 100
05123300	Oak Creek tributary near Bottineau, ND	Lat 48°49'14", long 100°24'38", in SW ¹ / ₄ SW ¹ / ₄ SE ¹ / ₄ sec.29, T.162 N., R.75 W., Bottineau County, Hydrologic Unit 09010004, on State Highway 5, 1.5 mi east of Bottineau.	3.10	1955-1959-73 1995-2003	03-23-03 05-09-03	² 10.79 9.91	-- 100	07-06-55	16.52	851
MISSOURI RIVER BASIN										
06332150	White Earth River tributary near White Earth, ND	Lat 48°19'55", long 102°45'10", in S ¹ / ₂ sec.15, T.156 N., R.94 W., Mountrail County, Hydrologic Unit 10110101, at culvert on U.S. Highway 2, 3 mi south of White Earth.	0.32	1960-73 1995-2003	08-09-03	6.44	¹⁴ 5	06-05-63	8.40	107
06336300	Little Missouri River tributary near Medora, ND	Lat 46°57'05", long 103°30'20", in SE ¹ / ₄ sec.11, T.140 N., R.102 W., Billings County, Hydrologic Unit 10110203, at Culvert on Theodore Roosevelt National Park highway, 3 mi north of Medora.	0.32	1955-73 1995-2003	03-17-03	3.62	¹⁷	06-20-60	10.90	200

Annual maximum discharge at crest-stage stations--Continued

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Water year 2003 maximum			Period of record maximum		
					Date	Gage height (feet)	Discharge (ft ³ /s)	Date	Gage height (feet)	Discharge (ft ³ /s)
MISSOURI RIVER BASIN--Continued										
06337080	Cherry Creek tributary near Arnegard, ND	Lat 47°47'49", long 103°22'08", in SE ¹ / ₄ SE ¹ / ₄ NE ¹ / ₄ sec.20, T.150 N., R.99 W., McKenzie County, Hydrologic Unit 10110205, at culverts 4 mi west and 0.5 mi south of Watford City.	10.41	1999-2003	03-18-03	1,000.90	¹ 400	03-18-03	1,000.90	¹ 400
06337900	Snake Creek tributary near Garrison, ND	Lat 47°37'55", long 101°21'00", on south line sec.14, T.148 N., R.84 W., McLean County, Hydrologic Unit 10110101, at culvert on county highway, 1 mi south of State Highway 37 and 3 mi southeast of Garrison.	1.22	1959-73 1995-2003	¹ 03-23-03	3.99	30	06-07-99	7.32	⁶ 150
06339890	North Creek near Werner, ND	Lat 47°24'37", long 102°30'10", in NE ¹ / ₄ SE ¹ / ₄ NE ¹ / ₄ sec.3, T.145 N., R.93 W., Dunn County, Hydrologic Unit 10130201, at box culverts 3.5 mi north and 5.5 mi east of Dunn Center.	17.6	1998-2003	03-15-03	² 993.67	15	03-16-99	995.56	620
06343000	Heart River near South Heart, ND	Lat 46°51'56", long 102°56'53", in NE ¹ / ₄ SE ¹ / ₄ SW ¹ / ₄ sec.8, T.139 N., R.97 W., Stark County, Hydrologic Unit 10130202, on left bank 1.7 mi downstream from North Creek, 2 mi east of South Heart, and 5.5 mi upstream from Edward Arthur Patterson Lake.	311	1965-84# 1985-2003	03-18-03	² 13.26	⁶ 1,100	05-09-70	22.77	8,080
06347090	Tavis Creek near Glen Ullin, ND	Lat 46°47'57", long 101°51'26", in NW ¹ / ₄ SE ¹ / ₄ NW ¹ / ₄ sec.1, T.138 N., R.89 W., Morton County, Hydrologic Unit 10130203, on State Highway 49, 1.5 mi southwest of Glen Ullin.	¹ 10	2000-03	03-17-03	8.78	¹ 90	03-17-03	8.78	¹ 90

Annual maximum discharge at crest-stage stations--Continued

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Water year 2003 maximum			Period of record maximum		
					Date	Gage height (feet)	Discharge (ft ³ /s)	Date	Gage height (feet)	Discharge (ft ³ /s)
MISSOURI RIVER BASIN--Continued										
06349083	Southeast Branch Little Heart River at St. Anthony, ND	Lat 46°37'12", long 100°54'12", in SW ¹ / ₄ SW ¹ / ₄ sec.5, T.136 N., R.81 W., Morton County, Hydrologic Unit 10130102, at culvert on State Highway 6, 0.75 mi northwest of St. Anthony.	⁶ 40.2	1996-2003	¹ 03-23-03	¹ 1,691.90	¹ 5	08-22-98	1,692.69	⁶ 480
06351630	Middle Fork Cedar Creek tributary near Amidon, ND	Lat 46°20'17", long 103°17'35", in SW ¹ / ₄ SE ¹ / ₄ SW ¹ / ₄ sec.7, T.133 N., R.100 W., Slope County, Hydrologic Unit 10130205, at culvert 1 mi east and 10 mi south of Amidon.	1.70	1998-2003	03-18-03	12.97	¹ 60	08-12-99	13.03	70
06352380	Timber Creek tributary near New Leipzig, ND	Lat 46°12'36", long 101°57'36", in NW ¹ / ₄ SW ¹ / ₄ sec.33 T.132 N., R.90 W., Grant County, Hydrologic Unit 10130205, at culvert on State Highway 49, 11.75 mi south of New Leipzig.	⁶ 2.8	1996-2003	03-18-03	1,592.52	0	07-01-97	1,597.02	740
06354450	Beaver Creek tributary near Linton, ND	Lat 46°14'48", long 100°04'47", in SW ¹ / ₄ SE ¹ / ₄ SW ¹ / ₄ sec.16, T.132 N., R.75 W., Emmons County, Hydrologic Unit 10130104, at culverts on State Highway 13, 7.25 mi east of Linton.	4.07	1998-2003	¹ 03-17-03	² 7.60	⁶ 10	07-04-99 ¹ 03-17-03	6.44 27.60	¹⁴ 330 --
06469100	Pipestem Creek tributary near Heaton, ND	Lat 47°27'27", long 99°34'58", in NE ¹ / ₄ NW ¹ / ₄ NW ¹ / ₄ sec.22, T.146 N., R.70 W., Wells County, Hydrologic Unit 10160002, at culverts on State Highway 52, 1.5 mi south and 1.8 mi west of Heaton.	3.59	1998-2003	03-16-03 03-24-03	² 8.18 7.83	-- ¹ 50	06-14-00	12.05	780

Annual maximum discharge at crest-stage stations--Continued

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Water year 2003 maximum			Period of record maximum		
					Date	Gage height (feet)	Dis-charge (ft ³ /s)	Date	Gage height (feet)	Dis-charge (ft ³ /s)
MISSOURI RIVER BASIN--Continued										
06470200	Beaver Creek tributary near Eldridge, ND	Lat 46°52'15", long 98°55'30", on east line sec.7, T.139 N., R. 65 W., Stutsman County, Hydrologic Unit 10160003, at culvert on county highway, 4 mi southwest of Eldridge.	0.19	1955-73 1995-2003	05-13-03	1.94	¹ 4.5	1973	5.88	49
06471100	Maple Creek tributary near Edgeley, ND	Lat 46°25'00", long 98°49'42", in NE ¹ / ₄ SE ¹ / ₄ SE ¹ / ₄ sec.15, T.134 N., R.65 W., LaMoure County, Hydrologic Unit 10160004, at culvert on gravel road 10.25 mi northwest of Edgeley.	⁶ 5.25	1996-2003	¹ 06-25-03	1,098.43	44	03-25-97	1,100.73	⁶ 400
06471150	South Fork Maple River tributary near Merricourt, ND	Lat 46°14'54", long 98°42'48", in NE ¹ / ₄ NE ¹ / ₄ SW ¹ / ₄ sec.17, T.132 N., R.64 W., Dickey County, Hydrologic Unit 10160004, at culvert on gravel road 5.5 mi northeast of Merricourt.	⁶ 5.5	1996-2003	¹ 06-25-03	1,195.46	41	03-25-97	1,199.71	⁶ 160

Operated as a continuous-record gaging station.

¹ On or about.

² Backwater from ice and snow.

³ From floodmark.

⁴ Starting in 2003 water year, peaks published in sea level. Peaks prior to 2003 (except 1969) published without additions of 800.00 datum then in use.

⁵ Backwater from vegetation.

⁶ Approximately.

⁷ Backwater from beaver dam.

⁸ Unknown.

⁹ Maximum gage height from high-water mark, 52.43 ft, probably occurred on April 22, 1997. Gage height at time of maximum discharge not known.

¹⁰ Not determined.

¹¹ Less than, no flow observed during the year.

¹² Stage did not exceed lowest recording level of gage.

¹³ Recorded, may have been higher in May.

¹⁴ Based on theoretical rating developed in 2003 water year.

Miscellaneous discharge measurement sites

Measurements of streamflow at points other than gaging stations are given in the following table.

Discharge measurements made at miscellaneous sites during water year 2003

Station number	Station name	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Dis-charge (ft ³ /s)
RED RIVER OF THE NORTH BASIN						
--	Wintering River at mouth near Karlsruhe, ND	Lat 48°11'30", long 100°34'36", in NW ¹ / ₄ sec.4, T.154 N., R.77 W., McHenry County, Hydrologic Unit 09010003, at bridge about 7 mi north, northeast of Karlsruhe.	--	2002	05-07-03 06-26-03 07-30-03 08-13-03 09-10-03 09-24-03	25.0 26.9 7.3 5.0 0.9 2.5
--	Souris River above Wintering River near Karlsruhe, ND	Lat 48°12'14", long 100°34'57", in NW ¹ / ₄ sec.33, T.155 N., R.77 W., McHenry County, Hydrologic Unit 09010003, at bridge about 7.5 mi north, northwest of Karlsruhe.	--	2002	05-07-03 06-26-03 07-30-03	128 20.9 9.4
--	Souris River near Wintering River School	Lat 48°13'31", long 100°32'12", in SW ¹ / ₄ SW ¹ / ₄ SW ¹ / ₄ sec.23, T.155 N., R.77 W., McHenry County, Hydrologic Unit 09010003, at bridge 9 mi southwest of Towner.	--	1997, 2002	05-07-03	178
--	Souris River at Rosencrans Forde	Lat 48°16'57", long 100°28'57", in NW ¹ / ₄ NW ¹ / ₄ NE ¹ / ₄ sec.6, T.155 N., R.76 W., McHenry County, Hydrologic Unit 09010003, at riffle about 4.5 mi southwest of Towner.	--	2002	05-07-03 06-26-03 07-30-03 08-13-03 09-10-03 09-24-03	52.0 45.8 19.9 24.8 10.9 13.7
05121500	Souris River near Towner, ND	Lat 48°18", long 100°27', in NE ¹ / ₄ sec.29, T.156 N., R.76 W., McHenry County, Hydrologic Unit 09010003, at old gaging station site, about 4 mi southwest of Towner.	13,090	1935-40, 2002	05-07-03 06-26-03 07-31-03 08-14-03 09-10-03 09-24-03	3.0 55.4 18.7 27.8 9.1 16.1
--	Souris River at Towner, ND	Lat 48°21'06", long 100°26'13", in SW ¹ / ₄ NW ¹ / ₄ NE ¹ / ₄ sec.10, T.156 N., R.76 W., McHenry County, Hydrologic Unit 09010003, at bridge on northwest edge of Towner.	--	1997, 2002	05-07-03 06-26-03 07-31-03 08-14-03 09-10-03 09-24-03	11.9 50.4 20.6 32.2 13.1 21.3
--	Souris River at Cliff Hanretty farm near Towner, ND	Lat 48°23'27", long 100°23'45", in NW ¹ / ₄ NW ¹ / ₄ SE ¹ / ₄ sec.19, T.157 N., R.75 W., McHenry County, Hydrologic Unit 09010003, at bridge about 3.5 mi north of Towner.	--	2002	05-08-03 06-26-03 07-31-03 09-11-03 09-24-03	42.8 28.2 21.5 17.0 13.0

Water-quality partial-record stations are particular sites where chemical-quality, biological and/or sediment data are collected systematically over a period of years for use in hydrologic analyses. These data are collected usually less than quarterly. Samples collected at sites other than gaging stations and partial-record stations to give better areal coverage in a river basin are referred to as miscellaneous sites.

