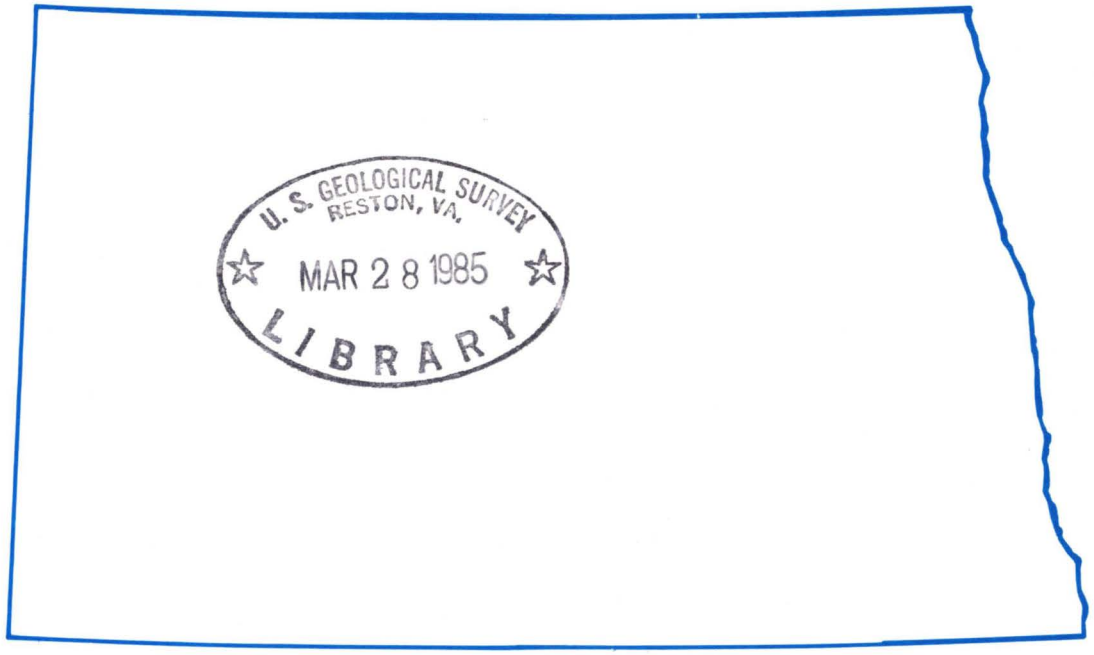
R
(200)
Ga3
North Dakota
1983
pt.1

Water Resources Data North Dakota Water Year 1983



U.S. GEOLOGICAL SURVEY
RESTON, VA.
MAR 28 1985
LIBRARY

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT ND-83-1
Prepared in cooperation with the State of North Dakota
and with other agencies

CALENDAR FOR WATER YEAR 1983

1982

OCTOBER

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

NOVEMBER

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

DECEMBER

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

1983

JANUARY

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

FEBRUARY

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28					

MARCH

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

APRIL

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

MAY

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

JUNE

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

JULY

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

AUGUST

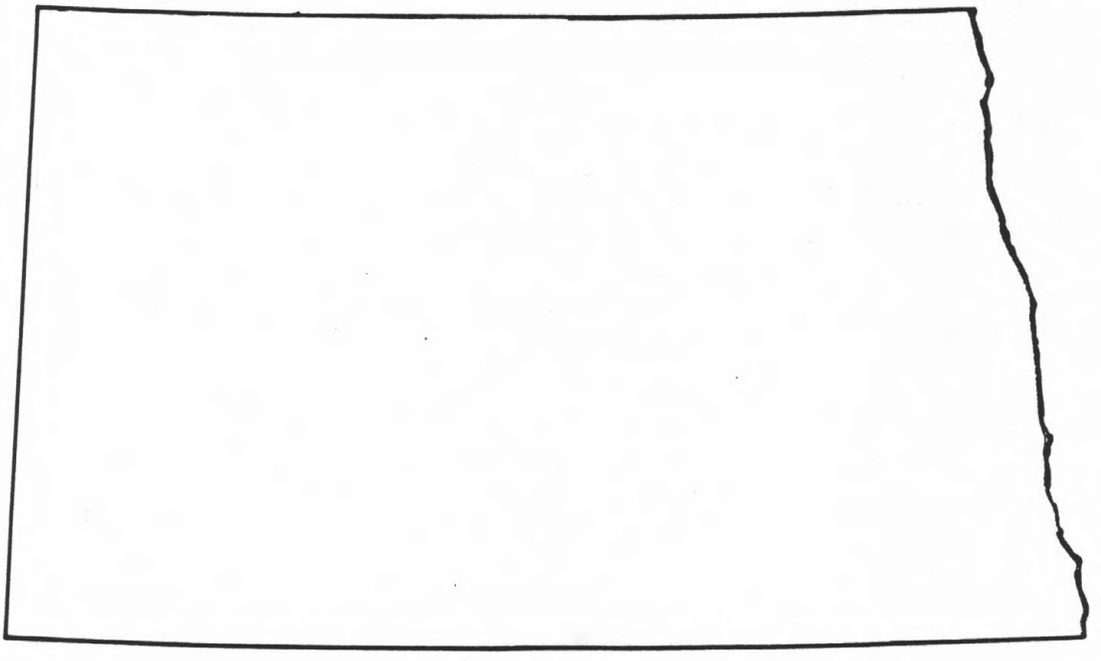
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

SEPTEMBER

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Water Resources Data North Dakota Water Year 1983

by R.E. Harkness, N.D. Haffield



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT ND-83-1
Prepared in cooperation with the State of North Dakota
and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

WILLIAM P. CLARK, SECRETARY

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For information on the water program in North Dakota write to
District Chief, Water Resources Division
U.S. Geological Survey
821 East Interstate Avenue
Bismarck, North Dakota 58501-1199

1984

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. USGS/WRD/HD-83-081	2.	3. Recipient's Accession No.

4. Title and Subtitle

Water Resources Data, North Dakota, Water Year 1983

5. Report Date
December 1984

6.

7. Author(s)
R. E. Harkness and N. D. Haffield

8. Performing Organization Rept. No.
USGS-WDR-ND-83-1

9. Performing Organization Name and Address

U.S. Geological Survey, Water Resources Division
821 East Interstate Avenue
Bismarck, North Dakota 58501-1199

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.
(C)
(G)

12. Sponsoring Organization Name and Address

U.S. Geological Survey, Water Resources Division
821 East Interstate Avenue
Bismarck, North Dakota 58501-1199

13. Type of Report & Period Covered
Annual - Oct. 1, 1982 to Sept. 30, 1983

14.

15. Supplementary Notes

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

16. Abstract (Limit: 200 words)

Water resources data for the 1983 water year for North Dakota consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground water. This report contains discharge records for 112 gaging stations; stage only records for 17 gaging stations; stage and contents for 10 lakes and reservoirs; water quality for 109 gaging stations; 5 lakes, 29 wells, and water levels for 31 observation wells. Additional water data were collected at various sites, not involved in the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in North Dakota.

17. Document Analysis a. Descriptors

*North Dakota, *Hydrologic data, *Surface water, *Ground water, *Water quality, Flow rate, Gaging stations, Lakes, Reservoirs, Chemical analyses, Sediments, Water temperatures, Sampling sites, Water levels, Water analyses.

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement: No restriction on distribution
This report may be purchased from: National Technical Information Service, Springfield, VA 22161

19. Security Class (This Report) Unclassified

20. Security Class (This Page) Unclassified

21. No. of Pages 392

22. Price

(See ANSI-Z39.18) See Instructions on Reverse

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

PREFACE

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

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

Bismarck District Office

Luverne L. Albright
Gilbert L. Berg
Katherine L. Kuzniar
Robert W. Gauger
Thomas A. Gleich
James D. Heidt
Carolyn S. Helgesen
Robert L. Houghton
Ronald L. Kuznair
Steven W. Norbeck
Michael J. Voigt
Jeannette E. Wagner
Geraldine B. Wald
Edwin A. Wesolowski

Grand Forks Field Headquarters

Gerald L. Ryan
Kelvin L. Boesflug
Sandra I. Nordby
Roger A. Pewe
Wayne R. Westensee

Dickinson Field Headquarters

Douglas L. Ellenbecker
George J. Klug
Sharon L. Schwartz

Katherine L. Kuzniar and Sherry M. Baumgartner typed the text of the report.

This report was prepared in cooperation with the State of North Dakota and with other agencies under the general supervision of L. Grady Moore, District Chief, North Dakota.

CONTENTS

	Page
Preface	III
List of gaging stations, in downstream order, for which records are published	VII
Introduction	1
Cooperation	1
Hydrologic conditions	2
Definition of terms	7
Downstream order and station number	12
Numbering system for wells and miscellaneous sites	12
Special networks and programs	12
Explanation of stage and water-discharge records	14
Collection and computation of data	14
Accuracy of field data and computed results	16
Other data available	16
Records of discharge collected by agencies other than the Geological Survey	16
Explanation of water-quality records	21
Collection and examination of data	21
Water analysis	21
Water temperature	21
Sediment	21
Parameter codes	22
Explanation of ground-water level records	22
Collection of the data	22
Availability of data	22
Publications on techniques of water-resources investigations	29
Gaging station records	33
Discharge at miscellaneous sites	358
Analyses of samples collected at miscellaneous surface-water quality sites	361
Ground-water records	366
Ground-water level records	366
Quality of ground-water records	376
Index	379

ILLUSTRATIONS

			Page
Figure	1.	Comparison of 1983 water year precipitation to 1941-70 average	3
	2.	Comparison of 1983 streamflow to mean streamflow for the period of record	4
	3.	Ground-water levels for 1983 compared with mean of monthly water level measurements for 1963-82 for a representative well	6
	4.	Ground-water levels for 1983 compared with mean of monthly water level measurements for 1968-82 for a representative well	6
	5.	System for numbering wells and miscellaneous sites (latitude and longitude)	13
	6.	System for numbering wells and miscellaneous sites (township and range)	13
	7.	Computer printout of annual maximum discharges for the period of record for the Knife River near Hazen, ND (06340500)	17
	8.	Computer printout of peak flow frequency analysis for the Knife River near Hazen, ND (06340500)	18
	9.	Computer printout of peak flow frequency curve for the Knife River near Hazen, ND (06340500)	19
	10.	Computer printout of statistics computed on monthly mean discharges for the period of record on Knife River near Hazen, ND (06340500)	20
	11.	Computer printout of statistics computed on annual mean discharges for the period of record on Knife River near Hazen, ND (06340500)	20
	12.	Ground-water level hydrograph for West Fargo aquifer well, Cass County, 1964-83	23
	13a.	Ground-water level hydrograph for McKenzie aquifer well, Burleigh County, 1963-72	24
	13b.	Ground-water level hydrograph for McKenzie aquifer well, Burleigh County, 1973-83	25
	14.	Ground-water level hydrograph for recorder well in Sheyenne Delta aquifer, Richland County, 1983 water year	27
	15.	Ground-water level hydrograph for Spiritwood aquifer well, Benson County, showing comparison with Devils Lake monthend water-level elevations	28
	16.	Map showing location of lake and stream gaging stations	30
	17.	Map showing location of water-quality stations	31
	18.	Map showing location of ground-water observation wells	32

TABLES

			Page
Table	1.	Comparison of 1983 specific-conductance measurements with monthly and annual means, maximums, and minimums for period of record	5
	2.	Reported water use for irrigation from the McKenzie aquifer, in acre-feet	26

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

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

Page

HUDSON BAY BASIN
Lake Winnipeg (Head of Nelson River)
RED RIVER OF THE NORTH BASIN
Otter Tail River (head of Red River of the North):
Bois de Sioux River near White Rock, SD (d)..... 33
Red River of the North at Wahpeton (dc)..... 35
Red River of the North at Hickson (dc)..... 37
Wild Rice River near Rutland (dc)..... 39
Richland County Drain 65 near Great Bend (d)..... 40
Wild Rice River near Abercrombie (dc)..... 41
Red River of the North at Fargo (dc)..... 43
Red River of the North below Fargo (c)..... 45
Sheyenne River above Harvey (dc)..... 47
Sheyenne River near Warwick (dc)..... 50
Devils Lake:
Mauvais Coulee (head of Big Coulee) near Cando (dc)..... 52
Edmore Coulee near Edmore (dc)..... 54
Sweetwater Lake at Sweetwater(c)..... 56
Starkweather Coulee near Webster (dc)..... 57
Little Coulee near Brinsmade (dc)..... 59
Big Coulee near Churchs Ferry (dc)..... 63
Big Coulee at Grahams Island Inlet near Fort Totten (c)..... 65
Devils Lake near Devils Lake (d)..... 66
Sheyenne River near Cooperstown (dc)..... 67
Lake Ashtabula:
Baldhill Creek near Dazey (dc)..... 69
Lake Ashtabula at Baldhill Dam (d)..... 71
Sheyenne River below Baldhill Dam (dc)..... 72
Sheyenne River at Valley City (dc)..... 74
Sheyenne River at Lisbon (dc)..... 76
Sheyenne River near Kindred (dcms)..... 78
Sheyenne River near Horace (dc)..... 82
Sheyenne River at West Fargo (dc)..... 84
Maple River near Hope (dc)..... 86
Maple River near Enderlin (dc)..... 88
Cass County Drain 52 near Amenia (dc)..... 90
Lower Branch Rush River near Prosper (dc)..... 92
Rush River at Amenia (dc)..... 94
Rush River near Prosper (dc)..... 96
Elm River near Kelso (dc)..... 98
Red River of the North at Halstad, MN (dcms)..... 100
Goose River:
Beaver Creek near Finley (dcms)..... 104
Goose River near Portland (dc)..... 107
Goose River at Hillsboro (dc)..... 109
Red River of the North at Grand Forks (dc)..... 111
Turtle River at Manvel (dcms)..... 113
Forest River:
Middle Branch Forest River near Whitman (dc)..... 114
Forest River near Fordville (dc)..... 116
Forest River at Minto (dc)..... 118
South Branch Park River (head of Park River):
Homme Lake near Park River (d)..... 120
South Branch Park River below Homme Dam (dc)..... 121
Middle Branch Park River near Union (dc)..... 123
South Branch Park River (head of Park River):
North Branch Park River:
Cart Creek at Mountain (dc)..... 125
Park River at Grafton (dc)..... 127
Red River of the North at Drayton (dc)..... 129
Pembina County drain 20 near Glasston (dc)..... 131
Pembina River:
Hidden Island Coulee near Hansboro (dc)..... 133
Cypress Creek near Sarles (dc)..... 135
Snowflake Creek near Snowflake, Manitoba (d)..... 137
Mowbray Creek near Mowbray, Manitoba (d)..... 138
Pembina River near Windygates, Manitoba (d)..... 139
Pembina River at Walhalla (dc)..... 140
Pembina River at Neche (dc)..... 142
Tongue River at Akra (dc)..... 144
Red River of the North at Emerson, Manitoba (dcmts)..... 146

HUDSON BAY BASIN--Continued — Page
Lake Winnipeg (head of Nelson River)--Continued
RED RIVER OF THE NORTH BASIN--Continued
Assiniboine River:
Souris (Mouse) River:
Long Creek at Western Crossing of International Boundary, Saskatchewan (d) 150
Long Creek near Noonan (dc) 151
East Branch Short Creek Reservoir near Columbus (d) 153
Short Creek below International boundary, near Roche Percee, Saskatchewan (d) 154
Souris (Mouse) River near Sherwood (dcms) 155
Lake Darling near Foxholm (d) 158
Souris (Mouse) River near Foxholm (dc) 159
Des Lacs River at Foxholm (dc) 161
Souris (Mouse) River above Minot (dcm) 163
Souris (Mouse) River near Verendrye (dcmts) 168
Wintering River near Karlsruhe (dc) 171
Souris (Mouse) River near Bantry (dcm) 173
Willow Creek:
Lake Metigoshe (head of Oak Creek) near Bottineau (d) 178
Willow Creek near Willow City (dc) 179
Souris (Mouse) River near Westhope (dcms) 181
MISSOURI RIVER BASIN
Missouri River near Culbertson, MT (dcms) 186
Missouri River Stage Gage No. 4 near Nohly, MT (d) 189
Missouri River Stage Gage No. 5 at Nohly, MT (d) 190
YELLOWSTONE RIVER BASIN
Yellowstone River near Sidney, MT (dcmts) 191
Yellowstone River Stage Gage No. 1 near Fairview, MT (d) 198
Yellowstone River Stage Gage No. 2 near Cartwright (d) 199
Yellowstone River Stage Gage No. 3 near Buford (d) 200
Missouri River Stage Gage No. 5A at Buford (d) 201
Missouri River Stage Gage No. 6 near Buford (d) 202
Missouri River Stage Gage No. 7 near Trenton (d) 203
Missouri River near Williston (dcms) 204
Missouri River Stage Gage No. 9 at Williston (d) 205
LITTLE MUDDY RIVER BASIN
Little Muddy River below Cow Creek near Williston (dc) 206
BEAR DEN CREEK BASIN
Bear Den Creek near Mandaree (dcms) 208
LITTLE MISSOURI RIVER BASIN
Little Missouri River at Marmarth (dc) 212
Deep Creek near Amidon (dcs) 214
Beaver Creek at Wibaux, MT (dcs) 217
Beaver Creek near Trotters (dc) 220
Little Missouri River near Watford City (dcms) 222
Lake Sakakawea near Riverdale (d) 226
Missouri River at Garrison Dam (dcmt) 227
Missouri River above Stanton (d) 231
KNIFE RIVER BASIN
Knife River at Manning (dcs) 232
Knife River near Golden Valley (dc) 234
Coyote Creek near Zap (dcs) 236
Brush Creek near Beulah (dcs) 239
Spring Creek at Zap (dcs) 242
West Branch Otter Creek near Beulah (dc) 244
Knife River at Hazen (dcms) 245
Antelope Creek above Hazen (dcs) 248
West Branch Antelope Creek No. 4 near Zap (dcs) 250
West Branch Antelope Creek near Hazen (dcs) 252
Missouri River near Stanton (d) 255
ALDERIN CREEK BASIN
Alderin Creek near Fort Clark (dcs) 256
Missouri River near Hensler (d) 258
COAL LAKE COULEE BASIN
Coal Lake Coulee near Hensler (dcs) 259
BUFFALO CREEK BASIN
Buffalo Creek near Washburn (dcs) 261
Missouri River at Washburn (d) 264
PAINTED WOODS CREEK BASIN
Painted Woods Creek near Wilton (c) 265
Missouri River at Price (d) 267

MISSOURI RIVER BASIN--Continued Page
SQUARE BUTTE CREEK BASIN
Square Butte Creek below Center (dc)..... 268
BURNT CREEK BASIN
Burnt Creek near Bismarck (dc)..... 270
Missouri River at Bismarck (d)..... 272
HEART RIVER BASIN
South Branch Heart River near South Heart (dcs)..... 273
Heart River near South Heart (dcs)..... 277
Edward Arthur Patterson Lake near Dickinson (d)..... 278
Green River near New Hradec (dcs)..... 281
Heart River near Richardton (dc)..... 283
Lake Tschida near Glen Ullin (d)..... 285
Heart River near Lark (dc)..... 288
Heart River near Mandan (dcms)..... 290
Missouri River below Mandan (d)..... 294
APPLE CREEK BASIN
Apple Creek near Menoken (dc)..... 295
Missouri River near Schmidt (d)..... 297
CANNONBALL RIVER BASIN
Coal Bank Creek near Havelock (dcs)..... 298
Cannonball River at Regent (dc)..... 301
Cedar Creek:
White Butte Fork Cedar Creek near Scranton (dc)..... 303
Cedar Creek near Haynes (dc)..... 305
Cedar Creek near Raleigh (dc)..... 307
Cannonball River at Breien (dcm)..... 309
BEAVER CREEK BASIN
Beaver Creek at Linton (dc)..... 313
GRAND RIVER BASIN
Bowman-Haley Lake near Haley (d)..... 315
North Fork Grand River at Haley (dc)..... 316
Buffalo Creek Tributary near Gascoyne (dcs)..... 318
Lake Oahe near Pierre, SD (d)..... 321
JAMES RIVER BASIN
James River near Manfred (dc)..... 322
James River near Grace City (dc)..... 324
James River near Pingree (c)..... 326
Jamestown Reservoir near Jamestown (d)..... 328
Pipestem Creek near Pingree (dc)..... 331
James River at Jamestown (dc)..... 333
James River at LaMoure (dcts)..... 335
Bear Creek near Oakes (dc)..... 342
James River at Oakes(ct)..... 343
James River at Dakota Lake Dam near Ludden (cdt)..... 346
James River at ND-SD State Line (t)..... 355
Elm River:
Maple River at ND-SD State line (d)..... 357

WATER RESOURCES DATA FOR NORTH DAKOTA, 1983

INTRODUCTION

Water-resources data for the 1983 water year for North Dakota consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water levels and water quality of ground-water wells. This report contains discharge records for 112 gaging stations; stage only records for 17 gaging stations; stage and contents for 10 lakes and reservoirs; water quality for 109 gaging stations, 5 lakes, 29 wells and water levels for 31 observation wells. Additional water data were collected at various sites not involved in the systematic data-collection program and are published as miscellaneous measurements and analyses. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State, local, and Federal agencies in North Dakota.

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

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

Beginning with the 1971 water year, water data for streamflow, water quality, and ground water are published in official Survey reports on a State-boundary basis. These official Survey reports carry an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water-Data Report ND-83-1". These water-data reports are for sale, in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on the back of the title page or by telephoning (701) 255-4011, ext. 601.

COOPERATION

The U.S. Geological Survey and organizations of the State of North Dakota have had cooperative agreements for the systematic collection of streamflow records since 1903, for ground-water levels since 1937, and for water-quality records since 1946. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

Burleigh County Water Resouce District, G. A. Neideffer, Chairman

City of Dickinson, Arthur Baumgartner, Mayor

North Dakota Public Service Commission, Bruce Hagen, President

North Dakota State Water Commission, Vernon Fahy, Chief Engineer

North Dakota State Health Department, Gene A. Christianson, Chief, Environmental Health Section

Oliver County Board of Commissioners, Frank Weisgarber, Chairman

Assistance in the form of funds or services was given by other Federal agencies:

Corps of Engineers, U.S. Army
International Joint Commission, U.S. Department of State
Bureau of Land Management, U.S. Department of the Interior
Fish and Wildlife Service, U.S. Department of the Interior
Soil Conservation Service, U.S. Department of Agriculture
Bureau of Reclamation, U.S. Department of the Interior
Other Federal agencies of the U.S. Department of Interior for the development of the Missouri River basin.

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

HYDROLOGIC CONDITIONS

Normally the total precipitation ranges from under 16 inches in the western part of the State to about 19.5 inches in the southeastern corner of the State.

A comparison of monthly precipitation for the 1983 water year with the average precipitation during the 1951-80 reference period is shown in figure 1. These data are from published reports of the National Weather Service, Natinal Oceanic and Atmospheric Administration, U.S. Department of Commerce.

Although the total precipitation for the 1983 water year was from 0.7 to 6.5 inches above normal across the State, the time distribution of the precipitation was not normal. October, a month when normally only about 5 percent of the annual rainfall occurs, received the largest amount of rainfall. Total rainfall for the month ranged from 2.6 to 6.5 inches greater than normal and was about 25 percent of the rainfall received during the year.

During the period November thru February the precipition amounts were about normal and resulted in the normal accumulation of snow. However, temperatures were generally above normal during this period. For example, the departures from normal temperatures in the Northwestern section equalled +2.5°F, +1.0°F, +8.5°F and +2.2°F for the months of December, January, February and March respectively. As a result of the warmer temperatures, the snowmelt runoff occured earlier and the volume of runoff was less than is normally expected. Hydrographs that compare historic mean monthly discharges with 1983 monthly means for selected streams are shown in figure 2.

Precipitation was 3.37 inches below normal in the southeastern part of the State during the growing season April to September. During June, July, and August temperatures were above normal, the hydrograph for the Wild Rice River near Abercrombie (fig. 2), which drains much of this area reflects the effects of the hot dry conditions on the streamflow.

Streamflow water quality during the 1983 water year is summarized for four selected streamflow stations in Table 1. The measurements of specific conductance made during the water year are compared to the historical maximum, minimum, and mean values by month and year. Specific conductance can be used to describe the general water-quality conditions since it is related to the concentration and types of ions in the water. Streamside measurements of specific conductance have been routinely obtained at all North Dakota streamflow stations since 1972.

Because the water quality at any particular site is dependent upon the source of streamflow, water quality varies considerably across the State. During periods of low flow when the major part of flow is derived from ground-water inflow, the dissolved solids concentrations are quite large, reflecting the mineralized characteristics of the inflow. Maximum values of specific conductance are observed during the fall and winter months when the flow is primarily from ground-water sources. As streamflow increases from increased runoff, the concentration of constituents in solution will decrease while other materials that tend to be carried in suspension, such as sediment, will increase. The variability in water quality is the greatest during the spring when there is a considerable quantity of overland runoff from snowmelt. Minimum values are observed during this period with the minimum value being dependent on the quantity of runoff that is available for dilution.

This years measurements of specific conductance all plot within the range that have historically been observed at each of the selected stations.

Ground-water level measurements made in a well completed in the Sheyenne Delta aquifer in the east-central part of the State are shown in figure 3. The greater than normal precipitation that occurred in this area in October and June resulted in higher than normal water levels in October, November and July. The rest of the water levels for the year were close to or below normal reflecting the general weather conditions that existed.

Ground-water level measurements made in a well completed in the Sentinel Butte aquifer (fig. 4) in the southwest part of the State increased from about 1/2 foot above average in September 1982 to about 1 foot above average in October. This was the result of the greater than normal precipitation that occured in October.

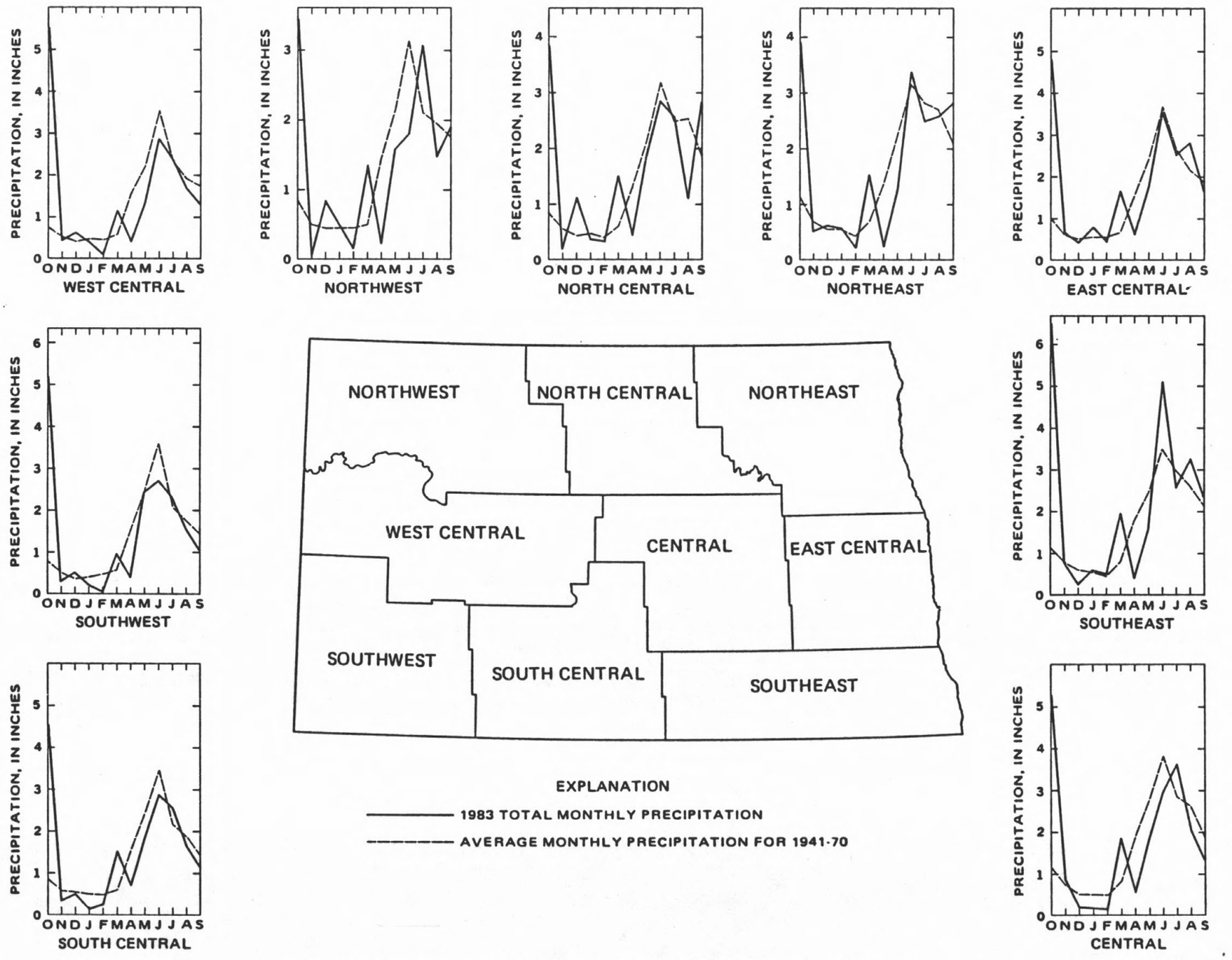


FIGURE 1.—Comparison of 1983 water year precipitation to 1941-70 average.

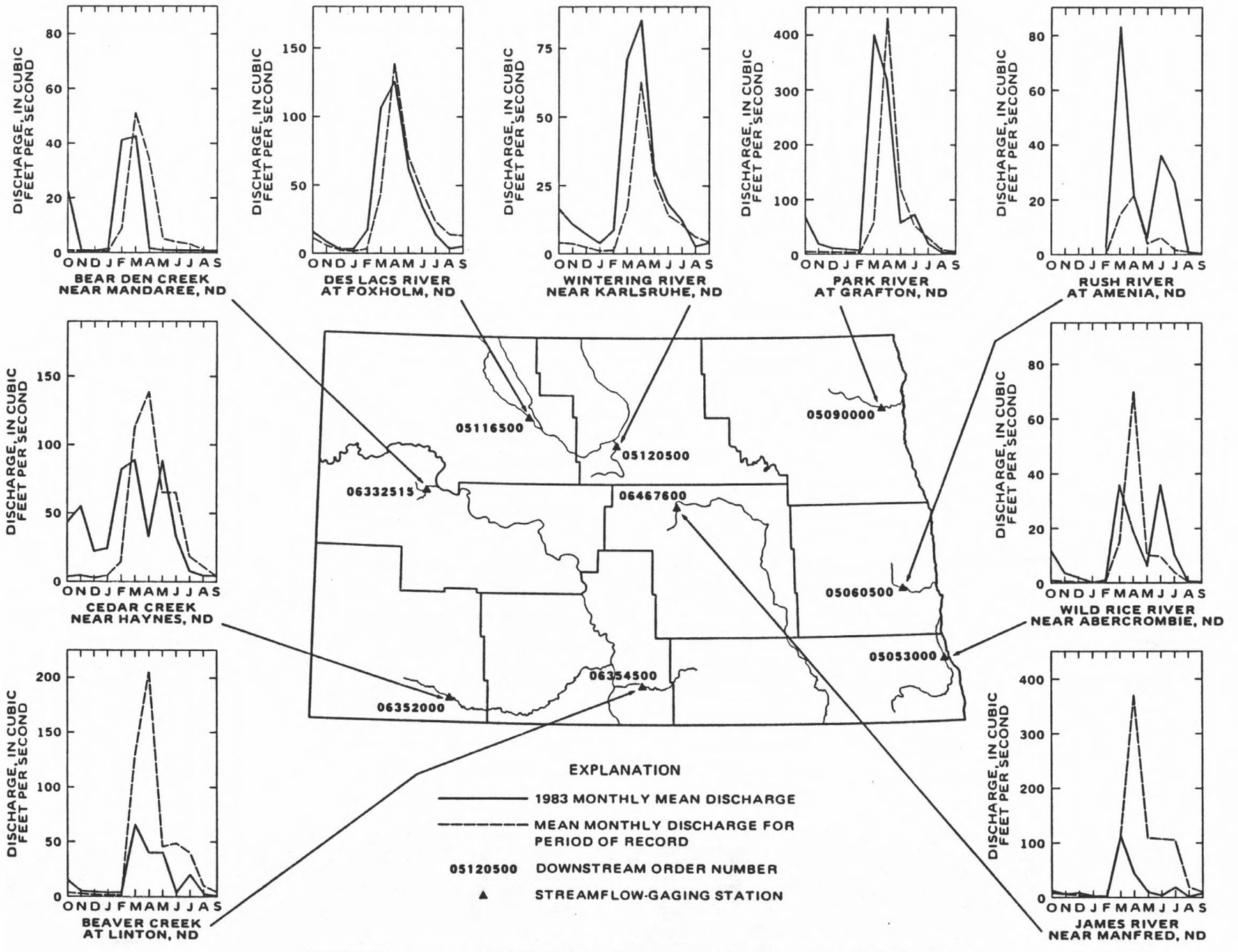


FIGURE 2.—Comparison of 1983 streamflow to mean streamflow for period of record.

Table 1.--Comparison of 1983 specific-conductance measurements with monthly and annual means, maximums, and minimums for period of record

	Oct.	Nov.	Dec.	Jan.	Feb	Mar.	Apr.	May	June	July	Aug.	Sept.	Period of Record	1983
05082500 Red River at Grand Forks, ND														
Mean	504	580	606	579	563	505	447	560	548	495	499	482	520	507
Maximum	660	750	976	870	830	746	747	702	699	640	621	674	976	615
Minimum	399	440	468	445	450	306	200	370	348	280	360	340	200	348
1983 Values	595	540	615	554	521	521 528	392 455 600 492	560	348 442	420 510 540	--	506	--	--
05114000 Souris River near Sherwood, ND														
Mean	1080	1250	1640	1750	1700	1350	597	751	998	1020	975	1050	1060	1080
Maximum	1470	1880	2230	2770	2200	2180	1280	1160	1340	1420	1300	1240	2770	1650
Minimum	710	925	1250	1280	640	200	277	345	520	540	128	775	128	535
1983 Values	1100 1040	1630	--	1680	1650	--	535 540	785	900	930	--	--	--	--
06337000 Little Missouri River near Watford City, ND														
Mean	1420	1900	2960	2380	1220	981	1430	1860	1640	1880	1820	1800	1670	1600
Maximum	3100	2610	5000	3350	2030	1750	2700	3100	2710	3000	2400	2390	5000	2430
Minimum	720	740	1720	1500	640	400	515	1410	800	1080	1000	900	400	640
1983 Values	833	--	2100	1500	640	--	1650	2150	2430	2100	1000	--	--	--
06354000 Cannonball River at Breien, ND														
Mean	1600	2180	2670	2340	1850	865	1060	1760	2140	1550	1480	1740	1760	2030
Maximum	2130	3070	3290	3800	3710	3100	2250	2930	3020	3000	2800	2300	3800	2930
Minimum	903	1600	2100	680	280	190	300	481	610	570	575	730	190	740
1983 Values	--	1600	--	2680	1680	740 1440	2260	2930	2330	--	2120	1480	--	--

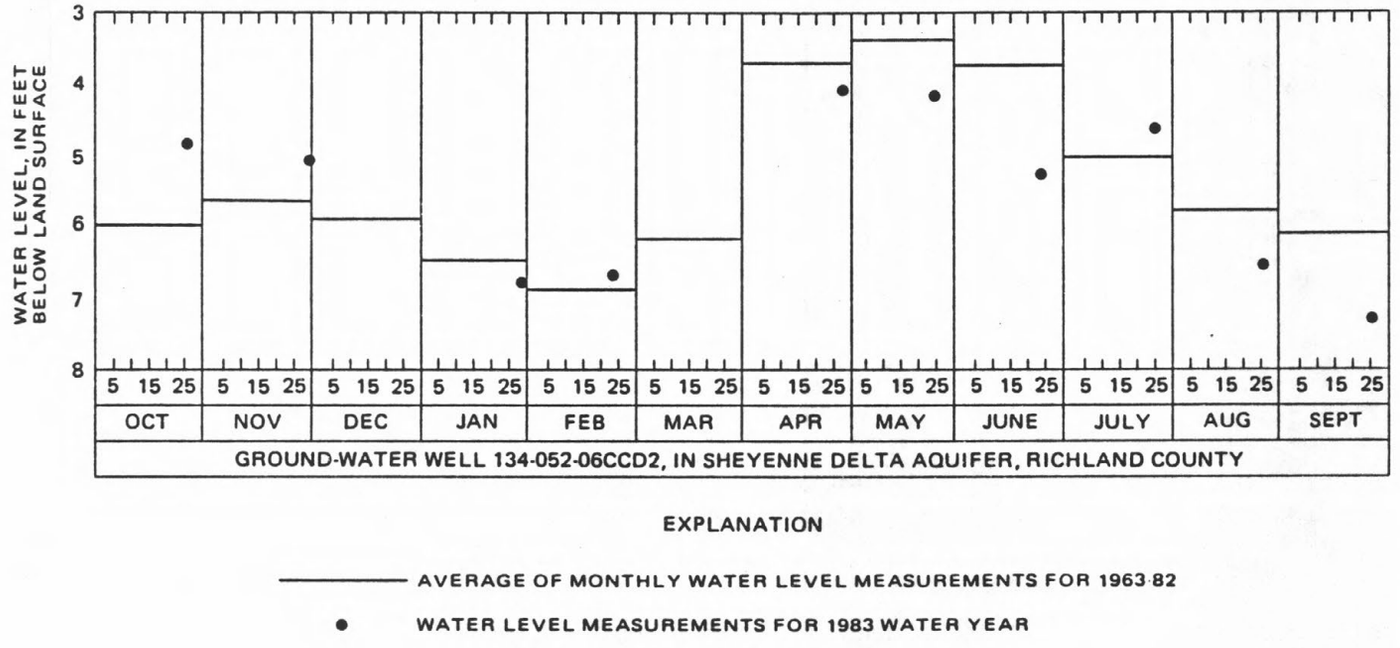


FIGURE 3.—Ground-water levels for 1983 compared with mean of monthly water level measurements for 1963-82 for a representative well.

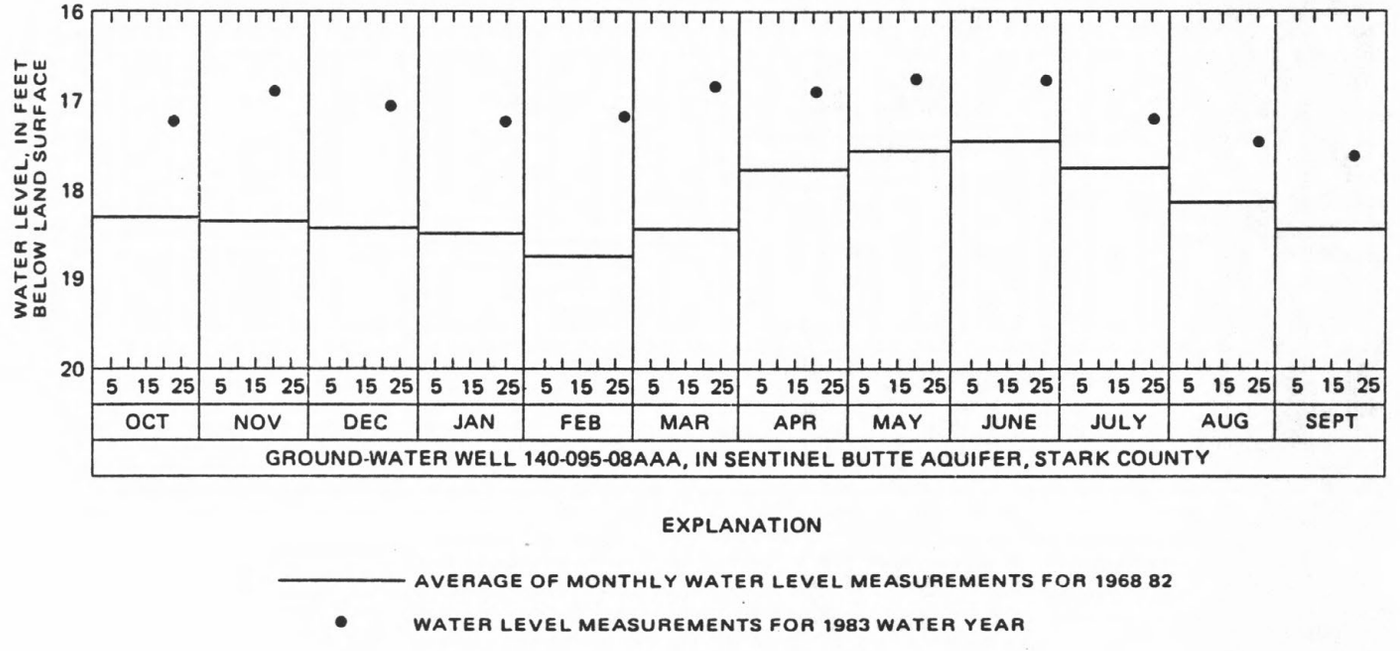


FIGURE 4.—Ground-water levels for 1983 compared with mean of monthly water level measurements for 1968-82 for a representative well.

DEFINITION OF TERMS

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

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

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

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

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

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warm-blooded animals. They commonly are 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° Celsius ± 0.2° Celsius on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milliliters of sample.

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

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.

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

Cfs-day is the volume of water represented by flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons or 2,447 cubic meters.

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

Coliform organisms are a group of bacteria used as an indicator of the sanitary quality of the water. The number of coliform colonies per 100 milliliters is determined by the immediate-incubation, membrane-filter method.

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, lake, stream or aquifer. Contents herein is that of a reservoir and unless otherwise indicated, is computed on the basis of a level pool and does not include bank storage.

Continuing-record station is a specified site which meets one or more conditions as listed:

1. When gage-height record for a river or canal is recorded or collected by an observer on a regular basis during periods of flow. Daily discharge and/or gage-height record may be published.

2. When ground-water level below land-surface datum is recorded or measured 10 or more months during the water year.

3. When chemical samples are collected daily or monthly for 10 or more months during the water year.

4. When water-temperature records include measurements made once or more times daily.

5. When sediment-discharge records include those periods for which sediment loads are computed and are considered to be representative of the runoff for the water year.

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

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

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

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

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

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 the quantity of substance present in the true chemical solution. In practice, however, the term includes all forms of substance that will pass through a 0.45 micrometer membrane filter, and thus may include some very small (colloidal) suspended particles. Analyses for "dissolved" constituents are performed on subsamples of the filtrate.

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

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

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

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

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

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

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

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

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

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

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

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

Particle-size distributions used in this report are based on recommended classifications made by the American Geophysical Union Subcommittee on Sediment Terminology.

The classifications are as follows:

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

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

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

Percent saturation is a comparison of the actual oxygen content of water to the saturation content of oxygen, expressed in terms of percent.

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

pH indicates the degree of acidity or alkalinity of water and is expressed in terms of pH units. The pH value of a solution is the negative logarithm of the concentration of hydrogen ions, in moles per liter. A pH of 7.0 indicates that the water is neither acid nor alkaline. pH readings progressively less than 7.0 denote increasing acidity and those progressively greater than 7.0 denote increasing alkalinity. The pH of most natural surface waters ranges between 6 and 8.

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

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

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

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

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

Bedload is that sediment transported by a river in rolling and saltation on or near the streambed.

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

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

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

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

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

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

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

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

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

Stage is the height of a water surface above an established datum plane; also gage height.

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

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

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

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

Suspended, recoverable is the quantity of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45-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" quantity (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

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

Suspended, total is the total quantity of a given constituent in the part of a representative water-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. A knowledge of the expected form of the constituent in the sample, as well as the analytical method 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 a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the presence of a thermograph or a digital mechanism that automatically records water temperatures on paper tape.

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

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

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

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

Total in bottom material is the total quantity 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 method used, is required to judge when the results should be reported as "total in bottom material."

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

Water year in Geological Survey reports dealing with surface-water supply is the 12 months October 1 through September 30. The water year is designated by the calendar year in which it ends and includes 9 of the 12 months of that calendar year plus the last 3 months of the previous calendar year. Thus, the year ending September 30, 1981, is called the "1981 water year."

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

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

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

DOWNSTREAM ORDER AND STATION NUMBER

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed before that station. A station on a tributary that enters between two main-stream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary on which a station is situated with respect to the stream to which it is immediately tributary is indicated by an indentation in a list of stations in the front of the report. Each indentation represents one rank. This downstream order and system of indentation show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

As an added means of identification, each hydrologic station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete 8-digit number for each station such as 05051700, which appears just to the left of the station name, includes the 2-digit part number "05" plus the 6-digit downstream order number "051700".

NUMBERING SYSTEM FOR WELLS AND MISCELLANEOUS SITES

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

The well and miscellaneous-site numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The system provides the geographic location of the well or miscellaneous site and a unique number for each site. The number consists of 15 digits; the first 6 digits denote the degrees, minutes, and seconds of latitude; the next 7 digits denote degrees, minutes, and seconds of longitude; and the last 2 digits (assigned sequentially) identify the wells or other sites within a 1-second grid. See figure 5.

In order to compare data for wells in other publications, such as the county ground-water studies, the wells in this report also are numbered according to a system based on the location in the public land classification of the U.S. Bureau of Land Management. The system is illustrated in figure 6. The first numeral denotes the township north of a base line, the second numeral denotes the range west of the fifth principal meridian, and the third numeral denotes the section in which the well 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, well 139-049-15ADC is in the SW¼SE¼NE¼ sec. 15, T. 139 N., R. 049 W. Consecutive terminal numerals are added if more than one well is recorded within a 10-acre tract.

SPECIAL NETWORKS AND PROGRAMS

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

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

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

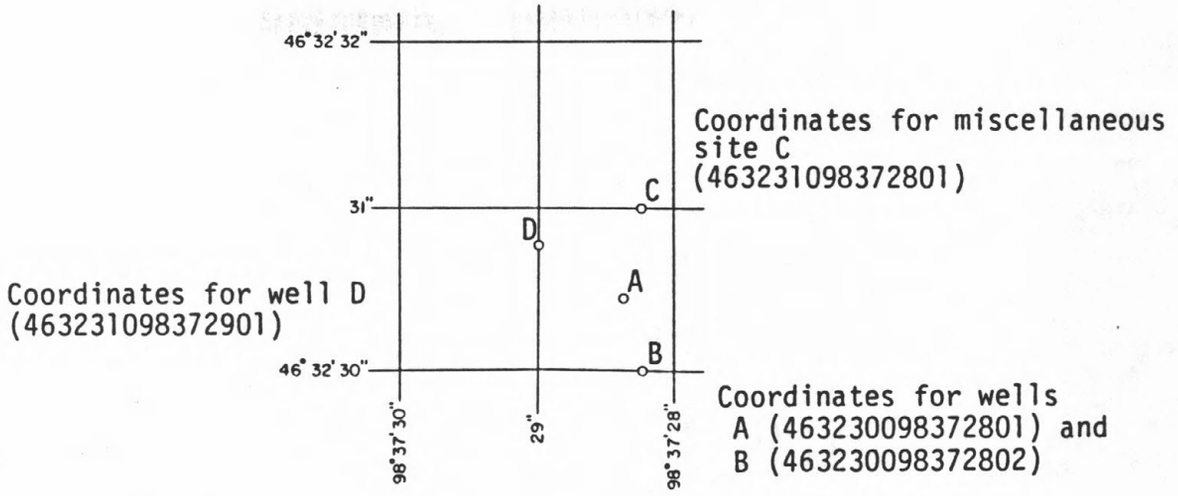


FIGURE 5.—System for numbering wells and miscellaneous sites (latitude and longitude).

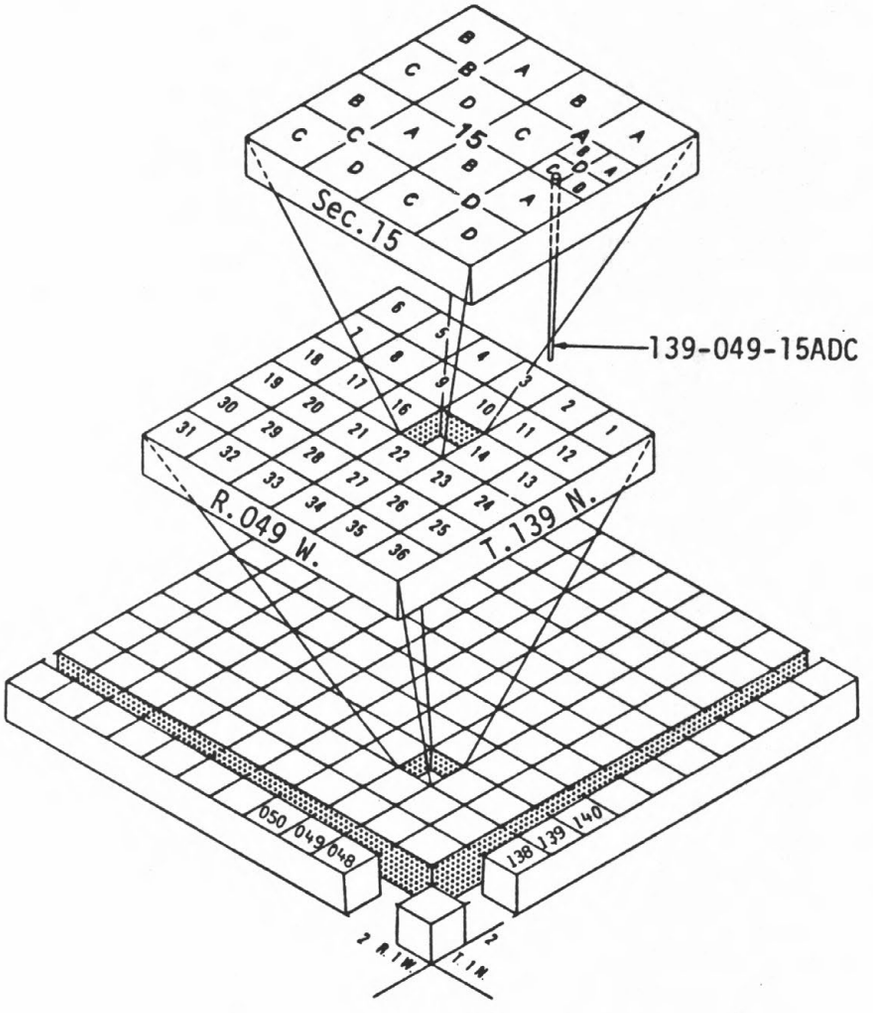


FIGURE 6.—System for numbering wells and miscellaneous sites (township and range).

EXPLANATION OF STAGE AND WATER-DISCHARGE RECORDS

Collection and computation of data

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

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

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

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

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

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

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

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

Previously published streamflow records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records usually are published along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISED RECORDS" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years, only one number is given; for instance, 1981 stands for the water year October 1, 1980, to September 30, 1981. If no daily, monthly, or annual figures of discharge are affected by the revision, the fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which runoff in cubic feet per second per square mile, and runoff, in inches, are published, a revision of the drainage area necessitates corresponding revision of all values based on the drainage area. Revised values of runoff in cubic feet per second per square mile, and runoff, in inches, resulting from a revision of the drainage area only usually are not published in the annual series of reports.

The type of gage currently in use; the datum of the present gage referred to National Geodetic Vertical Datum of 1929; and a condensed history of the type, location, and datum of previous gages used during the period of record are given under "GAGE." National Geodetic Vertical Datum of 1929 is explained in "DEFINITION OF TERMS."

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

The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE"; it is not given for stations having fewer than 5 complete water years of record or for stations where changes in water development during the period of record cause the value to have little significance. In addition, the median of yearly mean discharges is given for stations that have 10 or more complete water years of record, if the median differs from the average by more than 10 percent.

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

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

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

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. For some reservoirs a table showing daily contents or stage is given. A table of capacity at given stages is published for all reservoirs for which records are published on a daily basis, but is not published for reservoirs for which only monthly data are given.

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

Accuracy of field data and computed results

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

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

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

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

Other data available

Information of a more detailed nature than that published for most of the gaging stations, such as water temperatures, discharge measurements, gage-height records, and rating tables is on file in the district office. Also, most gaging-station records are available in computer-usable form and many statistical analyses have been made. For example, the computer listing of annual maximum discharges for the period of record at the Knife River near Hazen station (06340500) is shown in figure 7. The Log-Pearson Type III annual peak-flow frequency analysis for these data following the U.S. Water Resources Council guidelines in Bulletin 17B is shown in figure 8. The frequency analysis may also be shown graphically (fig. 9).

Usually data users are interested in comparing current streamflow to long-term averages. Examples of the statistics computed for the monthly and annual mean discharges, respectively, for the Knife River near Hazen are shown in figures 10 and 11. Current flow data at U.S. Geological Survey gaging stations are available upon request, but all data are provisional and subject to revision until published.

Many other statistics and data formats are available upon request. The information generally is available on a timely basis and can be specifically tailored to the individual data-users needs.

Records of discharge collected by agencies other than the U.S. Geological Survey

The National Water Data Exchange, Water Resources Division, U.S. Geological Survey, National Center, Reston, VA 22092, maintains an index of all discharge measurement sites in the State. Information on records available at specific sites can be obtained upon request.

PAGE 1 PKTBL/TXT

WATER YEAR	DATE	PEAK DISCHARGE (CFS)	GAGE HEIGHT (FT)	MAX GAGE HEIGHT (FT)	DATE
1930	02/21/30	3070.00	23.20		
1931	09/22/31	1450.00	11.60		
1932	06/14/32	1300.00	11.10		
1933	03/17/33	2200.00	14.50		
1938	07/05/38	7540.00	23.00		
1939	03/24/39	9300.00	24.47		
1940	07/29/40	1150.00	10.92		
1941	06/09/41	4110.00	20.23		
1942	06/07/42	3120.00	17.10		
1943	03/26/43	26500.00	26.30		
1944	04/03/44	8010.00	23.39		
1945	03/15/45	8690.00	23.99		
1946	03/03/46	3500.00	19.30		
1947	06/25/47	6000.00	21.70	21.95	03/25/47
1948	03/24/48	7070.00	23.62		
	03/30/48	4320.00			
	04/04/48	4760.00			
1949	04/06/49	7760.00	23.30	24.10	04/03/49
1950	04/17/50	22700.00	25.93		
1951	03/30/51	9000.00	25.36		
	04/05/51	7600.00	23.67		
1952	04/07/52	20200.00	25.83		
1953	06/14/53	3440.00	17.31		
1954	04/08/54	3880.00	18.06		
1955	03/13/55	1400.00	11.35		
1956	03/21/56	6630.00	23.76		
1957	03/01/57	1590.00	12.49		
1958	03/28/58	3500.00	19.82		
1959	03/24/59	4930.00	20.14		
1960	03/27/60	7230.00	23.13		
1961	03/03/61	488.00	9.62	9.72	03/02/61
1962	05/31/62	3860.00	17.48		
	06/16/62	2230.00	13.40		
	06/22/62	2060.00	12.91		
	07/06/62	1530.00	11.36		
	07/19/62	2340.00	13.72		
1963	06/10/63	1050.00	9.63		
1964	06/18/64	5170.00	20.17		
	07/05/64	1910.00	12.46		
1965	04/15/65	3330.00	15.99		
	05/05/65	2030.00	12.64		
	05/27/65	1950.00	12.34		
1966	06/24/66	35300.00	27.01		
	03/14/66	4230.00	17.82		
	08/01/66	1500.00	10.75		
1967	03/25/67	7980.00	23.88		
	03/04/67	2500.00			
	04/18/67	2430.00	12.72		
	05/08/67	3740.00	15.76		
1968	03/06/68	1800.00	18.37		
1969	04/07/69	11800.00	24.75		
	07/11/69	1710.00	11.51		
	07/18/69	4480.00	19.25		
1970	05/11/70	8180.00	23.83		
	04/30/70	3090.00	15.12		
	06/19/70	1860.00	11.95		
1971	03/17/71	4320.00	18.79		
	03/31/71	2790.00	15.09		
	06/06/71	3760.00	16.57		
	06/09/71	2610.00	13.97		
1972	03/15/72	19000.00	26.17		
	06/13/72	1580.00	11.05		
	06/20/72	2960.00	14.98		
1973	03/02/73	3900.00	21.44		
1974	03/03/74	1350.00	14.28		
1975	05/01/75	6600.00	22.60	23.37	04/24/75
	04/24/75	6500.00	23.37		
1976	03/19/76	3000.00	18.00		
1977	06/19/77	1200.00	9.75	11.69	03/11/77
1978	03/27/78	11000.00	25.10		
1979	04/18/79	5440.00	20.26		
	03/20/79	1700.00			
	04/13/79	2000.00			
	06/25/79	2000.00			
1980	06/15/80	1620.00	10.58		
1981	02/18/81	900.00	9.92		
1982	03/31/82	10500.00	25.14		
	02/23/82	2000.00			
	03/15/82	4400.00			
	04/13/82	6900.00	22.64		
	06/11/82	4000.00	17.20		
1983	03/13/83	5300.00		23.00	03/13/83
	10/31/82	2210.00	12.46		
	03/07/83	3100.00			

FIGURE 7.--Computer printout of annual maximum discharges for ther period of record for Knife River near Hazen, ND (06340500).

PGM J407 VER 3.7
(REV 11/5/81)

U. S. GEOLOGICAL SURVEY
ANNUAL PEAK FLOW FREQUENCY ANALYSIS
FOLLOWING WRC GUIDELINES BULL. 17-B.

RUN-DATE 12/14/84 AT 845 SEQ 1.0001

OPTIONS IN EFFECT -- PLOT BCPU LGPT NODB PPOS NORS EXPR CLIM

STATION - 06340500 /USGS KNIFE RIVER AT HAZEN, ND 1930-1983 06340500 /USGS

I N P U T D A T A S U M M A R Y

-- YEARS OF RECORD -- SYSTEMATIC	HISTORIC	HISTORIC PEAKS	GENERALIZED SKEW	STD. ERROR OF GENERAL. SKEW	SKEW OPTION	GAGE BASE DISCHARGE	USER-SET OUTLIER CRITERIA HIGH OUTLIER	LOW OUTLIER
50	0	0	-0.400	--	WRC WEIGHTED	0.0	--	--

********* NOTICE -- PRELIMINARY MACHINE COMPUTATIONS. *********
********* USER RESPONSIBLE FOR ASSESSMENT AND INTERPRETATION. *********

WCF134I-NO SYSTEMATIC PEAKS WERE BELOW GAGE BASE. 0.0
WCF195I-NO LOW OUTLIERS WERE DETECTED BELOW CRITERION. 323.6
WCF163I-NO HIGH OUTLIERS OR HISTORIC PEAKS EXCEEDED HHBASE. 60939.5

ANNUAL FREQUENCY CURVE PARAMETERS -- LOG-PEARSON TYPE III

	FLOOD BASE DISCHARGE	FLOOD BASE EXCEEDANCE PROBABILITY	LOGARITHMIC MEAN	LOGARITHMIC STANDARD DEVIATION	LOGARITHMIC SKEW
SYSTEMATIC RECORD	0.0	1.0000	3.6474	0.4109	-0.056
W R C ESTIMATE	0.0	1.0000	3.6474	0.4109	-0.145

ANNUAL FREQUENCY CURVE ORDINATES -- DISCHARGES AT SELECTED EXCEEDANCE PROBABILITIES

ANNUAL EXCEEDANCE PROBABILITY	W R C ESTIMATE	SYSTEMATIC RECORD	'EXPECTED PROBABILITY' ESTIMATE	95-PCT CONFIDENCE LIMITS FOR W R C ESTIMATES LOWER	UPPER
0.9950	341.1	369.4	286.7	193.9	518.8
0.9900	444.4	472.8	390.7	264.8	654.4
0.9500	901.5	922.7	855.5	605.8	1225.5
0.9000	1302.7	1313.5	1253.1	926.2	1708.8
0.8000	2017.5	2008.0	1979.5	1519.9	2560.7
0.5000	4543.4	4479.7	4543.4	3636.5	5683.7
0.2000	9905.5	9870.9	10077.3	7798.1	13169.1
0.1000	14698.2	14844.3	15201.2	11233.7	20584.2
0.0400	22176.0	22851.3	23419.4	16290.5	33075.6
0.0200	28775.0	30134.0	31174.8	20550.9	44802.4
0.0100	36247.4	38595.5	40121.5	25213.5	58710.6
0.0050	44646.9	48351.4	51012.0	30298.1	75008.2
0.0020	57267.5	63444.3	66413.1	37698.7	100594.1

FIGURE 8.--Computer printout of peak flow frequency analysis for the Knife River near Hazen, ND (06340500)

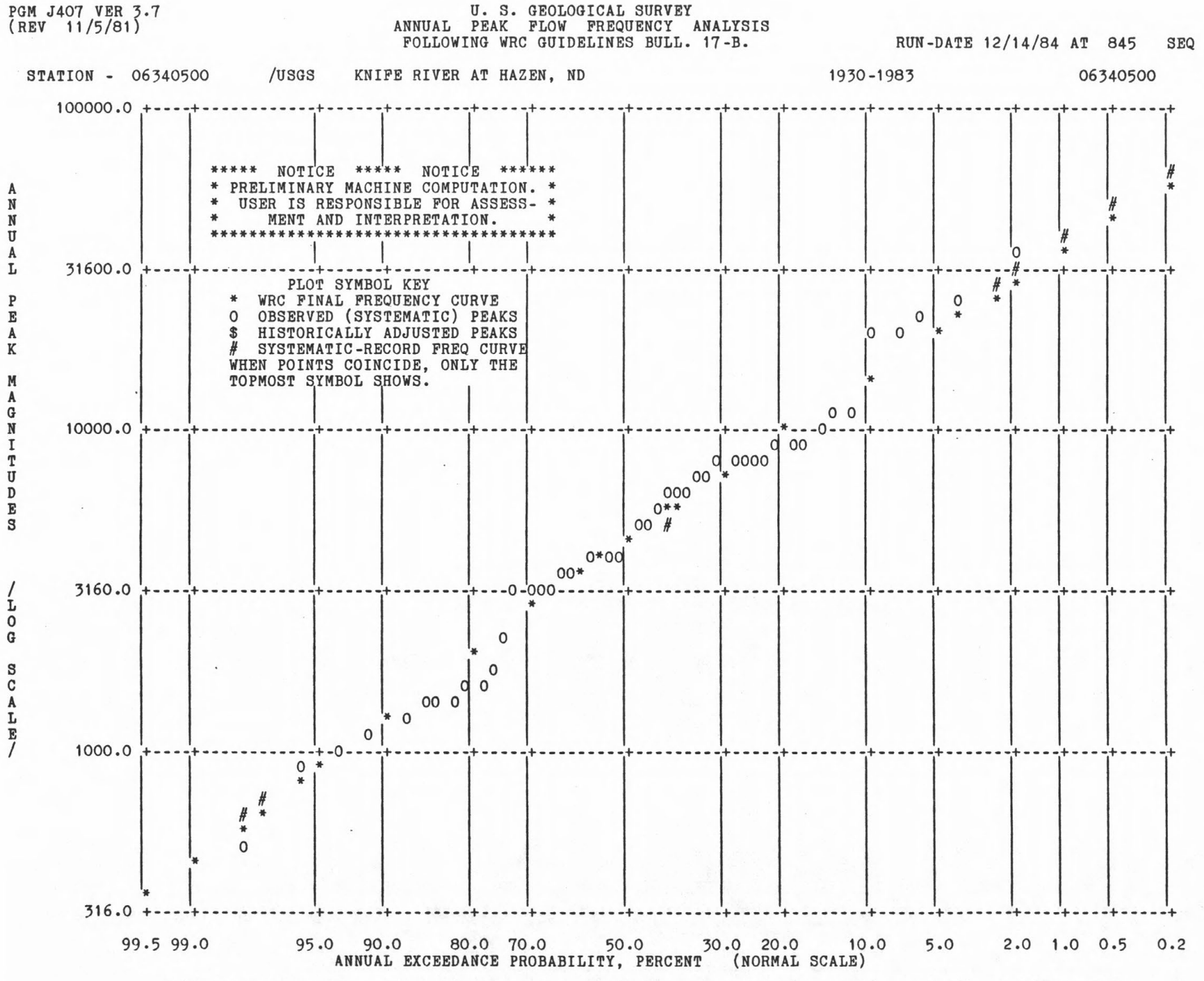


FIGURE 9.--Computer printout of peak flow frequency curve for Knife River near Hazen, ND (06340500).

STATION 06340500 KNIFE RIVER AT HAZEN, ND

DISCHARGE-(CFS)

STATISTICS ON NORMAL MONTHLY MEANS (ALL DAYS)

OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT
BY ROWS (MEAN,VARIANCE,STANDARD DEVIATION,SKEWNESS,COEFF. OF VARIATION,PERCENTAGE OF AVERAGE VALUE)											
35.70	31.00	20.50	19.80	92.20	713.00	618.00	170.00	266.00	118.00	48.80	35.70
2477.00	907.00	155.00	669.00	27000.00	581700.00	800600.00	65050.00	66630.00	24340.00	1887.00	907.00
49.80	30.10	12.50	25.90	164.00	763.00	895.00	255.00	258.00	156.00	43.40	30.10
6.03	5.38	2.63	3.42	3.18	1.65	2.36	3.75	1.38	3.87	1.91	2.11
1.39	0.97	0.61	1.31	1.78	1.07	1.45	1.50	0.97	1.32	0.89	0.84
1.65	1.43	0.95	0.91	4.25	32.90	28.50	7.82	12.30	5.45	2.25	1.65

***** INDICATES NO-VALUE MONTH(S) FOUND OR NOT ENOUGH DATA, THEREFORE STATISTIC IS NOT COMPUTED

FIGURE 10.--Computer printout of statisitics computed on monthly mean discharges for the period of record on the Knife River near Hazen, ND (06340500).

STATION 06340500 KNIFE RIVER AT HAZEN, ND

DISCHARGE-(CFS)

STATISTICS ON NORMAL ANNUAL MEANS(ALL DAYS)

MEAN	VARIANCE	STANDARD DEVIATION	SKEWNESS	COEFF. OF VARIATION	SERIAL CORR
181.00	12030.00	110.00	0.66	0.60	0.192

* INDICATES NO-VALUE YEAR(S), LOG OF ZERO, OR NOT ENOUGH DATA FOUND

FIGURE 11.--Computer printout of statistics computed on annual mean discharges for the period of record on the Knife River near Hazen, ND (060340500).

EXPLANATION OF WATER-QUALITY RECORDS

Collection and examination of data

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

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

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

Water analysis

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

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

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

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

Water temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are measured at time of discharge measurements for water-discharge stations. For stations where water temperatures are measured manually once or twice daily, the water temperatures are measured at about the same time each day. Large streams have a small diel temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

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

Sediment

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

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

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

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

Parameter codes

In most of the column headings of this report the names of the constituents or properties for which data are given are followed by five-digit codes which appear in parentheses. These codes, called parameter codes, are identical to those introduced or approved by the U.S. Environmental Protection Agency and are widely used by Federal and State agencies. The codes indicate, to one having a key, more precisely than the narrative column headings can the constituents or properties being reported. Data listed under a given code in this report generally are comparable to those listed under the same code by other agencies.

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of data

Only ground-water level data from a basic network of selected observation wells are published herein. This network contains observation wells so located that the most significant data are obtained from the fewest wells in the most important aquifers. The complete statewide network included more than 800 wells during 1983. One-half of these wells are measured annually and the others at a variety of frequencies. Forty-three wells were equipped with continuous water-level recorders.