05119410 BONNES COULEE NEAR VELVA, ND (LAT 48 03 30N LONG 100 57 00W)

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
MAR 25...	1330	37	7.9	7.8	874	880	8.0	1.8	210	44.0	25.0	18.0	3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate, water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Residue on evap. at 180degC wat flt mg/L (70300)	Arsenic, water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium, water, fltrd, ug/L (01130)
MAR 25...	100	48	177	5.0	0.10	270	568	61.1	612	2.0	140	<1	50

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Manganese, water, fltrd, ug/L (01056)	Mercury, water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
MAR 25...	90	<0.10	<1	<1	380

Remark codes used in this table:

< -- Less than

06343000 HEART RIVER NEAR SOUTH HEART, ND (LAT 46 51 56N LONG 102 56 53W)

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfl lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
AUG 21...	1150	8.7	7.6	7.6	792	788	22.0	19.3	37	9.42	3.30	5.90	13

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Arsenic, water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium, water, fltrd, ug/L (01130)
AUG 21...	177	90	153	3.4	0.35	49.8	220	513	13.2	15.0	3,870	6	10

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Manganese, water, fltrd, ug/L (01056)	Mercury, water, fltrd, ug/L (71890)	Molybdenum, water, fltrd, ug/L (01060)	Selenium, water, fltrd, ug/L (01145)	Strontium, water, fltrd, ug/L (01080)
AUG 21...	100	<0.20	<1	3	140

Remark codes used in this table:
 < -- Less than

480552098145300 McHUGH SLOUGH NEAR LAKOTA, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth to bottom of sampling interval meters (82048)	Depth to top of sampling interval meters (82047)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfltrd lab, uS/cm 25 degC (90095)	Hard-ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-ium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)
OCT 01...	1325	1.7	0.00	8.0	1,640	400	47.0	69.0	39.0	5	220	51	470
FEB 04...	0915	2.2	0.80	8.1	2,620	690	80.0	120	66.0	6	360	50	769
MAY 06...	0940	2.1	0.00	8.3	1,490	370	43.0	63.0	29.0	4	200	52	398
AUG 06...	0820	2.0	0.00	8.9	1,500	390	38.1	70.3	38.3	5	233	54	402

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti-tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro-gen, water, unfltrd mg/L (00605)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, unfltrd mg/L (00665)
OCT 01...	79.0	0.20	--	380	1,120	1,170	4.1	0.09	<0.06	<0.008	4.0	0.04	0.25
FEB 04...	110	0.30	--	660	1,860	1,950	6.0	E.03	<0.06	<0.008	--	0.03	0.26
MAY 06...	68.0	0.10	--	350	992	1,070	3.4	<0.04	<0.06	<0.008	--	<0.02	0.13
AUG 06...	62.3	0.15	26.4	353	1,040	--	6.4+dc	0.43	<0.06	<0.008	5.9	0.14	0.32+c

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank-ton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Mangan-ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb-denum, water, fltrd, ug/L (01060)	Selen-ium, water, fltrd, ug/L (01145)	Stront-ium, water, fltrd, ug/L (01080)
OCT 01...	70.4	<0.1	5.0	30	1	130	30	0.10	<1	<1	320
FEB 04...	E35.0	5.7	6.0	50	1	230	140	<0.10	<1	<1	620
MAY 06...	E6.4	<0.1	4.0	30	<1	140	20	<0.10	1	2	360
AUG 06...	E90.2d	<0.1d	6.8	20	<1	130	110	<0.20	<1	3	320

Remark codes used in this table:

< -- Less than

E -- Estimated value

Value qualifier codes used in this table:

+ -- Improper preservation

c -- See laboratory comment

d -- Diluted sample: method hi range exceeded

480552098145300 McHUGH SLOUGH NEAR LAKOTA, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth of lake, maximum meters (85310)	Ice thickness, meters (82131)	Sampling depth, meters (00098)	Transparency Secchi disc, inches (00077)	Wind direction, clkwise from north, degrees (00036)	Wind speed, mph (00035)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unf uS/cm 25 degC (00095)	Temperature, air, deg C (00020)
OCT													
01...	1320	1.7	--	0.00	12.0	310	15	728	10.3	98	8.6	1,590	7.5
01...	1321	--	--	1.0	--	--	--	--	10.1	--	8.6	1,590	--
01...	1322	--	--	1.7	--	--	--	--	9.9	--	8.6	1,590	--
FEB													
04...	0910	2.2	0.56	0.80	17.0	315	6.0	733	13.6	98	7.9	2,720	<-5.0
04...	0911	--	--	1.3	--	--	--	--	13.7	--	7.9	2,680	--
04...	0912	--	--	1.8	--	--	--	--	9.9	--	7.9	2,690	--
04...	0913	--	--	2.2	--	--	--	--	2.9	--	7.9	2,770	--
MAY													
06...	0935	2.1	--	0.00	21.6	90	15	726	9.3	88	8.2	1,560	9.0
06...	0936	--	--	0.70	--	--	--	--	9.1	--	8.2	1,560	--
06...	0937	--	--	1.3	--	--	--	--	9.0	--	8.2	1,560	--
06...	0938	--	--	2.1	--	--	--	--	8.9	--	8.2	1,560	--
AUG													
06...	0810	2.1	--	0.00	16.8	350	<5.0	734	5.7	68	9.1	1,500	19.0
06...	0811	--	--	0.50	--	--	--	--	5.7	--	9.1	1,500	--
06...	0812	--	--	1.0	--	--	--	--	5.6	--	9.1	1,500	--
06...	0813	--	--	1.5	--	--	--	--	5.6	--	9.0	1,500	--
06...	0814	--	--	2.0	--	--	--	--	5.6	--	9.0	1,500	--
06...	0815	--	--	2.1	--	--	--	--	5.6	--	9.0	1,500	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, water, deg C (00010)
OCT	
01...	10.7
01...	10.7
01...	10.7
FEB	
04...	-0.1
04...	0.8
04...	1.4
04...	2.2
MAY	
06...	10.1
06...	10.1
06...	10.1
06...	10.1
AUG	
06...	21.8
06...	21.8
06...	21.8
06...	21.8
06...	21.8
06...	21.8

Remark codes used in this table:
< -- Less than

480339098101300 LAKE LORETTA NEAR MICHIGAN, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth to bottom of sampling interval meters (82048)	Depth to top of sampling interval meters (82047)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfltrd lab, uS/cm 25 degC (90095)	Hard-ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)
OCT 01...	1435	6.2	0.00	8.6	2,430	570	71.0	95.0	44.0	6	340	54	370
FEB 04...	1130	6.8	0.80	8.5	2,810	690	78.0	120	54.0	6	390	53	460
JUN 19...	1120	6.5	0.00	8.5	2,450	590	71.7	99.5	41.4	6	352	54	379
AUG 06...	0955	6.9	0.00	8.9	2,360	570	66.7	98.7	40.7	6	356	55	363

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti-tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, unfltrd mg/L (00665)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)
OCT 01...	120	0.10	--	810	1,720	50	2.1	E.04	<0.06	<0.008	0.22	0.28	9.7
FEB 04...	160	0.20	--	950	2,030	2,080	2.1	<0.04	<0.06	<0.008	0.24	0.30	E3.8
JUN 19...	128	0.13	27.1	760	1,680	--	2.3	E.03	<0.06	<0.008	0.17	0.32	0.3
AUG 06...	127	0.15	26.2	795	1,700	--	2.4	<0.04	<0.06	<0.008	0.19	0.30	E23.6d

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chloro-phyll b phyto-plank-ton, fluoro, ug/L (70954)	Arsenic water, fltrd, ug/L (01000)	Iron, water, fltrd, ug/L (01046)	Lead, water, fltrd, ug/L (01049)	Lithium water, fltrd, ug/L (01130)	Mangan-ese, water, fltrd, ug/L (01056)	Mercury water, fltrd, ug/L (71890)	Molyb-denum, water, fltrd, ug/L (01060)	Selen-ium, water, fltrd, ug/L (01145)	Stront-ium, water, fltrd, ug/L (01080)
OCT 01...	<0.1	9.0	30	<1.0	140	20	0.10	1	<1	480
FEB 04...	<0.1	13.0	50	1	180	20	<0.10	<1	1	600
JUN 19...	<0.1	14.1	<10	<1	160	<10	<0.20	3	4	540
AUG 06...	<0.1d	15.7	20	<1	160	<10	<0.20	3	5	520

Remark codes used in this table:

< -- Less than

E -- Estimated value

Value qualifier codes used in this table:

d -- Diluted sample: method hi range exceeded

480339098101300 LAKE LORETTA NEAR MICHIGAN, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth of lake, maximum meters (85310)	Ice thickness, meters (82131)	Sampling depth, meters (00098)	Transparency Secchi disc, inches (00077)	Turbidity, water, unfltrd field, NTU (61028)	Wind direction, clkwise from north, degrees (00036)	Wind speed, mph (00035)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd uS/cm 25 degC (00095)
OCT													
01...	1430	6.2	--	0.00	24.0	--	310	15	729	9.8	95	8.6	2,390
01...	1431	--	--	2.0	--	--	--	--	--	9.7	--	8.6	2,400
01...	1432	--	--	4.0	--	--	--	--	--	9.5	--	8.6	2,400
01...	1433	--	--	6.2	--	--	--	--	--	9.6	--	8.6	2,400
FEB													
04...	1120	6.8	0.57	0.80	22.0	--	315	4.0	733	15.1	109	8.3	3,000
04...	1121	--	--	2.0	--	--	--	--	--	14.8	--	8.4	2,950
04...	1122	--	--	3.0	--	--	--	--	--	14.6	--	8.4	2,960
04...	1123	--	--	4.0	--	--	--	--	--	14.0	--	8.4	2,940
04...	1124	--	--	5.0	--	--	--	--	--	13.5	--	8.4	2,930
04...	1125	--	--	6.0	--	--	--	--	--	11.7	--	8.4	2,950
04...	1126	--	--	6.8	--	--	--	--	--	11.2	--	8.4	2,970
JUN													
19...	1125	6.5	--	0.00	31.0	5.9	200	12	726	9.1	109	8.8	2,470
19...	1127	--	--	2.0	--	5.7	--	--	--	9.1	--	8.7	2,470
19...	1129	--	--	4.0	--	6.0	--	--	--	8.8	--	8.8	2,480
19...	1130	--	--	6.5	--	8.5	--	--	--	5.9	--	8.5	2,520
AUG													
06...	0945	6.9	--	0.00	24.0	--	10	<5.0	734	8.7	105	8.9	2,410
06...	0946	--	--	1.0	--	--	--	--	--	8.6	--	8.9	2,410
06...	0947	--	--	2.0	--	--	--	--	--	8.3	--	8.9	2,410
06...	0948	--	--	3.0	--	--	--	--	--	8.3	--	8.9	2,410
06...	0949	--	--	4.0	--	--	--	--	--	8.2	--	8.8	2,410
06...	0950	--	--	5.0	--	--	--	--	--	7.7	--	8.9	2,410
06...	0951	--	--	6.0	--	--	--	--	--	7.4	--	8.9	2,410
06...	0952	--	--	6.9	--	--	--	--	--	6.8	--	8.9	2,410

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)
OCT		
01...	8.5	11.5
01...	--	11.5
01...	--	11.5
01...	--	11.5
FEB		
04...	<-5.0	0.2
04...	--	1.0
04...	--	1.2
04...	--	1.6
04...	--	2.0
04...	--	2.5
04...	--	2.4
JUN		
19...	23.0	21.7
19...	--	21.6
19...	--	21.3
19...	--	16.2
AUG		
06...	21.0	22.2
06...	--	22.2
06...	--	22.1
06...	--	22.1
06...	--	22.1
06...	--	22.1
06...	--	22.0
06...	--	22.0

Remark codes used in this table:
 < -- Less than

05055500 SHEYENNE RIVER AT SHEYENNE, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	pH, water, unfltrd lab, std units (00403)	Specif. conduc- tance, wat unfl lab, uS/cm 25 degC (90095)	Hard- ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Potas- sium, water, fltrd, mg/L (00935)	Sodium adsorp- tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)
AUG 25...	1130	8.6	1,520	390	54.3	61.3	12.9	4	201	52	533	21.0	0.3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro- gen, water, unfltrd mg/L (00605)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Phos- phorus, water, unfltrd mg/L (00665)	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)
AUG 25...	20.2	336d	1,030	1,110	2.2	0.10	<0.06	<0.008	2.1	0.31	0.41	3.1	<0.1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Iron, water, fltrd, ug/L (01046)	Mangan- ese, water, fltrd, ug/L (01056)
AUG 25...	15	77.7

Remark codes used in this table:
< -- Less than

Value qualifier codes used in this
table:
d -- Diluted sample: method hi
range exceeded

475001098560300 SHEYENNE RIVER NO. 2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	pH, water, unfltrd lab, std units (00403)	Specif. conduc- tance, wat unfl- trd lab, uS/cm 25 degC (90095)	Hard- ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Potas- sium, water, fltrd, mg/L (00935)	Sodium adsorp- tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl- fixed end pt, lab, mg/L as CaCO3 (90410)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)
AUG 25...	1210	8.3	1,340	380	62.2	55.8	11.5	3	156	46	475	20.9	0.3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro- gen, water, unfltrd mg/L (00605)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Phos- phorus, water, unfltrd mg/L (00665)	Total nitro- gen, water, unfltrd mg/L (00600)
AUG 25...	26.2	295	915	981	2.2	0.26	0.17	0.19	0.023	1.9	0.36	0.54	2.3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)	Mangan- ese, water, fltrd, ug/L (01056)
AUG 25...	5.6	0.3	28	323

474740098351500 SHEYENNE RIVER NO. 3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	pH, water, unfltrd lab, std units (00403)	Specif. conduc- tance, wat unfl- trd lab, uS/cm 25 degC (90095)	Hard- ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Potas- sium, water, fltrd, mg/L (00935)	Sodium adsorp- tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)
AUG 25...	1430	8.4	1,100	360	65.5	48.8	9.64	3	113	40	426	18.6	0.3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Phos- phorus, water, unfltrd mg/L (00665)	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)
AUG 25...	31.2	213	756	804	1.7	<0.04	E.05n	0.008	0.26	0.40	26.1*d	4.6	E5n	

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Mangan- ese, water, fltrd, ug/L (01056)
AUG 25...	437

Remark codes used in
this table:

< -- Less than
E -- Estimated
value

Value qualifier codes
used in this table:

* -- Sample was
warm when
received
d -- Diluted
sample: method hi
range exceeded
n -- Below the
NDV

475817098480800 WL526423

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	pH, water, unfltrd lab, std units (00403)	Specif. conduc- tance, wat unfl- trd lab, uS/cm 25 degC (90095)	Hard- ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Potas- sium, water, fltrd, mg/L (00935)	Sodium adsorp- tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl- fixed end pt, lab, mg/L as CaCO3 (90410)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)
SEP 25...	1100	8.3	7,160	1,600	128c	323d	124dc	16	14,50d	64	453	535dc	<0.2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro- gen, water, unfltrd mg/L (00605)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Phos- phorus, water, unfltrd mg/L (00665)	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)
SEP 25...	14.6	356,0dc	6,410	6,850	4.1	0.68	<0.06	0.024	3.4	0.03	0.15	2.6d	<0.1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Iron, water, fltrd, ug/L (01046)	Mangan- ese, water, fltrd, ug/L (01056)
SEP 25...	E7nc	297dc

Remark codes used in this table:
 < -- Less than
 E -- Estimated value

Value qualifier codes used in this
 table:
 c -- See laboratory comment
 d -- Diluted sample: method hi
 range exceeded
 n -- Below the NDV

475928099004400 WL526517

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	pH, water, unfltrd lab, std units (00403)	Specif. conduc- tance, wat unfl- trd lab, uS/cm 25 degC (90095)	Hard- ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Potas- sium, water, fltrd, mg/L (00935)	Sodium adsorp- tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl- fixed end pt, lab, mg/L as CaCO3 (90410)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)
SEP 25...	1240	8.5	1,460	550	64.9	95.4	17.4	3	155	37	278	45.6	0.3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Phos- phorus, water, unfltrd mg/L (00665)	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)
SEP 25...	20.6	555d	1,120	1,210	2.3	<0.04	<0.06	<0.008	<0.02	0.10	28.9d	1.1d	<8

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Mangan- ese, water, fltrd, ug/L (01056)
SEP 25...	1.8

Remark codes used in
this table:

< -- Less than

Value qualifier codes
used in this table:

d -- Diluted
sample: method hi
range exceeded

480349099111300 MINNEWAUKEN FLATS

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	pH, water, unfltrd lab, std units (00403)	Specif. conduc- tance, wat unfl- lab, uS/cm 25 degC (90095)	Hard- ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Potas- sium, water, fltrd, mg/L (00935)	Sodium adsorp- tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl- fixed end pt, lab, mg/L as CaCO3 (90410)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)
MAR 06...	1420	8.5	2,430	650	97.5	98.1	47.9	6	327	50	441	152	0.21

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro- gen, water, unfltrd mg/L (00605)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Phos- phorus, water, unfltrd mg/L (00665)	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)
MAR 06...	10.6	759	1,760	1,830	1.6	0.04	E.04	<0.008	1.6	0.23	0.25	0.8	<0.1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Iron, water, fltrd, ug/L (01046)	Mangan- ese, water, fltrd, ug/L (01056)
MAR 06...	<10	21.8

Remark codes used in this table:
 < -- Less than
 E -- Estimated value

480112098545200 WEST BAY-CASINO

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfltrd lab, uS/cm 25 degC (90095)	Hard-ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)
MAR 06...	1213	8.7	2,330	560	81.4	87.3	42.9	6	306	52	390	142	0.18

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti-tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Phos-phorus, water, unfltrd mg/L (00665)	Chloro-phyll a phyto-plank-ton, fluoro, ug/L (70953)	Chloro-phyll b phyto-plank-ton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)
MAR 06...	3.2	692	1,590	1,660	1.5	E.04	<0.06	<0.008	0.22	0.25	0.3	<0.1	<10	

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Mangan-ese, water, fltrd, ug/L (01056)
MAR 06...	8.0

Remark codes used in this table:
 < -- Less than
 E -- Estimated value

480153098500700 EAST BAY No. 5

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	pH, water, unfltrd lab, std units (00403)	Specif. conduc- tance, wat unfl- lab, uS/cm 25 degC (90095)	Hard- ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Potas- sium, water, fltrd, mg/L (00935)	Sodium adsorp- tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl- fixed end pt, lab, mg/L as CaCO3 (90410)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)
OCT 09...	1345	8.6	3,120	670	79.9	114	64.4	8	463	57	E425	208	<0.17

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Phos- phorus, water, unfltrd mg/L (00665)	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)	Mangan- ese, water, fltrd, ug/L (01056)
OCT 09...	4.8	1,030	2,340	2.3	<0.04	<0.06	<0.008	0.11	0.27	E6.2	<0.1	<30	E3.2n

Remark codes used in this table:

< -- Less than

E -- Estimated value

Value qualifier codes used in this table:

n -- Below the NDV

475719098480900 Unknown wetland

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	pH, water, unfltrd lab, std units (00403)	Specif. conduc- tance, wat unfl- trd lab, uS/cm 25 degC (90095)	Hard- ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorp- tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl- fixed end pt, lab, mg/L as CaCO3 (90410)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)
OCT 09...	1315	8.7	3,210	690	77.4	120	66.5	8	511	59	E426	216	<0.17
MAR 11...	1110	8.6	3,640	760	86.8	132	71.7	9	541	58	470	248	0.18

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro- gen, water, unfltrd mg/L (00605)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Phos- phorus, water, unfltrd mg/L (00665)	Total nitro- gen, water, unfltrd mg/L (00600)	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)
OCT 09...	10.6	1,080	--	2,420	2.2	0.06	0.07	E.005	2.1	0.25	0.31	2.3	E3.3
MAR 11...	11.9	1,220	2,590	2,700	2.0	0.06	0.29	E.005	1.9	0.26	0.31	2.3	1.4

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)	Mangan- ese, water, fltrd, ug/L (01056)
OCT 09...	<0.1	<30	<5.0
MAR 11...	0.2	<30	6.4

Remark codes used in this table:

< -- Less than

E -- Estimated value

475607098364600 Unknown wet land

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	pH, water, unfltrd lab, std units (00403)	Specif. conduc- tance, wat unfl- trd lab, uS/cm 25 degC (90095)	Hard- ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Potas- sium, water, fltrd, mg/L (00935)	Sodium adsorp- tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl- fixed end pt, lab, mg/L as CaCO3 (90410)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)
OCT 09...	1215	8.7	5,790	1,100	87.7	208	116	13	1,010	64	E523	449	<0.17
MAR 11...	1435	8.7	6,170	1,100	88.0	218	119	14	1,050	64	547	471	0.15

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of consti- tuents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitro- gen, water, unfltrd mg/L (00605)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Phos- phorus, water, unfltrd mg/L (00665)	Total nitro- gen, water, unfltrd mg/L (00600)	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)
OCT 09...	10.8	2,240	--	4,630	2.8	0.06	0.09	E.006	2.8	0.29	0.35	2.9	E12.8
MAR 11...	12.5	2,290	4,580	4,820	2.7	0.07	0.50	<0.008	2.6	0.31	0.40	3.2	E.2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)	Mangan- ese, water, fltrd, ug/L (01056)
OCT 09...	<0.1	<50	E5.0n
MAR 11...	<0.1	<50	<8.0

Remark codes used in this table:

< -- Less than
E -- Estimated value

Value qualifier codes used in this table:

n -- Below the NDV

473633101161400 LAKE SAKAKAWEA NEAR LAKE AUDUBON

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth to bottom of sampling intrval meters (82048)	Depth to top of sampling intrval meters (82047)	pH, water, unfltrd lab, std units (00403)	Specif. conduc-tance, wat unfl lab, uS/cm 25 degC (90095)	Hard-ness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-ium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)
OCT													
23...	1045	1.0	0.80	8.3	667	210	49.6	22.0	4.14	2	63.7	39	E175
23...	1050	4.0	2.0	--	--	--	--	--	--	--	--	--	--
23...	1055	16.4	16.2	8.2	692	220	50.9	22.6	4.29	2	67.7	40	E180
JAN													
07...	1255	1.5	1.0	8.3	642	220	53.9	21.8	3.90	2	64.2	38	171
07...	1300	5.8	5.3	8.3	641	220	52.3	21.4	3.78	2	62.8	38	171
07...	1305	5.0	2.5	--	--	--	--	--	--	--	--	--	--
FEB													
20...	1245	1.3	0.80	8.3	631	220	53.0	20.5	3.85	2	60.2	37	202
20...	1250	10.0	9.5	8.1	644	220	53.7	20.8	3.97	2	61.2	37	206
20...	1255	12.0	11.5	8.2	651	220	54.8	21.4	3.91	2	61.6	37	209
20...	1300	14.0	13.5	7.6	1,500	600	155	52.0	5.83	2	140	33	283
20...	1305	8.0	4.0	--	--	--	--	--	--	--	--	--	--
MAY													
29...	1040	1.0	0.80	E7.9	609	200	47.7	18.9	3.49	2	53.5	37	164
29...	1045	15.8	15.5	7.9	683	210	50.9	19.8	3.66	2	61.9	39	177
29...	1050	4.0	2.0	--	--	--	--	--	--	--	--	--	--
JUN													
24...	1125	1.0	0.80	8.3	620	210	51.8	20.5	3.88	2	58.8	37	165
24...	1130	15.5	15.3	8.3	621	220	52.2	20.7	3.88	2	58.5	37	165
24...	1135	2.0	1.0	--	--	--	--	--	--	--	--	--	--
JUL													
17...	1305	1.0	0.80	8.3	593	210	49.6	19.7	4.10	2	54.5	36	163
17...	1310	14.4	14.2	8.1	604	210	50.7	20.0	4.17	2	57.0	37	167
17...	1315	2.0	1.0	--	--	--	--	--	--	--	--	--	--
31...	1240	1.0	0.80	8.4	624	220	52.2	20.6	3.98	2	56.2	36	162
31...	1245	4.0	2.0	--	--	--	--	--	--	--	--	--	--
31...	1250	16.3	16.1	8.0	712	230	56.6	21.8	4.19	2	71.7	40	186
AUG													
15...	1120	1.0	0.80	8.4	613	210	49.2	20.7	4.32	2	57.6	37	162
15...	1125	2.0	1.0	--	--	--	--	--	--	--	--	--	--
15...	1130	11.0	10.8	E8.2	610	210	48.6	20.6	4.47	2	59.7	38	162
28...	1130	1.0	0.80	8.3	604	230	54.7	21.5	4.52	2	54.7	34	164
28...	1135	1.5	0.75	--	--	--	--	--	--	--	--	--	--
28...	1140	15.6	15.4	7.9	647	230	56.9	22.1	4.51	2	62.8	36	178
SEP													
09...	1135	1.0	0.80	8.4	605	210	51.8	19.9	4.29	2	55.5	36	164
09...	1140	1.2	0.60	--	--	--	--	--	--	--	--	--	--
09...	1145	13.4	13.2	8.4	603	210	52.6	20.3	4.46	2	56.7	36	163

473633101161400 LAKE SAKAKAWEA NEAR LAKE AUDUBON--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Organic nitrogen, water, unfltrd mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)
OCT													
23...	8.85	0.59	6.0	170	--	451	0.26	<0.04	--	E.04	<0.008	--	<0.02
23...	--	--	--	--	--	--	--	--	--	--	--	--	--
23...	9.16	0.60	6.2	179	--	468	0.23	<0.04	--	E.04	<0.008	--	<0.02
JAN													
07...	8.59	0.68	6.5	166	427	433	0.15	<0.04	--	E.04	<0.008	--	<0.02
07...	8.57	0.65	6.3	166	424	437	0.15	<0.04	--	E.04	<0.008	--	<0.02
07...	--	--	--	--	--	--	--	--	--	--	--	--	--
FEB													
20...	8.48	0.58	6.6	166	440	437	0.19	<0.04	--	E.04	<0.008	--	<0.02
20...	8.54	0.56	6.6	166	445	437	0.22	<0.04	--	E.05	<0.008	--	<0.02
20...	8.40	0.58	6.7	167	450	447	0.27	<0.04	--	E.05	<0.008	--	<0.02
20...	11.0	0.50	12.3	561	1,110	1,210	0.45	0.14	--	0.32	<0.008	0.31	<0.02
20...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
29...	9.40	0.6	6.6	155	393	414	0.29	<0.04	--	<0.06	<0.008	--	<0.02
29...	9.68	0.6	6.9	175	434	454	0.47	E.02	--	E.04	<0.008	--	<0.02
29...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUN													
24...	9.55	0.6	6.3	155	405	408	0.17	<0.04	--	<0.06	<0.008	--	<0.02
24...	9.48	0.6	6.3	153	404	395	0.25	<0.04	--	<0.06	<0.008	--	<0.02
24...	--	--	--	--	--	--	--	--	--	--	--	--	--
JUL													
17...	9.77	0.6	6.4	152	395	413	0.27	<0.04	--	E.04	<0.008	--	<0.02
17...	9.71	0.6	6.5	156	405	420	0.36	E.03	--	E.05	<0.008	--	<0.02
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
31...	9.42	0.6	6.1	151	398	415	0.24	<0.04	--	E.04	<0.008	--	<0.02
31...	--	--	--	--	--	--	--	--	--	--	--	--	--
31...	9.74	0.6	8.0	177	461	483	0.59	0.13	0.07	0.08	0.009	0.46	<0.02
AUG													
15...	9.70	0.6	6.5	154	400	411	0.24	<0.04	--	E.05n	E.004n	--	<0.02
15...	--	--	--	--	--	--	--	--	--	--	--	--	--
15...	9.63	0.6	6.6	153	400	413	0.23	<0.04	--	0.06	E.004n	--	<0.02
28...	9.55	0.6	6.7	153	403	410	0.25	<0.04	--	0.09	E.005n	--	<0.02
28...	--	--	--	--	--	--	--	--	--	--	--	--	--
28...	9.65	0.6	7.9	163	436	382	0.39	0.04	0.16	0.16	0.008	0.35	<0.02
SEP													
09...	9.47	0.6	6.8	154	401	416	0.23	<0.04	--	0.07	<0.008	--	<0.02
09...	--	--	--	--	--	--	--	--	--	--	--	--	--
09...	9.45	0.6	6.9	152	401	417	0.22	<0.04	--	0.07	<0.008	--	<0.02

473633101161400 LAKE SAKAKAWEA NEAR LAKE AUDUBON--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, unfltrd mg/L (00600)	Organic carbon, water, unfltrd mg/L (00680)	Chloro- phyll a phyto- plank- ton, fluoro, ug/L (70953)	Chloro- phyll b phyto- plank- ton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)	Mangan- ese, water, fltrd, ug/L (01056)
OCT							
23...	<0.04	--	3.4	--	--	<10	3.5
23...	--	--	--	0.7	<0.1	--	--
23...	<0.04	--	3.0	--	--	<10	12.2
JAN							
07...	<0.04	--	3.2	--	--	11	1.9
07...	<0.04	--	4.6	--	--	<10	2.1
07...	--	--	--	0.2	<0.1	--	--
FEB							
20...	<0.04	--	3.6	--	--	E5	1.6
20...	<0.04	--	3.8	--	--	<10	6.2
20...	<0.04	--	3.2	--	--	<10	13.8
20...	<0.04	0.77	12.1	--	--	13	772
20...	--	--	--	E.8	<0.1	--	--
MAY							
29...	<0.04	--	3.2	--	--	E4	0.9
29...	<0.04	--	4.0	--	--	<8	18.9
29...	--	--	--	1.4	<0.1	--	--
JUN							
24...	<0.04	--	2.5	--	--	<8	1.0
24...	<0.04	--	4.8	--	--	<8	0.9
24...	--	--	--	<0.1	<0.1	--	--
JUL							
17...	<0.04	--	6.0	--	--	E4	1.1
17...	E.02	--	4.3	--	--	E6	4.8
17...	--	--	--	1.6	<0.1	--	--
31...	<0.04	--	3.5	--	--	E5	2.4
31...	--	--	--	0.8	<0.1	--	--
31...	0.06	0.67	4.4	--	--	11	196
AUG							
15...	<0.04	--	6.4	--	--	13	2.7
15...	--	--	--	1.0	<0.1	--	--
15...	<0.04	0.29	4.6	--	--	<8	1.1
28...	<0.04	0.33	3.1	--	--	E4n	4.6
28...	--	--	--	E.9	<0.1	--	--
28...	0.05	0.55	4.8	--	--	E5n	365
SEP							
09...	<0.04	0.29	3.7	--	--	E7n	4.5
09...	--	--	--	0.9	<0.1	--	--
09...	<0.04	0.29	3.5	--	--	E7n	3.4