Each well is identified by means of (1) a 15-digit number that is based on latitude and longitude and (2) a local number that is provided for local needs. See figures 5 and 6.

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

Water-level measurements in this report are given in feet with reference to land surface. National Geodetic Vertical Datum of 1929 is the datum plane on which the national network of precise levels is based; land surface is a datum plane that is approximately at land surface of each well. If known, the altitude of the land surface related to the National Geodetic Vertical Datum of 1929 is given in the well description. The height of the measuring point above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month.

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

Availability of data

All water-level measurements and recorder data are stored in computer as well as manual files and are available in a tabular listing similar to those published in this report. However, ground-water data usually are more easily analyzed when displayed graphically. Examples of computer-generated hydrographs for four wells published in this report are presented in figures 12-15.

An example of water-level measurements in a well completed in the West Fargo aquifer in Cass County showing a decreasing water level is shown in figure 12. A change in frequency of measurement is easily identified by the density change of the plotted points.

The hydrograph for a well in Burleigh County completed in the McKenzie aquifer is shown in two 10-year segments by figures 13a and b. The first period from 1963 through 1972 shows very little fluctuation in water level. However, the second period from 1973 through 1982 shows large declines in the water level during mid-year periods.

The irrigation water-use data for the McKenzie aquifer (table 2) show that irrigation was insignificant until about 1972. From 1972 through 1974, only annual water-level measurements at the end of the year were made and the effect of irrigation withdrawals on the aquifer can not be detected on the hydrograph.

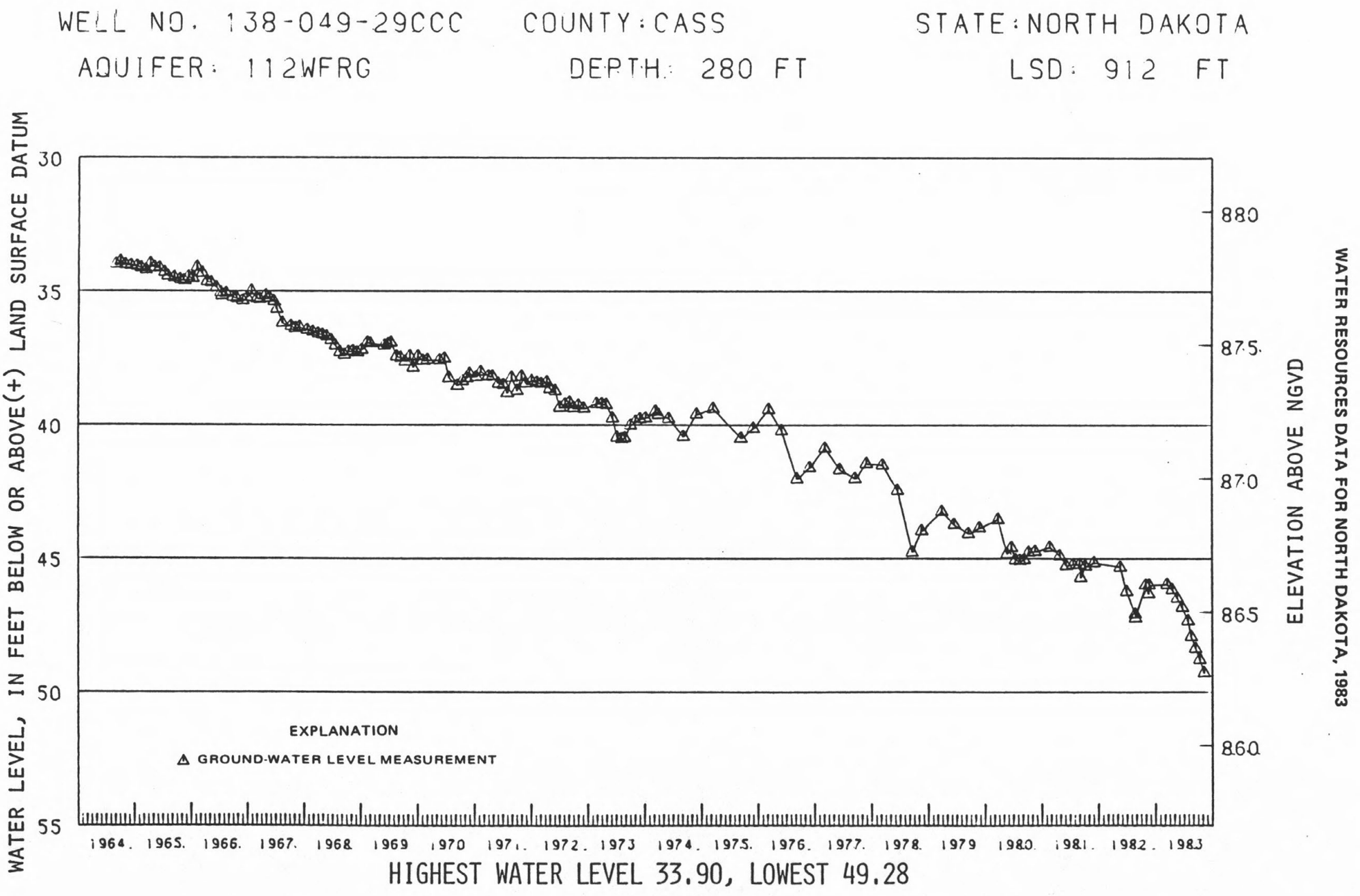


FIGURE 12.—Ground-water level hydrograph for West Fargo aquifer well, Cass County, 1964-83.

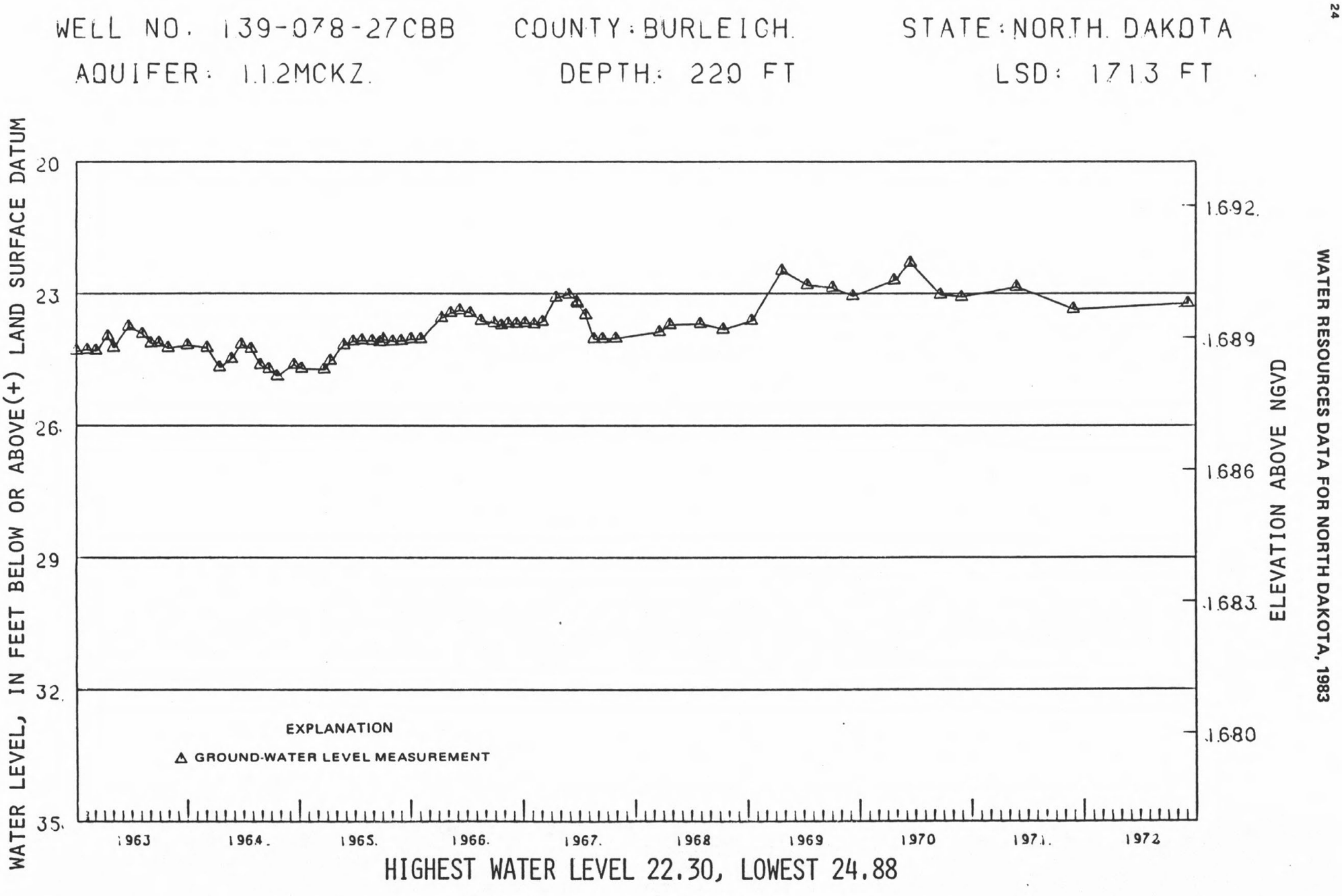


FIGURE 13a.—Ground-water level hydrograph for a McKenzie aquifer well, Burleigh County, 1963-72.

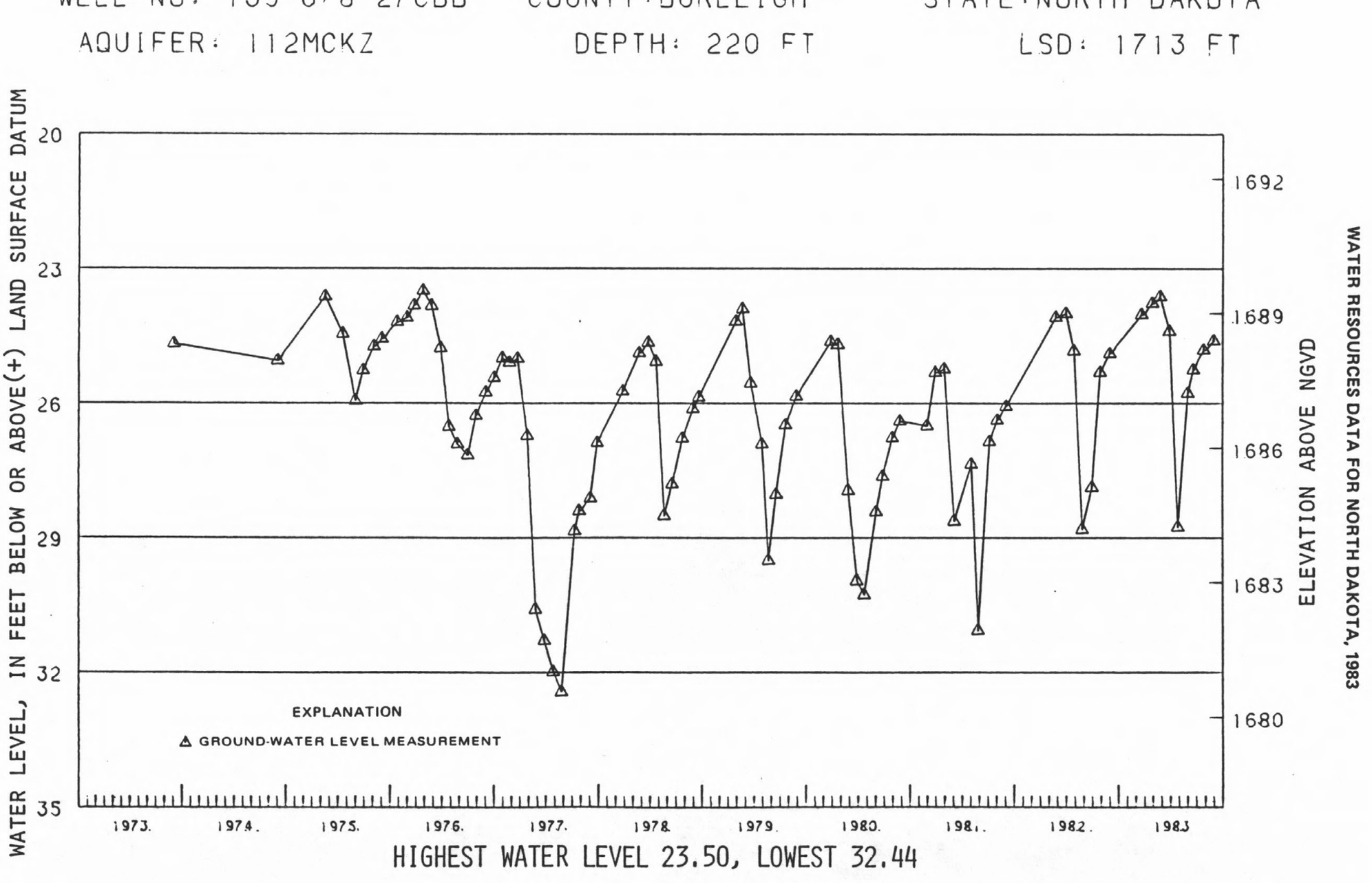


FIGURE 13b.—Ground-water level hydrograph for a McKenzie aquifer well, Burleigh County, 1973-83.

Table 2.--Reported water use for irrigation from the McKenzie aquifer, in acre-feet

Year	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Reported use (ac-ft)	0	0	75	150	436	416	400	182	338	781	183	314	475	230	348	486

Beginning in 1975, the frequency of water-level measurements was increased. This provided the definition necessary to show the annual declines in water level during the irrigation season and the recovery during the winter and spring. The largest total reported use was during 1977. This corresponds to the largest annual decline in the water level, more than 7 feet, during the period of record for this well.

The 1982 hydrograph for a well equipped with a continuous recorder that is completed in the Sheyenne Delta aquifer in Richland County is shown in figure 14. The double lines indicate the maximum and minimum recorded daily water levels. The dashed line was drawn between the taped measurements to compare the definition of changes in water level that is provided when continuous-recorder data are available to that of periodic measurements with a steel tape.

The ground-water data are recorded and stored as water level in feet below land surface. Since the elevation of land surface is determined for all well sites, it is possible to relate water level below land surface to elevation above National Geodetic Vertical Datum of 1929. Both vertical scales are used on the ground-water hydrographs, water level below land surface on the left margin and water-level elevation above National Geodetic Vertical Datum of 1929 on the right margin. This feature is convenient for showing the relationship that exists between the ground-water level and the level of water in nearby lakes and reservoirs. The hydrographs for Devils Lake and well 153-063-30CBC in Benson County are shown in figure 15. Such comparison hydrographs are useful tools for analysis of surface-water/ground-water relationships.

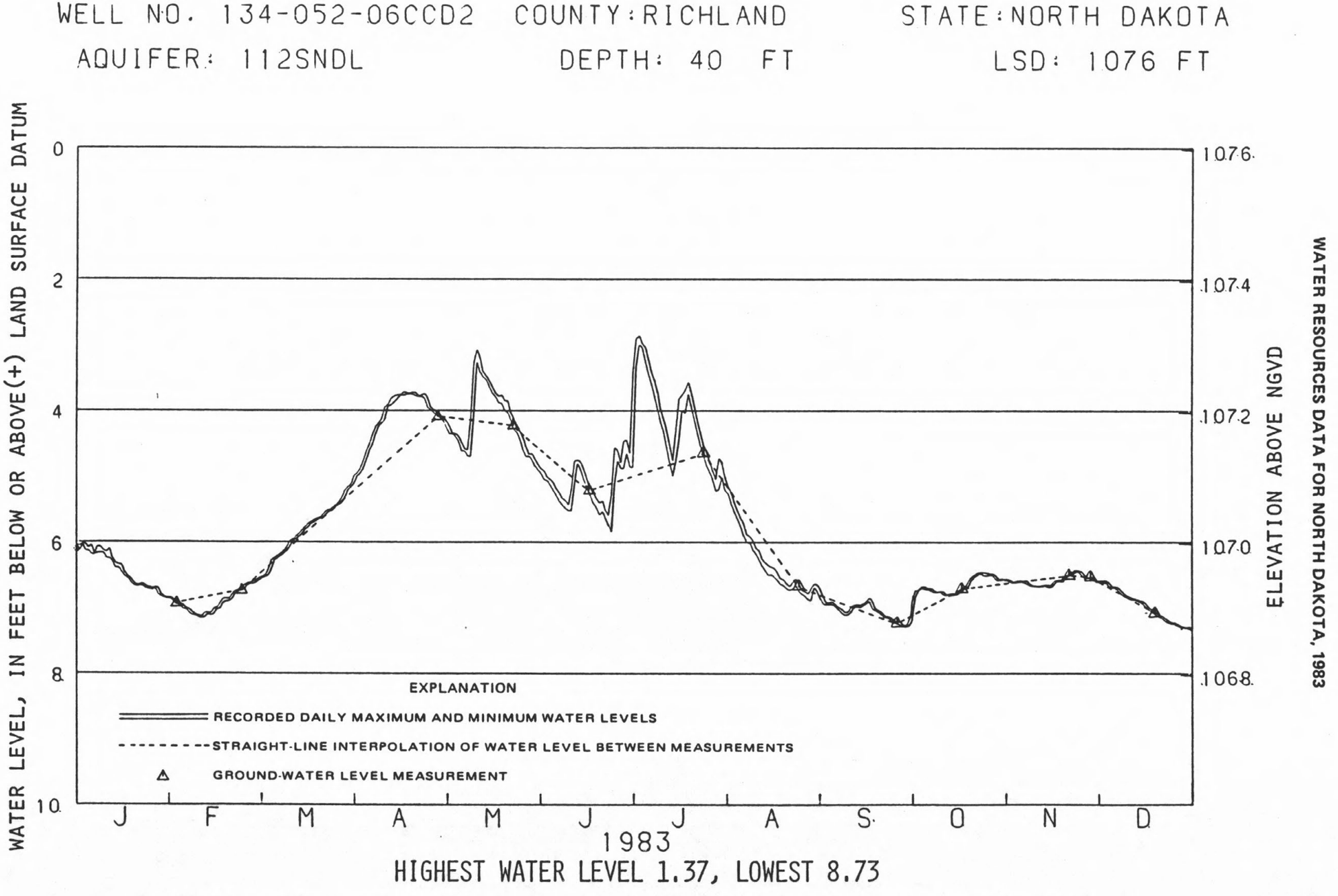


FIGURE 14.—Ground-water level hydrograph for recorder well in Sheyenne Delta aquifer, Richland County, 1983 water year.

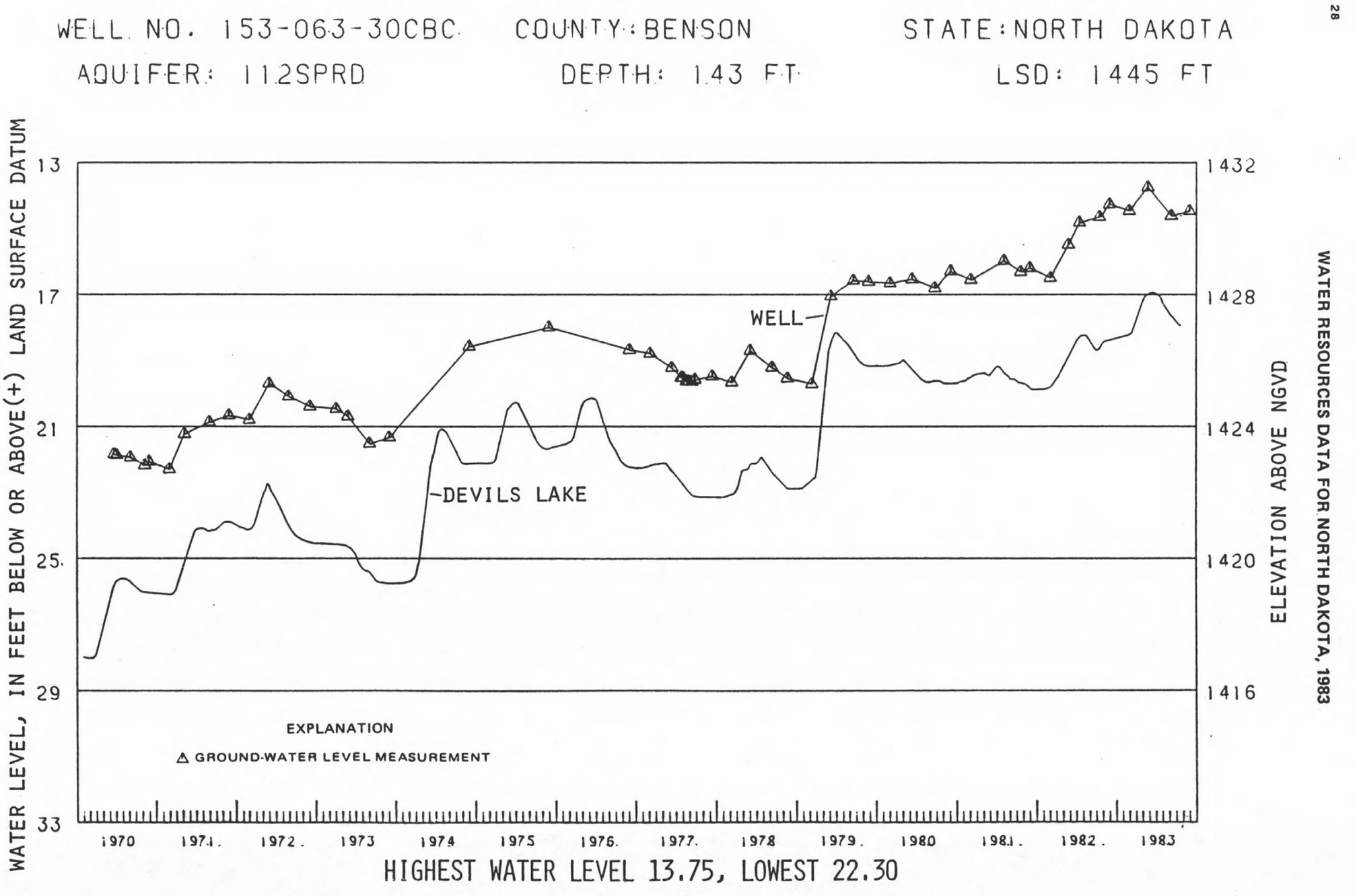


FIGURE 15.—Ground-water level hydrograph for Spiritwood aquifer well, Benson County, showing comparison with Devils Lake monthend water-level elevations.

Thirty-seven manuals by the U.S. Geological Survey have been published to date in the series on techniques describing procedures for planning and executing specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) is on surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises. The reports listed below are for sale by the U.S. Geological Survey, Branch of Distribution, 604 South Pickett St., Alexandria, VA 22304 (authorized agent of the Superintendent of Documents, Government Printing Office).

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

1-D1. *Water temperature--influential factors, field measurement, and data presentation*, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.

1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.

2-D1. *Application of surface geophysics to ground-water investigations*, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.

2-E1. *Application of borehole geophysics to water-resources investigations*, by W. S. Keys and L. M. MacCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.

3-A1. *General field and office procedures for indirect discharge measurements*, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.

3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.

3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.

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

3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 pages.

3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.

3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.

3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 pages.

3-A9. *Measurement of time of travel and dispersion in streams by dye tracing*, by E. F. Hubbard, F. A. Kilpatrick, L. A. Martens, and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1982. 44 pages.

3-A11. *Measurement of discharge by moving-boat method*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.

3-B1. *Aquifer-test design, observation, and data analysis*, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.

3-B2. *Introduction to ground-water hydraulics, a programed text for self-instruction*, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.

3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J. E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.

3-C1. *Fluvial sediment concepts*, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.

3-C2. *Field methods for measurement of fluvial sediment*, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.

3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.

4-A1. *Some statistical tools in hydrology*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 pages.

4-A2. *Frequency curves*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages.

4-B1. *Low-flow investigations*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.

4-B2. *Storage analyses for water supply*, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.

4-B3. *Regional analyses of streamflow characteristics*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 pages.

4-D1. *Computation of rate and volume of stream depletion by wells*, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages.

5-A1. *Methods for determination of inorganic substances in water and fluvial sediments*, by M. W. Skougstad and others, editors: USGS--TWRI Book 5, Chapter A1. 1979. 626 pages.

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

5-A3. *Methods for analysis of organic substances in water*, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 pages.

5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*, edited by P. E. Greeson, T. A. Ehlke, G. A. Irwin, B. W. Lium, and K. V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 pages.

5-A5. *Methods for determination of radioactive substances in water and fluvial sediments*, by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.

5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.

7-C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments*, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.

7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.

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, Chapter C3. 1981. 110 pages.

8-A1. *Methods of measuring water levels in deep wells*, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages

8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.

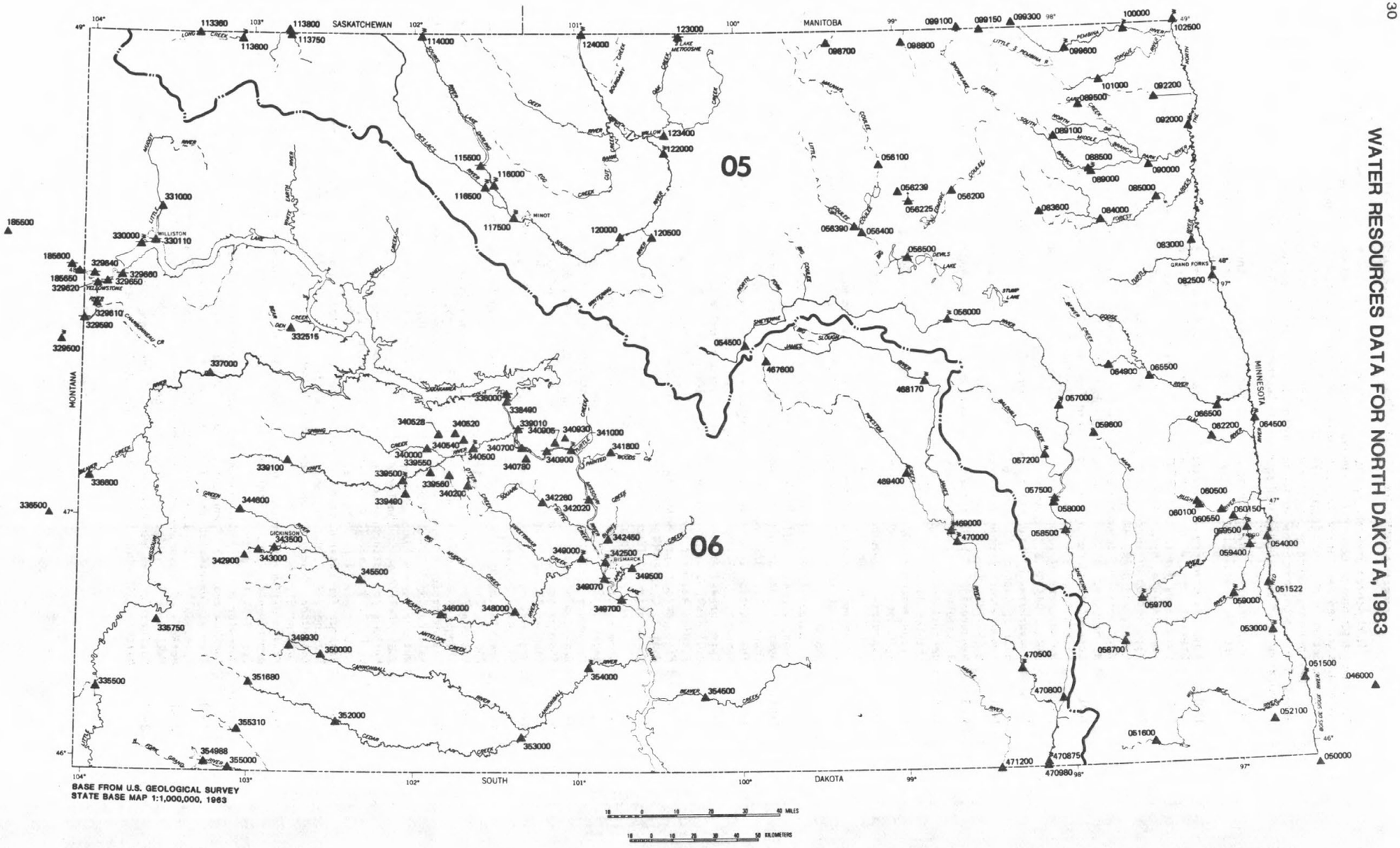


FIGURE 16.--Locations of lake, crest-stage and stream-gaging stations.

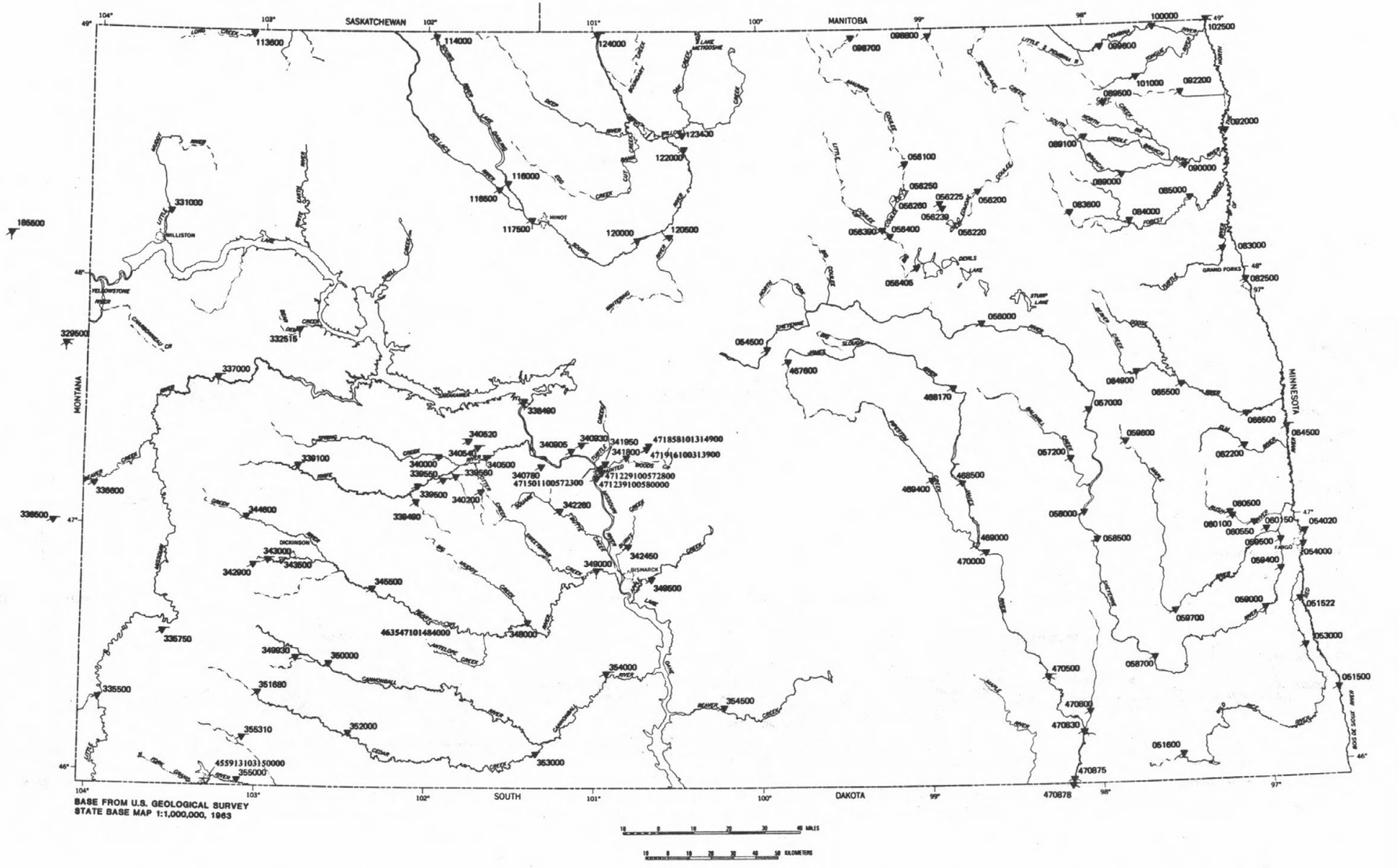


FIGURE 17.—Locations of water-quality stations.