Remark codes used in this table:

< -- Less than

E -- Estimated value

Value qualifier codes used in this table:

n -- Below the NDV

ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

473633101161400 LAKE SAKAKAWEA NEAR LAKE AUDUBON--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth of lake, maximum meters (85310)	Ice thickness, meters (82131)	Sampling depth, meters (00098)	Transparency Secchi disc, inches (00077)	Turbidity, water, unfltrd field, NTU (61028)	Wind direction, clkwise from north, degrees (00036)	Wind speed, mph (00035)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd uS/cm 25 degC (00095)
OCT													
23...	1035	16	--	0.00	76.8	0.0	220	11	733	12.8	109	7.8	733
23...	1036	--	--	1.0	--	0.0	--	--	--	12.3	--	7.9	734
23...	1037	--	--	3.0	--	0.0	--	--	--	12.1	--	8.0	733
23...	1038	--	--	5.2	--	0.0	--	--	--	12.0	--	8.1	734
23...	1039	--	--	8.1	--	0.0	--	--	--	11.9	--	8.2	740
23...	1040	--	--	10.6	--	0.0	--	--	--	11.9	--	8.2	741
23...	1041	--	--	13.6	--	0.0	--	--	--	11.9	--	8.2	740
23...	1042	--	--	16.4	--	0.0	--	--	--	11.3	--	8.1	790
JAN													
07...	1239	5.8	0.50	0.00	96.0	0.0	280	6.0	718	13.7	104	7.2	650
07...	1242	--	--	1.0	--	0.0	--	--	--	13.8	--	7.6	650
07...	1245	--	--	2.0	--	0.0	--	--	--	13.8	--	7.7	651
07...	1247	--	--	4.0	--	0.0	--	--	--	13.8	--	7.8	654
07...	1250	--	--	5.8	--	0.0	--	--	--	13.7	--	7.9	655
FEB													
20...	1230	14	0.80	1.5	156	0.0	60	10	719	16.3	119	6.9	703
20...	1231	--	--	1.5	--	0.0	--	--	--	15.6	--	7.2	713
20...	1232	--	--	2.6	--	0.0	--	--	--	15.3	--	7.4	713
20...	1233	--	--	4.4	--	0.0	--	--	--	15.1	--	7.6	713
20...	1234	--	--	5.6	--	0.0	--	--	--	15.1	--	7.7	713
20...	1235	--	--	7.7	--	0.0	--	--	--	14.8	--	7.7	694
20...	1236	--	--	8.6	--	0.0	--	--	--	14.7	--	7.8	701
20...	1237	--	--	10.2	--	0.0	--	--	--	14.7	--	7.8	711
20...	1238	--	--	11.7	--	0.0	--	--	--	5.8	--	7.0	1,550
20...	1239	--	--	14.1	--	0.0	--	--	--	0.3	--	7.0	2,180
20...	1240	--	--	14.4	--	0.0	--	--	--	0.3	--	7.0	2,360
MAY													
29...	1020	16	--	0.00	84.8	0.0	130	11	715	10.6	109	8.0	658
29...	1021	--	--	1.0	--	10	--	--	--	10.5	--	8.1	657
29...	1022	--	--	2.0	--	9.0	--	--	--	10.5	--	8.1	657
29...	1023	--	--	3.0	--	12	--	--	--	10.5	--	8.1	658
29...	1024	--	--	4.0	--	12	--	--	--	10.5	--	8.1	659
29...	1025	--	--	5.0	--	12	--	--	--	10.4	--	8.0	659
29...	1026	--	--	6.0	--	13	--	--	--	10.2	--	8.0	663
29...	1027	--	--	7.0	--	13	--	--	--	10.0	--	8.0	668
29...	1028	--	--	8.0	--	13	--	--	--	10.2	--	8.0	661
29...	1029	--	--	9.0	--	13	--	--	--	10.1	--	8.0	660
29...	1030	--	--	10.0	--	14	--	--	--	9.9	--	7.9	665
29...	1031	--	--	11.0	--	15	--	--	--	9.8	--	7.9	668
29...	1032	--	--	12.0	--	16	--	--	--	9.7	--	7.9	670
29...	1033	--	--	13.0	--	23	--	--	--	9.3	--	7.8	691
29...	1034	--	--	14.0	--	29	--	--	--	9.2	--	7.8	712
29...	1035	--	--	15.0	--	59	--	--	--	8.4	--	7.7	773
29...	1036	--	--	15.8	--	110	--	--	--	8.6	--	7.7	780
JUN													
24...	1110	16	--	0.00	37.0	4.5	45	<5.0	720	8.8	97	8.2	653
24...	1111	--	--	1.0	--	5.2	--	--	--	8.6	--	8.2	654
24...	1112	--	--	2.0	--	4.7	--	--	--	8.8	--	8.3	654
24...	1113	--	--	4.0	--	4.0	--	--	--	8.9	--	8.2	661
24...	1114	--	--	6.0	--	7.0	--	--	--	8.9	--	8.2	665
24...	1115	--	--	8.0	--	5.0	--	--	--	9.0	--	8.2	650
24...	1116	--	--	10.0	--	10	--	--	--	9.2	--	8.2	657
24...	1117	--	--	12.0	--	9.5	--	--	--	9.3	--	8.2	658
24...	1118	--	--	14.0	--	20	--	--	--	9.1	--	8.1	682
24...	1119	--	--	15.5	--	25	--	--	--	9.1	--	8.2	670

473633101161400 LAKE SAKAKAWEA NEAR LAKE AUDUBON--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth of lake, maximum meters (85310)	Ice thickness, meters (82131)	Sampling depth, meters (00098)	Transparency Secchi disc, inches (00077)	Turbidity, water, unfltrd field, NTU (61028)	Wind direction, clkwise from north, degrees (00036)	Wind speed, mph (00035)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf uS/cm 25 degC (00095)
JUL													
17...	1255	14	--	0.00	42.0	16	200	20	726	8.7	99	8.3	657
17...	1256	--	--	1.0	--	12	--	--	--	8.4	--	8.3	657
17...	1257	--	--	2.1	--	12	--	--	--	8.3	--	8.3	657
17...	1258	--	--	4.0	--	12	--	--	--	8.0	--	8.2	660
17...	1259	--	--	6.0	--	12	--	--	--	8.1	--	8.2	659
17...	1300	--	--	8.1	--	13	--	--	--	7.9	--	8.2	658
17...	1301	--	--	10.0	--	15	--	--	--	7.6	--	8.1	665
17...	1302	--	--	12.0	--	30	--	--	--	6.9	--	8.0	684
17...	1303	--	--	14.4	--	28	--	--	--	6.7	--	7.9	702
31...	1225	16	--	0.00	72.0	0.0	315	10	720	8.3	101	8.3	649
31...	1226	--	--	1.0	--	0.0	--	--	--	8.2	--	8.3	649
31...	1227	--	--	2.4	--	1.0	--	--	--	8.2	--	8.3	649
31...	1228	--	--	4.0	--	1.1	--	--	--	8.1	--	8.3	649
31...	1229	--	--	6.1	--	2.6	--	--	--	8.0	--	8.3	650
31...	1230	--	--	7.8	--	1.6	--	--	--	8.0	--	8.3	651
31...	1231	--	--	9.8	--	10	--	--	--	7.6	--	8.2	656
31...	1232	--	--	11.5	--	19	--	--	--	6.3	--	8.1	668
31...	1233	--	--	12.5	--	24	--	--	--	5.3	--	7.8	690
31...	1234	--	--	13.6	--	35	--	--	--	4.1	--	7.7	707
31...	1235	--	--	15.4	--	80	--	--	--	1.5	--	7.4	754
31...	1236	--	--	16.3	--	90	--	--	--	1.2	--	7.4	755

ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

473633101161400 LAKE SAKAKAWEA NEAR LAKE AUDUBON--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)
OCT		
23...	-2.0	6.8
23...	--	6.8
23...	--	6.8
23...	--	6.8
23...	--	6.7
23...	--	6.7
23...	--	6.7
23...	--	6.9
JAN		
07...	7.0	1.4
07...	--	1.0
07...	--	0.8
07...	--	0.7
07...	--	0.8
FEB		
20...	-7.0	0.1
20...	--	0.2
20...	--	0.2
20...	--	0.2
20...	--	0.1
20...	--	0.2
20...	--	0.2
20...	--	0.3
20...	--	2.3
20...	--	4.0
20...	--	4.1
MAY		
29...	17.0	13.5
29...	--	13.5
29...	--	13.5
29...	--	13.1
29...	--	12.9
29...	--	12.7
29...	--	12.2
29...	--	11.7
29...	--	11.5
29...	--	11.3
29...	--	11.1
29...	--	10.9
29...	--	10.9
29...	--	10.9
29...	--	11.0
29...	--	11.1
29...	--	11.1
JUN		
24...	15.0	16.9
24...	--	16.9
24...	--	16.9
24...	--	14.6
24...	--	13.9
24...	--	13.2
24...	--	12.4
24...	--	12.3
24...	--	12.0
24...	--	12.0

473633101161400 LAKE SAKAKAWEA NEAR LAKE AUDUBON--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)
JUL		
17...	21.0	19.4
17...	--	19.4
17...	--	19.4
17...	--	19.3
17...	--	19.2
17...	--	19.2
17...	--	19.0
17...	--	18.7
17...	--	18.6
31...	24.0	21.6
31...	--	21.6
31...	--	21.6
31...	--	21.5
31...	--	21.4
31...	--	21.3
31...	--	21.0
31...	--	20.2
31...	--	19.2
31...	--	18.2
31...	--	17.3
31...	--	17.0

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Depth of lake, maximum meters (85310)	Sam- pling depth, meters (00098)	Trans- parency Secchi disc, inches (00077)	Tur- bidity, water, unfltrd field, NTU (61028)	Wind direc- tion, clkwise from north, degrees (00036)	Wind speed, mph (00035)	Baro- metric pres- sure, mm Hg (00025)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfltrd field, std units (00400)	Specif. conduc- tance, wat unf uS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)
AUG													
15...	1110	11	0.00	43.0	--	40	10	715	8.4	104	8.1	651	23.5
15...	1111	--	2.0	--	--	--	--	--	8.1	--	8.2	655	--
15...	1112	--	3.9	--	--	--	--	--	7.9	--	8.2	653	--
15...	1113	--	5.9	--	--	--	--	--	7.8	--	8.1	651	--
15...	1114	--	8.1	--	--	--	--	--	7.5	--	8.1	653	--
15...	1115	--	10.0	--	--	--	--	--	6.9	--	8.1	655	--
15...	1116	--	11.2	--	--	--	--	--	6.1	--	8.0	675	--
28...	1115	16	0.00	30.0	3.0	330	5.0	717	8.1	97	8.0	655	21.0
28...	1116	--	1.0	--	8.2	--	--	--	8.0	--	8.0	657	--
28...	1117	--	2.5	--	7.3	--	--	--	8.0	--	8.1	658	--
28...	1118	--	4.7	--	7.0	--	--	--	7.9	--	8.1	657	--
28...	1119	--	6.4	--	7.8	--	--	--	7.8	--	8.1	657	--
28...	1120	--	9.0	--	10	--	--	--	7.8	--	8.1	660	--
28...	1121	--	11.1	--	14	--	--	--	7.7	--	8.1	664	--
28...	1122	--	13.6	--	14	--	--	--	7.7	--	8.1	667	--
28...	1123	--	15.0	--	40	--	--	--	5.4	--	7.9	675	--
28...	1124	--	15.6	--	48	--	--	--	0.8	--	7.3	730	--
SEP													
09...	1125	13	0.00	24.0	8.0	240	10	716	8.7	104	8.5	656	24.0
09...	1126	--	1.0	--	8.7	--	--	--	8.5	--	8.6	657	--
09...	1127	--	2.5	--	9.0	--	--	--	8.4	--	8.6	657	--
09...	1128	--	4.3	--	10	--	--	--	8.4	--	8.6	658	--
09...	1129	--	6.0	--	12	--	--	--	8.3	--	8.6	657	--
09...	1130	--	7.8	--	12	--	--	--	8.2	--	8.6	656	--
09...	1131	--	9.5	--	10	--	--	--	8.1	--	8.6	657	--
09...	1132	--	11.0	--	8.5	--	--	--	8.1	--	8.6	652	--
09...	1133	--	13.4	--	10	--	--	--	8.1	--	8.6	651	--

ANALYSES OF SAMPLES COLLECTED AT LAKE SAKAKAWEA WATER-QUALITY SITES

473633101161400 LAKE SAKAKAWEA NEAR LAKE AUDUBON--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Temperature, water, deg C (00010)
AUG	
15...	22.8
15...	22.3
15...	21.5
15...	21.3
15...	21.1
15...	20.7
15...	20.3
28...	21.1
28...	21.0
28...	20.9
28...	20.9
28...	20.9
28...	20.8
28...	20.8
28...	20.8
28...	20.4
28...	18.1
SEP	
09...	20.5
09...	20.5
09...	20.5
09...	20.4
09...	20.4
09...	20.3
09...	20.3
09...	20.3
09...	20.2

Remark codes used in
this table:

< -- Less than

05100460 TONGUE RIVER NEAR OLGA, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unfltrd uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Nitrite water, unfltrd mg/L as N (00615)	Organic nitrogen, water, unfltrd mg/L (00605)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, unfltrd mg/L (00600)
APR													
01...	0955	0.40	--	--	--	--	--	--	--	--	--	--	--
09...	1540	39	--	--	--	--	--	--	--	--	--	--	--
11...	0740	19	--	--	--	--	--	--	--	--	--	--	--
23...	1020	1.1	--	1,170	9.0	9.5	--	--	--	--	--	--	--
MAY													
13...	1130	0.20	7.3	1,410	19.5	13.0	1.9	0.075	0.050	1.92	1.8	0.164	2.0
19...	1600	50	7.4	1,540	7.5	11.0	1.8	0.099	11.9	--	1.7	0.305	14
JUN													
09...	1345	0.25	7.1	1,620	14.5	15.5	1.8	0.027	0.140	--	1.8	0.348	1.9
JUL													
21...	1120	0.00	--	--	--	--	--	--	--	--	--	--	--
AUG													
27...	1330	0.00	--	--	--	--	--	--	--	--	--	--	--
SEP													
18...	0810	0.00	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Suspnd. sediment, sieve diametr percent <.063mm (70331)	Suspended sediment concentration mg/L (80154)	Suspended sediment load, tons/d (80155)
APR			
01...	85	46	0.05
09...	86	120	13
11...	46	215	11
23...	90	7	0.02
MAY			
13...	93	5	0.00
19...	--	--	--
JUN			
09...	100	2	0.00
JUL			
21...	--	--	--
AUG			
27...	--	--	--
SEP			
18...	--	--	--