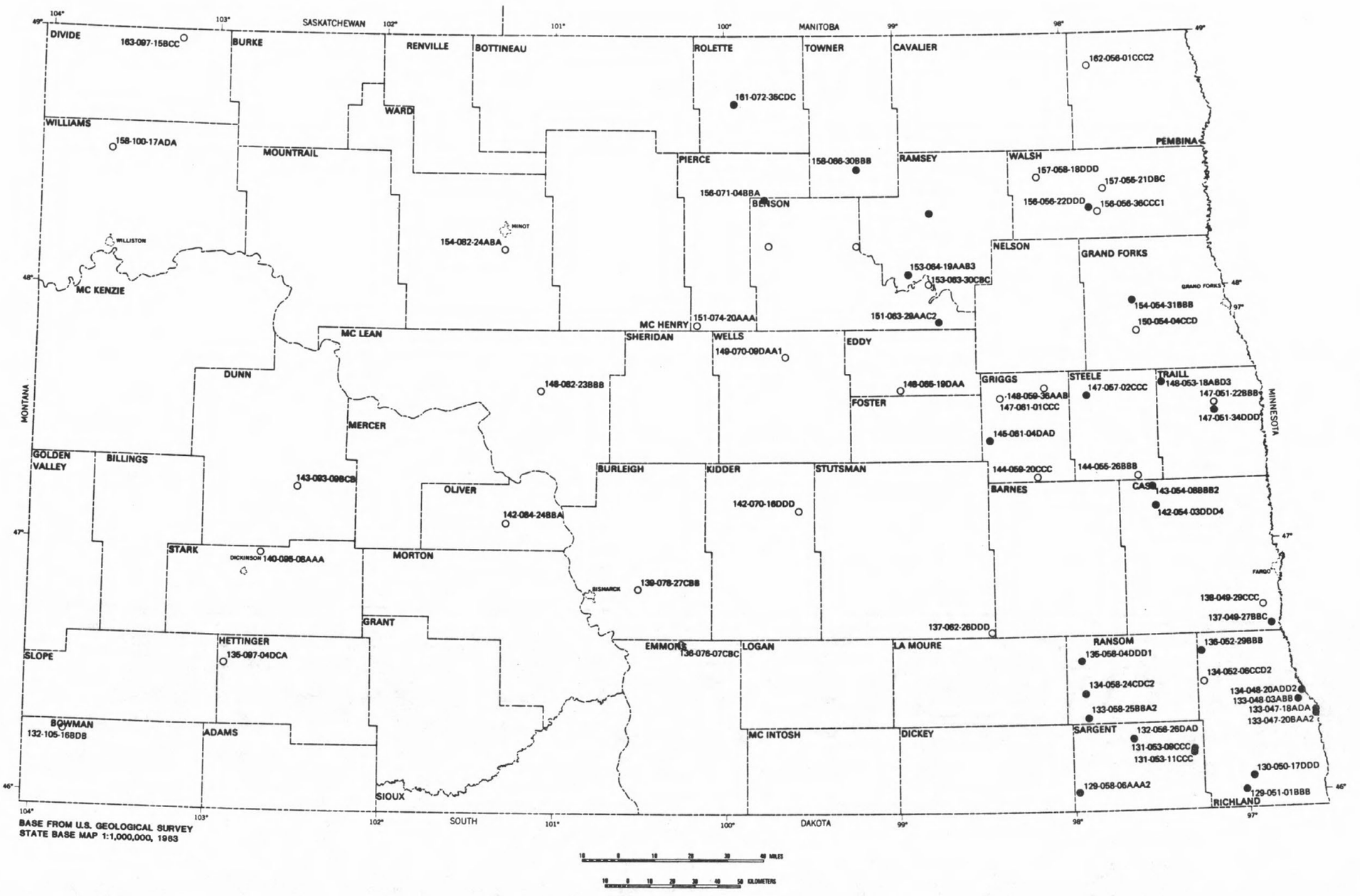


FIGURE 18.—Locations of ground-water observation wells.

RED RIVER OF THE NORTH BASIN

050460000 OTTER TAIL RIVER BELOW ORWELL DAM, NEAR FERGUS FALLS, MN

LOCATION.--Lat 46°12'35", long 96°11'05", in NE¼ sec.34, T.132 N., R.44 W., Otter Tail County, Hydrologic Unit 09020103, on left bank 0.7 mi downstream from Orwell Dam, 6.1 mi downstream from Dayton Hollow Dam, 8 mi southwest of Fergus Falls, and 11.1 downstream from Pelican River.

DRAINAGE AREA.--1,830 mi^2, approximately.

PERIOD OF RECORD.--October 1930 to current year. Prior to October 1952, published as Otter Tail River below Pelican River, near Fergus Falls. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 785: 1934(M). WSP 1208: 1947(M). WSP 1308: 1931(M).

GAGE.--Water-stage recorder. Datum of gage is 1,029.65 ft, adjustment of 1912 (levels by Corps of Engineers). Oct. 11, 1930, to Nov. 17, 1933, at same site at datum 2.00 ft higher; Nov. 18, 1933, to Mar. 21, 1953; at site 6.1 mi upstream at datum 40.30 ft higher.

REMARKS.--Records good. Flow regulated by Orwell Lake (station 05045950) beginning Mar. 21, 1953 and powerplants upstream.

AVERAGE DISCHARGE.--52 years, 303 ft^3/s, 219,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,710 ft^3/s, June 17, 1953, gage height, 5.60 ft backwater from aquatic vegetation; minimum, 0.70 ft^3/s Aug. 5, 1970, gage height, 1.28 ft, result of regulation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 849 ft^3/s part of each day May 29-31, gage height, 3.71 ft result of regulation; maximum gage height, 3.97 ft Jan. 10, backwater from ice; minimum, 23 ft^3/s Apr. 2, gage height, 1.77 ft result of regulation.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	167	334	289	300	262	294	362	373	273	178	343	397
2	173	334	290	299	262	294	362	388	270	213	345	401
3	177	334	294	296	259	294	360	388	255	244	345	405
4	195	334	294	295	260	294	361	381	254	267	345	401
5	205	334	294	294	256	294	362	350	252	304	345	401
6	235	333	294	294	256	298	362	370	243	339	345	400
7	302	333	294	292	256	342	362	369	218	332	354	401
8	304	333	294	289	256	367	363	368	230	309	354	402
9	283	328	294	289	256	385	363	358	232	320	356	401
10	289	349	294	289	256	396	366	336	236	317	356	406
11	289	363	294	289	256	389	377	315	240	289	357	407
12	321	366	290	286	256	382	385	307	240	261	357	380
13	358	362	289	283	256	379	383	314	243	225	363	367
14	373	362	289	283	256	377	384	319	250	116	365	362
15	341	359	289	283	256	375	383	321	255	88	367	363
16	322	356	289	283	256	373	381	324	268	94	369	364
17	328	354	286	281	256	373	378	328	269	97	370	360
18	328	351	287	277	256	373	383	333	268	98	371	362
19	328	340	284	272	256	372	384	340	265	232	373	327
20	328	334	284	272	261	370	379	336	234	438	373	295
21	328	334	302	273	261	370	378	334	213	440	371	299
22	328	331	317	274	261	368	379	334	219	443	371	294
23	328	328	315	272	261	365	384	314	223	442	375	295
24	328	308	313	272	261	357	384	306	223	436	378	298
25	334	289	313	272	282	357	383	306	224	371	378	295
26	334	289	311	272	294	357	382	302	224	333	378	300
27	333	289	311	269	294	359	377	289	212	336	378	304
28	334	289	311	267	294	358	374	280	196	339	379	307
29	334	289	306	267	---	356	373	278	181	339	379	311
30	332	289	304	267	---	356	372	278	165	339	391	306
31	328	---	300	266	---	358	---	277	---	339	401	---
TOTAL	9287	9928	9215	8717	7352	10982	11226	10216	7075	8918	11332	10611
MEAN	300	331	297	281	263	354	374	330	236	288	366	354
MAX	373	366	317	300	294	396	385	388	273	443	401	407
MIN	167	289	284	266	256	294	360	277	165	88	343	294
AC-FT	18420	19690	18280	17290	14580	21780	22270	20260	14030	17690	22480	21050

WTR YR 1983 TOTAL 114859 MEAN 315 MAX 443 MIN 88 AC-FT 227800

RED RIVER OF THE NORTH BASIN

05050000 BOIS DE SIOUX RIVER NEAR WHITE ROCK, SD

LOCATION.--Lat 45°51'45", long 96°34'25", in SW¼SW¼ sec.27, T.128 N., R.47 W., Roberts County, Hydrologic Unit 09020101, on Sisseton Indian Reservation, on left bank just downstream from Big Slough Outlet, 300 ft downstream from White Rock Dam, 4 mi south of White Rock, and 5 mi northwest of Wheaton, MN.

DRAINAGE AREA.--1,160 mi^2, approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 960.00 ft, adjustment of 1912 (levels by Corps of Engineers). Prior to Jan. 14, 1943, nonrecording gage at same site at datum 0.11 ft lower. Jan. 15, 1943, to Sept. 30, 1963, water-stage recorder at same site at datum 0.11 ft lower.

REMARKS.--Records fair. Flow regulated by Lake Traverse-Bois de Sioux Flood Control and Water Conservation project, available capacity for flood control, 137,000 acre-ft.

AVERAGE DISCHARGE.--42 years, 75.0 ft^3/s, 55,340 acre-ft/yr; median of yearly mean discharges, 43 ft^3/s 31,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,770 ft^3/s, occurred during period Apr. 19-21, 1969, gage height, 15.07 ft, from floodmark; no flow at times in most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 150 ft^3/s Nov. 29, gage height, 6.63 ft, backwater from ice; due to regulation; no flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.00	52	10	.00	.03	3.8	3.2	.49	.32	.00	.00
2	.08	.00	51	11	.00	.06	3.8	4.0	.40	.27	.00	.00
3	.04	.00	50	7.5	.00	.08	3.4	4.2	.44	.27	.00	.00
4	.03	.00	48	4.6	.00	.12	2.8	3.6	.53	.35	.00	.00
5	.14	.00	47	4.4	.00	.14	2.8	2.4	.58	.36	.00	.00
6	.35	.00	45	4.6	.00	.15	2.4	2.8	.54	.28	.00	.00
7	.35	.00	43	4.9	.00	.23	2.1	4.2	.45	.15	.00	.00
8	.33	.00	37	2.1	.00	.25	1.9	1.5	.38	.10	.00	.00
9	.60	.00	35	1.4	.00	.33	1.5	1.8	.34	.08	.00	.00
10	.62	.00	34	3.4	.00	.80	1.4	4.6	.26	.00	.00	.00
11	.55	.00	34	1.5	.00	2.5	1.2	2.5	.19	.00	.00	.00
12	.52	.00	33	.72	.00	2.5	1.3	1.5	.09	.00	.00	.00
13	.48	.00	32	.90	.00	2.1	4.0	1.1	.14	.00	.00	.00
14	.42	.00	30	1.8	.00	5.8	6.3	1.8	.59	.00	.00	.00
15	.42	.00	16	1.6	.00	5.8	2.1	1.5	.71	.00	.00	.00
16	.23	.00	14	.96	.00	5.2	2.2	1.3	.68	.00	.00	.00
17	.14	.00	16	.65	.00	5.2	1.6	3.0	.59	.00	.00	.00
18	.23	.00	19	.50	.00	4.2	1.8	3.6	.45	.00	.00	.00
19	.31	.00	16	.23	.00	4.2	1.6	1.5	.32	.00	.00	.00
20	.23	.00	11	.04	.00	4.0	1.8	1.2	.27	.00	.00	.00
21	.10	.00	8.7	.00	.00	4.0	2.0	.71	.27	.00	.00	.00
22	.08	.00	8.3	.00	.00	3.8	3.4	1.2	.23	.00	.00	.00
23	.08	21	7.2	.00	.00	3.6	3.0	.72	.28	.00	.00	.00
24	.08	56	3.2	.00	.00	3.4	2.4	1.1	.23	.00	.00	.00
25	.08	9.0	1.1	.00	.00	3.4	1.6	.74	.14	.00	.00	.00
26	.00	.20	3.2	.00	.00	3.2	2.4	.45	.14	.00	.00	.00
27	.00	.00	6.0	.00	.00	3.2	2.6	.38	.19	.00	.00	.00
28	.00	.00	5.5	.00	.00	3.2	3.2	.75	.17	.00	.00	.00
29	.00	19	3.6	.00	---	3.0	3.2	1.1	.29	.00	.00	.00
30	.00	64	3.0	.00	---	3.0	2.6	.79	.34	.00	.00	.00
31	.00	---	5.2	.00	---	3.4	---	.64	---	.00	.00	---
TOTAL	6.51	169.20	718.0	62.80	.00	80.89	76.2	59.88	10.72	2.18	.00	.00
MEAN	.21	5.64	23.2	2.03	.000	2.61	2.54	1.93	.36	.070	.000	.000
MAX	.62	64	52	11	.00	5.8	6.3	4.6	.71	.36	.00	.00
MIN	.00	.00	1.1	.00	.00	.03	1.2	.38	.09	.00	.00	.00
AC-FT	13	336	1420	125	.00	160	151	119	21	4.3	.00	.00

CAL YR 1982 TOTAL 10396.25 MEAN 28.5 MAX 346 MIN .00 AC-FT 20620
WTR YR 1983 TOTAL 1186.38 MEAN 3.25 MAX 64 MIN .00 AC-FT 2350

RED RIVER OF THE NORTH BASIN

05051500 RED RIVER OF THE NORTH AT WAHPETON, ND

LOCATION.--Lat 46°15'55", long 96°35'40", in NE¼ sec.8, T.132 N., R.47 W., Richland County, Hydrologic Unit 09020104, on left bank in Wahpeton, 800 ft downstream from confluence of Bois de Sioux and Otter Tail Rivers, and at mile 548.6.

DRAINAGE AREA.--4,010 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1942 to current year. Gage-height records collected in this vicinity since 1917 are contained in reports of the U.S. Weather Bureau.

GAGE.--Water-stage recorder and concrete and wooden dam. Datum of gage is 942.97 ft National Geodetic Vertical Datum of 1929. Prior to Aug. 6, 1943, U.S. Weather Bureau nonrecording gage 800 ft upstream, converted to present datum. Aug. 6, 1943, to Oct. 27, 1950, nonrecording gage at present site and datum.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Orwell Reservoir, capacity, 14,100 acre-ft at elevation 1,070 ft National Geodetic Vertical Datum of 1929, adjustment of 1912; Lake Traverse, capacity, 137,000 acre-ft, available for flood control; numerous other controlled lakes and ponds, and several powerplants.

AVERAGE DISCHARGE.--40 years (1943-83), 519 ft^3/s, 376,000 acre-ft/yr; median of yearly mean discharges, 459 ft^3/s, 333,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,200 ft^3/s Apr. 10, 1969, gage height, 16.34 ft; minimum daily, 1.7 ft^3/s Aug. 28 to Sept. 5, 9, 10, 1976.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 17.0 ft, discharge, 10,500 ft^3/s occurred in the spring of 1897 and has not been exceeded since.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 880 ft^3/s Mar. 13, gage height, 5.70 ft, backwater from ice; minimum daily, 80 ft^3/s July 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	165	388	420	390	295	410	476	392	253	135	336	445
2	186	385	452	370	285	440	486	395	247	137	329	445
3	191	391	480	350	280	460	492	401	240	180	335	418
4	186	388	410	350	290	510	486	404	230	209	331	398
5	196	388	370	355	320	580	479	399	216	233	326	395
6	264	381	310	360	300	600	469	369	191	262	328	382
7	273	380	285	350	300	600	458	372	180	298	324	376
8	330	399	250	350	312	260	448	378	182	302	321	369
9	481	408	280	345	328	260	441	371	189	283	328	369
10	516	391	330	330	330	405	434	345	195	272	327	376
11	556	270	350	290	335	645	434	350	228	269	333	372
12	619	255	360	230	340	800	434	332	215	254	329	376
13	644	220	395	300	340	880	438	302	220	214	327	369
14	646	320	390	322	338	800	445	303	245	172	332	341
15	622	430	370	298	332	720	441	308	240	80	330	341
16	565	510	350	315	330	700	424	308	240	134	339	354
17	488	475	350	325	325	564	418	308	250	270	354	344
18	454	455	355	328	320	556	414	308	252	317	349	341
19	438	450	355	325	325	564	414	308	251	338	343	341
20	436	390	345	330	330	568	418	326	248	537	344	326
21	442	255	332	330	320	564	414	316	229	734	342	302
22	475	190	352	338	322	548	411	306	189	733	344	314
23	416	260	370	330	332	536	408	306	186	649	349	290
24	404	325	375	325	335	511	411	292	187	591	348	279
25	400	360	330	292	340	500	411	281	184	560	344	282
26	395	350	285	300	345	493	405	278	195	483	342	282
27	390	320	345	320	370	479	408	268	193	377	345	285
28	389	355	340	330	385	465	405	260	180	350	344	285
29	387	390	255	328	---	458	405	252	167	339	436	288
30	387	400	370	320	---	451	398	255	162	341	563	288
31	387	---	390	315	---	455	---	257	---	333	472	---
TOTAL	12728	10879	10951	10141	9104	16782	13025	10050	6384	10386	10894	10373
MEAN	411	363	353	327	325	541	434	324	213	335	351	346
MAX	646	510	480	390	385	880	492	404	253	734	563	445
MIN	165	190	250	230	280	260	398	252	162	80	321	279
AC-FT	25250	21580	21720	20110	18060	33290	25840	19930	12660	20600	21610	20570

CAL YR 1982 TOTAL 184300 MEAN 505 MAX 3070 MIN 37 AC-FT 365600
WTR YR 1983 TOTAL 131697 MEAN 361 MAX 880 MIN 80 AC-FT 261200

RED RIVER OF THE NORTH BASIN

05051500 RED RIVER OF THE NORTH AT WAHPETON, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 05...	1225	191	472	--	11.0	13.0	--	--	--	--	--
NOV 15...	1600	428	640	--	1.5	.0	--	--	--	--	--
DEC 17...	1130	349	615	--	- .9	.0	--	--	--	--	--
FEB 03...	1100	279	635	--	-1.9	.0	--	--	--	--	--
MAR 24...	1205	504	520	8.2	3.0	3.0	230	26	43	30	15
MAY 04...	1500	397	485	--	18.0	11.0	--	--	--	--	--
JUN 16...	1000	242	478	--	16.5	17.5	--	--	--	--	--
AUG 01...	1310	330	448	--	24.0	25.5	--	--	--	--	--
29...	1330	352	421	7.4	25.5	25.5	200	12	36	27	4.5

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 24...	12	.4	6.9	250	0	200	2.5	64	9.7	.10	13	293
AUG 29...	5	.1	4.2	231	0	190	15	16	7.3	.10	21	227

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 24...	306	.40	399	2	0	60	1	20	20	.2	0	130
AUG 29...	230	.31	216	5	40	30	2	8	10	.3	0	90

RED RIVER OF THE NORTH BASIN

05051522 RED RIVER OF THE NORTH AT HICKSON, ND

LOCATION.--Lat 46°39'35", long 96°47'44", in SW¼ sec.19, T.137 N., R.48 W., Clay County, MN, Hydrologic Unit 09020104, on right bank 60 ft downstream from bridge on township road, and 1 mi southeast of Hickson, ND.

DRAINAGE AREA.--4,300 mi^2, approximately.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and concrete control. Datum of gage is 877.06 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Flow regulated by Orwell Reservoir, capacity, 14,100 acre-ft at elevation 1,070 ft National Geodetic Vertical Datum of 1929, adjustment of 1912; Lake Traverse, capacity, 137,000 acre-ft, available for flood control; numerous other controlled lakes and ponds; and several powerplants.

AVERAGE DISCHARGE.--8 years, 479 ft^3/s, 347,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,600 ft^3/s Apr. 18, 1979, gage height, 33.03 ft; no flow Oct. 26, 1976, to Jan. 9, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 824 ft^3/s Mar. 19, gage height, 11.08 ft; minimum daily, 169 ft^3/s June 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	176	389	417	357	325	367	746	444	268	181	352	536
2	188	388	424	374	317	389	741	444	270	200	340	496
3	198	388	434	376	290	402	733	436	268	584	332	472
4	209	381	458	378	287	408	720	436	260	428	332	464
5	214	380	452	352	262	448	708	452	243	340	336	444
6	228	382	424	356	276	519	595	452	225	308	336	424
7	259	386	328	360	322	675	534	448	209	292	328	416
8	301	387	222	362	334	665	514	424	179	300	320	407
9	356	384	246	358	300	595	495	424	171	304	316	403
10	466	413	302	356	315	395	482	424	169	304	316	399
11	575	423	331	348	330	269	472	423	188	276	320	396
12	609	396	348	337	330	336	464	424	208	264	324	398
13	632	248	361	319	348	513	456	410	228	256	328	400
14	655	205	377	252	340	684	454	373	229	236	332	396
15	659	195	384	293	340	777	460	358	232	200	332	388
16	650	355	380	326	340	790	471	358	250	180	340	372
17	625	518	377	310	337	797	475	364	260	200	332	370
18	560	538	374	326	337	814	472	365	262	420	348	372
19	500	509	369	342	340	822	464	363	279	508	352	362
20	463	491	368	330	337	823	462	359	283	562	352	354
21	443	460	368	330	336	812	466	364	284	602	352	352
22	439	431	363	330	338	802	464	369	277	711	352	332
23	457	301	358	330	337	780	459	353	249	765	348	324
24	458	193	363	330	336	774	454	341	212	715	352	324
25	426	210	374	325	339	770	453	335	202	632	360	310
26	415	300	378	305	346	758	450	318	202	582	356	298
27	405	350	335	290	348	742	447	309	208	544	352	297
28	401	385	299	305	350	727	444	311	211	468	352	299
29	396	405	323	325	---	730	444	293	204	396	356	296
30	393	411	317	341	---	724	448	276	198	380	376	302
31	392	---	291	330	---	731	---	270	---	376	504	---
TOTAL	13148	11202	11145	10353	9137	19838	15447	11720	6928	12514	10728	11403
MEAN	424	373	360	334	326	640	515	378	231	404	346	380
MAX	659	538	458	378	350	823	746	452	284	765	504	536
MIN	176	193	222	252	262	269	444	270	169	180	316	296
AC-FT	26080	22220	22110	20540	18120	39350	30640	23250	13740	24820	21280	22620

CAL YR 1982 TOTAL 212077 MEAN 581 MAX 4150 MIN 51 AC-FT 420700
WTR YR 1983 TOTAL 143563 MEAN 393 MAX 823 MIN 169 AC-FT 284800

RED RIVER OF THE NORTH BASIN

05051522 RED RIVER OF THE NORTH AT HICKSON, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
OCT												
06...	1130	223	435	--	10.0	11.0	--	--	--	--	--	--
DEC												
16...	1140	391	560	8.2	- .9	.0	5	3.7	16.3	114	306	54
MAR												
02...	1235	392	--	--	4.5	.0	--	--	--	--	--	--
APR												
14...	0955	444	470	8.6	- .9	5.0	10	23	14.2	115	225	24
JUN												
09...	0940	170	520	--	20.5	19.5	--	--	--	--	--	--
20...	1640	283	475	--	31.0	23.5	--	--	--	--	--	--
JUL												
26...	1535	582	593	--	32.0	26.5	--	--	--	--	--	--
SEP												
08...	0950	386	480	8.4	25.0	19.0	5	37	9.0	102	231	26

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
DEC												
16...	55	41	20	12	.5	6.6	252	3.1	86	11	.10	14
APR												
14...	44	28	13	11	.4	5.1	201	1.0	44	8.5	.10	8.7
SEP												
08...	43	30	15	12	.4	1.3	205	1.6	38	9.0	.10	21

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)
DEC											
16...	391	385	.53	413	<.020	<.10	<.10	.070	--	1.1	1.20
APR											
14...	267	272	.36	320	.020	<.10	.10	.140	--	1.3	1.40
SEP											
08...	289	280	.39	301	.020	.30	.45	.070	1.7	1.3	1.40

DATE	NITRO-GEN, TOTAL (MG/L AS NO3) (71887)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P) (70507)	PHOS-PHORUS, HYDRO-LYZABLE TOTAL (MG/L AS P) (00669)	PHOS-PHORUS, HYDRO. + ORTHO TOTAL (MG/L AS P) (00678)	PHOS-PHORUS, ORGANIC TOTAL (MG/L AS P) (00670)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)
DEC											
16...	--	.070	.21	.050	.030	.02	.05	.02	80	13	.6
APR											
14...	--	.120	.37	.050	.050	.03	.08	.04	40	8.7	.5
SEP											
08...	7.5	.180	.55	.120	.090	.06	.15	.03	80	8.9	.4

RED RIVER OF THE NORTH BASIN

05051600 WILD RICE RIVER NEAR RUTLAND, ND

LOCATION.--Lat 46°01'20", long 97°30'40", in SE¼SE¼ 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 mi^2, of which about 250 mi^2 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 National Geodetic Vertical Datum of 1929. Prior to Dec. 11, 1960, nonrecording gage at same site and datum.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--23 years (water years 1960-82), 8.08 ft^3/s, 5,850 acre-ft/yr; median of yearly mean discharges, 4.7 ft^3/s; 3,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,270 ft^3/s Apr. 8, 1969, gage height, 8.77 ft, backwater from ice; maximum gage height, 8.78 ft Apr. 8, 1969, backwater from ice; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7.6 ft^3/s Oct. 9, gage height, 2.45 ft; no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00					.00	.00	.00	.00	.00	.00	.00
2	2.0					.00	.00	.00	.00	.00	.00	.00
3	2.5					.00	.00	.00	.00	.00	.00	.00
4	2.7					.00	.00	.00	.00	.00	.00	.00
5	2.7					.00	.00	.00	.00	.00	.00	.00
6	2.9					.00	.00	.00	.00	.00	.00	.00
7	4.9					.00	.00	.00	.00	.00	.00	.00
8	5.2					.00	.00	.00	.00	.00	.00	.00
9	7.0					.00	.00	.00	.00	.00	.00	.00
10	5.5					.00	.00	.00	.00	.00	.00	.00
11	4.8					.00	.00	.00	.00	.00	.00	.00
12	3.9					.06	.00	.00	.00	.00	.00	.00
13	3.1					.30	.00	.00	.00	.00	.00	.00
14	2.5					.20	.00	.00	.00	.00	.00	.00
15	2.0					.15	.00	.00	.00	.00	.00	.00
16	1.5					.10	.00	.00	.00	.00	.00	.00
17	1.0					.05	.00	.00	.00	.00	.00	.00
18	.50					.02	.00	.00	.00	.00	.00	.00
19	.30					.00	.00	.00	.00	.00	.00	.00
20	.20					.00	.00	.00	.00	.00	.00	.00
21	.10					.00	.00	.00	.00	.00	.00	.00
22	.05					.00	.00	.00	.00	.00	.00	.00
23	.00					.00	.00	.00	.00	.00	.00	.00
24	.00					.00	.00	.00	.00	.00	.00	.00
25	.00					.00	.00	.00	.00	.00	.00	.00
26	.00					.00	.00	.00	.00	.00	.00	.00
27	.00					.00	.00	.00	.00	.00	.00	.00
28	.00					.00	.00	.00	.00	.00	.00	.00
29	.00					.00	.00	.00	.00	.00	.00	.00
30	.00					.00	.00	.00	.00	.00	.00	.00
31	.00					.00	---	.00	---	.00	.00	---
TOTAL	55.35					.88	.00	.00	.00	.00	.00	.00
MEAN	1.79					.028	.000	.000	.000	.000	.000	.000
MAX	7.0					.30	.00	.00	.00	.00	.00	.00
MIN	.00					.00	.00	.00	.00	.00	.00	.00
AC-FT	110					1.7	.00	.00	.00	.00	.00	.00

RED RIVER OF THE NORTH BASIN

05052100 RICHLAND COUNTY DRAIN 65 NEAR GREAT BEND, ND

LOCATION.--Lat 46°05'41", long 96°47'01", in NE¼NE¼NE¼ sec.11, T.130 N., R.49 W., Richland County, Hydrologic Unit 09020105, at bridge on county road 4 mi south and 1 mi east of Great Bend.

DRAINAGE AREA.--38 mi^2.

PERIOD OF RECORD.--October 1980 to current year (seasonal records only since 1982).

GAGE.--Water-stage recorder. Altitude of gage is 988 ft, from topographic map.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10 ft^3/s March 31, 1982, gage height, 6.16 ft, backwater from ice; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6.1 ft^3/s Mar. 15, gage height, 2.41 ft, backwater from ice; no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						.00	.42	.00	.00	.00	.00	
2						.00	.12	.00	.00	.00	.00	
3						.00	.00	.00	.00	.00	.00	
4						.00	.00	.00	.00	.00	.00	
5						.00	.00	.00	.00	.00	.00	
6						.00	.00	.00	.00	.00	.00	
7						.00	.00	.00	.00	.00	.00	
8						.00	.00	.00	.00	.00	.00	
9						.00	.00	.00	.00	.00	.00	
10						.00	.00	.00	.00	.00	.00	
11						.00	.00	.00	.00	.00	.00	
12						.54	.00	.00	.00	.00	.00	
13						2.6	.00	.00	.00	.00	.00	
14						3.7	.00	.00	.00	.00	.00	
15						5.0	.00	.00	.00	.00	.00	
16						4.8	.00	.00	.00	.00	.00	
17						4.0	.00	.00	.00	.00	.00	
18						4.0	.00	.00	.00	.00	.00	
19						3.2	.00	.00	.00	.00	.00	
20						2.3	.00	.00	.00	.00	.00	
21						1.6	.00	.00	.00	.00	.00	
22						.90	.00	.00	.00	.00	.00	
23						.30	.00	.00	.00	.00	.00	
24						.06	.00	.00	.00	.00	.00	
25						.00	.00	.00	.00	.00	.00	
26						.00	.00	.00	.00	.00	.00	
27						.00	.00	.00	.00	.00	.00	
28						.00	.00	.00	.00	.00	.00	
29						.00	.00	.00	.00	.00	.00	
30						.00	.00	.00	.00	.00	.00	
31						.00	---	.00	---	.00	.00	
TOTAL						33.00	.54	.00	.00	.00	.00	
MEAN						1.06	.018	.000	.000	.000	.000	
MAX						5.0	.42	.00	.00	.00	.00	
MIN						.00	.00	.00	.00	.00	.00	
AC-FT						65	1.1	.00	.00	.00	.00	

RED RIVER OF THE NORTH BASIN

05053000 WILD RICE RIVER NEAR ABERCROMBIE, ND

LOCATION.--Lat 46°28'05", long 96°47'00", in NE¼NE¼ 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 mi^2, of which about 590 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 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 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. Some regulation by Fish and Wildlife Service reservoirs, of which Lake Tawaukon is the largest. Some small diversions for irrigation.

AVERAGE DISCHARGE.--51 years, 72.0 ft^3/s, 52,160 acre-ft/yr; median of yearly mean discharges, 32 ft^3/s, 23,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,540 ft^3/s Apr. 11, 1969, gage height, 24.58 ft; no flow at times most years.

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.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 265 ft^3/s Mar. 19, gage height, 2.79 ft; no peaks above base of 300 ft^3/s; no flow Oct. 1-8, June 23 - July 1, Aug. 13-28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.26	7.2	1.3	.30	6.1	118	14	.12	.00	.36	20
2	.00	.31	8.9	1.3	.27	6.8	118	13	.22	.04	.26	14
3	.00	.37	9.4	1.3	.22	6.9	116	12	.18	21	.22	9.0
4	.00	.31	9.4	1.4	.13	7.9	114	11	.18	43	.18	11
5	.00	.31	9.7	1.4	.08	14	88	11	.18	35	.12	32
6	.00	.31	9.5	1.4	.07	52	59	9.4	.09	22	.08	33
7	.00	.31	8.5	1.4	.05	138	43	8.7	.06	16	.06	24
8	.00	.26	8.0	1.4	.04	57	37	8.5	.03	10	.03	17
9	.15	.26	7.5	1.4	.02	47	31	4.3	.01	6.3	.02	12
10	2.3	.43	6.5	1.4	.01	44	27	3.4	.07	4.0	.02	9.8
11	21	.49	5.5	1.2	.01	34	22	4.4	.31	2.5	.03	7.4
12	35	.56	5.5	1.2	.03	24	21	6.4	.22	1.6	.01	6.3
13	41	.49	5.5	1.2	.06	29	20	9.2	.22	1.4	.00	4.8
14	43	.37	5.3	1.2	.07	80	18	11	.26	1.8	.00	3.3
15	32	.31	5.2	.90	.07	126	16	11	.22	1.6	.00	2.7
16	23	.81	5.0	.90	.13	148	15	8.6	.15	2.7	.00	2.1
17	17	7.3	5.0	.80	.11	208	18	5.4	.09	3.5	.00	1.5
18	13	18	5.0	.60	.20	249	18	3.3	.07	9.4	.00	1.2
19	9.8	16	4.9	.45	.40	262	19	6.3	.05	33	.00	1.1
20	6.3	15	4.9	.47	.31	258	18	7.4	.04	78	.00	1.2
21	3.3	12	4.4	.53	.31	244	18	7.4	.02	83	.00	1.1
22	1.6	10	4.0	.78	.45	203	17	5.7	.01	70	.00	1.0
23	1.0	9.2	3.9	.73	.50	170	17	4.0	.00	40	.00	.81
24	.56	7.8	3.9	.65	.70	156	16	3.1	.00	22	.00	.72
25	.31	6.9	3.5	.50	1.0	143	16	1.5	.00	14	.00	.64
26	.26	6.5	3.1	.30	2.0	123	16	.81	.00	9.8	.00	.49
27	.22	6.8	2.8	.30	5.5	117	15	.43	.00	6.7	.00	.43
28	.18	6.8	2.3	.30	5.3	110	15	.08	.00	4.3	.00	.37
29	.18	6.9	1.8	.30	---	97	15	.03	.00	2.7	.07	.37
30	.26	7.1	1.5	.30	---	86	14	.01	.00	1.4	6.3	.56
31	.26	---	1.4	.30	---	89	---	.04	---	.71	19	---
TOTAL	251.68	142.46	169.0	27.61	18.34	3335.7	1095	191.40	2.80	547.45	26.76	219.89
MEAN	8.12	4.75	5.45	.89	.66	108	36.5	6.17	.093	17.7	.86	7.33
MAX	43	18	9.7	1.4	5.5	262	118	14	.31	83	19	33
MIN	.00	.26	1.4	.30	.01	6.1	14	.01	.00	.00	.00	.37
AC-FT	499	283	335	55	36	6620	2170	380	5.6	1090	53	436

CAL YR 1982 TOTAL 14579.75 MEAN 39.9 MAX 1470 MIN .00 AC-FT 28920
WTR YR 1983 TOTAL 6028.09 MEAN 16.5 MAX 262 MIN .00 AC-FT 11960

RED RIVER OF THE NORTH BASIN

05053000 WILD RICE RIVER NEAR ABERCROMBIE, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
DEC											
16...	1525	4.8	1700	--	- .9	.5	--	--	--	--	--
FEB											
02...	1350	.24	2000	--	- .9	.0	--	--	--	--	--
MAR											
10...	1115	44	1870	--	- .9	.5	--	--	--	--	--
30...	1230	87	510	7.8	5.0	.5	180	46	42	19	29
MAY											
05...	1230	11	1120	--	18.0	13.5	--	--	--	--	--
JUN											
16...	1820	.13	1399	--	21.5	20.0	--	--	--	--	--
JUL											
05...	1020	36	--	--	14.5	19.0	--	--	--	--	--
AUG											
01...	1010	.40	650	8.1	27.0	24.5	230	43	51	25	47
31...	1155	24	690	--	27.0	23.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
30...	24	1.0	10	168	0	140	4.2	90	15	.10	13	318
AUG												
01...	30	1.4	11	229	0	190	2.9	110	25	.30	29	411

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
30...	302	.43	74.8	3	60	40	1	45	30	.8	0	130
AUG												
01...	412	.56	.44	11	150	0	0	40	180	.2	0	260

05054000 RED RIVER OF THE NORTH AT FARGO, ND

LOCATION.--Lat 46°51'40", long 96°47'00", in NW¼NE¼ sec.18, T.139 N., R.48 W., Cass County, Hydrologic Unit 09020104, at city waterplant on 4th St. S. in Fargo, 25 mi upstream from mouth of Sheyenne River, and at mile 453.0.