ANALYSES OF SAMPLES COLLECTED AT TONGUE RIVER WATER-QUALITY SITES

05100480 TONGUE RIVER BELOW YOUNG DAM NEAR CONCRETE, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unfltrd uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Organic nitrogen, water, unfltrd mg/L (00605)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, unfltrd mg/L (00600)	Suspnd. sediment, sieve diameter <.063mm (70331)
MAR 26...	1530	4.9	--	--	--	--	--	--	--	--	--	--	99
APR 01...	1045	23	--	--	--	--	--	--	--	--	--	--	96
10...	0940	137	--	--	--	--	--	--	--	--	--	--	73
23...	1130	2.8	--	813	10.0	10.5	--	--	--	--	--	--	--
MAY 13...	1000	3.1	9.2	690	17.8	13.5	1.5	0.049	0.600	1.4	0.050	2.1	89
20...	0900	51	7.6	922	--	10.5	1.4	0.203	6.47	1.1	0.186	7.8	--
JUN 10...	0825	9.2	7.9	914	11.0	16.0	1.3	0.148	3.00	1.2	0.079	4.3	96
JUL 21...	1300	0.16	8.2	932	21.0	23.5	1.4	0.219	0.410	1.2	0.153	1.8	97
SEP 18...	0845	0.00	--	--	--	--	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Suspended sediment concentration mg/L (80154)	Suspended sediment load, tons/d (80155)
MAR 26...	24	0.32
APR 01...	36	2.2
10...	310	115
23...	--	--
MAY 13...	22	0.18
20...	--	--
JUN 10...	8	0.20
JUL 21...	9	0.00
SEP 18...	--	--

05100800 TONGUE RIVER ABOVE RENWICK DAM NEAR AKRA, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif. conductance, wat unfltrd uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)	Organic nitrogen, water, unfltrd mg/L (00605)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, unfltrd mg/L (00600)	Suspnd. sediment, sieve diametr <.063mm (70331)
APR													
01...	1605	80	--	--	--	--	--	--	--	--	--	--	88
10...	1140	224	--	--	--	--	--	--	--	--	--	--	58
23...	1340	34	--	658	14.0	10.0	--	--	--	--	--	--	90
MAY													
13...	1230	37	7.8	780	20.5	12.5	0.62	0.047	0.190	0.58	0.170	0.81	91
20...	1045	110	7.9	889	11.5	10.0	0.54	0.094	2.40	0.45	0.376	2.9	--
JUN													
10...	1215	70	7.4	709	19.0	18.0	0.73	<0.010	0.740	--	0.178	1.5	99
JUL													
21...	1530	2.2	7.8	721	22.5	23.0	0.50	0.044	0.190	0.46	0.200	0.69	100
AUG													
28...	0820	1.6	7.8	636	10.0	15.0	0.49	<0.010	0.030	--	0.312	0.52	99
SEP													
18...	1020	2.1	7.8	650	9.5	12.0	0.42	<0.010	0.050	--	0.246	0.47	92

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Suspended sediment concentration mg/L (80154)	Suspended sediment load, tons/d (80155)
APR		
01...	405	88
10...	4,680	2,830
23...	137	12
MAY		
13...	138	14
20...	--	--
JUN		
10...	123	23
JUL		
21...	9	0.05
AUG		
28...	64	0.28
SEP		
18...	30	0.17

Remark codes used in this table:
< -- Less than

05046502 OTTER TAIL RIVER AT 11TH STREET IN BRECKENRIDGE, MN

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
SEP 16...	1200	149	16	735	9.6	103	8.2	8.6	468	462	22.5	17.1	250

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
SEP 16...	44.2	33.3	4.10	0.3	11.8	9	218	10.6	31.4	267	107	0.46	0.53

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd mg/L as N (00630)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)	Manganese, water, fltrd, ug/L (01056)
SEP 16...	<0.010	<0.010	<0.020	<0.020	0.010	0.021	0.026	0.48	0.55	16.0	<1.0	20	<10

Remark codes used in this table:

< -- Less than

05051300 BOIS DE SIOUX RIVER NEAR DORAN, MN

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)
SEP 16...	0850	0.00

05053800 RED RIVER OF THE NORTH ABOVE FARGO, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (90095)	Specif. conductance, wat unfltrd lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
SEP 15...	1400	114	52	740	7.1	77	7.9	8.4	800	802	24.8	18.0	300

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
SEP 15...	54.4	40.6	7.70	2	62.8	30	258	50.2	98.7	470	145	0.63	0.62

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd mg/L as N (00630)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)	Manganese, water, fltrd, ug/L (01056)
SEP 15...	<0.010	<0.010	0.040	0.040	0.227	0.230	0.283	0.67	0.66	24.0	<1.0	20	<10

Remark codes used in this table:

< -- Less than

05062000 BUFFALO RIVER NEAR DIL WORTH, MN

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
SEP 15...	1730	23	22	739	8.3	91	7.9	8.3	690	679	22.5	18.0	360

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
SEP 15...	75.7	41.0	4.90	0.4	18.3	10	298	8.6	78.3	407	25.2	0.46	0.33

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd mg/L as N (00630)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)	Manganese, water, fltrd, ug/L (01056)
SEP 15...	<0.010	<0.010	0.030	0.040	0.061	0.062	0.104	0.49	0.37	<6.0	<2.0	80	40

Remark codes used in this table:

< -- Less than

05064000 WILD RICE RIVER AT HENDRUM, MN

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm 25 degC (90095)	Specif. conductance, wat unflab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
SEP 16...	1150	59	38	739	8.6	91	8.4	8.4	578	579	23.0	16.5	300

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
SEP 16...	62.7	34.4	4.10	0.4	15.7	10	262	6.7	52.3	334	53.0	0.41	0.36

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd mg/L as N (00630)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)	Manganese, water, fltrd, ug/L (01056)
SEP 16...	<0.010	<0.010	<0.020	0.020	0.017	0.007	0.036	0.43	0.38	<7.5	<2.5	20	10

Remark codes used in this table:

< -- Less than

05067500 MARSH RIVER NEAR SHELLY, MN

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
SEP 16...	1010	0.30	5.0	739	3.3	33	7.8	8.2	801	796	20.5	13.3	400

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
SEP 16...	67.7	55.4	7.20	0.6	28.3	13	331	14.7	83.4	458	0.37	1.2	1.2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd mg/L as N (00630)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)	Manganese, water, fltrd, ug/L (01056)
SEP 16...	<0.010	<0.010	<0.020	<0.020	0.394	0.424	0.431	1.2	1.2	<3.0	<1.0	40	100

Remark codes used in this table:

< -- Less than

05069000 SANDHILL RIVER AT CLIMAX, MN

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
SEP 16...	0840	20	55	739	8.9	91	8.4	8.4	574	576	12.0	14.7	310

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
SEP 16...	69.3	33.5	3.60	0.2	9.50	6	258	7.4	46.5	326	17.5	0.30	0.25

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd mg/L as N (00630)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)	Manganese, water, fltrd, ug/L (01056)
SEP 16...	<0.010	<0.010	<0.020	<0.020	0.016	0.006	0.033	0.32	0.27	<7.5	<2.5	10	<10

Remark codes used in this table:

< -- Less than

05070000 RED RIVER OF THE NORTH NEAR THOMPSON, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
SEP 15...	0950	251	34	741	8.4	90	8.6	8.6	849	832	10.0	17.4	350

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
SEP 15...	66.9	44.5	9.60	1	54.0	24	257	28.8	157	516	349	0.53	0.53

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd mg/L as N (00630)	Organic nitrogen, water, unfltrd mg/L (00605)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)
SEP 15...	<0.010	0.012	<0.020	0.030	0.52	0.091	0.084	0.149	0.55	0.56	<12.0	<4.0	20

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Manganese, water, fltrd, ug/L (01056)
SEP 15...	<10

Remark codes used in this table:
< -- Less than

05080000 RED LAKE RIVER AT FISCHER, MN

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
SEP 15...	1145	165	28	741	9.3	97	8.4	8.4	455	459	17.0	16.2	230

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
SEP 15...	51.5	25.1	3.40	0.3	10.6	9	194	8.8	41.1	258	114	0.65	0.59

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd mg/L as N (00630)	Organic nitrogen, water, unfltrd mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)
SEP 15...	<0.010	0.018	<0.020	0.020	0.57	0.014	0.006	0.038	0.67	0.61	<4.6	<1.5	20

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Manganese, water, fltrd, ug/L (01056)
SEP 15...	20

Remark codes used in this table:
< -- Less than

05095000 TWO RIVERS AT HALLOCK, MN

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm 25 degC (90095)	Specif. conductance, wat unflab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
SEP 15...	1640	E5.0	24	738	3.0	32	8.1	8.6	659	588	19.0	17.0	310

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Sulfate, water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd, mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)
SEP 15...	63.5	37.8	9.40	0.6	22.9	13	264	45.3	40.4	379	1.0	1.1	<0.010

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd, mg/L as N (00630)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd, mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd, mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)	Manganese, water, fltrd, ug/L (01056)
SEP 15...	<0.010	<0.020	<0.020	0.021	0.018	0.064	1.0	1.1	23.4	6.7	30	30

Remark codes used in this table:

< -- Less than

E -- Estimated value

465602096472700 RED RIVER OF THE NORTH BELOW FARGO, ND HIGHWAY 22

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
SEP 15...	1605	118	48	740	7.6	85	7.7	8.2	822	821	26.5	19.4	280

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
SEP 15...	51.1	35.9	14.4	2	67.7	33	210	57.0	107	480	153	0.85	0.71

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd mg/L as N (00630)	Organic nitrogen, water, fltrd, mg/L (00607)	Organic nitrogen, water, unfltrd mg/L (00605)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)
SEP 15...	0.107	0.112	4.14	4.10	0.74	0.60	0.968	0.948	1.04	5.0	4.8	<10.0	<3.3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Iron, water, fltrd, ug/L (01046)	Manganese, water, fltrd, ug/L (01056)
SEP 15...	20	10

Remark codes used in this table:
< -- Less than

470000096535300 SHEYENNE RIVER NEAR MOUTH, ND HIGHWAY 81

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
SEP 16...	1625	69	84	735	9.9	109	8.2	8.5	1,080	1,090	26.5	18.0	410

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
SEP 16...	86.4	46.4	10.0	2	94.3	33	303	32.1	240	692	129	0.54	0.47

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd mg/L as N (00630)	Organic nitrogen, water, unfltrd mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)
SEP 16...	<0.010	0.012	<0.020	0.020	0.46	0.060	0.067	0.134	0.56	0.47	<12.0	<4.0	20

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Manganese, water, fltrd, ug/L (01056)
SEP 16...	10

Remark codes used in this table:
< -- Less than

480239097115000 TURTLE RIVER ABOVE MANVEL, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl lab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
SEP 16...	1430	1.6	28	735	8.0	85	8.1	8.5	4,300	4,390	20.0	16.0	740

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
SEP 16...	152	87.8	22.3	10	645	64	198	983	544	2,550	10.8	0.83	1.2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd mg/L as N (00630)	Organic nitrogen, water, unfltrd mg/L (00605)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)
SEP 16...	<0.010	0.028	<0.020	0.020	1.2	0.019	0.024	0.149	0.85	1.2	63.4	7.8	30

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Manganese, water, fltrd, ug/L (01056)
SEP 16...	790

Remark codes used in this table:
< -- Less than

482118097090500 FOREST RIVER NEAR CONFLUENCE WITH RED RIVER OF THE NORTH

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm 25 degC (90095)	Specif. conductance, wat unflab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
SEP 16...	1150	9.7	13	736	8.3	86	8.0	8.4	5,340	546	18.5	15.5	790

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
SEP 16...	150	102	22.9	14	879	70	179	1,300	677	3,240	84.8	1.1	1.2

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd mg/L as N (00630)	Organic nitrogen, water, unfltrd mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)
SEP 16...	<0.010	0.021	0.110	0.120	1.2	0.011	0.014	0.055	1.2	1.4	16.6	<0.5	20

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Manganese, water, fltrd, ug/L (01056)
SEP 16...	170

Remark codes used in this table:
< -- Less than

482451097062500 SNAKE RIVER AT JUNCTION HIGHWAY 220 AND 317

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)
SEP 16...	0845	0.00

482736097112800 PARK RIVER AT I-29 REST AREA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm 25 degC (90095)	Specif. conductance, wat unflab, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
SEP 16...	0950	1.9	7.0	739	7.0	72	8.4	8.8	23,700	25	14.0	15.0	1,400

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
SEP 16...	258	182	83.3	57	4,880	88	158	7,660	1,270	14,400	75.6	0.79	1.3

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd mg/L as N (00630)	Organic nitrogen, water, unfltrd mg/L (00605)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)
SEP 16...	<0.010	0.017	<0.020	<0.020	1.3	0.021	0.024	0.141	0.81	1.4	47.5	<0.5	40

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Manganese, water, fltrd, ug/L (01056)
SEP 16...	700

Remark codes used in this table:
< -- Less than

485636097173800 PEMBINA RIVER ABOVE PEMBINA, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Turbidity, water, unfltrd field, NTU (61028)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conductance, wat unflab, uS/cm 25 degC (90095)	Specif. conductance, wat unfl, uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)
SEP 15...	1350	20	74	738	9.2	96	8.2	8.4	885	873	18.5	15.5	380

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Sodium, percent (00932)	ANC, wat unfl fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Sulfate water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, fltrd, tons/d (70302)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
SEP 15...	89.2	38.6	9.80	1	51.0	22	262	20.6	187	555	30.4	0.40	0.34

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, fltrd, mg/L as N (00608)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite + nitrate water, unfltrd mg/L as N (00630)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Chlorophyll b phytoplankton, fluoro, ug/L (70954)	Iron, water, fltrd, ug/L (01046)	Manganese, water, fltrd, ug/L (01056)
SEP 15...	<0.010	<0.010	0.060	0.070	0.034	0.058	0.112	0.46	0.41	<6.0	<2.0	20	60

Remark codes used in this table:

< -- Less than

465323096462700 RED RIVER OF THE NORTH AT 12TH AVENUE NORTH BRIDGE, FARGO, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Dis-charge, cfs (00060)	Tur- bidity, water, unfltrd field, NTU (61028)	Baro- metric pres- sure, mm Hg (00025)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfltrd field, std units (00400)	Specif. conduc- tance, wat unfltrd uS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water unfltrd mg/L as N (00630)
MAY													
08...	1500	773	95	735	9.8	99	8.0	697	21.0	14.3	0.57	0.053	0.180
29...	1500	1,070	82	731	8.7	99	8.3	946	30.0	19.6	0.69	<0.010	0.030
JUN													
12...	1415	847	79	730	7.6	88	8.1	766	26.5	20.5	0.81	0.081	0.180
23...	1500	2,130	870	735	6.1	73	8.0	453	26.3	22.0	0.44	0.154	0.420
JUL													
01...	1530	6,500	300	739	5.0	59	7.5	447	32.0	21.5	0.69	0.132	0.570
15...	1300	2,900	160	745	6.6	81	7.8	891	27.5	24.2	0.67	<0.010	0.430
29...	1345	1,070	77	739	7.9	100	8.0	654	30.0	25.5	0.64	<0.010	0.120
AUG													
14...	1420	685	66	747	7.6	96	8.2	689	34.0	26.0	0.72	<0.010	0.050
26...	1515	E165	58	742	4.4	56	8.0	728	29.5	26.0	0.61	<0.010	<0.020
SEP													
22...	1405	147	66	739	7.4	78	8.2	791	13.5	16.1	0.60	<0.010	0.060

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Organic nitro- gen, water, unfltrd mg/L (00605)	Phos- phorus, water, unfltrd mg/L (00665)	Total nitro- gen, water, unfltrd mg/L (00600)	Suspnd. sedi- ment, sieve diametr percent <.063mm (70331)	Sus- pended sedi- ment concen- tration mg/L (80154)	Sus- pended sedi- ment load, tons/d (80155)
MAY						
08...	0.52	0.072	0.75	99	87	182
29...	--	0.087	0.72	99	74	214
JUN						
12...	0.73	0.089	0.99	99	79	181
23...	0.29	0.503	0.86	99	834	4,800
JUL						
01...	0.56	0.363	1.3	99	287	5,040
15...	--	0.421	1.1	99	245	1,920
29...	--	0.229	0.76	100	104	300
AUG						
14...	--	0.223	0.78	100	80	148
26...	--	0.163	0.63	94	169	--
SEP						
22...	--	0.242	0.66	99	69	27

Remark codes used in this table:

< -- Less than

E -- Estimated value

465323096462700 RED RIVER OF THE NORTH AT 12TH AVENUE NORTH BRIDGE, FARGO, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Dis- solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif. conduc- tance, wat unf uS/cm 25 degC (00095)	Temper- ature, water, deg C (00010)	Loca- tion in X-sect. looking dwnstrm ft from 1 bank (00009)
MAY						
08...	1501	9.9	8.3	697	14.4	45.0
08...	1502	9.8	8.0	697	14.3	80.0
08...	1503	9.7	8.0	696	14.4	115
29...	1515	9.2	8.3	945	19.6	38.0
29...	1516	8.7	8.3	946	19.6	75.0
29...	1517	8.6	8.2	944	19.7	113
JUN						
12...	1455	7.7	8.2	714	20.5	38.0
12...	1458	7.6	8.1	766	20.5	75.0
12...	1500	7.5	8.1	768	20.5	103
23...	1505	5.8	8.0	447	21.8	45.0
23...	1506	6.1	8.0	453	21.8	85.0
23...	1507	6.0	8.0	453	21.8	125
JUL						
01...	1540	5.0	7.5	441	21.5	135
01...	1541	5.0	7.5	447	21.4	175
01...	1542	4.9	7.5	447	21.4	215
15...	1301	6.6	7.8	889	24.2	45.0
15...	1302	6.6	7.8	891	24.2	85.0
15...	1303	6.6	7.8	890	24.2	125
AUG						
14...	1421	7.7	8.3	688	25.7	49.0
14...	1422	7.7	8.2	691	25.7	79.0
14...	1423	7.5	8.2	689	25.7	109
26...	1520	4.7	8.0	728	26.4	35.0
26...	1521	4.4	8.0	728	26.3	65.0
26...	1522	4.2	7.9	727	25.9	95.0
SEP						
22...	1413	7.5	8.3	790	16.2	39.0
22...	1418	7.5	8.2	791	16.1	74.0
22...	1423	7.5	8.2	792	16.2	109

465327096461800 SITE 1, POOL DOWNSTREAM DAM A AND 12TH AVENUE NORTH BRIDGE, FARGO, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Baro- metric pres- sure, mm Hg (00025)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfltrd field, std units (00400)	Specif. conduc- tance, wat unfltrd uS/cm 25 degC (00095)	Temper- ature, water, deg C (00010)
SEP							
24...	0850	733	9.2	95	8.2	747	14.8
24...	1150	735	8.6	89	8.0	750	14.8
24...	1450	735	9.5	98	8.3	736	14.8
24...	1750	737	9.8	100	8.3	727	14.7
24...	2050	738	8.7	89	8.2	725	14.6
24...	2350	740	8.7	88	8.2	721	14.3
25...	0250	739	8.7	87	8.2	715	14.1
25...	0550	739	9.4	94	8.3	704	13.7
25...	0850	738	8.8	88	8.3	688	13.8

465328096461700 SITE 2, WASTEWATER TREATMENT PLANT OUTFLOW EAST BANK DOWNSTREAM DAM A, MOORHEAD, MN

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Baro- metric pres- sure, mm Hg (00025)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfltrd field, std units (00400)	Specif. conduc- tance, wat unfltrd uS/cm 25 degC (00095)	Temper- ature, water, deg C (00010)
SEP							
24...	0855	733	7.3	78	7.0	1,160	16.3
24...	1155	735	7.3	77	7.0	1,160	15.9
24...	1455	735	7.5	78	7.0	1,160	15.5
24...	1755	737	7.6	79	7.0	1,170	15.5
24...	2055	738	7.6	79	7.0	1,160	15.3
24...	2355	740	7.7	79	7.0	1,170	15.0
25...	0255	739	7.4	76	7.0	1,170	14.8
25...	0555	739	7.5	77	7.0	1,170	14.6
25...	0855	738	7.4	75	7.0	1,170	14.5

465431096455000 SITE 4, INTERSECTION WOODCREST DRIVE AND ELM STREET, FARGO, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instan- taneous dis- charge, cfs (00061)	Baro- metric pres- sure, mm Hg (00025)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfltrd field, std units (00400)	Specif. conduc- tance, wat unfltrd uS/cm 25 degC (00095)	Temper- ature, water, deg C (00010)	Propane water unfltrd ug/L (82358)	Rhoda- mine dye concen- tration ug/L (99908)
SEP										
24...	1040	84	--	--	--	--	--	--	--	--
24...	1120	--	--	--	--	--	--	--	--	25.1
24...	1130	--	--	--	--	--	--	--	--	30.6
24...	1140	--	--	--	--	--	--	--	--	27.4
24...	1150	--	--	--	--	--	--	--	--	24.9
24...	1210	--	--	--	--	--	--	--	--	12.9
24...	1230	--	734	8.8	90	8.2	769	14.6	--	7.23
24...	1300	--	--	--	--	--	--	--	--	2.06
24...	1330	--	--	--	--	--	--	--	33.0	1.31
24...	1400	--	--	--	--	--	--	--	35.0	0.878
24...	1430	--	--	--	--	--	--	--	31.0	0.924
24...	1530	--	735	9.2	95	8.2	769	15.0	--	--
24...	1830	--	737	8.6	87	8.2	762	14.4	--	--
24...	2130	--	738	8.1	82	8.1	760	14.2	--	--
25...	0030	--	740	8.1	81	8.1	758	14.0	--	--
25...	0330	--	739	8.1	80	8.1	757	13.7	--	--
25...	0630	--	739	8.6	85	8.1	744	13.5	--	--
25...	0930	--	738	8.5	85	8.1	732	13.6	--	--
25...	1230	--	738	9.3	93	8.1	734	13.7	--	--

465544096455300 SITE 5, CARDINAL MUENCH SEMINARY, FARGO, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Propane water unfltrd ug/L (82358)	Rhodamine dye concentration ug/L (99908)
SEP										
24...	1625	83	--	--	--	--	--	--	--	--
24...	2145	--	--	--	--	--	--	--	--	1.04
24...	2200	--	--	--	--	--	--	--	--	1.62
24...	2215	--	738	9.3	91	8.2	776	12.8	--	2.69
24...	2230	--	--	--	--	--	--	--	--	4.12
24...	2245	--	--	--	--	--	--	--	--	5.41
24...	2300	--	--	--	--	--	--	--	--	6.51
24...	2315	--	--	--	--	--	--	--	--	7.61
24...	2330	--	--	--	--	--	--	--	--	8.44
24...	2345	--	--	--	--	--	--	--	--	8.34
24...	2359	--	--	--	--	--	--	--	--	8.31
25...	0015	--	740	8.9	87	8.2	772	12.5	--	--
25...	0030	--	--	--	--	--	--	--	--	7.43
25...	0100	--	--	--	--	--	--	--	--	5.58
25...	0130	--	--	--	--	--	--	--	--	4.34
25...	0200	--	--	--	--	--	--	--	--	3.06
25...	0230	--	--	--	--	--	--	--	18.0	2.26
25...	0330	--	--	--	--	--	--	--	16.0	--
25...	0415	--	739	8.5	82	8.1	773	12.2	--	--
25...	0430	--	--	--	--	--	--	--	E3.9	--
25...	0715	--	739	8.7	83	8.1	772	11.7	--	--
25...	1015	--	738	8.2	78	8.1	768	11.7	--	--
25...	1315	--	737	9.2	89	8.1	765	12.2	--	--
25...	1615	--	734	9.5	94	8.2	756	13.1	--	--
25...	1915	--	732	9.5	95	8.2	751	13.2	--	--

Remark codes used in this table:

E -- Estimated value

465530096465900 SITE 5.7, WEST END OF TROLLWOOD PARK LOT, FARGO, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Propane water unfltrd ug/L (82358)	Rhodamine dye concentration ug/L (99908)
SEP										
24...	2000	83	--	--	--	--	--	--	--	--
25...	0600	--	--	--	--	--	--	--	--	1.31
25...	0620	--	--	--	--	--	--	--	--	1.56
25...	0640	--	--	--	--	--	--	--	--	2.37
25...	0700	--	--	--	--	--	--	--	--	3.04
25...	0720	--	--	--	--	--	--	--	--	4.15
25...	0740	--	--	--	--	--	--	--	--	4.79
25...	0745	--	739	9.1	86	8.2	781	11.3	--	--
25...	0808	--	--	--	--	--	--	--	--	5.84
25...	0825	--	--	--	--	--	--	--	--	5.94
25...	0845	--	--	--	--	--	--	--	--	6.30
25...	0915	--	--	--	--	--	--	--	--	6.21
25...	0945	--	--	--	--	--	--	--	--	5.50
25...	1030	--	--	--	--	--	--	--	--	4.46
25...	1045	--	738	8.8	83	8.2	779	11.3	--	--
25...	1115	--	--	--	--	--	--	--	--	3.57
25...	1215	--	--	--	--	--	--	--	--	2.43
25...	1330	--	--	--	--	--	--	--	18.0	1.43
25...	1345	--	735	9.4	90	8.1	777	11.7	--	--
25...	1430	--	--	--	--	--	--	--	19.0	1.25
25...	1530	--	--	--	--	--	--	--	16.0	1.20
25...	1645	--	734	9.3	90	8.2	774	12.2	--	--
25...	1945	--	732	9.1	88	8.2	771	12.2	--	--
25...	2245	--	730	8.9	87	8.2	765	12.1	--	--
26...	0145	--	729	9.0	88	8.1	764	12.1	--	--
26...	0445	--	728	8.8	86	8.2	760	12.1	--	--
26...	0745	--	729	9.1	89	8.2	750	12.1	--	--

465535096470800 SITE 5.8, FARGO WASTEWATER TREATMENT PLANT OUTFLOW, FARGO, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Baro- metric pres- sure, mm Hg (00025)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfltrd field, std units (00400)	Specif. conduc- tance, wat unfl- trd uS/cm 25 degC (00095)	Temper- ature, water, deg C (00010)
SEP 25...	0800	738	8.8	100	7.4	1,180	19.7

465602096472900 SITE 6, CASS COUNTY 20 BRIDGE, FARGO, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instan- taneous dis- charge, cfs (00061)	Baro- metric pres- sure, mm Hg (00025)	Dis- solved oxygen, mg/L (00300)	Dis- solved oxygen, percent of sat- uration (00301)	pH, water, unfltrd field, std units (00400)	Specif. conduc- tance, wat unfl- trd uS/cm 25 degC (00095)	Temper- ature, water, deg C (00010)	Propane water unfltrd ug/L (82358)	Rhoda- mine dye concen- tration ug/L (99908)
SEP										
25...	1100	--	--	--	--	--	--	--	--	2.17
25...	1130	--	--	--	--	--	--	--	--	2.56
25...	1145	--	--	--	--	--	--	--	--	3.30
25...	1200	--	--	--	--	--	--	--	--	4.10
25...	1220	95	--	--	--	--	--	--	--	--
25...	1230	--	--	--	--	--	--	--	--	4.39
25...	1300	--	--	--	--	--	--	--	--	4.64
25...	1315	--	--	--	--	--	--	--	--	4.83
25...	1330	--	--	--	--	--	--	--	--	4.49
25...	1415	--	735	9.9	98	8.1	860	13.1	--	--
25...	1430	--	--	--	--	--	--	--	--	3.98
25...	1500	--	--	--	--	--	--	--	--	3.21
25...	1600	--	--	--	--	--	--	--	--	2.43
25...	1630	--	--	--	--	--	--	--	--	2.14
25...	1700	--	--	--	--	--	--	--	12.0	1.61
25...	1715	--	734	9.4	94	8.1	864	13.6	--	--
25...	1800	--	--	--	--	--	--	--	9.2	1.17
25...	1900	--	--	--	--	--	--	--	17.0	0.925
25...	2015	--	732	9.2	92	8.1	864	13.3	--	--
25...	2315	--	730	9.1	90	8.1	867	12.9	--	--
26...	0215	--	729	8.9	88	8.0	861	12.9	--	--
26...	0515	--	728	8.8	88	8.0	846	13.0	--	--
26...	0815	--	729	8.9	88	8.1	827	12.9	--	--
26...	1115	--	729	9.3	93	8.1	810	13.0	--	--
26...	1415	--	729	9.5	97	8.1	830	14.1	--	--