DRAINAGE AREA.--6,800 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1901 to current year. Published as "at Moorhead, Minn." 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 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 those for winter periods, which are fair. Flow regulated by Orwell Reservoir, capacity, 14,100 acre-ft at elevation 1,070 ft National Geodetic Vertical Datum of 1929, adjustment of 1912; Lake Traverse, capacity, 137,000 acre-ft, available for flood control; other controlled lakes and ponds; and several powerplants. Some small diversions for municipal supply. Figures of daily discharge do not include diversions to cities of Fargo and Moorhead and from Sheyenne River.

AVERAGE DISCHARGE (UNADJUSTED).--82 years, 552 ft^3/s, 399,900 acre-ft/yr; median of yearly mean discharges, 442 ft^3/s, 320,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,300 ft^3/s Apr. 15, 1969, gage height, 37.34 ft; no flow for many days in each year for period 1932-41, Sept. 30, Oct. 1, 2, 1970, Oct. 10-19, 1976.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 7, 1897 reached a stage of 39.1 ft present datum, discharge, 25,000 ft^3/s at site 1.5 mi downstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,750 ft^3/s July 4, gage height, 15.99 ft; minimum daily, 146 ft^3/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	146	388	355	270	300	332	1030	465	289	173	388	504
2	180	395	416	300	290	350	1090	465	285	190	365	513
3	176	400	415	330	280	380	1000	452	285	542	324	451
4	180	391	420	342	280	399	970	443	280	1620	318	446
5	179	394	441	330	255	450	960	452	275	1570	302	433
6	268	393	443	320	230	525	900	459	246	1140	290	409
7	229	387	414	320	240	760	830	468	236	718	280	393
8	250	388	360	320	270	765	770	447	193	514	263	376
9	501	389	250	320	290	620	680	425	169	419	253	368
10	561	424	199	300	280	500	617	435	164	364	258	377
11	674	445	226	300	290	360	577	469	176	307	263	374
12	804	417	275	310	300	250	540	472	193	268	258	382
13	821	343	302	280	312	290	525	434	207	238	268	378
14	822	225	318	240	322	478	507	390	214	213	274	376
15	827	192	339	230	330	530	509	359	208	192	274	395
16	796	209	357	262	340	620	503	348	222	152	296	367
17	772	378	352	270	340	780	513	353	235	249	296	352
18	712	518	350	285	341	840	512	356	235	528	296	346
19	618	537	315	292	332	895	507	353	244	814	302	344
20	545	528	310	310	323	970	515	375	254	757	308	335
21	492	431	305	308	312	1000	529	371	257	709	324	326
22	468	400	310	300	318	1040	528	373	260	753	313	319
23	466	365	330	298	321	1020	520	380	239	879	308	303
24	490	255	334	298	299	1000	500	360	251	881	308	302
25	460	185	353	295	294	995	486	357	221	769	318	295
26	432	220	364	290	305	970	478	360	201	668	313	275
27	414	280	344	280	317	960	480	332	184	598	308	279
28	404	330	299	268	312	940	466	338	185	514	337	277
29	397	330	265	275	---	920	462	332	214	431	323	269
30	390	330	280	290	---	900	464	325	202	394	318	307
31	390	---	270	300	---	930	---	293	---	365	379	---
TOTAL	14864	10867	10311	9133	8423	21769	18968	12241	6824	17929	9425	10871
MEAN	479	362	333	295	301	702	632	395	227	578	304	362
MAX	827	537	443	342	341	1040	1090	472	289	1620	388	513
MIN	146	185	199	230	230	250	462	293	164	152	253	269
AC-FT	29480	21550	20450	18120	16710	43180	37620	24280	13540	35560	18690	21560
(+)	1138	1013	1058	1116	1021	1006	1013	1257	1429	1402	1715	1161
MEAN*	498	379	350	313	319	719	649	415	251	601	332	382
AC-FT*	30620	22560	21510	19240	17730	44190	38630	25540	14970	36960	20400	22720

		OBSERVED							ADJUSTED	
CAL YR 1982	TOTAL	232386	MEAN	637	MAX 5800	MIN 45	AC-FT 460900	MEAN	658	AC-FT 476110
WTR YR 1983	TOTAL	151625	MEAN	415	MAX 1620	MIN 146	AC-FT 300700	MEAN	434	AC-FT 315069

\+ Diversions in acre-feet to cities of Fargo and Moorhead.
* Adjusted for diversions to cities of Fargo and Moorhead.

RED RIVER OF THE NORTH BASIN

05054000 RED RIVER OF THE NORTH AT FARGO, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
06...	1405	225	405	7.7	5.9	10.5	--	--	--	--	--
NOV											
17...	1015	361	570	8.1	5.0	1.0	--	--	--	--	--
DEC											
21...	1415	308	610	8.4	- .9	.5	--	--	--	--	--
FEB											
04...	1220	280	460	8.0	- .9	.0	--	--	--	--	--
MAR											
29...	1015	937	460	7.8	.5	.5	200	41	42	24	16
MAY											
04...	1110	445	505	8.7	8.0	12.0	--	--	--	--	--
JUN											
22...	1030	260	474	--	25.0	23.0	--	--	--	--	--
JUL											
25...	1550	756	500	--	33.0	27.5	--	--	--	--	--
AUG											
31...	1445	397	436	7.9	32.0	27.0	220	19	40	29	11

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
29...	14	.5	8.5	199	0	160	5.0	64	9.9	.10	12	304
AUG												
31...	10	.3	6.4	245	0	200	4.9	33	9.6	.20	19	258

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
29...	278	.41	769	3	40	80	6	14	10	.0	0	69
AUG												
31...	269	.35	277	8	60	30	2	20	10	.4	0	130

RED RIVER OF THE NORTH BASIN

05054020 RED RIVER OF THE NORTH BELOW FARGO, ND

WATER-QUALITY RECORDS

LOCATION.--Lat 46°55'50", long 96°47'05", in SW¼NE¼ sec.19, T.140 N., R.48 W., Cass County, Hydrologic Unit 09020104, at bridge on county highway 2 mi north of North Dakota State University campus in Fargo, and 12 mi above mouth of Sheyenne River.

DRAINAGE AREA.--6,820 mi^2, approximately.

PERIOD OF RECORD.--Water years 1969 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
OCT									
06...	1405	225	405	7.7	10.0	10.5	20	194	12
NOV									
17...	1015	361	570	8.1	5.0	1.0	15	242	38
DEC									
21...	1415	307	610	8.4	- .9	.5	<1	304	49
FEB									
04...	1220	280	460	8.0	- .9	.0	<1	287	24
MAR									
29...	1015	937	510	7.8	.5	.5	30	211	44
MAY									
04...	1110	445	665	8.7	8.0	12.0	5	273	55
JUN									
22...	1130	260	498	7.9	23.0	23.0	10	227	21
JUL									
25...	1700	756	511	7.9	32.0	28.0	25	224	76
AUG									
31...	1550	397	475	7.8	32.0	26.5	20	213	9.1

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
OCT										
06...	35	26	13	12	.4	5.2	183	7.1	35	8.3
NOV										
17...	44	32	16	12	.5	5.3	204	3.1	64	11
DEC										
21...	54	41	22	13	.6	7.3	255	1.9	92	15
FEB										
04...	49	40	20	13	.5	5.6	263	5.1	53	12
MAR										
29...	45	24	17	14	.5	7.8	168	5.1	71	10
MAY										
04...	50	36	23	15	.6	13	218	.8	53	33
JUN										
22...	43	29	15	12	.4	5.4	206	5.0	44	12
JUL										
25...	50	24	14	12	.4	6.6	148	3.6	110	6.5
AUG										
31...	39	28	13	11	.4	4.7	204	6.2	23	7.4

RED RIVER OF THE NORTH BASIN

05054020 RED RIVER OF THE NORTH BELOW FARGO, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC DISSOLVED (UG/L AS AS) (01000)
OCT 06...	.20	9.7	235	242	.32	143	.40	.080	--	--
NOV 17...	.20	12	324	307	.44	316	.30	.070	--	--
DEC 21...	.20	14	413	398	.56	342	<.10	.060	--	--
FEB 04...	.20	17	352	355	.48	266	.24	.200	--	--
MAR 29...	.20	15	290	291	.39	734	.96	.200	70	2
MAY 04...	.20	6.0	387	345	.53	465	.58	.090	--	--
JUN 22...	.20	46	279	318	.38	196	.26	.110	--	--
JUL 25...	.20	21	331	321	.45	676	.59	.240	--	--
AUG 31...	.20	18	256	256	.35	274	.17	.100	20	7

DATE	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	LITHIUM DISSOLVED (UG/L AS LI) (01130)
OCT 06...	--	70	--	--	--	--	--	--	--
NOV 17...	--	70	--	--	--	--	--	--	--
DEC 21...	--	80	--	--	--	--	--	--	--
FEB 04...	--	80	--	--	--	--	--	--	--
MAR 29...	53	60	<1	<10	2	10	58	7	23
MAY 04...	--	60	--	--	--	--	--	--	--
JUN 22...	--	70	--	--	--	--	--	--	--
JUL 25...	--	100	--	--	--	--	--	--	--
AUG 31...	110	60	<1	<10	40	5	6	<1	31

DATE	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY DISSOLVED (UG/L AS HG) (71890)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	CYANIDE TOTAL (MG/L AS CN) (00720)
OCT 06...	--	--	--	--	--	--	--	--	--
NOV 17...	--	--	--	--	--	--	--	--	--
DEC 21...	--	--	--	--	--	--	--	--	--
FEB 04...	--	--	--	--	--	--	--	--	--
MAR 29...	18	<.1	2	6	<1	160	1.9	6	<.01
MAY 04...	--	--	--	--	--	--	--	--	--
JUN 22...	--	--	--	--	--	--	--	--	--
JUL 25...	--	--	--	--	--	--	--	--	--
AUG 31...	6	<.1	<1	43	1	140	5.8	8	<.01

RED RIVER OF THE NORTH BASIN

05054500 SHEYENNE RIVER ABOVE HARVEY, ND

LOCATION.--Lat 47°42'10", long 99°56'55", in SW¼SE¼ 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 mi^2, of which about 270 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

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

REMARKS.--Records fair.

AVERAGE DISCHARGE.--28 years, 7.68 ft^3/s, 5,560 acre-ft/yr; median of yearly mean discharges, 5.4 ft^3/s, 3,910 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,000 ft^3/s Apr. 20, 1979, gage height, 9.45 ft; maximum gage height, 10.30 ft Apr. 1, 1971, backwater from ice; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 25 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 10	1500	48	6.92	Mar. 13	2000	*240	a*9.57
Feb. 25	--	70	ice jam	May 13	1800	51	6.92

Minimum Daily, 0.63 ft^3/s Aug. 8, 13-15, 20.

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	11	9.0	2.3	3.0	29	83	32	18	3.3	1.6	1.1
2	2.3	11	13	2.6	3.0	49	81	29	18	4.5	1.4	1.1
3	1.6	10	15	3.3	2.5	45	70	26	18	4.1	1.2	.76
4	1.5	9.0	15	4.0	2.5	43	66	28	16	4.1	1.1	.76
5	1.4	12	15	4.0	2.0	54	62	24	15	3.7	1.1	1.0
6	2.8	13	13	4.0	2.0	83	60	22	14	3.8	.86	1.1
7	7.9	12	9.0	4.5	2.0	100	58	21	14	4.0	.67	1.1
8	12	8.9	8.1	5.0	2.0	115	58	19	13	3.9	.63	1.2
9	18	10	5.4	5.5	2.0	131	57	17	12	3.8	.76	1.4
10	46	10	6.0	6.0	2.0	130	57	18	10	3.4	.81	1.4
11	45	9.3	5.6	7.0	2.0	127	57	17	8.5	2.7	.76	1.4
12	33	8.4	4.7	7.0	2.5	138	62	31	7.5	2.4	.67	2.0
13	20	9.0	6.0	6.5	4.5	179	64	49	6.3	2.3	.63	2.2
14	20	10	5.0	6.0	7.0	214	60	47	5.7	2.2	.63	2.4
15	22	11	4.0	5.5	18	183	60	40	5.6	2.0	.63	5.2
16	18	11	4.0	5.5	39	158	58	35	4.8	1.9	.71	4.6
17	15	12	5.0	5.0	53	150	57	30	3.9	1.9	.81	2.4
18	13	12	5.0	4.0	43	151	55	28	3.3	3.4	.76	1.9
19	12	12	5.0	3.5	47	152	53	32	4.5	5.5	.67	1.6
20	9.7	12	4.5	3.0	54	140	51	46	7.5	9.9	.63	1.6
21	7.7	12	4.5	3.0	54	130	48	39	7.1	7.5	.67	1.8
22	7.2	12	4.5	3.0	60	120	47	36	8.6	4.9	.67	1.9
23	5.7	11	4.0	3.0	65	110	48	33	6.1	3.8	1.1	1.6
24	4.8	9.4	4.0	3.0	65	100	45	30	4.8	3.3	1.6	1.2
25	4.7	9.3	3.5	3.0	69	100	41	28	4.0	2.8	5.5	1.1
26	4.5	8.6	3.5	3.0	63	96	39	25	3.5	2.6	12	1.1
27	4.2	8.5	3.5	3.0	47	92	38	23	3.2	2.6	4.1	1.1
28	4.8	8.5	3.0	3.0	33	85	37	23	3.1	2.2	2.3	1.1
29	7.1	9.0	2.5	3.0	---	81	36	21	3.3	2.0	1.9	1.1
30	6.7	9.0	2.0	3.0	---	79	33	20	3.6	1.8	1.5	1.7
31	6.8	---	2.0	3.0	---	85	---	19	---	1.7	1.1	---
TOTAL	366.9	310.9	194.3	127.2	749.0	3449	1641	888	252.9	108.0	49.47	49.92
MEAN	11.8	10.4	6.27	4.10	26.8	111	54.7	28.6	8.43	3.48	1.60	1.66
MAX	46	13	15	7.0	69	214	83	49	18	9.9	12	5.2
MIN	1.4	8.4	2.0	2.3	2.0	29	33	17	3.1	1.7	.63	.76
AC-FT	728	617	385	252	1490	6840	3250	1760	502	214	98	99

CAL YR 1982 TOTAL 11049.29 MEAN 30.3 MAX 215 MIN .00 AC-FT 21920
WTR YR 1983 TOTAL 8186.59 MEAN 22.4 MAX 214 MIN .63 AC-FT 16240

RED RIVER OF THE NORTH BASIN

05054500 SHEYENNE RIVER ABOVE HARVEY, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
OCT											
19...	1200	12	1220	8.1	1.0	5.5	50	--	--	340	0
NOV											
15...	1314	11	1750	8.4	3.0	.0	10	16.2	112	200	0
JAN											
03...	1500	3.3	1680	7.7	- .4	.0	10	4.0	--	370	0
FEB											
14...	1420	6.8	940	8.0	1.0	.5	45	3.8	26	200	0
MAR											
09...	0955	165	300	7.9	- .4	.0	50	1.9	13	110	0
30...	1100	94	730	7.8	9.0	.0	60	3.2	22	190	0
MAY											
04...	1100	29	1160	8.1	14.0	9.0	40	3.9	34	320	0
JUN											
21...	1254	7.3	1250	9.0	22.0	22.0	55	10.4	119	220	0
JUL											
19...	0905	3.7	1260	8.6	28.0	23.5	55	3.8	45	190	0
SEP											
07...	1300	1.2	1320	8.5	23.5	16.0	50	9.6	98	150	0

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
OCT										
19...	66	42	150	48	3.6	12	345	5.3	300	10
NOV										
15...	27	31	120	56	3.8	6.4	350	2.7	240	15
JAN										
03...	52	59	260	59	6.0	14	579	22	340	21
FEB										
14...	33	29	130	55	4.1	20	312	6.0	170	12
MAR										
09...	23	12	20	26	.9	14	124	3.0	44	5.0
30...	31	28	82	46	2.6	14	235	7.2	150	9.1
MAY										
04...	46	49	160	51	4.0	13	399	6.1	230	17
JUN										
21...	27	36	230	69	6.9	8.1	469	.9	230	15
JUL										
19...	23	31	230	72	7.5	9.5	464	2.2	210	16
SEP										
07...	32	16	250	78	9.3	5.8	476	2.9	170	17

RED RIVER OF THE NORTH BASIN

05054500 SHEYENNE RIVER ABOVE HARVEY, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC DISSOLVED (UG/L AS AS) (01000)
OCT										
19...	.20	19	810	806	1.1	26.2	.10	.090	--	--
NOV										
15...	.30	5.1	869	655	1.2	24.6	.28	.110	--	--
JAN										
03...	.30	35	1140	1130	1.6	10.0	.28	.230	--	--
FEB										
14...	.20	19	612	601	.83	11.2	.43	.540	--	--
MAR										
09...	<.10	21	235	216	.32	105	.79	.260	1000	2
30...	.10	14	471	.469	.64	119	.11	.290	--	--
MAY										
04...	.20	3.0	770	758	1.0	60.3	<.10	.160	--	--
JUN										
21...	.30	14	852	842	1.2	16.8	<.10	.360	--	--
JUL										
19...	.30	8.4	836	807	1.1	8.4	<.10	.200	--	--
SEP										
07...	.30	31	777	809	1.1	2.5	.10	.140	80	3

DATE	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	LITHIUM DISSOLVED (UG/L AS LI) (01130)
OCT									
19...	--	400	--	--	--	--	--	--	--
NOV									
15...	--	550	--	--	--	--	--	--	--
JAN									
03...	--	780	--	--	--	--	--	--	--
FEB									
14...	--	370	--	--	--	--	--	--	--
MAR									
09...	59	80	<1	<10	<1	8	1000	1	14
30...	--	230	--	--	--	--	--	--	--
MAY									
04...	--	470	--	--	--	--	--	--	--
JUN									
21...	--	740	--	--	--	--	--	--	--
JUL									
19...	--	770	--	--	--	--	--	--	--
SEP									
07...	74	700	<1	<10	3	1	92	11	110

DATE	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY DISSOLVED (UG/L AS HG) (71890)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	CYANIDE TOTAL (MG/L AS CN) (00720)
OCT									
19...	--	--	--	--	--	--	--	--	--
NOV									
15...	--	--	--	--	--	--	--	--	--
JAN									
03...	--	--	--	--	--	--	--	--	--
FEB									
14...	--	--	--	--	--	--	--	--	--
MAR									
09...	24	.4	<1	4	<1	91	7.3	130	<.01
30...	--	--	--	--	--	--	--	--	--
MAY									
04...	--	--	--	--	--	--	--	--	--
JUN									
21...	--	--	--	--	--	--	--	--	--
JUL									
19...	--	--	--	--	--	--	--	--	--
SEP									
07...	61	.2	<1	5	<1	170	7.3	<3	<.01

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 mi^2, approximately, of which about 1,310 mi^2 is probably noncontributing - includes 227 mi^2 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. Altitude of gage is 1,370 ft, by barometer.

REMARKS.--Records good. Records include flow of spring which enters below gage and just above control. Discharge measurements of spring inflow made during the water year are listed below:

Date	Discharge (ft^3/s)	Date	Discharge (ft^3/s)	Date	Discharge (ft^3/s)
Oct. 15	1.24	Mar. 4	1.32	June 3	1.25
Dec. 3	1.92	Mar. 30	1.01	Aug. 16	.40 est
Jan. 12	1.09				

AVERAGE DISCHARGE.--34 years, 56.2 ft^3/s, 40,710 acre-ft/yr; median of yearly mean discharges, 51 ft^3/s, 36,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,660 ft^3/s Apr. 14, 1969, gage height, 7.51 ft; maximum gage height, 7.83 ft Apr. 18, 1956; no flow Aug. 7 to Sept. 1, Sept. 3-9, 1961.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 12	2300	*1,480	5.51	Apr. 7	0130	621	3.98

Minimum daily, 0.47 ft^3/s Aug. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.5	54	14	12	12	136	465	115	80	20	3.0	1.1
2	15	46	29	12	12	132	535	110	78	30	2.3	1.3
3	22	44	42	12	12	137	544	105	72	42	4.0	1.3
4	45	45	56	12	12	138	555	105	64	42	3.6	1.3
5	45	42	60	12	9.5	229	560	100	64	40	3.4	2.0
6	63	32	57	12	8.6	470	577	91	56	38	2.9	3.0
7	89	39	55	12	8.6	621	588	85	52	36	2.8	2.6
8	88	42	53	12	7.6	758	582	80	50	32	2.7	4.6
9	79	42	53	18	7.6	1030	510	87	44	24	3.4	4.8
10	74	44	48	25	7.6	1260	420	78	40	22	3.0	1.9
11	92	44	47	30	7.6	1390	343	74	36	18	2.2	2.0
12	96	36	41	30	7.6	1450	305	91	34	17	1.5	3.0
13	88	39	37	42	15	1460	278	93	30	16	1.1	3.0
14	75	40	35	58	24	1440	254	120	34	16	.75	3.8
15	69	34	30	62	22	1410	238	120	36	16	.63	13
16	71	34	25	60	38	1420	225	108	32	15	.47	14
17	77	35	21	58	58	1430	210	118	26	13	.56	14
18	89	35	19	52	64	1390	194	122	18	14	1.4	12
19	99	36	17	42	82	1300	190	125	17	13	4.2	5.3
20	102	37	16	32	98	1140	186	122	20	13	3.8	3.6
21	101	33	16	27	129	960	183	125	42	14	5.6	2.8
22	98	31	16	25	142	808	176	128	89	15	4.7	2.3
23	95	30	16	23	139	682	169	125	89	16	4.3	2.0
24	90	25	16	21	121	588	158	118	72	16	6.4	4.2
25	85	21	16	21	113	520	152	115	52	13	26	13
26	80	18	16	20	121	460	143	115	38	13	38	24
27	73	16	15	18	147	405	146	115	28	22	22	26
28	68	15	14	16	139	371	149	105	24	24	7.6	26
29	66	14	13	14	---	339	122	93	20	18	3.8	26
30	64	13	12	13	---	323	120	87	20	20	2.0	28
31	63	---	12	13	---	385	---	82	---	15	1.1	---
TOTAL	2270.5	1016	917	816	1564.7	24582	9277	3257	1357	663	169.21	251.9
MEAN	73.2	33.9	29.6	26.3	55.9	793	309	105	45.2	21.4	5.46	8.40
MAX	102	54	60	62	147	1460	588	128	89	42	38	28
MIN	9.5	13	12	12	7.6	132	120	74	17	13	.47	1.1
AC-FT	4500	2020	1820	1620	3100	48760	18400	6460	2690	1320	336	500

CAL YR 1982 TOTAL 41012.00 MEAN 112 MAX 1380 MIN 2.6 AC-FT 81350
WTR YR 1983 TOTAL 46141.31 MEAN 126 MAX 1460 MIN .47 AC-FT 91520

RED RIVER OF THE NORTH BASIN

05056000 SHEYENNE RIVER NR WARWICK, ND--CONTINUED

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982.

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)
OCT												
15...	1630	69	832	--	14.5	10.0	--	--	--	--	--	--
DEC												
03...	1000	43	1300	--	-2.0	.5	--	--	--	--	--	--
JAN												
12...	1250	30	1160	--	2.5	.5	--	--	--	--	--	--
MAR												
04...	1015	137	662	--	.5	.0	--	--	--	--	--	--
30...	0830	317	635	7.6	-1.0	.5	160	0	29	22	66	44
JUN												
03...	1205	73	1200	--	22.0	18.0	--	--	--	--	--	--
JUL												
18...	1440	15	1000	--	30.0	27.5	--	--	--	--	--	--
SEP												
09...	1125	4.5	734	8.4	15.0	17.0	--	--	--	--	--	--

DATE	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
MAR												
30...	2	17	230	11	92	7.1	.10	15	387	390	.53	331

DATE	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR											
30...	.140	2	160	110	0	60	150	.2	2	0	150

RED RIVER OF THE NORTH BASIN

05056100 MAUVAIS COULEE NEAR CANDO, ND

LOCATION.--Lat 48°26'53", long 99°06'08", in SE¼NE¼SE¼ 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, 5.5 mi southeast of Cando, and 7 mi northeast of Maza.

DRAINAGE AREA.--387 mi^2, of which about 10 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 1,445 ft, from topographic map. Prior to July 2, 1957, nonrecording gage at present site and datum.

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

AVERAGE DISCHARGE.--26 years (water years 1957-82), 19.2 ft^3/s, 13,910 acre-ft/yr; median of yearly mean discharges, 13 ft^3/s, 9,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,660 ft^3/s Apr. 25, 1979, gage height, 11.18 ft; no flow at times each year.

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.--Maximun discharge, 362 ft^3/s Apr. 9, gage height, 6.35 ft; no flow July 28 to Sept. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						.50	37	25	15	10	.00	.00
2						.58	35	24	15	18	.00	.00
3						.68	36	22	14	22	.00	.00
4						.77	54	22	14	23	.00	.00
5						1.0	65	23	14	21	.00	.00
6						5.0	146	22	13	19	.00	.00
7						20	289	19	13	17	.00	.00
8						25	351	19	12	15	.00	.08
9						24	355	20	12	13	.00	.33
10						23	345	19	11	11	.00	.38
11						25	314	16	10	9.3	.00	.38
12						28	292	17	9.1	8.7	.00	.43
13						35	241	19	8.6	7.6	.00	.48
14						45	187	20	7.8	6.5	.00	.54
15						60	245	22	6.7	5.2	.00	1.1
16						75	204	23	6.3	4.3	.00	1.2
17						70	175	24	5.6	4.1	.00	1.3
18						65	156	24	5.2	4.0	.00	1.2
19						60	137	22	4.9	3.5	.00	.99
20						55	123	24	5.2	2.9	.00	.88
21						48	52	24	5.0	2.0	.00	.77
22						42	46	22	6.3	1.3	.00	.65
23						38	42	21	7.1	.89	.00	.60
24						35	38	19	7.2	.61	.00	.54
25						33	36	20	7.1	.38	.00	.48
26						30	34	20	7.3	.24	.00	.43
27						26	31	18	7.1	.11	.00	.43
28						25	30	18	6.3	.02	.00	.38
29						25	28	16	5.7	.00	.00	.33
30						26	26	15	6.2	.00	.00	.33
31						30	---	15	---	.00	.00	---
TOTAL						976.53	4150	634	267.7	230.65	.00	14.23
MEAN						31.5	138	20.5	8.92	7.44	.000	.47
MAX						75	355	25	15	23	.00	1.3
MIN						.50	26	15	4.9	.00	.00	.00
AC-FT						1940	8230	1260	531	457	.00	28

RED RIVER OF THE NORTH BASIN

05056100 MAUVAIS COULEE NEAR CANDO, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
14...	1315	3.0	1210	--	18.0	9.0	--	--	--	--	--
MAR											
03...	1350	.51	1280	--	2.0	.5	--	--	--	--	--
30...	1600	26	860	7.4	3.0	.0	260	62	54	30	22
MAY											
27...	1155	19	988	--	25.5	17.0	--	--	--	--	--
JUL											
19...	1515	3.2	993	8.3	32.5	27.0	430	97	81	55	57
SEP											
08...	1230	.02	1260	--	19.0	17.0	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
30...	14	.6	22	240	0	200	15	120	14	.10	18	420
JUL												
19...	22	1.2	14	405	0	330	3.2	200	27	.20	8.3	668

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
30...	400	.57	29.9	2	0	100	0	30	170	.1	0	210
JUL												
19...	642	.91	5.8	7	70	30	1	50	190	.4	1	330

RED RIVER OF THE NORTH BASIN

05056200 EDMORE COULEE NEAR EDMORE, ND

LOCATION.--Lat 48°20'14", long 98°39'33", in NW¼ 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 mi^2, of which about 100 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Prior to June 26, 1957, nonrecording gage at same site and datum.

REMARKS.--Records poor.

AVERAGE DISCHARGE.--25 years (1957-82), 13.7 ft^3/s, 9,930 acre-ft/yr; median of yearly mean discharges, 9.2 ft^3/s, 6,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,110 ft^3/s Apr. 25, 1979, gage height, 7.31 ft; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 350 ft^3/s Apr. 11, gage height, 5.50 ft, no flow Mar. 1, Sept. 5-7, Sept. 26-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						.00	80	17	2.3	4.0	1.6	5.7
2						.30	120	15	2.2	12	1.3	3.1
3						.50	150	14	2.1	22	1.1	1.5
4						1.0	180	12	1.8	24	.92	.31
5						4.0	210	11	1.6	17	.84	.00
6						10	240	10	1.5	13	.71	.00
7						15	252	8.4	1.3	11	.52	.00
8						15	128	8.2	1.0	11	.31	.00
9						15	242	7.3	.87	16	.17	.19
10						20	318	7.0	.75	30	.17	.60
11						25	332	6.6	.69	36	.17	.80
12						30	332	6.0	.62	32	.17	.75
13						35	185	6.6	.82	28	.14	.56
14						40	164	6.1	.55	26	.03	.32
15						40	188	5.7	.32	20	.00	4.0
16						38	180	5.6	.20	18	.00	11
17						38	144	5.1	.12	16	.00	13
18						36	107	4.9	.06	14	.00	8.7
19						36	98	4.4	.02	12	.00	5.1
20						34	76	4.4	.02	11	.00	3.3
21						34	60	4.3	.02	9.4	.00	1.5
22						34	53	3.8	.03	8.0	.00	.65
23						32	45	3.6	.24	6.5	.03	.10
24						30	40	3.6	1.0	5.4	2.5	.04
25						30	33	3.4	1.4	4.7	16	.08
26						32	28	2.7	1.3	4.1	26	.00
27						34	25	1.8	.95	3.6	26	.00
28						36	22	1.4	.48	3.3	16	.00
29						38	20	2.2	.20	2.9	11	.00
30						45	19	2.3	.17	2.5	10	.00
31						60	---	2.1	---	2.0	10	---
TOTAL						837.80	4071	196.5	24.63	425.4	125.68	61.30
MEAN						27.0	136	6.34	.82	13.7	4.05	2.04
MAX						60	332	17	2.3	36	26	13
MIN						.00	19	1.4	.02	2.0	.00	.00
AC-FT						1660	8070	390	49	844	249	122

RED RIVER OF THE NORTH BASIN

05056200 EDMORE COULEE NR EDMORE, ND--CONTINUED

WATER QUALITY

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	OXYGEN, DIS-SOLVED (MG/L) (00300)	DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)
OCT										
15...	1000	9.2	1230	--	6.5	9.0	--	--	--	--
MAR										
03...	0940	.64	828	--	1.0	.0	--	--	--	--
29...	1345	37	590	7.5	.5	.0	--	--	--	200
APR										
07...	1525	259	625	--	8.0	3.0	--	--	--	--
MAY										
24...	1615	--	871	8.7	14.0	17.0	15	7.6	83	230
26...	1540	2.3	1080	--	22.0	16.0	--	--	--	--
JUL										
19...	1005	11	1290	--	26.5	25.0	--	--	--	--

DATE	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
MAR										
29...	0	49	19	30	22	1	27	210	13	80
MAY										
24...	0	34	36	70	37	2	19	238	.9	190

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)
MAR										
29...	10	.10	22	370	360	.50	37	.230	--	--
MAY										
24...	24	.10	18	596	530	.81	--	--	<.100	.040

DATE	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR										
29...	4	0	140	1	20	890	.2	3	0	110
MAY										
24...	--	80	--	--	--	--	--	--	--	--

RED RIVER OF THE NORTH BASIN

05056220. SWEETWATER LAKE AT SWEETWATER, ND

LOCATION.--Lat 48°12'39", long 98°52'15", in NE¼SW¼SW¼ 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 mi^2 of which about 290 mi^2 is probably noncontributing.

WATER-QUALITY RECORDS

PERIOD OF RECORD.---1960, 1962 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE, AIR (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	COLOR (PLATINUM-COBALT UNITS) (00080)	HARDNESS (MG/L AS CACO3) (00900)	NESS NONCARBONATE (MG/L AS CACO3) (95902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)
OCT 13...	1245	825	9.1	11.0	7.0	35	240	24	31	40	81
MAY 24...	1615	871	8.7	14.0	17.0	15	230	0	34	36	70

DATE	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CACO3) (90410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)
OCT 13...	40	2	21	219	180	28	.20	28	548	540
MAY 24...	37	2	19	238	190	24	.10	18	596	530

DATE	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)
OCT 13...	<.100	.030	20	4	87	80	<1	<10	<1	<1
MAY 24...	<.100	.040	--	--	--	80	--	--	--	--

DATE	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY DISSOLVED (UG/L AS HG) (71890)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
OCT 13...	<3	<1	68	1	<.1	2	<1	190	<1	11

05056239 STARKWEATHER COULEE NEAR WEBSTER, ND

LOCATION.--Lat 48°19'13", long 98°56'23", in NW¼SW¼NW¼ sec.19, T.156 N., R.64 W., Ramsey County, Hydrologic Unit 09020201, on bridge 3.8 mi northwest of Webster.

DRAINAGE AREA.--About 310 mi^2, of which about 100 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1979 to current year.

GAGE.--Nonrecording gage.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 252 ft^3/s Apr. 14, 1982, gage height, 7.24 ft; no flow for many months.