465722096481200 SITE 7, 1.5 MILES NORTH OF CASS COUNTY 20, FARGO, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfiltered 25 degC (00095)	Temperature, water, deg C (00010)	Propane water unfltrd ug/L (82358)	Rhodamine dye concentration ug/L (99908)
SEP										
25...	1500	101	--	--	--	--	--	--	--	--
25...	1545	--	--	--	--	--	--	--	--	0.586
25...	1600	--	--	--	--	--	--	--	--	0.646
25...	1630	--	--	--	--	--	--	--	--	0.631
25...	1700	--	--	--	--	--	--	--	--	0.752
25...	1730	--	--	--	--	--	--	--	--	1.00
25...	1745	--	--	9.4	--	8.2	837	12.4	--	--
25...	1815	--	--	--	--	--	--	--	--	1.80
25...	1900	--	--	--	--	--	--	--	--	2.72
25...	1945	--	--	--	--	--	--	--	--	3.55
25...	2030	--	--	--	--	--	--	--	--	4.00
25...	2045	--	732	9.5	93	8.1	849	12.5	--	--
25...	2115	--	--	--	--	--	--	--	--	4.04
25...	2230	--	--	--	--	--	--	--	--	3.26
25...	2330	--	--	--	--	--	--	--	--	2.63
25...	2345	--	730	9.1	90	8.1	863	12.6	--	--
26...	0015	--	--	--	--	--	--	--	--	2.02
26...	0115	--	--	--	--	--	--	--	<5.4	1.51
26...	0215	--	--	--	--	--	--	--	<5.4	1.26
26...	0245	--	729	8.8	87	8.0	871	12.5	--	--
26...	0315	--	--	--	--	--	--	--	9.2	1.03
26...	0545	--	728	8.5	84	8.0	871	12.3	--	--
26...	0845	--	729	8.6	84	8.0	871	12.3	--	--
26...	1145	--	729	9.5	94	8.1	856	12.9	--	--
26...	1445	--	729	9.4	94	8.0	846	13.4	--	--
26...	1745	--	730	9.8	98	8.2	815	13.3	--	--

Remark codes used in this table:

< -- Less than

465836096491200 SITE 9.5, CASS COUNTY 22 BRIDGE, FARGO, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Propane water unfltrd ug/L (82358)	Rhodamine dye concentration ug/L (99908)
SEP										
26...	0100	--	--	--	--	--	--	--	--	0.876
26...	0130	--	--	--	--	--	--	--	--	0.845
26...	0200	--	--	--	--	--	--	--	--	0.875
26...	0230	--	--	--	--	--	--	--	--	0.957
26...	0300	--	--	--	--	--	--	--	--	1.07
26...	0315	--	729	8.9	86	8.1	854	11.5	--	--
26...	0330	--	--	--	--	--	--	--	--	1.37
26...	0400	--	--	--	--	--	--	--	--	1.44
26...	0430	--	--	--	--	--	--	--	--	1.87
26...	0500	--	--	--	--	--	--	--	--	2.26
26...	0530	--	--	--	--	--	--	--	--	2.74
26...	0600	--	--	--	--	--	--	--	--	3.13
26...	0615	--	728	9.0	86	8.1	858	11.5	--	--
26...	0630	--	--	--	--	--	--	--	--	3.42
26...	0700	--	--	--	--	--	--	--	--	3.63
26...	0730	--	--	--	--	--	--	--	--	3.56
26...	0800	--	--	--	--	--	--	--	--	3.56
26...	0830	--	--	--	--	--	--	--	--	3.38
26...	0915	--	729	9.1	88	8.1	871	11.7	--	3.27
26...	1000	--	--	--	--	--	--	--	--	2.67
26...	1045	--	--	--	--	--	--	--	--	2.39
26...	1110	100	--	--	--	--	--	--	--	--
26...	1130	--	--	--	--	--	--	--	--	2.04
26...	1215	--	792	9.2	83	8.1	876	12.4	--	1.74
26...	1300	--	--	--	--	--	--	--	--	1.53
26...	1400	--	--	--	--	--	--	--	--	1.36
26...	1500	--	--	--	--	--	--	--	--	1.24
26...	1515	--	729	9.6	95	8.1	881	12.8	--	--
26...	1600	--	--	--	--	--	--	--	--	1.14
26...	1700	--	--	--	--	--	--	--	--	1.05
26...	1730	--	--	--	--	--	--	--	<5.4	1.03
26...	1800	--	--	--	--	--	--	--	6.7	--
26...	1815	--	730	9.6	95	8.2	878	12.8	--	--
26...	1830	--	--	--	--	--	--	--	8.3	1.05
26...	2115	--	732	9.4	92	8.1	876	12.6	--	--
27...	0015	--	733	9.3	91	8.1	860	12.5	--	--
27...	0315	--	733	9.1	89	8.1	837	12.2	--	--

Remark codes used in this table:

< -- Less than

470022096501900 SITE 10, 2 MILES NORTH OF CASS COUNTY 22, FARGO, ND

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf uS/cm 25 degC (00095)	Temperature, water, deg C (00010)	Propane water unfltrd ug/L (82358)
SEP									
26...	1110	86	--	--	--	--	--	--	--
26...	1230	--	729	9.8	95	8.2	872	11.8	--
26...	1530	--	729	10.1	99	8.2	866	12.2	--
26...	1830	--	730	10.1	99	8.2	881	12.5	--
26...	1905	84	--	--	--	--	--	--	--
26...	2130	--	732	9.8	96	8.2	886	12.3	--
27...	0030	--	733	9.4	91	8.1	888	12.0	--
27...	0300	--	--	--	--	--	--	--	E4.7
27...	0330	--	733	9.4	90	8.1	888	11.8	--
27...	0400	--	--	--	--	--	--	--	E4.7
27...	0500	--	--	--	--	--	--	--	E4.8
27...	0630	--	735	9.5	91	8.1	889	11.5	--
27...	0930	--	735	9.3	88	8.1	884	11.4	--
27...	1230	--	735	9.5	91	8.1	870	11.6	--

Remark codes used in this table:

E -- Estimated value

CHEMICAL QUALITY OF PRECIPITATION

RED RIVER OF THE NORTH BASIN

484714097442301 ICELANDIC STATE PARK, ND
(National Trends Network precipitation-quality station)

LOCATION.--Lat 48°47'14", long 97°44'23", in SW¹/₄NW¹/₄SW¹/₄ sec. 10, T.161 N., R.55 W., Pembina County, Hydrologic Unit 09020313, at Icelandic State Park 5.6 mi west of Cavalier.

PERIOD OF RECORD.--October 1983 to current year (weekly composite).

INSTRUMENTATION.--The composite sample collector is an Aerochem Metrics¹ model 301 wet/dry precipitation collector mounted on ground surface. Precipitation quantity is determined by a Belfort¹ model 5-780 recording rain gage equipped with an event recorder and an Alter-type wind screen. The recording rain gage is installed 20 ft east of the sample collector with gage mouth and collector bucket elevations of 50.75 in above land surface.

REMARKS.--Data presented are provisional analyses by the Central Analytical Laboratory of the Illinois State Water Survey and have not completed quality-assurance review by the National Atmospheric Deposition Program. Analyses are determined from water taken from the sample collector.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Period of collection	Precipitation total, in/wk (00046)	Collector efficiency, atm dep wet, percent (82284)	Specific conductance wat unf uS/cm 25 decC (00095)	Specific conductance wat unf lab uS/cm 25 decC (90095)	pH, water, un ltrd eld, std units (00400)	pH, water, un ltrd lab, std units (00403)	Calcium, water, trd, mg/L (00915)	Magnesium, water, trd, mg/L (00925)
09/24 to 10/01	.03	67	--	a14	--	a6.4	a.789	a.135
10/01 to 10/08	.02	100	--	a10	--	a5.3	a.141	a.018
10/08 to 10/15	--	--	--	19	--	6.6	.511	.091
10/15 to 10/22	--	--	--	5	--	6.0	.126	.030
10/22 to 10/29	--	--	--	13	--	5.7	.083	.015
10/29 to 11/05	.00	--	--	--	--	--	--	--
11/05 to 11/12	.07	114	--	11	--	5.9	.227	.038
11/12 to 11/19	.09	67	12	13	5.6	5.8	.073	.017
11/19 to 11/26	b<.01	>100	--	11	--	6.3	--	--
11/26 to 12/03	.03	33	--	a10	--	a6.5	a.503	a.084
12/03 to 12/10	b.0	--	--	--	--	--	--	--
12/10 to 12/17	.05	100	--	7	--	5.7	.049	.006
12/17 to 12/24	.37	35	--	9	--	4.8	.062	.012
12/24 to 12/31	b.0	--	--	--	--	--	--	--
12/31 to 01/07	.00	--	--	--	--	--	--	--
01/07 to 01/14	b<.01	--	--	--	--	--	--	--
01/14 to 01/21	.00	--	--	--	--	--	--	--
01/21 to 01/28	.15	13	--	a4	--	a5.7	a.189	a.039
01/28 to 02/11	.05	40	--	a10	--	a4.8	a.115	a.018
02/11 to 02/18	.12	8	--	a4	--	a6.0	a.209	a.028
02/18 to 02/25	.00	--	--	--	--	--	--	--
02/25 to 03/04	b.02	<50	--	--	--	--	--	--
03/04 to 03/11	b.10	<10	--	14	--	6.1	--	--
03/11 to 03/18	b.00	--	--	--	--	--	--	--
03/18 to 03/25	b<.01	100	--	24	--	7.0	--	--
03/25 to 04/01	.80	94	7	7	4.4	5.6	.044	.007
04/01 to 04/08	.47	51	8	8	6.4	6.5	.617	.119
04/08 to 04/15	.00	--	--	--	--	--	--	--
04/15 to 04/22	.75	85	3	2	5.8	5.7	.054	.008
04/22 to 04/29	.20	110	--	32	--	6.7	.947	.160
04/29 to 05/06	b.10	110	--	--	--	--	--	--
05/06 to 05/13	.72	96	8	8	6.3	6.2	.144	.031
05/13 to 05/20	1.92	97	10	10	5.7	6.2	.233	.043
05/20 to 05/27	.57	86	12	11	6.7	6.4	.140	.027
05/27 to 06/03	.70	101	--	7	--	6.5	.353	.053
06/03 to 06/10	1.52	101	7	6	6.0	6.0	.081	.023
06/10 to 06/17	.48	106	7	7	5.7	5.6	.134	.034
06/17 to 06/24	1.07	96	--	10	--	6.1	.307	.053
06/24 to 07/01	.60	105	5	5	6.5	6.1	.177	.036
07/01 to 07/07	.30	110	--	8	--	6.1	.275	.052
07/07 to 07/15	.42	107	7	7	6.0	6.2	.286	.080
07/15 to 07/22	.35	100	8	9	6.3	6.2	.376	.093
07/22 to 07/29	b.00	>100	--	--	--	--	--	--
07/29 to 08/05	.20	105	--	12	--	6.3	.662	.193
08/05 to 08/12	.05	100	--	12	--	5.8	.277	.043
08/12 to 08/19	.00	--	--	--	--	--	--	--
08/19 to 08/26	.22	95	14	14	6.2	6.5	.915	.228
08/26 to 09/02	.62	103	15	22	6.8	6.5	.512	.208
09/02 to 09/09	.00	--	--	--	--	--	--	--
09/09 to 09/16	.30	83	9	9	5.6	5.7	.126	.026
09/16 to 09/23	.78	100	6	5	5.5	5.9	.149	.027
09/23 to 09/30	.03	133	--	7	--	6.4	.244	.058

RED RIVER OF THE NORTH BASIN

484714097442301 ICELANDIC STATE PARK, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Period of collection	Sodium, water, trd, mg/L (00930)	Potassium, water, trd, mg/L (00935)	Sulfate, water, trd, mg/L (00945)	Chloride, water, trd, mg/L (00940)	Nitrate, water, trd, mg/L as N (00618)	Ammonia, water, trd, mg/L as N (00608)	Phosphorus, water, trd, mg/L (00666)
09/24 to 10/01	a.034	a.062	a1.1	a.09	a.395	a.640	a<.008
10/01 to 10/08	a.058	a.025	a1.6	a.10	a.250	a.480	a<.009
10/08 to 10/15	.030	.057	1.2	.24	.452	1.40	<.003
10/15 to 10/22	.004	.018	.33	.02	.163	.230	<.003
10/22 to 10/29	.011	.012	1.4	.07	.625	1.10	<.003
10/29 to 11/05	--	--	--	--	--	--	--
11/05 to 11/12	.051	.023	.83	.05	.459	.570	<.003
11/12 to 11/19	.022	.022	1.5	.04	.505	.920	<.003
11/19 to 11/26	--	--	--	--	--	--	--
11/26 to 12/03	a.292	a.051	a1.3	a.23	a.061	a.370	a<.011
12/03 to 12/10	--	--	--	--	--	--	--
12/10 to 12/17	.011	.003	.29	.03	.103	.180	<.003
12/17 to 12/24	.008	.006	.57	.02	.267	.190	.003
12/24 to 12/31	--	--	--	--	--	--	--
12/31 to 01/07	--	--	--	--	--	--	--
01/07 to 01/14	--	--	--	--	--	--	--
01/14 to 01/21	--	--	--	--	--	--	--
01/21 to 01/28	a.018	a.014	a.18	a.09	a.200	a.130	a<.011
01/28 to 02/11	a.018	a.009	a.39	a.05	a.390	a.160	a<.009
02/11 to 02/18	a<.012	a.028	a.20	a.06	a.161	a.180	a<.012
02/18 to 02/25	--	--	--	--	--	--	--
02/25 to 03/04	--	--	--	--	--	--	--
03/04 to 03/11	--	--	--	--	--	--	--
03/11 to 03/18	--	--	--	--	--	--	--
03/18 to 03/25	--	--	--	--	--	--	--
03/25 to 04/01	.009	.003	.74	.01	.209	.460	<.003
04/01 to 04/08	.032	.019	.37	.04	.168	.270	<.003
04/08 to 04/15	--	--	--	--	--	--	--
04/15 to 04/22	.005	<.003	.10	<.01	.040	.060	<.003
04/22 to 04/29	.053	.070	3.2	.09	1.08	2.39	<.003
04/29 to 05/06	--	--	--	--	--	--	--
05/06 to 05/13	.009	.012	.93	.02	.179	.630	<.003
05/13 to 05/20	.023	.017	1.1	.05	.332	.740	<.003
05/20 to 05/27	.008	.015	.90	.03	.372	1.00	<.003
05/27 to 06/03	.024	.036	.45	.03	.139	.390	<.003
06/03 to 06/10	.012	.049	.45	.03	.175	.330	<.003
06/10 to 06/17	.007	.021	.54	.04	.262	.360	<.003
06/17 to 06/24	.025	.038	1.4	.06	.283	.680	<.003
06/24 to 07/01	.009	.021	.33	.03	.096	.280	<.003
07/01 to 07/07	.036	.048	.72	.08	.302	.510	<.003
07/07 to 07/15	.021	.020	.56	.06	.215	.390	<.003
07/15 to 07/22	.012	.027	.66	.05	.183	.430	<.003
07/22 to 07/29	--	--	--	--	--	--	--
07/29 to 08/05	.014	.049	.98	.10	.407	.630	<.003
08/05 to 08/12	.033	.051	.89	.12	.554	.730	<.003
08/12 to 08/19	--	--	--	--	--	--	--
08/19 to 08/26	.064	.130	1.6	.09	.403	.600	<.003
08/26 to 09/02	.022	.283	1.2	.11	.363	1.02	.154
09/02 to 09/09	--	--	--	--	--	--	--
09/09 to 09/16	.014	.023	1.3	.05	.227	.570	<.003
09/16 to 09/23	.011	.011	.54	.03	.172	.290	<.003
09/23 to 09/30	.068	.097	.61	.11	.052	.440	<.003

1 The use of brand names in this report is for identification purposes only and does not imply endorsement by the U.S. Geological Survey.

a To provide for an adequate sample, 50 milliliters of dilution water was added.

b Trace of water collected in field sampler.