EXTREMES FOR CURRENT YEAR.--Maximum discharge of about 150 ft^3/s probably occured Mar. 25, gage height, 7.40 ft, from flood mark, backwater from ice; no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.10	.00	.00	.00	57	30	.32	2.0	.00	8.0
2	.00	.00	.50	.00	.00	.00	58	16	.23	1.0	.00	7.6
3	.00	.00	1.5	.00	.00	.00	58	9.2	.09	.40	.00	6.7
4	.00	.00	.50	.00	.00	.00	58	7.6	.00	.00	.00	5.9
5	.00	.00	.20	.00	.00	.50	59	6.7	.00	.00	.00	4.6
6	.50	.00	.05	.00	.00	5.0	59	5.7	.00	.00	.00	3.0
7	5.0	.00	.00	.00	.00	15	58	5.5	.00	.00	.00	1.8
8	7.0	.00	.00	.00	.00	10	66	3.5	.00	.00	.00	2.1
9	8.0	.00	.00	.00	.00	8.0	91	2.7	.00	.00	.00	2.0
10	15	.00	.00	.00	.00	7.0	129	2.4	.00	.00	.00	1.4
11	20	.00	.00	.00	.00	6.0	118	2.3	.00	.00	.00	1.3
12	18	.00	.00	.00	.00	10	118	3.3	.00	.00	.00	1.9
13	16	.00	.00	.00	.00	20	106	4.6	.00	.00	.00	2.7
14	14	.00	.00	.00	.00	30	92	4.0	.00	.00	.00	4.7
15	12	.00	.00	.00	.00	28	80	3.5	.00	.00	.00	9.4
16	10	.00	.00	.00	.00	27	78	3.3	.00	.00	.00	12
17	9.0	.00	.00	.00	.00	27	77	3.0	.00	.00	.00	13
18	8.0	.00	.00	.00	.00	26	82	2.6	.25	.00	.00	11
19	7.0	.00	.00	.00	.00	26	71	2.6	1.9	.00	.00	9.2
20	6.0	.00	.00	.00	.00	25	53	2.5	1.8	.00	.00	8.9
21	5.0	.00	.00	.00	.00	25	60	2.1	.90	.00	.00	6.5
22	4.0	.00	.00	.00	.00	25	53	2.0	3.5	.00	.00	4.9
23	3.0	.00	.00	.00	.00	25	50	1.9	3.3	.00	.00	4.2
24	2.0	.00	.00	.00	.00	30	46	1.8	3.0	.00	.00	4.4
25	1.0	.00	.00	.00	.00	150	42	1.5	2.7	.00	.00	2.9
26	.50	.00	.00	.00	.00	125	40	1.3	2.4	.00	2.0	2.1
27	.25	.00	.00	.00	.00	110	22	1.0	2.1	.00	15	2.0
28	.10	.00	.00	.00	.00	90	18	.95	1.8	.00	12	1.9
29	.05	.00	.00	.00	---	75	35	.80	1.5	.00	9.9	1.6
30	.00	.00	.00	.00	---	55	35	.72	5.0	.00	9.2	1.6
31	.00	---	.00	.00	---	56	---	.57	---	.00	8.2	---
TOTAL	171.40	.00	2.85	.00	.00	1036.50	1969	135.64	30.79	3.40	56.30	149.3
MEAN	5.53	.000	.092	.000	.000	33.4	65.6	4.38	1.03	.11	1.82	4.98
MAX	20	.00	1.5	.00	.00	150	129	30	5.0	2.0	15	13
MIN	.00	.00	.00	.00	.00	.00	18	.57	.00	.00	.00	1.3
AC-FT	340	.00	5.7	.00	.00	2060	3910	269	61	6.7	112	296

CAL YR 1982 TOTAL 7548.22 MEAN 20.7 MAX 252 MIN .00 AC-FT 14970
WTR YR 1983 TOTAL 3555.18 MEAN 9.74 MAX 150 MIN .00 AC-FT 7050

RED RIVER OF THE NORTH BASIN

05056239 STARKWEATHER COULEE NEAR WEBSTER, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 15...	1230	12	800	--	10.5	9.5	--	--	--	--	--
DEC 03...	1405	1.6	512	--	1.0	.0	--	--	--	--	--
MAR 30...	1220	53	460	7.3	.5	.0	189	8.9	46	18	9.7
APR 21...	1350	63	512	--	13.5	13.5	--	--	--	--	--
MAY 25...	1150	1.5	972	--	19.5	16.5	--	--	--	--	--
AUG 09...	0945	2.2	462	8.7	18.0	16.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 30...	9	.3	22	220	0	180	18	53	5.0	.10	19	288

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 30...	282	.39	41.4	4	0	60	0	20	180	.1	0	170

RED RIVER OF THE NORTH BASIN

05056250 LAKE ALICE NEAR CHURCHS FERRY, ND

LOCATION.--Lat 48°07'21", long 99°05'42", in SE¼NE¼NE¼ 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-DISCHARGE RECORDS

PERIOD OF RECORD.--1960, 1962-1964, 1966 to current year.

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE, AIR (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	COLOR (PLATINUM-COBALT UNITS) (00080)	HARDNESS (MG/L AS CACO3) (00900)	NESS NONCARBONATE (MG/L AS CACO3) (95902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)
OCT 13...	1550	1360	7.6	13.0	10.0	60	550	353	130	54	69
MAY 24...	1330	775	8.1	12.0	14.0	40	240	77	50	28	38

DATE	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CACO3) (90410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)
OCT 13...	20	1	37	195	460	48	.20	18	982	930
MAY 24...	24	1	16	163	150	22	.10	6.6	511	410

DATE	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)
OCT 13...	.840	.320	20	5	98	90	<1	<10	<1	1
MAY 24...	<.100	.180	--	--	--	80	--	--	--	--

DATE	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY DISSOLVED (UG/L AS HG) (71890)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
OCT 13...	46	<1	82	140	<.1	8	2	370	7	13

RED RIVER OF THE NORTH BASIN

05056260 LAKE IRVINE NEAR CHURCHS FERRY, ND

LOCATION.--Lat 48°16'57", long 99°10'25", in SE¼SW¼SW¼ sec.32, T.156 N., R.66 W., Ramsey County, Hydrologic Unit 09020201, at south end of lake 1¼ mi northwest of Churchs Ferry.

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

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1966 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE, AIR (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	COLOR (PLATINUM-COBALT UNITS) (00080)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS NONCARBONATE (MG/L AS CACO3) (95902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)
OCT 13...	1435	880	8.2	15.0	9.0	60	320	81	61	41	61
MAY 24...	1245	664	8.6	11.5	14.0	45	220	57	42	27	34

DATE	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CACO3) (90410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)
OCT 13...	29	2	9.2	241	190	27	.20	22	605	560
MAY 24...	24	1	15	159	120	16	<.10	7.0	377	360

DATE	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)
OCT 13...	.220	.240	10	7	160	100	<1	<10	1	<1
MAY 24...	<.100	.090	--	--	--	60	--	--	--	--

DATE	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY DISSOLVED (UG/L AS HG) (71890)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
OCT 13...	21	<1	67	4	.1	3	4	270	12	11

RED RIVER OF THE NORTH BASIN

05056390 LITTLE COULEE NEAR BRINSMADE, ND

LOCATION.--Lat 48°11'15", long 99°14'34", in SW¼ sec.2, T.154 N., R.67 W., Benson County, Hydrologic Unit 09020201, on right bank 100 ft downstream from bridge on township road, 0.5 mi downstream from Silver Lake, and 4 mi east of Brinsmade.

DRAINAGE AREA.--350 mi^2, of which 160 mi^2 is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1975 to current year (seasonal records only since 1983).

GAGE.--Water-stage recorder. Altitude of gage is 1,435 ft, from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--7 years (water years 1976-82), 7.02 ft^3/s, 5,090 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 425 ft^3/s May 1, 1979, gage height, 10.43 ft; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum recorded discharge, 67 ft^3/s Mar. 23, gage height, 8.80 ft; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						.05	39	16	8.1	.63	.00	.00
2						.10	40	16	7.3	.68	.00	.00
3						.20	41	15	7.4	.79	.00	.00
4						.40	41	15	7.3	.71	.00	.00
5						1.0	41	15	6.6	.63	.00	.00
6						2.0	40	15	5.7	.45	.00	.00
7						3.0	40	14	5.1	.34	.00	.00
8						2.5	39	14	4.4	.26	.00	.00
9						2.0	38	14	3.9	.22	.00	.00
10						1.5	37	14	3.2	.16	.00	.00
11						1.5	36	14	2.8	.10	.00	.00
12						2.0	35	16	2.4	.04	.00	.00
13						4.0	33	17	2.5	.00	.00	.00
14						10	31	17	2.5	.00	.00	.02
15						25	30	17	2.0	.00	.00	.10
16						28	29	17	1.7	.00	.00	.10
17						30	28	17	1.2	.00	.00	.09
18						30	26	16	.84	.00	.00	.07
19						30	25	15	.74	.21	.00	.05
20						30	24	14	.98	.22	.00	.04
21						30	23	15	1.2	.03	.00	.03
22						35	23	14	2.3	.02	.00	.03
23						48	22	14	1.1	.00	.00	.03
24						39	21	14	.74	.00	.00	.03
25						34	20	15	.65	.00	.00	.03
26						33	19	15	.62	.00	.00	.02
27						32	17	14	.57	.00	.00	.01
28						31	16	15	.55	.00	.00	.01
29						31	16	14	.50	.00	.00	.01
30						32	16	11	.63	.00	.00	.01
31						35	---	9.6	---	.00	.00	---
TOTAL						583.25	886	458.6	85.52	5.49	.00	.68
MEAN						18.8	29.5	14.8	2.85	.18	.000	.023
MAX						48	41	17	8.1	.79	.00	.10
MIN						.05	16	9.6	.50	.00	.00	.00
AC-FT						1160	1760	910	170	11	.00	1.3

RED RIVER OF THE NORTH BASIN

05056390 LITTLE COULEE NEAR BRINSMADE, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 14...	1425	.25	2500	7.2	19.5	9.5	1100	898	310	90	230
MAR 03...	1540	E.15	1120	--	--	--	--	--	--	--	--
APR 06...	1050	40	750	8.5	2.5	2.5	250	18	50	30	65
MAY 26...	1635	15	1025	--	26.0	18.0	--	--	--	--	--
JUL 21...	0935	.04	1550	7.2	24.0	23.0	460	211	100	52	170

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
OCT 14...	29	3.1	43	303	0	250	30	1100	110	.20	23	2130
APR 06...	34	1.8	23	281	0	230	1.4	120	32	.10	14	451
JUL 21...	43	3.5	27	309	0	250	31	560	46	.20	37	1170

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
OCT 14...	2070	2.9	1.4	25	50	30	1	110	30	.4	0	710
APR 06...	474	.61	48.8	4	110	130	0	34	40	.6	0	90
JUL 21...	1150	1.6	.13	9	360	370	1	120	2600	.8	1	200

E - Estimated.

05056400 BIG COULEE NEAR CHURCHS FERRY, ND

LOCATION.--Lat 48°10'40", long 99°13'15", in NW¼NW¼ sec.12, T.154 N., R.67 W., Benson County, Hydrologic Unit 09020201, on right bank on downstream side of bridge on U.S. Highway 281, 1 mi downstream from Little Coulee, and 6 mi south of Churchs Ferry.

DRAINAGE AREA.--2,510 mi^2, approximately, of which about 690 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1950 to current year. Prior to October 1960, published as Mauvais Coulee near Churchs Ferry.

GAGE.--Water-stage recorder. Datum of gage is 1,432.65 ft National Geodetic Vertical Datum of 1929. Prior to June 21, 1950, reference marks, and June 21, 1950, to July 17, 1956, nonrecording gage at former bridge on U.S. Highway 281, 0.1 mi upstream at datum 0.70 ft higher.

REMARKS.--Records good. Flow affected by many lakes on the mainstem and tributaries.

AVERAGE DISCHARGE.--33 years, 42.1 ft^3/s, 30,500 acre-ft/yr; median of yearly mean discharges, 16 ft^3/s, 11,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,420 ft^3/s May 6, 1979, gage height, 7.59 ft; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 190 ft^3/s, Apr. 23; gage height, 3.27 ft; maximum gage height, 3.98 ft, Mar. 7; backwater from ice. No flow for several days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	29	12	10	8.5	2.5	130	166	67	15	.43	.43
2	5.0	33	22	10	8.0	2.3	130	167	62	17	.38	.23
3	4.7	33	18	10	7.0	2.4	110	167	57	16	.32	.11
4	4.8	32	14	10	6.0	4.0	90	165	62	14	.27	.07
5	4.5	28	13	10	5.0	30	80	164	60	20	.17	.03
6	10	23	12	10	4.5	150	77	167	52	11	.12	.00
7	20	20	11	10	4.0	140	83	171	49	8.6	.09	.00
8	10	18	10	10	4.0	130	97	157	46	8.9	.04	.00
9	15	16	9.0	11	3.5	110	125	143	44	9.5	.02	.00
10	43	16	9.0	13	3.5	100	148	133	33	5.5	.03	.00
11	40	15	9.0	13	3.0	100	143	141	33	3.7	.04	.01
12	25	14	9.0	13	3.0	105	151	159	24	5.4	.03	.02
13	20	14	9.0	15	4.0	120	143	137	26	3.9	.02	.06
14	36	13	9.0	15	12	120	150	140	31	3.4	.01	.13
15	45	13	9.0	15	16	120	165	139	32	3.8	.00	1.1
16	51	12	9.0	15	16	110	172	129	32	3.2	.00	1.1
17	48	12	9.0	15	12	95	181	118	24	2.7	.01	.76
18	50	11	10	15	10	90	181	111	20	3.0	.03	.45
19	55	11	10	15	8.0	85	184	112	12	3.4	.01	.33
20	50	11	10	15	6.0	82	185	114	16	3.6	.01	.19
21	44	10	10	15	5.0	80	187	110	20	3.3	.00	.15
22	41	10	10	15	6.0	78	187	116	27	2.7	.00	.12
23	40	10	10	15	7.0	75	190	113	28	2.3	.02	.13
24	39	10	10	15	7.0	75	186	112	22	2.0	.05	.11
25	39	10	10	14	6.5	75	179	106	15	1.6	.57	.09
26	40	10	10	12	7.0	75	170	97	20	1.0	2.6	.10
27	35	10	10	10	7.5	75	157	88	22	.71	2.0	.09
28	36	10	10	9.5	6.5	72	163	91	19	.56	1.2	.02
29	40	11	10	9.5	---	70	165	103	16	.39	.92	.02
30	32	12	10	9.0	---	85	165	85	16	.46	.72	.09
31	27	---	10	9.0	---	105	---	79	---	.48	.54	---
TOTAL	954.5	477	333.0	383.0	196.5	2563.2	4474	4000	987	177.10	10.65	5.94
MEAN	30.8	15.9	10.7	12.4	7.02	82.7	149	129	32.9	5.71	.34	.20
MAX	55	33	22	15	16	150	190	171	67	20	2.6	1.1
MIN	4.5	10	9.0	9.0	3.0	2.3	77	79	12	.39	.00	.00
AC-FT	1890	946	661	760	390	5080	8870	7930	1960	351	21	12

CAL YR 1982	TOTAL	18858.60	MEAN 51.7	MAX 227	MIN .00	AC-FT	37410
WTR YR 1983	TOTAL	14561.89	MEAN 39.9	MAX 190	MIN .00	AC-FT	28880

RED RIVER OF THE NORTH BASIN

05056400 BIG COULEE NEAR CHURCHS FERRY, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 14...	1550	39	1040	--	19.5	11.0	--	--	--	--	--
NOV 30...	1250	13	1440	--	.0	.0	--	--	--	--	--
JAN 13...	1220	15	1300	--	- .9	.0	--	--	--	--	--
MAR 03...	1720	2.4	1680	--	1.0	.0	--	--	--	--	--
APR 06...	1345	78	800	8.3	4.5	3.0	260	38	49	34	62
MAY 27...	0940	87	799	--	20.0	17.0	--	--	--	--	--
JUL 21...	0840	3.3	988	8.5	24.0	24.5	350	83	68	44	71

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
APR 06...	32	1.7	22	274	0	220	2.2	170	32	.10	13	530
JUL 21...	29	1.7	27	327	0	270	1.6	250	29	.20	22	681

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
APR 06...	519	.72	111	2	150	90	0	21	100	.3	0	180
JUL 21...	673	.93	6.1	13	130	30	1	50	290	.3	1	300

05056405 BIG COULEE AT GRAHAM IS INLET NEAR FT TOTTEN, ND

WATER-QUALITY RECORDS

LOCATION.--Lat 48°02'25", long 99°02'50", in SW¼ sec.29, T.153 N., R.65 W., Ramsey County, Hydrologic Unit 09020201, at bridge on county highway, 5 mi northwest of Ft. Totten.

PERIOD OF RECORD.--Water year 1966 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPERATURE, AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	COLOR (PLATINUM-COBALT UNITS) (00080)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS NONCARBONATE (MG/L AS CACO3) (95902)
OCT 13...	1010	5.5	725	2290	8.5	6.5	10.6	91	50	540	179
MAY 24...	1715	13.5	728	2460	8.8	15.0	9.3	97	15	470	129

DATE	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CACO3) (90410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)
OCT 13...	71	88	320	6	45	361	650	150	.20	8.3	1590
MAY 24...	58	80	300	6	48	346	700	160	.20	16	1700

DATE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)
OCT 13...	1500	.140	.150	10	7	<100	330	<1	10	1	2
MAY 24...	1600	<.100	.330	--	--	--	360	--	--	--	--

DATE	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY DISSOLVED (UG/L AS HG) (71890)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
OCT 13...	80	<1	160	10	<.1	5	2	300	2	10
MAY 24...	--	--	--	--	--	--	--	--	--	--

05056500 DEVILS LAKE NEAR DEVILS LAKE, ND

LOCATION.--Lat 48°04'00", long 98°56'07", in SW¼ sec.18, T.153 N., R.64 W., Ramsey County, Hydrologic Unit 09020201, at Lakewood, on east bank of Creel Bay, 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 mi^2, approximately, of which about 1,000 mi^2 is probably noncontributing.

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 National Geodetic Vertical Datum of 1929; gage readings have been reduced to elevations NGVD. 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 observed, 1,438.40 ft in 1867, present datum; minimum observed, 1,400.87 ft Oct. 24, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--The lake level was about elevation 1,446 ft about 1830 and lower thereafter, according to the tree growth noted 1885-89. Reference is Geological Survey monograph, volume XXV, The Glacial History of Lake Agassiz by Warren Upham.

EXTREMES FOR CURRENT YEAR.--Maximum elevation recorded, 1,428.14 ft June 3; minimum recorded, 1,426.17 ft Oct. 5.

MONTHEND ELEVATION, IN FEET, AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Oct. 31.....	1,426.59	Jan. 31.....	1,426.75	Apr. 30.....	1,427.80	July 31.....	1,427.74
Nov. 30.....	1,426.62	Feb. 28.....	1,426.79	May 31.....	1,428.07	Aug. 31.....	1,427.38
Dec. 31.....	1,426.70	Mar. 31.....	1,427.17	June 30.....	1,428.00	Sept.30.....	1,427.17

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26.24	26.59	26.62	26.70	26.75	26.79	27.18	27.82	28.07	28.00	27.73	27.36
2	26.28	26.60	26.68	26.68	26.74	26.80	27.20	27.85	28.07	27.99	27.71	27.36
3	26.28	26.58	26.67	26.68	26.73	26.81	27.22	27.87	28.09	28.07	27.70	27.34
4	26.30	26.54	26.68	26.70	26.73	26.81	27.23	27.85	28.06	28.04	27.70	27.30
5	26.23	26.53	26.67	26.69	26.74	26.83	27.25	27.88	28.06	28.00	27.67	27.29
6	26.29	26.55	26.66	26.71	26.73	26.90	27.27	27.85	28.08	28.00	27.64	27.31
7	26.39	26.58	26.65	26.71	26.75	26.93	27.29	27.89	28.06	28.00	27.64	27.23
8	26.37	26.54	26.64	26.72	26.75	26.95	27.32	27.88	28.07	28.00	27.58	27.20
9	26.38	26.54	26.66	26.78	26.75	26.97	27.35	27.87	28.04	27.96	27.55	27.22
10	26.53	26.57	26.66	26.77	26.76	26.98	27.37	27.93	28.02	27.98	27.53	27.31
11	26.56	26.57	26.64	26.75	26.76	26.99	27.38	27.85	28.01	28.03	27.52	27.20
12	26.55	26.56	26.67	26.77	26.76	27.01	27.41	27.89	28.00	27.93	27.50	27.20
13	26.57	26.56	26.66	26.76	26.78	27.01	27.42	28.02	28.03	27.91	27.50	27.21
14	26.58	26.58	26.66	26.75	26.77	27.03	27.43	27.92	28.04	27.88	27.46	27.13
15	26.58	26.65	26.68	26.75	26.77	27.02	27.48	27.93	28.02	27.86	27.45	27.25
16	26.55	26.59	26.68	26.75	26.77	27.03	27.46	27.93	28.00	27.91	27.40	27.28
17	26.58	26.60	26.69	26.74	26.76	27.03	27.47	27.98	27.98	27.85	27.42	27.29
18	26.57	26.61	26.69	26.75	26.77	27.04	24.50	27.98	27.92	27.83	27.41	27.41
19	26.58	26.62	26.69	26.76	26.77	27.04	27.53	27.95	27.93	27.88	27.40	27.30
20	26.58	26.62	26.68	26.76	26.77	27.06	27.57	27.99	28.03	27.88	27.37	27.32
21	26.58	26.57	26.68	26.76	26.78	27.04	24.59	28.03	28.03	27.88	27.31	27.28
22	26.60	26.58	26.68	26.77	26.77	27.05	27.62	28.02	28.10	27.88	27.30	27.24
23	26.59	26.59	26.70	26.77	26.78	27.08	27.65	28.03	28.07	27.85	27.26	27.22
24	26.60	26.59	26.69	26.75	26.79	27.07	27.68	28.02	28.03	27.82	27.30	27.21
25	26.60	26.58	26.68	26.73	26.78	27.08	27.70	28.04	28.06	27.79	27.35	27.21
26	26.60	26.58	26.69	26.72	26.80	27.09	27.83	28.05	28.04	27.76	27.41	27.20
27	26.59	26.59	26.69	26.74	26.80	27.10	27.82	28.07	28.00	27.79	27.42	27.18
28	26.61	26.60	26.67	26.77	26.79	27.11	27.77	28.07	27.98	27.82	27.41	27.21
29	26.65	26.61	26.67	26.76	---	27.12	27.78	28.05	27.97	27.79	27.36	27.13
30	26.60	26.61	26.67	26.74	---	27.11	27.80	28.04	28.02	27.76	27.37	27.12
31	26.58	---	26.69	26.74	---	27.17	---	28.07	---	27.75	27.37	---
TOTAL	821.59	797.48	826.84	828.93	749.40	837.05	818.57	866.62	840.88	864.89	851.74	817.51
MEAN	26.50	26.58	26.67	26.74	26.76	27.00	27.29	27.96	28.03	27.90	27.48	27.25
MAX	26.65	26.65	26.70	26.78	26.80	27.17	27.83	28.07	28.10	28.07	27.73	27.41
MIN	26.23	26.53	26.62	26.68	26.73	26.79	24.50	27.82	27.92	27.75	27.26	27.12

WTR YR 1983 TOTAL 9921.50 MEAN 27.18 MAX 28.10 MIN 24.50

05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND

LOCATION.--Lat 47°26'01", long 98°01'43", in NE¼NE¼SE¼ sec.27, T.146 N., R.58 W., Griggs County, Hydrologic Unit 09020203, on right bank 150 ft downstream from county bridge, and 5 mi east of Cooperstown.

DRAINAGE AREA.--6,470 mi^2, approximately, of which about 5,200 mi^2 is probably noncontributing, includes 3,800 mi^2 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. WDR ND-80-1: Gage datum.

GAGE.--Water-stage recorder. Datum of gage is 1,271.76 ft, National Geodetic Vertical Datum of 1929, Coast and Geodetic Survey benchmark. Prior to Aug. 3, 1950, nonrecording gage at site 150 ft upstream at same datum.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--38 years, 104 ft^3/s, 75,350 acre-ft/yr; median of yearly mean discharges, 84 ft^3/s, 60,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,830 ft^3/s Apr. 17, 1950, gage height, 18.69 ft; no flow at times.

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

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Apr. 12	1030	*1900	53.8	a15.83	4.825	July 9	0700	784	22.2	10.76	3.280
June 13	2330	241	6.83	6.34	1.932	July 21	0800	307	8.69	7.41	2.259

Minimum daily discharge, 3.5 ft^3/s (0.10 m^3/s) Feb. 8-18.

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.8	110	43	38	20	280	819	254	142	115	34	224
2	14	105	60	36	20	340	706	244	135	104	34	182
3	20	100	56	35	18	420	682	231	130	116	37	155
4	18	95	65	33	16	450	670	215	123	212	35	134
5	16	73	71	32	14	570	689	202	115	408	35	116
6	26	83	73	32	12	800	725	192	111	434	34	101
7	33	90	79	31	10	910	757	184	107	379	32	90
8	35	80	78	30	10	820	791	175	101	290	30	82
9	73	78	76	30	10	800	821	168	94	216	28	75
10	133	81	74	30	8.0	960	835	162	89	166	27	70
11	188	78	72	29	8.0	1040	820	158	83	135	26	63
12	196	71	70	29	8.0	1080	775	153	80	113	25	59
13	195	57	68	29	10	1180	725	155	100	97	24	59
14	179	58	66	29	15	1280	667	163	94	87	23	58
15	186	53	64	29	14	1450	588	163	94	74	22	70
16	197	49	62	29	14	1560	515	161	93	71	25	83
17	182	49	62	28	14	1600	459	162	81	66	23	113
18	165	51	60	28	14	1600	422	166	71	61	21	131
19	147	53	60	28	14	1520	393	173	66	59	26	132
20	132	52	60	28	14	1480	371	177	63	56	25	126
21	122	52	58	28	14	1450	355	174	67	55	27	115
22	120	51	58	28	14	1440	340	173	343	54	71	111
23	123	50	56	28	14	1420	325	173	292	51	153	102
24	129	49	56	28	14	1390	315	175	575	47	177	93
25	134	49	56	28	14	1360	304	172	574	45	254	84
26	136	48	56	28	30	1330	295	169	369	42	337	74
27	135	48	54	26	140	1250	285	167	223	40	448	65
28	132	47	50	24	250	1160	277	163	162	39	457	57
29	128	46	46	22	---	1070	274	154	140	39	424	52
30	122	45	43	22	---	980	267	147	127	39	362	48
31	116	---	40	20	---	920	---	145	---	37	288	---
TOTAL	3539.8	1951	1892	895	753.0	33910	16267	5470	4844	3747	3564	2924
MEAN	114	65.0	61.0	28.9	26.9	1094	542	176	161	121	115	97.5
MAX	197	110	79	38	250	1600	835	254	575	434	457	224
MIN	7.8	45	40	20	8.0	280	267	145	63	37	21	48
AC-FT	7020	3870	3750	1780	1490	67260	32270	10850	9610	7430	7070	5800

CAL YR 1982 TOTAL 57391.4 MEAN 157 MAX 1800 MIN 3.5 AC-FT 113800
WTR YR 1983 TOTAL 79756.8 MEAN 219 MAX 1600 MIN 7.8 AC-FT 158200

05057000 SHEYENNE RIVER NEAR COOPERSTOWN, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 28...	0950	130	930	--	5.0	8.0	--	--	--	--	--
DEC 07...	1400	79	1240	--	- .9	.0	--	--	--	--	--
JAN 10...	1700	33	1300	--	.0	.0	--	--	--	--	--
MAR 31...	1015	942	520	7.8	1.5	1.0	148	42	31	17	50
JUN 02...	1520	134	1125	--	23.5	17.0	--	--	--	--	--
JUL 15...	1230	76	900	--	29.0	27.0	--	--	--	--	--
SEP 13...	1450	58	735	--	16.0	15.0	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 31...	39	1.8	17	231	0	190	5.8	72	6.6	.10	14	364

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 31...	324	.50	926	2	100	130	200	47	190	.0	0	100

05057200 BALDHILL CREEK NEAR DAZEY, ND

LOCATION.--Lat 47°13'45", long 98°07'28", in NW¼SE¼SW¼ 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 mi^2, of which about 340 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Prior to Nov. 9, 1956, nonrecording gage 500 ft downstream at same datum.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--27 years, 15.5 ft^3/s, 11,230 acre-ft/yr; median of yearly mean discharges, 12 ft^3/s, 8,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 9,000 ft^3/s Apr. 19, 1979 on basis of contracted opening measurment of peak flow at site 4.5 mi downstream, gage height, 17.78 ft, from floodmark; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 60 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 7	--	*650	[a]9.95	Apr. 7	1115	107	5.41
Mar. 16	1345	386	7.35	June 26	0330	84	5.15

Minimum daily, 1.1 ft^3/s Feb. 10-12.

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	8.2	2.2	2.3	1.9	32	79	17	9.4	44	3.6	2.9
2	3.0	8.1	14	2.3	1.9	45	67	16	7.4	40	3.3	2.6
3	4.0	7.4	13	2.2	1.8	65	71	15	7.4	41	2.6	2.2
4	5.0	6.5	11	2.2	1.7	78	75	14	6.6	36	2.4	2.0
5	6.0	6.7	10	2.2	1.6	250	73	13	5.8	31	2.2	2.1
6	14	6.8	9.6	2.5	1.5	530	74	13	4.6	28	1.9	2.1
7	16	6.4	8.0	2.5	1.4	525	71	12	4.2	24	1.7	1.9
8	14	6.0	6.7	2.5	1.3	210	65	11	4.8	24	1.9	4.0
9	22	5.6	6.4	3.0	1.2	110	59	10	4.4	26	2.1	5.4
10	30	5.9	6.2	3.3	1.1	200	51	11	4.9	25	2.8	5.4
11	22	5.7	6.1	3.3	1.1	225	44	12	4.5	22	1.7	5.2
12	21	4.5	6.0	3.1	1.1	260	40	13	5.2	21	1.5	4.9
13	18	4.4	5.8	3.1	1.4	280	35	14	7.7	19	1.4	4.2
14	15	4.3	5.1	3.0	4.0	300	28	14	8.5	18	1.3	3.8
15	14	4.2	4.5	2.8	5.0	330	27	13	8.1	15	1.3	6.9
16	13	4.1	4.3	2.7	6.0	361	24	13	6.5	13	1.6	7.9
17	13	4.0	4.0	2.5	4.0	296	23	12	5.9	12	2.0	6.4
18	13	3.8	4.0	2.4	3.0	214	22	12	5.4	12	1.6	5.3
19	13	4.1	4.0	2.3	2.5	160	20	12	13	11	1.5	5.2
20	13	4.2	3.9	2.3	2.0	132	19	13	15	11	1.4	4.8
21	14	3.8	3.7	2.2	5.0	111	18	13	15	11	1.6	4.2
22	15	3.6	3.6	2.2	7.0	93	17	13	20	9.9	1.6	3.6
23	15	3.1	3.5	2.2	5.5	84	16	13	23	8.1	1.6	3.0
24	14	2.9	3.4	2.2	4.0	80	16	13	22	7.0	1.9	2.8
25	13	2.7	3.3	2.1	2.5	75	16	12	21	6.2	11	3.0
26	12	2.4	3.0	2.0	6.0	68	18	12	76	5.2	15	3.1
27	11	2.3	2.8	1.9	35	63	17	12	59	4.6	14	3.0
28	11	2.3	2.5	1.9	40	58	18	12	51	4.4	9.2	3.3
29	11	2.3	2.3	1.9	---	58	18	11	50	4.0	6.2	2.7
30	10	2.3	2.3	1.9	---	59	18	9.7	50	3.8	4.6	2.9
31	8.9	---	2.3	1.9	---	74	---	9.0	---	3.1	3.8	---
TOTAL	406.4	138.6	167.5	74.9	150.5	5426	1139	389.7	526.3	540.3	110.3	116.8
MEAN	13.1	4.62	5.40	2.42	5.38	175	38.0	12.6	17.5	17.4	3.56	3.89
MAX	30	8.2	14	3.3	40	530	79	17	76	44	15	7.9
MIN	2.5	2.3	2.2	1.9	1.1	32	16	9.0	4.2	3.1	1.3	1.9
AC-FT	806	275	332	149	299	10760	2260	773	1040	1070	219	232

CAL YR 1982	TOTAL	5821.94	MEAN 16.0	MAX 550	MIN .06	AC-FT	11550	
WTR YR 1983	TOTAL	9186.30	MEAN 25.2	MAX 530	MIN 1.1	AC-FT	18220	

05057200 BALDHILL CREEK NEAR DAZEY, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 27...	1453	11	935	--	13.0	9.0	--	--	--	--	--
DEC 07...	1545	8.3	1010	--	- .9	.0	--	--	--	--	--
JAN 10...	1450	3.3	1120	--	.0	.5	--	--	--	--	--
MAR 16...	1455	382	280	7.3	2.0	.5	119	6.8	28	12	9.4
JUN 02...	1200	7.5	994	--	22.0	17.0	--	--	--	--	--
JUL 15...	0950	15	842	--	28.0	26.0	--	--	--	--	--
SEP 13...	1110	4.0	720	8.4	12.0	14.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 16...	13	.4	16	154	0	130	12	28	4.1	.10	16	234

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 16...	192	.32	241	2	80	150	1	8	50	10	0	73

05057500 LAKE ASHTABULA AT BALDHILL DAM, ND

LOCATION.--Lat 47°02'00", long 98°05'00", in NW¼ 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 mi^2, approximately, of which about 5,560 mi^2 is probably noncontributing, including 3,800 mi^2 in closed basins.

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 National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by an earth-fill 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 taintor gates, each 15 ft high and 40 ft long. The reservoir is operated for flood control and to increase low-water flow.

COOPERATION.--Records furnished by 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, 73,450 acre-ft May 22, elevation, 1,266.50 ft; minimum, 53,375 acre-ft Feb. 25-27, elevation, 1,262.75 ft.

MONTHEND ELEVATION AND CONTENTS AT 0800, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,265.68	68,808	--
Oct. 31	1,265.99	70,544	+1,736
Nov. 30	1,264.63	62,225	-8,318
Dec. 31	1,264.11	58,325	-3,900
CAL YR 1982	--	--	+2,565
Jan. 31	1,263.00	54,500	-3,825
Feb. 28	1,262.77	53,465	-1,035
Mar. 31	1,266.11	71,227	+17,762
Apr. 30	1,266.25	72,025	+798
May 31	1,266.16	71,512	-513
June 30	1,266.06	70,942	-570
July 31	1,266.01	70,657	-285
Aug. 31	1,266.22	71,854	+1,197
Sept. 30	1,266.32	72,424	+570
WTR YR 1983	--	--	+3,616

05058000 SHEYENNE RIVER BELOW BALDHILL DAM, ND

LOCATION.--Lat 47°01'50", long 98°05'50", in NW¼ sec.18, T.141 N., R.58 W., Barnes County, Hydrologic Unit 09020204, on right bank 600 ft downstream from Baldhill Dam, 8 mi northwest of Valley City, and at mile 270.5.

DRAINAGE AREA.--7,470 mi^2, approximately, of which about 5,560 mi^2 is probably noncontributing, including 3,800 mi^2 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 and concrete control. Datum of gage is 1,200.00 ft National Geodetic Vertical Datum of 1929.

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. Small diversions are still made but not published.

AVERAGE DISCHARGE (UNADJUSTED).--34 years, 126 ft^3/s, 91,290 acre-ft/yr; median of yearly mean discharges, 92 ft^3/s, 66,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,740 ft^3/s Apr. 24, 1979, gage height, 36.26 ft; no flow at times in 1950, 1952-53, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,910 ft^3/s Mar. 9, gage height, 29.91 ft; minimum daily, 10 ft^3/s Oct. 1-7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	157	232	130	58	38	1280	217	260	164	25	278
2	10	161	232	136	58	39	883	259	142	66	25	257
3	10	161	171	139	58	32	762	278	96	66	25	236
4	10	161	127	130	58	19	768	278	61	66	23	236
5	10	197	130	133	58	31	771	278	60	66	22	204
6	10	232	136	130	58	148	771	280	60	102	21	96
7	10	241	98	139	58	783	901	279	59	197	20	53
8	18	241	71	133	58	1500	1050	279	58	272	12	54
9	35	241	69	127	58	1860	1150	221	58	313	11	54
10	186	241	67	133	74	1870	1210	97	43	313	23	54
11	466	241	69	145	87	1850	1200	54	32	279	23	54
12	560	262	71	133	81	1840	1200	53	32	242	23	33
13	560	246	69	136	85	1820	1050	52	32	155	23	18
14	550	246	72	139	87	1810	913	53	32	74	23	18
15	319	257	71	139	87	1690	793	115	32	73	22	18
16	189	262	71	139	87	1450	595	163	32	71	23	25
17	186	252	71	142	87	1310	504	162	30	71	23	32
18	120	246	71	139	87	1380	511	160	31	71	23	32
19	76	236	71	142	87	1690	511	162	32	72	23	33
20	76	246	71	139	87	1800	510	176	67	72	23	33
21	76	267	110	136	87	1800	493	206	107	96	23	42
22	66	283	133	136	87	1620	483	212	167	116	23	49
23	57	272	133	133	87	1260	404	231	405	117	23	50
24	57	262	139	142	87	1090	315	248	546	114	23	50
25	67	262	142	92	87	1160	210	249	575	112	23	50
26	78	252	139	57	87	1340	107	251	747	97	23	50
27	98	262	142	57	87	1430	51	250	882	66	23	50
28	117	257	136	58	71	1420	50	254	879	27	23	50
29	142	252	136	58	---	1420	136	254	649	27	130	50
30	161	241	136	58	---	1420	189	255	366	26	252	50
31	157	---	133	58	---	1410	---	260	---	26	279	---
TOTAL	4487	7137	3519	3708	2138	38330	19771	6286	6572	3629	1281	2309
MEAN	145	238	114	120	76.4	1236	659	203	219	117	41.3	77.0
MAX	560	283	232	145	87	1870	1280	280	882	313	279	278
MIN	10	157	67	57	58	19	50	52	30	26	11	18
AC-FT	8900	14160	6980	7350	4240	76030	39220	12470	13040	7200	2540	4580

CAL YR 1982 TOTAL 70210.4 MEAN 192 MAX 1780 MIN 7.6 AC-FT 139300
WTR YR 1983 TOTAL 99167.0 MEAN 272 MAX 1870 MIN 10 AC-FT 196700

RED RIVER OF THE NORTH BASIN

05058000 SHEYENNE RIVER BELOW BALDHILL DAM, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
27...	1235	118	681	--	9.0	8.0	--	--	--	--	--
DEC											
13...	1300	69	995	--	.0	3.0	--	--	--	--	--
JAN											
31...	1225	58	1100	--	- .9	3.0	--	--	--	--	--
MAR											
14...	1520	1880	630	7.8	2.0	3.0	210	0	42	26	70
APR											
12...	1350	1200	460	--	7.0	3.5	--	--	--	--	--
JUN											
02...	0940	251	532	--	18.0	14.0	--	--	--	--	--
12...	1430	33	531	--	23.0	19.0	--	--	--	--	--
JUL											
29...	1110	28	591	--	29.0	25.5	--	--	--	--	--
AUG											
30...	1410	278	628	8.1	32.0	24.0	200	0	44	23	52

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
14...	40	2.1	14	288	0	240	7.3	130	13	.10	11	465
AUG												
30...	34	1.6	14	281	0	230	3.5	90	9.5	.10	9.6	376

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
14...	450	.63	2360	3	130	140	1	31	320	.3	0	170
AUG												
30...	381	.51	282	4	110	30	2	40	610	.3	0	210

05058500 SHEYENNE RIVER AT VALLEY CITY, ND

LOCATION.--Lat 46°54'50", long 98°00'30", in SE¼NW¼ sec.28, T.140 N., R.58 W., Barnes County, on left bank 100 ft downstream from College Dam in Valley City, and at mile 253.0.

DRAINAGE AREA.--7,810 mi^2, approximately, of which about 5,700 mi^2 is probably noncontributing, includes 3,800 mi^2 in closed basins.

GAGE-HEIGHT RECORDS

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

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

AVERAGE DISCHARGE (UNADJUSTED).--37 years (1938-75), 124 ft^3/s, 89,840 acre-ft/yr; median of yearly mean discharges, 97 ft^3/s, 70,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,580 ft^3/s Apr. 28, 1948, gage height, 17.51 ft; maximum gage height, 17.62 ft Apr. 19, 1969; no flow during several periods in 1938-41.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,030 ft^3/s Mar. 13, gage height, 11.26 ft; minimum not determined.

REVISIONS (WATER YEARS).--WSP 1388: 1939 (M). WSP 1728: Drainage area.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.87	3.83	4.34	3.66	3.17	3.40	9.10	4.13	4.45	3.85	2.89	4.55
2	2.90	3.86	4.49	3.66	3.18	3.22	7.38	4.34	4.41	3.86	2.94	4.54
3	2.86	3.82	4.19	3.68	3.15	3.23	6.30	4.52	3.64	3.98	2.93	4.40
4	2.85	3.80	3.69	3.67	3.21	3.23	6.38	4.55	2.99	3.41	2.91	4.34
5	2.84	3.83	3.62	3.67	3.24	4.43	6.38	4.57	3.14	3.31	2.90	4.33
6	3.01	4.14	3.65	3.65	3.24	6.41	6.37	4.57	3.14	3.28	2.90	3.70
7	2.98	4.28	3.61	3.67	3.26	5.30	6.42	4.58	3.15	3.58	2.90	3.16
8	2.88	4.43	3.31	3.67	3.26	6.56	7.03	4.58	3.14	4.37	2.86	3.17
9	3.15	4.47	3.26	3.63	3.26	9.23	7.58	4.53	3.12	4.65	2.84	3.18
10	3.48	4.36	3.25	3.64	3.24	10.69	8.17	3.94	3.11	4.60	2.79	3.19
11	5.19	4.11	3.23	3.65	3.25	10.82	8.13	3.22	3.04	4.61	2.83	3.18
12	5.84	4.16	3.23	3.72	3.41	10.85	8.12	3.25	3.02	4.40	2.88	3.18
13	5.74	4.35	3.24	3.68	3.42	11.12	8.05	3.23	3.04	4.17	2.89	3.08
14	5.73	4.34	3.24	3.67	3.40	10.78	6.88	3.21	3.01	3.50	2.90	2.99
15	5.18	4.35	3.25	3.70	3.33	10.50	6.67	3.24	3.00	3.11	2.90	2.98
16	3.99	4.40	3.24	3.74	3.31	9.76	6.07	4.02	3.00	3.34	2.92	2.97
17	4.05	4.41	3.23	3.74	3.29	8.76	5.52	4.03	2.99	3.35	2.90	2.99
18	3.82	4.39	3.24	3.70	3.28	8.66	5.54	3.96	2.98	3.30	2.90	3.05
19	3.33	4.33	3.24	3.76	3.29	9.32	5.55	3.95	2.98	3.29	2.91	3.06
20	3.26	4.33	3.24	3.77	3.30	10.43	5.54	3.97	3.06	3.32	2.90	3.07
21	3.26	4.41	3.28	3.76	3.28	10.49	5.54	4.22	5.01	3.32	2.91	3.07
22	3.27	4.51	3.59	3.74	3.29	10.49	5.52	4.32	5.48	3.74	2.90	3.14
23	3.20	4.71	3.64	3.74	3.31	10.48	5.39	4.30	4.42	3.61	2.90	3.17
24	3.16	4.59	3.66	3.74	3.30	10.40	4.90	4.41	5.34	3.58	2.92	3.19
25	3.16	4.50	3.81	3.67	3.29	9.56	4.45	4.44	5.36	3.41	2.96	3.19
26	3.22	4.46	3.74	3.23	3.41	9.83	3.85	4.46	5.48	3.44	2.93	3.19
27	3.29	4.45	3.72	3.18	3.75	9.50	3.32	4.47	6.47	3.43	2.90	3.19
28	3.48	4.44	3.64	3.18	3.58	9.44	3.05	4.45	5.97	3.22	2.89	3.20
29	3.55	4.48	3.71	3.18	---	9.25	3.34	4.44	6.22	2.91	2.93	3.20
30	3.74	4.36	3.67	3.17	---	9.21	4.10	4.45	5.40	2.67	4.07	3.20
31	3.79	---	3.71	3.17	---	9.21	---	4.46	---	2.88	4.55	---
TOTAL	113.07	128.90	109.96	111.49	92.70	264.56	180.64	128.81	119.56	111.49	92.65	100.85
MEAN	3.65	4.30	3.55	3.60	3.31	8.53	6.02	4.16	3.99	3.60	2.99	3.36
MAX	5.84	4.71	4.49	3.77	3.75	11.12	9.10	4.58	6.47	4.65	4.55	4.55
MIN	2.84	3.80	3.23	3.17	3.15	3.22	3.05	3.21	2.98	2.67	2.79	2.97

WTR YR 1983 TOTAL 1554.68 MEAN 4.26 MAX 11.12 MIN 2.67

05058500 SHEYENNE RIVER AT VALLEY CITY, N. DAK.--CONTINUED

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)
MAR 11...	1200	1960	830	8.3	-.5	4.0	250	0	48	31	88	42

DATE	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
MAR 11...	2	13	280	2.7	150	15	.20	11	544	520	.74	2880

DATE	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 11...	.200	3	150	60	0	36	420	.3	3	1	180

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 mi^2, approximately, of which about 5,700 mi^2 is probably noncontributing, including 3,800 mi^2 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Lake Ashtabula (station 05057500) 108.5 mi upstream.

AVERAGE DISCHARGE.--27 years, 157 ft^3/s, 113,700 acre-ft/yr; median of yearly mean discharges, 157 ft^3/s, 113,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,270 ft^3/s July 1, 1975, gage height, 19.04 ft; no flow Sept. 19-21, Oct. 23, 24, 1956, Aug. 16, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,370 ft^3/s Mar. 17, gage height, 13.75 ft, backwater from ice; minimum daily, 10 ft^3/s Aug. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	115	253	133	67	96	1550	86	251	624	57	88
2	19	126	256	133	66	128	1550	153	253	497	39	218
3	17	143	260	133	65	181	1490	204	253	313	24	237
4	17	150	272	133	65	152	1040	227	249	609	17	238
5	17	150	239	134	65	159	783	257	211	598	17	226
6	26	145	177	134	65	238	773	269	133	278	24	212
7	28	145	138	133	65	261	765	271	79	179	23	208
8	41	161	119	136	65	475	757	273	71	152	19	185
9	65	195	113	138	65	680	783	276	76	161	16	110
10	95	218	107	134	65	702	911	278	77	218	16	67
11	89	248	86	133	65	911	1080	284	74	282	15	57
12	100	202	77	133	65	1380	1180	248	79	271	14	58
13	204	152	74	133	76	1780	1220	160	85	257	13	58
14	437	143	72	133	72	1980	1220	115	81	232	11	56
15	500	152	72	133	74	2140	1180	109	63	209	10	59
16	505	234	70	133	80	2330	914	102	54	170	11	51
17	472	238	70	133	84	2260	835	95	53	156	11	40
18	252	245	70	133	88	2060	692	122	48	137	14	31
19	181	252	70	133	88	1680	580	197	43	115	16	26
20	174	248	70	133	88	1460	567	193	42	111	16	25
21	137	215	70	133	88	1460	559	186	41	101	17	23
22	98	192	70	133	88	1660	533	186	238	96	16	29
23	84	170	70	133	88	1810	523	205	1160	96	16	32
24	80	190	74	133	88	1810	518	243	1230	117	16	33
25	79	192	92	133	88	1640	480	234	533	137	16	35
26	73	223	121	130	88	1150	387	241	468	127	16	46
27	67	241	124	127	88	1130	282	251	418	123	15	52
28	64	252	124	117	90	1260	215	254	437	107	16	53
29	68	261	124	82	---	1480	170	253	627	108	21	50
30	78	255	132	72	---	1590	117	249	609	109	27	54
31	101	---	132	70	---	1580	---	250	---	81	90	---
TOTAL	4183	5853	3798	3934	2139	37623	23654	6471	8036	6771	649	2657
MEAN	135	195	123	127	76.4	1214	788	209	268	218	20.9	88.6
MAX	505	261	272	138	90	2330	1550	284	1230	624	90	238
MIN	15	115	70	70	65	96	117	86	41	81	10	23
AC-FT	8300	11610	7530	7800	4240	74630	46920	12840	15940	13430	1290	5270

CAL YR 1982	TOTAL	80670.2	MEAN 221	MAX 2260	MIN 9.1	AC-FT	160000	
WTR YR 1983	TOTAL	105768.0	MEAN 290	MAX 2330	MIN 10	AC-FT	209800	

05058700 SHEYENNE RIVER AT LISBON, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
OCT											
27...	0835	66	750	8.3	8.0	8.0	30	10.7	95	219	.00
DEC											
14...	0915	72	5225	8.1	- .9	1.5	10	14.0	106	278	.00
FEB											
01...	0905	67	995	7.4	- .9	1.0	15	13.0	95	277	.00
MAR											
15...	1045	2110	650	7.9	3.0	.5	50	12.0	85	220	.00
APR											
12...	0815	1140	582	8.7	4.5	6.0	70	13.6	113	158	.00
JUN											
17...	1345	50	722	7.8	28.0	19.5	30	8.3	94	220	.00
23...	1845	1350	408	--	30.0	23.0	--	--	--	--	--
JUL											
29...	1420	108	729	8.1	32.0	28.0	15	6.5	86	218	.00
AUG											
30...	1800	25	908	8.1	28.0	26.0	15	6.0	77	276	31

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
OCT										
27...	45	26	74	41	2.2	11	250	2.4	130	17
DEC										
14...	57	33	560	81	15	12	279	4.3	170	29
FEB										
01...	50	37	110	45	2.9	11	304	23	180	22
MAR										
15...	47	25	73	40	2.2	11	237	5.8	130	17
APR										
12...	37	16	36	31	1.3	13	159	.6	72	9.0
JUN										
17...	50	23	56	34	1.7	11	220	6.7	130	19
JUL										
29...	51	22	56	34	1.7	11	220	3.4	120	23
AUG										
30...	61	30	81	38	2.2	13	245	3.7	150	36

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	BORON, DIS-SOLVED (UG/L AS B) (01020)
OCT									
27...	.20	3.9	469	457	.64	83.6	<.10	.090	150
DEC									
14...	.20	7.3	577	1036	.78	112	.41	.130	180
FEB									
01...	.20	7.9	627	601	.85	113	.57	.160	210
MAR									
15...	.20	12	457	457	.62	2600	.53	.130	140
APR									
12...	.10	17	324	296	.44	997	1.5	.220	80
JUN									
17...	.20	7.2	446	428	.61	60.2	.10	.040	160
JUL									
29...	.20	12	415	427	.56	121	.54	.090	180
AUG									
30...	.30	18	564	536	.77	38.1	<.10	.070	230

RED RIVER OF THE NORTH BASIN

05059000 SHEYENNE RIVER NEAR KINDRED, ND
(National stream-quality accounting network station)

LOCATION.--Lat 46°37'35", long 97°00'05", in NE¼NW¼ sec.5, T.136 N., R.50 W., Richland County, Hydrologic Unit 09020204, on right bank 25 ft downstream from Burlington Northern Railway bridge, 1.5 mi southeast of Kindred, and at mile 68.1.

DRAINAGE AREA.--8,800 mi^2, approximately, of which about 5,780 mi^2 is probably noncontributing, including 3,800 mi^2 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 National Geodetic Vertical Datum of 1929. July 1949 to Sept. 30, 1962, nonrecording gage at same site and datum.

REMARKS.--Records good, except for winter period which are fair. Flow regulated to a large degree by Lake Ashtabula (station 05057500) 202 mi upstream and several small reservoirs.

AVERAGE DISCHARGE.--34 years, 199 ft^3/s, 144,000 acre-ft/yr; median of yearly mean discharges, 160 ft^3/s, 116,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,690 ft^3/s Apr. 15, 1969, gage height, 21.03 ft; maximum gage height, 21.66 ft July 6, 1975; minimum daily discharge, 13 ft^3/s Nov. 13, 1955, Aug. 22-24, 1959.

EXTREMES OUTSIDE PERIOD OF RECORD.--Spring flood in 1947 or 1948 reached a stage of 22.1 ft, from floodmarks, discharge about 3,600 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,060 ft^3/s Mar. 21, gage height, 17.64 ft; backwater from ice; minimum daily discharge, 26 ft^3/s Aug. 22, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	99	287	150	130	95	1600	315	299	520	130	30
2	36	101	301	141	115	95	1540	277	297	585	128	29
3	37	114	300	142	97	105	1510	241	297	697	109	35
4	39	128	293	138	87	109	1510	215	294	633	91	87
5	38	143	286	138	87	170	1480	250	294	505	77	181
6	47	158	283	138	80	203	1250	286	290	460	64	222
7	61	163	284	138	78	193	942	306	285	638	51	232
8	57	169	239	138	76	230	855	323	251	498	42	232
9	77	164	191	139	76	281	829	332	198	347	37	226
10	129	166	161	139	75	311	811	339	155	276	39	217
11	121	178	150	138	75	507	811	349	133	246	39	212
12	115	178	153	140	75	752	898	387	125	244	37	161
13	113	113	144	139	75	805	1030	404	140	294	34	123
14	101	110	133	138	75	950	1160	384	142	322	32	96
15	96	136	122	138	75	1400	1200	326	136	315	30	87
16	157	168	111	138	75	1730	1210	267	133	308	31	87
17	288	208	116	138	75	1930	1190	234	131	297	33	85
18	336	214	117	138	77	1930	1030	220	119	292	32	85
19	356	252	114	138	80	1920	889	209	111	251	29	82
20	322	274	110	138	81	1940	788	203	100	232	27	73
21	239	265	108	138	84	2040	663	220	97	212	27	64
22	200	239	107	138	89	1880	615	271	95	189	26	58
23	182	222	107	138	95	1710	596	272	90	168	28	52
24	170	207	107	138	95	1670	581	261	87	155	30	49
25	144	190	97	138	95	1830	569	259	410	140	30	46
26	125	177	95	138	95	2010	561	273	971	135	29	46
27	121	193	94	138	95	2030	538	292	836	138	28	50
28	117	212	90	138	95	2000	497	290	545	151	27	53
29	112	245	110	138	---	1810	423	294	475	147	26	52
30	106	276	139	138	---	1780	367	299	462	142	29	60
31	101	---	149	134	---	1700	---	299	---	133	30	---
TOTAL	4175	5462	5098	4298	2407	36116	27943	8897	7998	9670	1402	3112
MEAN	135	182	164	139	86.0	1165	931	287	267	312	45.2	104
MAX	356	276	301	150	130	2040	1600	404	971	697	130	232
MIN	32	99	90	134	75	95	367	203	87	133	26	29
AC-FT	8280	10830	10110	8530	4770	71640	55420	17650	15860	19180	2780	6170

CAL YR 1982 TOTAL 87632 MEAN 240 MAX 2020 MIN 20 AC-FT 173800
WTR YR 1983 TOTAL 116578 MEAN 319 MAX 2040 MIN 26 AC-FT 231200

05059000 SHEYENNE RIVER NEAR KINDRED, ND
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT 26...	1355	130	730	8.4	15.5	8.0	19	11.4	100	K33	96
DEC 15...	1200	121	750	8.0	- .9	.5	10	14.4	102	K7	K16
FEB 02...	1140	116	640	7.4	- .9	.0	--	13.5	95	<3	K20
MAR 22...	1045	1920	700	8.3	- .9	.0	45	12.6	88	K17	560
APR 19...	1405	866	520	8.4	11.0	6.0	--	16.1	134	K17	260
MAY 24...	1225	261	750	8.3	15.5	16.5	22	8.4	89	K27	K32
JUN 21...	1120	98	782	22.0	23.0	23.0	--	--	--	--	740
JUL 26...	1130	138	709	8.1	25.5	24.5	36	6.9	86	130	850
SEP 07...	1315	235	910	8.2	24.0	18.0	50	10.3	112	K240	K740
07...	1400	235	910	8.2	24.0	18.0	--	10.3	112	--	--

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
OCT 26...	220	0	50	24	65	37	1.9	9.8	246	1.9	130	17
DEC 15...	310	26	69	34	81	35	2.1	11	287	5.5	150	21
MAR 22...	220	0	47	24	66	38	2.0	12	228	2.2	120	15
MAY 24...	270	19	63	27	59	31	1.6	10	250	2.4	140	21
JUL 26...	240	0	59	23	52	31	1.5	10	243	3.7	110	19
SEP 07...	280	44	64	28	81	38	2.2	13	232	2.8	170	37

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)
OCT 26...	.20	9.4	467	454	.64	164	<.10	.14	1.80	.130	.40
DEC 15...	.20	9.9	549	549	.75	179	.38	.27	1.30	.140	.43
MAR 22...	.20	13	439	435	.60	2280	.51	.49	3.20	.350	1.1
MAY 24...	.20	16	497	487	.68	350	<.10	.10	1.50	.200	.61
JUL 26...	.20	19	438	438	.60	163	.62	.23	2.60	.250	.77
SEP 07...	.20	18	556	551	.76	353	.18	.27	1.50	.200	.61

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

05059000 SHEYENNE RIVER NEAR KINDRED, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
OCT 26...	.100	.070	.21	<10	5	72	<1	<1	<3	2	7
DEC 15...	.130	.050	.15	--	--	--	--	--	--	--	--
MAR 22...	.150	.120	.37	80	3	56	1	<1	<3	9	75
MAY 24...	.040	.030	.09	20	4	240	1	<1	<3	8	31
JUL 26...	.150	.100	.31	--	--	--	--	--	--	--	--
SEP 07...	.110	.090	.28	30	5	93	<1	<1	<3	4	<3

DATE	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
OCT 26...	7	54	31	<.1	<10	6	<1	<1	250	<6.0	7
DEC 15...	--	--	--	--	--	--	--	--	--	--	--
MAR 22...	4	51	110	<.1	<10	8	1	<1	220	<6.0	43
MAY 24...	2	50	12	.2	<10	6	<1	<1	300	<6.0	11
JUL 26...	--	--	--	--	--	--	--	--	--	--	--
SEP 07...	<1	65	9	.3	<10	31	1	<1	330	<6.0	<3

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 26...	1355	130	25	8.8	99
DEC 15...	1200	121	44	14	98
MAR 22...	1045	1920	202	1050	89
MAY 24...	1225	261	83	58	97
JUL 26...	1130	138	115	43	99
SEP 07...	1315	235	136	86	94

05059000 SHEYENNE RIVER NEAR KINDRED, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLE LOCATION, CROSS SECTION (FT FM L BANK) (00009)	TEMPERATURE (DEG C) (00010)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	OXYGEN, DISSOLVED (MG/L) (00300)
MAY						
24...	1406	5.00	16.8	750	8.4	8.3
24...	1407	5.00	16.8	749	8.4	8.4
24...	1408	10.0	16.8	753	8.3	8.5
24...	1409	10.0	16.8	754	8.3	8.6
24...	1410	15.0	16.7	746	8.3	8.6
24...	1411	15.0	16.8	749	8.3	8.5
24...	1412	18.0	16.8	750	8.3	8.5
24...	1413	18.0	16.8	751	8.3	8.4
24...	1414	21.0	16.8	749	8.3	8.4
24...	1415	21.0	16.8	748	8.3	8.4
24...	1416	24.0	16.8	748	8.3	8.4
24...	1417	24.0	16.8	748	8.3	8.4
24...	1418	27.0	16.8	749	8.4	8.3
24...	1419	27.0	16.8	749	8.3	8.3
24...	1420	30.0	16.8	749	8.4	8.2
24...	1421	30.0	16.8	749	8.4	8.2
24...	1422	33.0	16.9	749	8.4	8.2
24...	1423	33.0	16.8	750	8.4	8.1
24...	1424	36.0	16.9	750	8.4	8.1
24...	1425	36.0	16.9	750	8.4	8.1
24...	1426	84.0	16.9	750	8.4	8.0

05059400 SHEYENNE RIVER NEAR HORACE, ND

LOCATION.--Lat 46°48'13", long 96°54'13", in NW¼NW¼ sec.5, T.138 N., R.49 W., Cass County, Hydrologic Unit 09020204, at bridge on county road 3 mi north and 0.1 mi east of Horace.

DRAINAGE AREA.--8,850 mi^2, approximately, of which about 5,780 mi^2 is probably noncontributing, including 3,800 mi^2 in closed basins.

GAGE-HEIGHT RECORDS

PERIOD OF RECORD.--October 1979 to current year (gage heights and annual maximum discharge).

GAGE.--Water-stage recorder. Datum of gage is 888.94 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated to a large degree by Lake Ashtabula (station 05057500) 241 mi upstream. Above 3,000 ft^3/s overflow occurs upstream between Kindred and Horace. This overflow bypasses the station by flowing into the Maple River to the west and into the Wild Rice River to the east.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,040 ft^3/s Apr. 16, 1982, determined from a hydrographic comparison with stations 05059000, Sheyenne River near Kindred, ND and 05059500, Sheyenne River at West Fargo, ND; maximum recorded gage height, 21.31 ft Mar. 22, 1983, ice jam; minimum not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,800 ft^3/s Mar. 22, gage height, 21.31 ft, ice jam; minimum not determined.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.46	5.50	7.96	7.01	7.42	8.02	19.27	8.85	8.05	9.79	6.07	4.56
2	4.47	5.45	8.27	7.15	7.12	8.03	19.98	8.39	8.04	10.20	5.96	4.56
3	4.48	5.44	8.47	7.26	6.85	8.05	17.33	7.93	8.02	10.86	5.95	4.55
4	4.51	5.54	8.60	7.31	6.70	8.08	15.95	7.47	8.00	11.34	5.80	4.56
5	4.52	5.76	8.57	7.33	6.63	8.25	15.68	7.13	7.99	10.98	5.59	5.21
6	4.63	6.00	8.51	7.40	6.60	8.44	15.34	7.42	7.98	10.15	5.41	6.22
7	4.80	6.20	8.47	7.45	6.58	9.13	14.03	7.93	7.97	9.95	5.23	6.83
8	4.95	6.33	8.45	7.47	6.58	9.65	12.57	8.18	7.90	10.86	5.08	6.97
9	5.17	6.47	8.14	7.47	6.57	10.64	12.13	8.38	7.56	10.06	4.95	6.98
10	5.51	6.48	7.64	7.47	6.60	10.95	11.97	8.48	7.00	8.80	4.85	6.95
11	6.14	6.46	7.21	7.46	6.61	10.75	11.85	8.58	6.49	7.92	4.82	6.93
12	6.36	6.45	6.96	7.45	6.68	11.45	11.93	8.73	6.16	7.44	4.81	6.78
13	6.12	6.68	6.86	7.46	6.77	13.77	12.49	9.02	6.11	7.34	4.79	6.29
14	6.06	7.11	6.75	7.45	6.86	14.86	13.25	9.17	6.15	7.89	4.73	5.81
15	5.91	7.15	6.64	7.38	6.91	14.91	13.85	8.99	6.19	8.27	4.68	5.53
16	5.75	7.14	6.53	7.32	6.91	15.79	14.08	8.46	6.12	8.25	4.65	5.40
17	6.25	7.31	6.46	7.33	6.94	17.20	14.13	7.77	6.06	8.30	4.65	5.38
18	8.07	7.49	6.42	7.35	6.99	18.51	13.91	7.28	6.01	8.17	4.64	5.33
19	8.67	7.60	6.39	7.37	7.08	19.55	13.06	7.02	5.93	7.97	4.64	5.30
20	8.84	7.91	6.38	7.36	7.13	20.35	12.33	6.90	5.78	7.57	4.60	5.29
21	8.59	8.32	6.39	7.34	7.22	20.92	11.65	6.78	5.69	7.33	4.56	5.20
22	7.81	8.31	6.43	7.38	7.32	21.23	10.99	6.90	5.62	7.07	4.53	5.09
23	7.17	8.09	6.44	7.46	7.46	21.00	10.72	7.51	5.57	6.77	4.51	4.99
24	6.91	7.83	6.45	7.55	7.68	20.30	10.61	7.64	5.52	6.54	4.53	4.92
25	6.68	7.61	6.45	7.57	7.94	19.86	10.53	7.56	5.46	6.37	4.61	4.87
26	6.32	7.37	6.42	7.60	8.09	20.06	10.46	7.49	8.58	6.19	4.60	4.83
27	6.03	7.19	6.39	7.65	8.13	20.47	10.40	7.63	12.50	6.11	4.58	4.80
28	5.83	7.27	6.37	7.70	8.05	20.63	10.24	7.88	11.99	6.09	4.55	4.83
29	5.73	7.42	6.41	7.69	---	20.18	9.92	7.89	10.55	6.28	4.51	4.87
30	5.67	7.64	6.61	7.63	---	19.22	9.39	7.95	9.96	6.30	4.51	4.93
31	5.58	---	6.81	7.56	---	18.70	---	7.99	---	6.24	4.52	---
TOTAL	187.99	207.52	220.85	230.38	198.42	468.95	390.04	245.30	220.95	253.40	151.91	164.76
MEAN	6.06	6.92	7.12	7.43	7.09	15.13	13.00	7.91	7.37	8.17	4.90	5.49
MAX	8.84	8.32	8.60	7.70	8.13	21.23	19.98	9.17	12.50	11.34	6.07	6.98
MIN	4.46	5.44	6.37	7.01	6.57	8.02	9.39	6.78	5.46	6.09	4.51	4.55

WTR YR 1983 TOTAL 2940.47 MEAN 8.06 MAX 21.23 MIN 4.46

05059400 SHEYENNE RIVER NEAR HORACE, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
MAR 22...	1455	1750	695	7.9	- .9	.5	209	15	44	24	68

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 22...	40	2.1	14	273	0	220	5.5	120	13	.20	10	446

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 22...	431	.61	2110	4	120	80	5	38	130	.3	0	120

05059500 SHEYENNE RIVER AT WEST FARGO, ND

LOCATION.--Lat 46°53'28", long 96°54'24", in SE¼SE¼ 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 mi^2, approximately, of which about 5,780 mi^2 is probably noncontributing, including 3,800 mi^2 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 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. Flow regulated to a large degree by Lake Ashtabula (station 05057500) 246 mi upstream. Above 3,000 ft^3/s overflow that occurs upstream from the gaging station Sheyenne River near Horace (station 05059400) bypasses this station by flowing into the Maple River drainage to the west or into the Wild Rice River drainage to the east. This overflow is not included in the flow for this station. 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.