< Less than.

CHEMICAL QUALITY OF PRECIPITATION

JAMES RIVER BASIN

470732099140204 WOODWORTH, ND
(National Trends Network precipitation-quality station)

LOCATION.--Lat 47°14'32", long 99°14'02", in SE¹/₄SW¹/₄SW¹/₄ sec.12, T.142 N., R.68 W., Stutsman County, Hydrologic Unit 10160002, at U.S. Fish and Wildlife Service Northern Prairie Wildlife Research Center, at Woodworth Experiment Station 2.8 mi east and 1 mi south of Woodworth.

PERIOD OF RECORD.--November 1983 to current year (weekly composite).

INSTRUMENTATION.--The composite sample collector is an Aerochem Metrics¹ model 301 wet/dry precipitation collector mounted on ground surface. Precipitation quantity is determined by a Belfort¹ model 5-780 recording rain gage equipped with an event recorder and an Alter-type wind screen. The recording rain gage is installed 17 ft east of the sample collector with gage mouth and collector bucket elevations of 50.75 in above land surface.

REMARKS.--The station is located 300 ft west of an event sample-collection station which was operated by the North Dakota State Health Department (station discontinued 1987). Continuously recording meteorological instrumentation for air temperature, wind speed, and wind direction were installed 9.8 ft above land surface at the event station. Data presented are provisional analyses by the Central Analytical Laboratory of the Illinois State Water Survey and have not completed quality-assurance review by the National Atmospheric Deposition Program. Analyses are determined from water taken from the sample collector.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Period of collection	Precipitation total, in/wk (00046)	Collector efficiency, atm dep wet, percent (82284)	Specific conductance wat unf uS/cm 25 decC (00095)	Specific conductance wat unf lab uS/cm 25 decC (90095)	pH, water, un ltrd eld, std units (00400)	pH, water, un ltrd lab, std units (00403)	Calcium, water, trd, mg/L (00915)	Magnesium, water, trd, mg/L (00925)
09/24 to 10/01	.12	<8	--	--	--	--	--	--
10/01 to 10/08	.53	94	5	4	6.2	5.8	.053	.011
10/08 to 10/15	b.02	<50	--	--	--	--	--	--
10/15 to 10/22	.35	17	15	11	6.5	6.0	.353	.076
10/22 to 10/29	.09	33	--	11	--	6.2	.092	.012
10/29 to 11/05	b.00	--	--	--	--	--	--	--
11/05 to 11/12	b.07	<14	--	210	--	6.8	--	--
11/12 to 11/19	b.05	<20	--	--	--	--	--	--
11/19 to 11/26	b.02	<50	--	--	--	--	--	--
11/26 to 12/03	b.02	<50	--	--	--	--	--	--
12/03 to 12/10	.01	100	--	a26	--	a6.2	a1.48	a.233
12/10 to 12/17	b.03	<33	--	--	--	--	--	--
12/17 to 12/24	.35	89	6	7	5.1	4.9	.015	<.003
12/24 to 12/31	.07	57	--	20	--	5.2	.460	.074
12/31 to 01/07	.00	--	--	--	--	--	--	--
01/07 to 01/14	.05	<20	--	--	--	--	--	--
01/14 to 01/21	b.01	<100	--	--	--	--	--	--
01/21 to 01/28	b.03	<33	--	--	--	--	--	--
01/28 to 02/04	b.02	50	--	410	--	8.1	--	--
02/04 to 02/11	b.00	--	--	--	--	--	--	--
02/11 to 02/18	b.05	20	--	39	--	7.0	--	--
02/18 to 02/25	b.01	<100	--	--	--	--	--	--
02/25 to 03/04	.00	--	--	--	--	--	--	--
03/04 to 03/11	.07	14	--	a31	--	a6.0	a1.73	a.418
03/11 to 03/18	.10	50	20	18	6.3	6.8	.346	.070
03/18 to 03/25	b.01	<100	--	--	--	--	--	--
03/25 to 04/01	.17	106	76	7	6.3	6.1	.101	.014
04/01 to 04/08	b.00	--	--	--	--	--	--	--
04/08 to 04/15	.00	--	--	--	--	--	--	--
04/15 to 04/22	.58	95	6	6	6.0	6.3	.141	.022
04/22 to 04/29	.06	83	17	16	5.2	6.6	.675	.073
04/29 to 05/06	2.14	109	10	7	6.5	5.5	.077	.012
05/06 to 05/13	1.05	104	9	8	6.3	6.0	.143	.026
05/13 to 05/20	2.34	105	8	7	6.5	6.0	.119	.018
05/20 to 05/27	.07	86	15	13	6.8	6.6	.214	.042
05/27 to 06/03	.17	24	--	156	--	7.7	2.77	.860
06/03 to 06/10	.94	96	14	15	6.7	6.7	.339	.156
06/10 to 06/17	.50	100	10	7	6.8	6.3	.175	.039
06/17 to 06/24	.73	101	12	10	6.3	6.1	.333	.038
06/24 to 07/01	.55	100	10	8	6.5	6.3	.400	.072
07/01 to 07/08	.20	85	12	11	6.5	6.0	.235	.038
07/08 to 07/15	.95	101	9	8	6.5	6.2	.230	.048
07/15 to 07/22	.34	109	14	10	6.9	6.4	.326	.066
07/22 to 07/29	.00	--	--	--	--	--	--	--
07/29 to 08/05	.17	100	13	10	5.8	6.5	.415	.101
08/05 to 08/12	.40	105	11	11	6.5	6.3	.305	.027
08/12 to 08/19	.00	--	--	--	--	--	--	--
08/19 to 08/26	.16	88	31	25	7.2	7.0	1.63	.191
08/26 to 09/02	.05	60	--	29	--	7.0	1.71	.289
09/02 to 09/09	.00	--	--	--	--	--	--	--
09/09 to 09/16	.80	104	12	8	6.3	6.0	.131	.018
09/16 to 09/23	.34	103	10	8.3	6.4	6.0	.277	.038
09/23 to 09/30	.06	50	--	9	--	6.5	.482	.091

JAMES RIVER BASIN

470732099140204 WOODWORTH, ND--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Period of collection	Sodium, water, trd, mg/L (00930)	Potassium, water, trd, mg/L (00935)	Sulfate, water, trd, mg/L (00945)	Chloride, water, trd, mg/L (00940)	Nitrate, water, trd, mg/L as N (00618)	Ammonia, water, trd, mg/L as N (00608)	Phosphorus, water, trd, mg/L (00666)
09/24 to 10/01	--	--	--	--	--	--	--
10/01 to 10/08	.003	.006	.30	.01	.097	.230	<.003
10/08 to 10/15	--	--	--	--	--	--	--
10/15 to 10/22	.020	.055	1.8	.05	.287	.570	<.003
0/22 to 10/29	.010	.023	.97	.05	.546	.940	<.003
10/29 to 11/05	--	--	--	--	--	--	--
11/05 to 11/12	--	--	--	--	--	--	--
11/12 to 11/19	--	--	--	--	--	--	--
11/19 to 11/26	--	--	--	--	--	--	--
11/26 to 12/03	--	--	--	--	--	--	--
12/03 to 12/10	a.233	a.097	a2.8	a.60	a1.31	a1.01	a<.015
12/10 to 12/17	--	--	--	--	--	--	--
12/17 to 12/24	.003	<.003	.18	.02	.228	.080	<.003
12/24 to 12/31	.080	.056	2.4	.09	.791	.810	<.003
12/31 to 01/07	--	--	--	--	--	--	--
01/07 to 01/14	--	--	--	--	--	--	--
01/14 to 01/21	--	--	--	--	--	--	--
01/21 to 01/28	--	--	--	--	--	--	--
01/28 to 02/04	--	--	--	--	--	--	--
02/04 to 02/11	--	--	--	--	--	--	--
02/11 to 02/18	--	--	--	--	--	--	--
02/18 to 02/25	--	--	--	--	--	--	--
02/25 to 03/04	--	--	--	--	--	--	--
03/04 to 03/11	a.342	a.179	a3.5	a.33	ab.39	a.950	a<.016
03/11 to 03/18	.063	.033	1.4	.06	.552	1.52	<.003
03/18 to 03/25	--	--	--	--	--	--	--
03/25 to 04/01	.023	.009	--	--	--	.550	<.003
04/01 to 04/08	--	--	--	--	--	--	--
04/08 to 04/15	--	--	--	--	--	--	--
04/15 to 04/22	.018	.013	.53	.02	.155	.360	<.003
04/22 to 04/29	.086	.032	1.5	.07	.570	.930	<.003
04/29 to 05/06	.010	.004	.86	.02	.228	.470	<.003
05/06 to 05/13	.009	.005	.82	.02	.221	.550	<.003
05/13 to 05/20	.012	.008	.76	.02	.261	.540	<.003
05/20 to 05/27	.010	.016	.67	.05	.358	1.13	<.003
05/27 to 06/03	.402	3.02	5.5	1.1	1.29	15.2	1.85
06/03 to 06/10	.009	.184	.90	.05	.233	.860	.228
06/10 to 06/17	.019	.038	.41	.05	.217	.520	<.003
06/17 to 06/24	.045	.053	1.0	.12	.365	.680	<.003
06/24 to 07/01	.031	.035	.95	.04	.207	.450	<.003
07/01 to 07/08	.047	.059	1.3	.09	.397	.780	<.003
07/08 to 07/15	.024	.068	.67	.07	.273	.360	<.003
07/15 to 07/22	.022	.030	1.1	.07	.322	.710	<.003
07/22 to 07/29	--	--	--	--	--	--	--
07/29 to 08/05	.015	.039	.84	.05	.319	.640	<.003
08/05 to 08/12	.010	.030	1.1	.06	.381	.750	<.003
08/12 to 08/19	--	--	--	--	--	--	--
08/19 to 08/26	.071	.194	1.7	.15	.997	1.36	.003
08/26 to 09/02	.240	.320	2.3	.24	.939	1.35	<.003
09/02 to 09/09	--	--	--	--	--	--	--
09/09 to 09/16	.008	.014	1.3	.03	.203	.640	<.003
09/16 to 09/23	.030	.023	.93	.06	.241	.410	<.003
09/23 to 09/30	.115	.072	.83	.13	.137	.460	<.003

1 The use of brand names in this report is for identification purposes only and does not imply endorsement by the U.S. Geological Survey.

a To provide for an adequate sample, 50 milliliters of dilution water was added.

b Trace of water collected in field sampler.

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Conversion Factors

Multiply	By	To obtain
Length		
inch (in.)	2.54×10^1	millimeter (mm)
	2.54×10^{-2}	meter
foot (ft)	3.048×10^{-1}	meter (m)
mile (mi)	1.609×10^0	kilometer (km)
Area		
acre	4.047×10^3	square meter (m ²)
	4.047×10^{-1}	square hectometer (hm ²)
	4.047×10^{-3}	square kilometer (km ²)
square mile (mi ²)	2.590×10^0	square kilometer (km ²)
Volume		
gallon (gal)	3.785×10^0	liter (L)
	3.785×10^{-3}	cubic meter (m ³)
	3.785×10^0	cubic decimeter (dm ³)
million gallons (Mgal)	3.785×10^3	cubic meter (m ³)
	3.785×10^{-3}	cubic hectometer (hm ³)
cubic foot (ft ³)	2.832×10^{-2}	cubic meter (m ³)
	2.832×10^1	cubic decimeter (dm ³)
cubic-foot-per-second-per-day [(ft ³ /s/d)]	2.447×10^3	cubic meter (m ³)
	2.447×10^{-3}	cubic hectometer (hm ³)
acre-foot (acre-ft)	1.223×10^3	cubic meter (m ³)
	1.223×10^{-3}	cubic hectometer (hm ³)
	1.223×10^{-6}	cubic kilometer (km ³)
Flow rate		
cubic foot per second (ft ³ /s)	2.832×10^1	liter (L/s)
	2.832×10^{-2}	cubic meter per second (m ³ /s)
	2.832×10^1	cubic decimeter per second (dm ³ /s)
gallon per minute (gal/min)	6.309×10^{-2}	liter per second (L/s)
	6.309×10^{-5}	cubic meter per second (m ³ /s)
	6.309×10^{-2}	cubic decimeter per second (dm ³ /s)
million gallons per day (Mgal/d)	4.381×10^{-2}	cubic meter per second
	4.381×10^1	cubic decimeter per second (dm ³ /s)
Mass		
ton, short (2,000 lb)	9.072×10^{-1}	megagram (Mg) or metric ton

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

$$^{\circ}\text{F} = (1.8 \times ^{\circ}\text{C}) + 32$$



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