AVERAGE DISCHARGE (ADJUSTED).--56 years (water years 1904-5, 1930-83), 176 ft^3/s, 127,500 acre-ft/yr; median of yearly mean discharges, 148 ft^3/s, 107,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,480 ft^3/s Apr. 21, 1979, gage height, 22.12 ft, backwater from Red and/or Maple Rivers; maximum gage height, 22.25 ft July 5, 1975, backwater from Red and/or Maple Rivers; minimum daily, 1.0 ft^3/s Sept. 23, 1976, caused by diversion to Red River of the North.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,100 ft^3/s Mar. 22, gage height, 19.82 ft, backwater from ice; minimum daily, 35 ft^3/s Aug. 24 and Sept. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	102	286	140	145	95	1740	430	305	644	142	38
2	40	96	315	145	140	95	1710	368	305	666	131	38
3	36	95	325	150	135	95	1780	307	303	805	130	36
4	38	99	340	145	125	95	1660	257	302	988	123	35
5	40	114	334	143	110	125	1680	224	299	1040	106	52
6	52	131	329	140	100	140	1630	228	296	898	91	126
7	51	150	323	140	90	210	1400	278	295	748	78	192
8	62	164	315	140	85	224	1070	313	290	812	67	205
9	121	177	290	140	80	245	950	337	266	754	60	218
10	123	181	260	140	78	320	914	353	222	512	55	217
11	141	176	220	145	75	305	894	374	184	421	51	205
12	172	163	190	150	75	320	896	386	160	333	50	209
13	151	197	165	150	75	551	975	416	156	236	50	172
14	146	224	160	150	75	805	1110	446	150	274	48	128
15	139	229	148	150	75	834	1240	434	145	335	46	106
16	125	215	137	150	75	898	1300	375	140	345	45	86
17	130	216	128	150	75	1160	1310	293	130	379	44	83
18	280	239	123	150	75	1430	1290	241	125	344	42	79
19	387	254	117	150	75	1680	1150	215	120	305	43	75
20	418	285	115	150	75	1840	1000	205	115	274	41	74
21	408	370	111	150	80	1990	894	195	110	246	40	70
22	329	420	110	150	80	2060	780	196	104	224	37	63
23	247	440	108	150	85	2040	722	239	100	201	36	57
24	215	430	108	150	90	1980	698	262	96	179	35	52
25	199	410	108	150	95	1900	685	256	92	164	39	48
26	172	350	105	150	95	1910	674	240	255	150	41	46
27	150	300	102	150	95	1990	662	254	1160	142	39	44
28	132	270	100	150	95	2060	640	280	1230	137	41	44
29	122	260	98	150	---	2040	595	292	1090	148	40	46
30	114	260	95	150	---	1910	508	295	817	161	36	50
31	109	---	112	150	---	1730	---	303	---	154	36	---
TOTAL	4887	7017	5777	4568	2553	33077	32557	9292	9362	13019	1863	2894
MEAN	158	234	186	147	91.2	1067	1085	300	312	420	60.1	96.5
MAX	418	440	340	150	145	2060	1780	446	1230	1040	142	218
MIN	36	95	95	140	75	95	508	195	92	137	35	35
AC-FT	9690	13920	11460	9060	5060	65610	64580	18430	18570	25820	3700	5740

CAL YR 1982 TOTAL 91741 MEAN 251 MAX 2030 MIN 20 AC-FT 182000
WTR YR 1983 TOTAL 126866 MEAN 348 MAX 2060 MIN 35 AC-FT 251600

RED RIVER OF THE NORTH BASIN

05059500 SHEYENNE RIVER AT WEST FARGO, ND

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
28...	1020	175	725	--	11.0	6.5	--	--	--	--	--
DEC											
21...	1145	110	950	--	.5	.5	--	--	--	--	--
JAN											
26...	1325	159	980	--	.0	.0	--	--	--	--	--
MAR											
09...	1425	250	790	--	- .9	.5	--	--	--	--	--
21...	1625	1990	720	7.5	- .4	1.0	200	0	42	23	64
APR											
13...	1200	970	775	--	.0	3.0	--	--	--	--	--
JUN											
09...	1215	270	670	--	24.5	20.0	--	--	--	--	--
JUL											
25...	1200	166	662	--	30.5	25.0	--	--	--	--	--
AUG											
30...	0855	37	815	8.0	18.5	19.5	340	65	85	30	52

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
21...	39	2.0	14	280	0	230	14	110	12	.20	12	430
AUG												
30...	25	1.3	10	331	0	270	5.3	130	26	.30	24	496

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
21...	419	.58	2310	2	110	110	3	60	150	.2	0	230
AUG												
30...	521	.67	49.1	6	120	10	0	40	70	.3	0	400

05059600 MAPLE RIVER NEAR HOPE, ND

LOCATION.--Lat 47°19'30", long 97°47'25", in NW¼NW¼ 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 Highway 32 and 38, and 3 mi west of Hope.

DRAINAGE AREA.--20.2 mi^2, of which about 2.8 mi^2 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Records good.

AVERAGE DISCHARGE.--18 years (water years 1965-82), 2.82 ft^3/s, 2,040 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 900 ft^3/s Apr. 18, 1979, gage height, 5.86 ft, backwater from ice; no flow for many months each year.

EXTREMES FOR CURRENT YEAR.--Maximum recorded discharge, 160 ft^3/s Mar. 13, gage height, 4.29 ft, backwater from ice; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						.00	51	1.1	.11	6.4	.00	.00
2						.00	34	1.1	.09	4.6	.00	.00
3						.00	22	1.1	.06	3.3	.00	.00
4						.00	18	1.1	.04	2.5	.00	.00
5						1.0	26	1.1	.02	1.9	.00	.00
6						5.0	26	1.1	.00	1.5	.00	.00
7						20	25	.98	.00	1.1	.00	.00
8						50	19	.92	.00	.82	.00	.00
9						45	15	.87	.00	.55	.00	.00
10						40	9.8	.82	.00	.36	.00	.00
11						10	7.5	.87	.00	.20	.00	.00
12						27	5.7	1.1	.00	.09	.00	.00
13						100	4.1	1.4	.00	.03	.00	.00
14						90	2.2	1.5	.00	.01	.00	.00
15						50	2.5	1.5	.00	.00	.00	.00
16						45	2.3	1.5	.00	.00	.00	.00
17						42	2.0	1.8	.00	.00	.00	.00
18						17	1.8	1.8	.00	.00	.00	.00
19						10	1.4	1.8	.00	.00	.00	.00
20						7.5	1.3	1.8	.00	.00	.00	.00
21						6.7	1.2	1.8	.00	.00	.00	.00
22						6.4	1.0	1.6	.07	.00	.00	.00
23						6.4	.92	1.4	.05	.00	.00	.00
24						6.2	.87	1.3	.03	.00	.00	.00
25						6.0	.87	1.0	76	.00	.00	.00
26						5.8	.98	.82	62	.00	.00	.00
27						5.4	.98	.62	35	.00	.00	.00
28						4.4	1.0	.44	20	.00	.00	.00
29						3.4	1.0	.30	12	.00	.00	.00
30						3.5	1.1	.22	9.0	.00	.00	.00
31						14	---	.15	---	.00	.00	---
TOTAL						627.70	286.52	34.91	214.47	23.36	.00	.00
MEAN						20.2	9.55	1.13	7.15	.75	.000	.000
MAX						100	51	1.8	76	6.4	.00	.00
MIN						.00	.87	.15	.00	.00	.00	.00
AC-FT						1250	568	69	425	46	.00	.00

05059600 MAPLE RIVER NEAR HOPE, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 28...	1150	.22	1280	7.9	6.0	6.5	493	271	110	53	90
MAR 11...	1535	8.6	395	7.5	2.5	.0	147	8.9	34	15	12
30...	1515	3.2	460	--	2.5	1.0	--	--	--	--	--
JUN 02...	1720	.08	2330	8.0	24.0	19.0	928	420	190	110	200
JUL 14...	1015	.00	1490	--	29.0	25.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
OCT 28...	28	1.8	13	272	0	220	5.4	460	27	.20	26	971
MAR 11...	13	.4	26	190	0	160	9.5	34	5.7	.10	21	292
JUN 02...	31	2.9	16	621	0	510	9.9	780	80	.30	24	1770

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
OCT 28...	914	1.3	.58	17	60	20	1	54	10	.3	0	270
MAR 11...	243	.40	6.8	3	120	140	1	10	60	.1	0	94
JUN 02...	1707	2.4	.36	0	100	90	1	120	460	.6	0	840

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 mi^2, of which about 47 mi^2 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 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 good except those for winter periods, which are fair.

AVERAGE DISCHARGE.--27 years, 37.4 ft^3/s, 27,100 acre-ft/yr; median of yearly mean discharges, 24 ft^3/s, 17,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,610 ft^3/s June 30, 1975, gage height, 15.41 ft; minimum daily, 0.1 ft^3/s Dec. 7-9, 1963.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 12	--	802	Ice jam	June 23	0100	*2930	12.23
Mar. 16	0645	838	7.87	July 4	2115	1060	8.60

Minimum daily discharge, 1.1 ft^3/s Aug. 26-28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	6.1	4.7	3.0	2.5	3.0	193	39	5.3	303	20	5.3
2	2.9	13	6.4	2.9	2.4	3.0	189	37	5.0	278	19	5.9
3	2.4	6.3	7.3	2.3	2.2	3.0	194	34	4.2	347	15	5.0
4	2.4	5.0	7.9	2.3	2.0	2.6	186	32	3.4	842	13	4.7
5	2.6	4.4	7.7	2.2	2.0	5.0	178	31	3.0	911	12	4.7
6	4.0	4.2	6.9	2.2	2.0	32	176	30	2.7	686	9.9	4.5
7	4.5	4.3	6.3	2.2	2.0	60	176	28	2.6	494	7.5	4.5
8	3.6	4.0	5.6	2.2	2.0	38	181	26	2.4	337	5.2	4.7
9	12	3.1	5.3	2.2	2.0	27	172	23	2.3	253	4.0	4.2
10	9.0	2.7	4.2	2.2	2.0	75	160	22	2.1	201	3.5	4.0
11	4.2	4.1	3.8	2.5	2.0	670	149	25	1.9	158	2.7	4.6
12	3.8	4.9	3.7	2.7	2.2	684	137	31	3.0	126	2.3	4.2
13	3.4	3.1	3.6	2.7	2.3	556	131	32	7.1	100	2.1	4.2
14	3.2	2.8	3.6	2.6	2.4	541	118	31	6.2	85	1.9	4.2
15	3.0	2.7	3.4	2.6	2.7	627	100	31	6.9	73	1.3	4.3
16	3.0	3.3	3.2	2.6	2.7	722	93	29	11	80	1.6	3.8
17	3.0	4.7	3.2	2.5	2.7	670	88	27	12	78	1.7	3.5
18	3.0	5.2	3.2	2.4	7.6	690	84	24	13	78	1.9	4.0
19	3.0	5.5	3.2	2.3	8.3	638	83	22	7.5	71	2.3	1.9
20	3.0	7.0	3.2	2.2	7.2	612	82	22	10	70	2.3	2.2
21	3.0	6.7	3.2	2.2	6.6	553	78	21	32	70	2.1	2.2
22	3.0	6.4	3.2	2.2	6.3	497	74	20	738	65	2.0	2.2
23	3.0	6.0	3.0	2.2	7.9	435	70	19	2780	59	2.3	2.2
24	3.0	5.7	2.8	2.2	7.9	357	65	17	2010	52	2.1	1.8
25	2.8	5.4	2.8	2.0	7.6	323	58	16	1410	45	1.7	1.9
26	2.8	5.0	3.4	1.9	6.3	291	54	11	1040	41	1.1	1.9
27	5.1	4.7	3.4	1.9	4.2	258	49	1.9	766	36	1.1	1.9
28	6.2	4.6	3.0	2.5	3.4	237	46	1.2	563	31	1.1	1.8
29	5.3	4.3	2.9	2.5	---	228	43	2.1	440	27	4.2	1.7
30	5.3	4.4	2.9	2.5	---	214	41	5.0	360	28	21	2.0
31	5.3	---	2.9	2.5	---	204	---	5.0	---	23	10	---
TOTAL	123.1	149.6	129.9	73.4	111.4	10255.6	3448	695.2	10250.6	6048	177.9	104.0
MEAN	3.97	4.99	4.19	2.37	3.98	331	115	22.4	342	195	5.74	3.47
MAX	12	13	7.9	3.0	8.3	722	194	39	2780	911	21	5.9
MIN	2.3	2.7	2.8	1.9	2.0	2.6	41	1.2	1.9	23	1.1	1.7
AC-FT	244	297	258	146	221	20340	6840	1380	20330	12000	353	206

CAL YR 1982	TOTAL	23424.4	MEAN 64.2	MAX 2900	MIN 1.7	AC-FT	46460
WTR YR 1983	TOTAL	31566.7	MEAN 86.5	MAX 2780	MIN 1.1	AC-FT	62610

RED RIVER OF THE NORTH BASIN

05059700 MAPLE RIVER NEAR ENDERLIN, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
26...	1855	2.7	1600	--	10.0	10.5	--	--	--	--	--
DEC											
14...	1130	3.6	2250	--	- .9	.5	--	--	--	--	--
FEB											
01...	1110	2.4	1400	--	- .9	1.0	--	--	--	--	--
MAR											
15...	1400	525	420	7.4	3.5	1.0	170	33	42	17	17
APR											
12...	1055	138	540	--	9.5	7.0	--	--	--	--	--
JUN											
15...	1315	895	--	--	23.5	19.5	--	--	--	--	--
17...	1020	11	1535	--	17.0	18.0	--	--	--	--	--
23...	1250	2840	--	--	27.0	24.0	--	--	--	--	--
29...	1700	26	1135	--	32.0	27.0	--	--	--	--	--
AUG											
31...	0850	12	1295	7.9	24.0	22.0	470	142	110	48	100

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
15...	16	.6	19	173	0	140	11	66	9.2	.10	21	333
AUG												
31...	31	2.1	18	404	0	330	8.1	270	68	.20	21	820

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
15...	285	.45	472	3	100	170	1	15	60	.2	0	30
AUG												
31...	835	1.1	26.1	9	200	40	2	70	270	.3	0	600

RED RIVER OF THE NORTH BASIN

05060100 CASS COUNTY DRAIN 52 NEAR AMENIA, ND

LOCATION.--Lat 46°58'41", long 97°11'52", in SE¼SE¼SE¼ sec.36, T.141 N., R.52 W., Cass County, Hydrologic Unit 09020204, on left bank 40 ft upstream on county road 0.7 mi south and 1 mi east of Amenia.

DRAINAGE AREA.--13.5 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1980 to current year (seasonal records only since 1982).

GAGE.--Water-stage recorder. Altitude of gage is 943 ft, from topographic map.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 223 ft^3/s Apr. 2, 1982, gage height, 4.58 ft; maximum gage height, 5.76 ft Apr. 1, 1982, backwater from ice; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 195 ft^3/s June 22, gage height, 3.44 ft; no flow for many months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						.10	13	.00	.00	.00	.00	
2						.30	7.4	.00	.00	5.6	.00	
3						.75	5.6	.00	.00	154	.00	
4						.79	6.5	.00	.00	30	.00	
5						13	5.2	.00	.00	5.9	.00	
6						23	2.9	.00	.00	1.6	.00	
7						30	1.9	.00	.00	.61	.00	
8						9.5	1.7	.00	.00	.26	.00	
9						.98	1.4	.02	.00	.12	.00	
10						.71	.88	.08	.00	.00	.00	
11						.98	.57	.10	.00	.00	.00	
12						3.0	.41	.10	.00	.00	.00	
13						14	.14	.16	.00	.00	.00	
14						39	.08	.10	.00	.00	.00	
15						18	.00	.05	.00	.00	.00	
16						6.8	.00	.02	.00	.00	.00	
17						5.9	.00	.00	.00	.00	.00	
18						5.9	.57	.00	.00	.00	.00	
19						8.3	2.3	.00	.00	.00	.00	
20						8.7	2.3	.00	.00	.00	.00	
21						6.9	1.4	.00	20	.00	.00	
22						3.4	.66	.00	168	.00	.00	
23						2.0	.38	.00	39	.00	.00	
24						2.5	.18	.00	7.6	.00	.00	
25						4.1	.01	.00	1.2	.00	.00	
26						2.7	.00	.00	.10	.00	.18	
27						3.2	.00	.00	.04	.00	.18	
28						5.6	.00	.00	.00	.00	.16	
29						7.0	.00	.00	.00	.00	.00	
30						1.8	.00	.00	.00	.00	.00	
31						9.7	---	.00	---	.00	.00	
TOTAL						238.61	55.48	.63	235.94	198.09	.52	
MEAN						7.70	1.85	.020	7.86	6.39	.017	
MAX						39	13	.16	168	154	.18	
MIN						.10	.00	.00	.00	.00	.00	
AC-FT						473	110	1.2	468	393	1.0	

RED RIVER OF THE NORTH BASIN

05060100 CASS COUNTY DRAIN #52 NEAR AMENIA, ND

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1981 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
MAR											
03...	1725	.74	250	--	3.5	.0	81	0	21	7.0	16
30...	0950	1.3	500	--	.0	.5	--	--	--	--	--
JUN											
21...	1740	20	158	7.8	30.5	26.0	61	0	16	5.0	6.2
JUL											
03...	1555	142	--	--	24.5	20.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
03...	28	.8	7.3	107	0	88	--	19	8.3	.10	13	162
JUN												
21...	17	.4	4.3	73	0	60	1.8	17	2.7	.20	13	104

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
03...	147	.22	.32	3	60	150	0	7	40	.1	1	45
JUN												
21...	101	.14	5.6	3	20	210	1	10	10	.6	0	100

05060150 LOWER BRANCH RUSH RIVER NEAR PROSPER, ND

LOCATION.--Lat 46°56'30", long 96°59'18", in NE¼NE¼SE¼ sec.16, T.140 N., R.50 W., Cass County, Hydrologic Unit 09020204, on right bank 60 ft upstream on county road 1.5 mi east and 1.5 mi south of Prosper.

DRAINAGE AREA.--35.8 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1980 to current year; seasonal records only since 1982. Prior to October 1981, published as Lower Branch Rush River near Amenia.

GAGE.--Water-stage recorder. Altitude of gage is 900 ft, from topographic map.

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,140 ft^3/s Apr. 2, 1982, gage height, 9.65 ft; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum observed discharge, 199 ft^3/s July 4, gage height, 6.50 ft; no flow for most of the year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						.25	96	1.3	.01	3.6	.01	
2						.75	92	1.2	.00	3.0	.00	
3						.68	59	1.1	.00	75	.00	
4						1.0	28	.96	.00	167	.00	
5						5.0	18	.89	.00	66	.00	
6						10	18	.75	.00	39	.00	
7						20	12	.68	.00	21	.00	
8						15	7.1	.56	.00	15	.00	
9						8.5	4.3	.45	.00	11	.00	
10						7.0	3.6	.38	.00	9.0	.00	
11						10	2.9	.47	.00	7.6	.00	
12						16	.30	.70	.00	5.1	.00	
13						15	.05	.77	.00	4.7	.00	
14						14	.00	1.1	.00	4.3	.00	
15						12	.04	1.0	.00	3.8	.00	
16						17	.70	.92	.00	3.4	.00	
17						28	.75	.77	.00	3.0	.00	
18						25	5.4	.77	.00	2.5	.00	
19						29	4.9	.68	.00	2.1	.00	
20						21	5.6	.68	.00	1.2	.00	
21						19	6.5	.63	.00	.10	.00	
22						18	7.6	.60	5.0	.09	.00	
23						16	6.7	.56	160	.08	.00	
24						15	3.8	.40	100	.07	.00	
25						22	2.6	.31	23	.06	.00	
26						29	1.8	.29	20	.05	.00	
27						31	1.6	.22	18	.05	.00	
28						32	1.5	.17	6.8	.04	.00	
29						34	1.4	.11	5.9	.03	.00	
30						34	1.3	.05	4.7	.01	.00	
31						51	---	.01	---	.01	.00	
TOTAL						556.18	393.44	19.48	343.41	447.89	.01	
MEAN						17.9	13.1	.63	11.4	14.4	.000	
MAX						51	96	1.3	160	167	.01	
MIN						.25	.00	.01	.00	.01	.00	
AC-FT						1100	780	39	681	888	.02	

RED RIVER OF THE NORTH BASIN

05060150 LOWER BRANCH RUSH RIVER NEAR PROSPER, ND

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1981 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
MAR											
02...	1500	.75	--	--	4.0	.5	--	--	--	--	--
29...	1415	34	290	7.7	1.0	.5	100	0	25	9.0	11
JUN											
24...	1650	51	198	7.9	29.0	26.0	82	0	22	6.5	5.5
JUL											
03...	1930	186	--	--	17.0	20.0	--	--	--	--	--
28...	1550	.04	438	--	33.5	27.0	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
29...	18	.5	7.6	138	0	110	4.4	12	4.2	.10	15	172
JUN												
24...	12	.3	6.2	102	0	84	2.0	9.9	4.8	.20	18	119

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
29...	156	.23	16.0	4	20	100	2	11	10	.0	0	32
JUN												
24...	123	.16	16.5	4	50	60	2	15	0	.2	0	120

05060500 RUSH RIVER AT AMENIA, ND

LOCATION.--Lat 47°01'00", long 97°12'50", in SE¼NW¼ 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, 0.6 mi north of Amenia.

DRAINAGE AREA.--116 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1946 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 943 ft, from topographic map. See WSP 1913 for history of changes prior to June 10, 1961.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--37 years, 9.22 ft^3/s, 6,680 acre-ft/yr; median of yearly mean discharges, 5.9 ft^3/s, 4,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,490 ft^3/s Apr. 19, 1979, gage height, 10.37 ft; maximum gage height, 12.15 ft Mar. 23, 1966, backwater from ice; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 27 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 12	1130	58	5.62	Apr. 2	1015	100	6.66
Mar. 11	--	72	Ice jam	June 22	2345	*428	8.07
Mar. 14	--	138	Ice jam	July 3	0130	165	7.09

No flow Oct. 1-9, Dec. 31 - Feb. 15, Aug. 8 - Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	3.0	2.1	.00	.00	2.0	47	4.7	4.9	26	.14	.00
2	.00	2.7	2.2	.00	.00	4.0	56	4.7	2.8	31	.13	.00
3	.00	3.0	2.4	.00	.00	6.0	35	4.5	1.9	88	.12	.00
4	.00	3.3	2.5	.00	.00	8.0	34	4.4	1.3	32	.10	.00
5	.00	3.4	2.6	.00	.00	10	36	4.0	1.1	30	.08	.00
6	.00	3.4	2.4	.00	.00	20	34	3.9	.84	26	.04	.00
7	.00	3.5	2.2	.00	.00	40	31	3.7	.51	22	.01	.00
8	.00	3.7	2.0	.00	.00	30	30	3.6	.29	18	.00	.00
9	.00	3.7	1.7	.00	.00	30	29	3.4	.18	14	.00	.00
10	7.1	3.7	1.6	.00	.00	25	27	3.2	.12	11	.00	.00
11	20	4.5	1.6	.00	.00	72	24	3.6	.10	7.5	.00	.00
12	55	8.1	1.5	.00	.00	36	22	4.9	.31	5.2	.00	.00
13	45	5.6	1.3	.00	.00	42	20	6.5	5.4	3.7	.00	.00
14	35	5.3	1.2	.00	.00	104	16	12	8.9	2.7	.00	.00
15	29	4.7	1.0	.00	.00	91	13	13	16	2.1	.00	.00
16	24	3.9	.80	.00	.10	78	11	11	24	1.6	.00	.00
17	20	3.5	.60	.00	.20	70	10	8.7	21	1.6	.00	.00
18	17	3.2	.50	.00	.40	61	10	6.9	18	1.2	.00	.00
19	15	3.2	.40	.00	.30	50	8.1	6.3	17	.82	.00	.00
20	13	3.2	.25	.00	.10	40	6.8	5.6	14	.39	.00	.00
21	11	3.0	.20	.00	.40	31	5.4	5.6	28	.31	.00	.00
22	9.2	3.0	.20	.00	1.0	27	4.8	6.9	196	.33	.00	.00
23	8.3	2.9	.15	.00	.80	24	5.3	8.3	335	.27	.00	.00
24	7.4	2.8	.10	.00	.60	24	5.3	10	147	.24	.00	.00
25	6.1	2.7	.05	.00	.70	24	5.1	11	77	.20	.00	.00
26	5.7	2.6	.05	.00	1.5	26	4.9	10	49	.19	.00	.00
27	5.3	2.5	.04	.00	2.0	26	4.9	9.3	34	.17	.00	.00
28	5.6	2.4	.03	.00	2.0	30	4.7	8.8	30	.13	.00	.00
29	6.4	2.3	.02	.00	---	28	4.7	7.9	28	.12	.00	.00
30	4.2	2.2	.01	.00	---	23	4.6	9.0	27	.17	.00	.00
31	3.8	---	.00	.00	---	27	---	7.1	---	.17	.00	---
TOTAL	353.10	105.0	31.70	.00	10.10	1109.0	549.6	212.5	1089.65	327.11	.62	.00
MEAN	11.4	3.50	1.02	.000	.36	35.8	18.3	6.85	36.3	10.6	.020	.000
MAX	55	8.1	2.6	.00	2.0	104	56	13	335	88	.14	.00
MIN	.00	2.2	.00	.00	.00	2.0	4.6	3.2	.10	.12	.00	.00
AC-FT	700	208	63	.00	20	2200	1090	421	2160	649	1.2	.00

CAL YR 1982 TOTAL 5433.42 MEAN 14.9 MAX 570 MIN .00 AC-FT 10780
WTR YR 1983 TOTAL 3788.38 MEAN 10.4 MAX 335 MIN .00 AC-FT 7510

05060500 RUSH RIVER AT AMENIA, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
NOV											
18...	1115	3.2	1650	--	7.0	.5	--	--	--	--	--
DEC											
14...	1410	1.2	2275	--	- .9	.0	--	--	--	--	--
MAR											
30...	1130	24	530	8.2	1.5	.5	210	36	54	19	17
APR											
15...	0945	12	600	--	3.0	2.5	--	--	--	--	--
JUN											
08...	0940	.20	1425	8.1	--	17.5	730	312	170	73	110
08...	0941	.20	1430	8.1	21.5	17.5	730	321	170	74	110
21...	1520	30	695	--	29.0	23.0	--	--	--	--	--
JUL											
03...	1425	70	--	--	21.0	20.0	--	--	--	--	--
28...	1355	.19	1180	--	32.0	28.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
MAR										
30...	14	.5	12	216	0	180	2.2	76	7.1	.10
JUN										
08...	24	1.8	16	506	0	410	6.4	500	42	.30
08...	24	1.8	14	--	--	410	6.3	500	42	.40

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BORON, DIS-SOLVED (UG/L AS B) (01020)
MAR										
30...	18	353	311	.48	22.6	--	--	5	--	80
JUN										
08...	11	1230	1170	1.7	.66	--	--	8	--	230
08...	12	1210	1170	1.6	.65	<.10	.200	9	84	310

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
MAR									
30...	--	70	3	54	70	.1	0	160	--
JUN									
08...	--	20	2	160	530	.3	2	930	--
08...	1	11	1	190	520	<.1	1	860	21

05060550 RUSH RIVER NEAR PROSPER, ND

LOCATION.--Lat 46°57'59", long 97°03'04", in NE¼SE¼SE¼ sec.1, T.140 N., R.51 W., Cass County, Hydrologic Unit 09020204, on right bank 30 ft upstream on county road 1.5 mi west and 0.2 mi north of Prosper.

DRAINAGE AREA.--170 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1980 to current year (seasonal records only since 1982).

GAGE.--Water-stage recorder. Altitude of gage is 908 ft, from topographic map.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 965 ft^3/s Apr. 3, 1982, gage height, 10.36 ft, backwater from ice; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 318 ft^3/s July 3, gage height, 7.31 ft; maximum gage height, 10.26 ft Mar. 7, backwater from ice; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						2.0	66	3.7	1.6	29	.00	
2						5.8	104	3.4	1.8	33	.00	
3						16	76	3.4	1.7	212	.00	
4						15	72	3.2	1.1	145	.00	
5						19	37	3.0	.71	62	.00	
6						28	55	2.7	.45	37	.00	
7						50	49	2.3	.26	26	.00	
8						97	43	2.0	.11	19	.00	
9						35	33	1.7	.08	14	.00	
10						34	30	1.5	.07	10	.00	
11						96	25	1.8	.03	7.0	.00	
12						87	20	3.1	.02	4.4	.00	
13						87	31	3.2	.12	3.4	.00	
14						101	40	2.9	.09	2.2	.00	
15						127	26	5.6	.03	1.3	.00	
16						106	9.9	8.4	.02	1.2	.00	
17						98	8.6	7.5	4.2	1.1	.00	
18						90	7.8	5.6	16	1.0	.00	
19						83	8.5	4.3	15	.74	.00	
20						79	8.1	3.6	12	.58	.00	
21						71	7.3	3.0	11	.41	.00	
22						61	6.3	2.7	55	.14	.00	
23						50	5.3	2.3	235	.10	.00	
24						48	4.7	2.3	227	.09	.00	
25						45	5.2	2.7	153	.05	.00	
26						43	4.9	3.3	99	.02	.00	
27						43	4.4	3.4	69	.01	.00	
28						40	4.7	3.1	48	.00	.00	
29						41	4.3	2.5	37	.00	.00	
30						37	4.2	2.2	31	.00	.00	
31						44	---	1.8	---	.00	.00	
TOTAL						1778.8	801.2	102.2	1020.39	610.74	.00	
MEAN						57.4	26.7	3.30	34.0	19.7	.000	
MAX						127	104	8.4	235	212	.00	
MIN						2.0	4.2	1.5	.02	.00	.00	
AC-FT						3530	1590	203	2020	1210	.00	

PERIOD OF RECORD.--Water years 1981 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
MAR											
02...	1630	5.9	--	--	3.0	.0	--	--	--	--	--
29...	1500	E50	420	7.9	1.0	.0	170	26	43	15	14
APR											
11...	1015	211	--	--	--	--	--	--	--	--	--
14...	1515	56	710	--	2.5	1.5	--	--	--	--	--
JUN											
01...	1330	12	1415	--	22.0	16.0	--	--	--	--	--
08...	1720	.09	1720	8.0	--	21.5	750	352	170	79	110
22...	1720	143	994	--	25.5	24.5	--	--	--	--	--
JUL											
03...	1745	316	--	--	25.0	20.0	--	--	--	--	--
15...	1525	23	1325	--	34.0	27.0	--	--	--	--	--
SEP											
12...	1420	9.8	980	8.4	14.0	14.0	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
29...	14	.5	12	175	0	140	3.5	59	7.7	.10	17	276
JUN												
08...	24	1.8	17	487	0	400	7.7	550	39	.30	13	1270

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
29...	255	.38	--	4	60	0	1	22	0	.0	0	130
JUN												
08...	1220	1.7	.31	7	250	20	2	200	220	.5	2	980

E - Estimated.

05062200 ELM RIVER NEAR KELSO, ND

LOCATION.--Lat 47°17'30", long 97°06'50", in sec.23, T.144 N., R.51 W., Traill County, Hydrologic Unit 09020107, on left bank 50 ft upstream from county road, 4.0 mi south and 3.4 mi west of Kelso.

DRAINAGE AREA.--199 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1955 to September 1963, 1964-73 (annual maximum only), October 1980 to current year (seasonal records only since 1982).

GAGE.--Water-stage recorder. Altitude of gage is 893 ft, from topographic map. Prior to September 1963 gage located at site one mile upstream at datum of 887.60 ft National Geodetic Vertical Datum of 1929, Emerson-Crookston supplementary adjustment of 1941.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--9 years (water years 1956-63, 1981), 2.22 ft^3/s, 1,610 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,000 ft^3/s, occurred during March 1966; maximum gage height, 13.75 ft Mar. 6, 1983, from floodmark, backwater from ice; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 310 ft^3/s Mar. 17, gage height, 10.10 ft; maximum gage height, 13.75 ft Mar. 6, from floodmark, backwater from ice; no flow for most of the year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						1.0	196	9.0	6.5	88	6.4	
2						3.0	187	9.0	5.8	67	6.1	
3						5.0	162	9.0	5.0	98	6.1	
4						12	162	8.0	4.7	70	6.0	
5						50	188	8.0	5.2	46	6.3	
6						150	171	8.0	5.2	37	4.4	
7						100	138	7.0	4.7	30	4.3	
8						60	115	7.0	4.7	26	4.8	
9						50	95	7.0	4.0	21	4.2	
10						40	81	7.0	3.6	17	2.8	
11						80	68	7.0	2.6	14	5.7	
12						150	59	8.0	25	12	3.3	
13						180	50	10	39	9.9	2.2	
14						260	40	12	73	8.8	2.0	
15						270	40	12	144	7.1	2.5	
16						275	37	12	98	6.7	2.4	
17						280	32	11	82	6.1	2.0	
18						270	30	11	68	5.6	1.9	
19						250	28	10	54	5.6	2.7	
20						220	26	10	44	5.0	2.6	
21						200	23	10	45	5.6	2.5	
22						170	20	10	130	6.2	2.5	
23						140	18	10	265	5.9	2.4	
24						130	16	10	317	5.2	2.5	
25						120	14	10	564	5.1	5.0	
26						110	12	9.0	485	4.2	7.6	
27						100	10	9.0	307	4.0	8.8	
28						90	10	8.0	231	4.3	5.7	
29						89	10	8.0	180	3.8	3.8	
30						78	10	7.0	138	4.8	2.3	
31						127	---	7.0	---	5.9	2.1	
TOTAL						4060.0	2048	280.0	3341.0	635.8	123.9	
MEAN						131	68.3	9.03	111	20.5	4.00	
MAX						280	196	12	564	98	8.8	
MIN						1.0	10	7.0	2.6	3.8	1.9	
AC-FT						8050	4060	555	6630	1260	246	

PERIOD OF RECORD.--Water years 1981 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
MAR											
03...	1350	4.8	1260	--	3.0	.0	--	--	--	--	--
16...	1435	273	388	7.5	3.0	.0	160	22	39	14	8.6
28...	1530	91	1000	--	6.0	1.0	--	--	--	--	--
JUN											
01...	1535	6.2	1040	8.3	23.0	18.0	450	115	100	49	50
22...	1145	70	--	--	17.0	20.0	--	--	--	--	--
JUL											
22...	1455	6.1	930	--	33.0	27.5	--	--	--	--	--
SEP											
01...	1225	2.0	1058	--	31.0	25.0	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
16...	10	.3	15	162	0	130	8.1	50	4.5	.10	18	270
JUN												
01...	19	1	16	412	0	340	3.3	210	29	.20	7.8	701

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
16...	230	.37	199	4	60	120	0	13	10	.2	0	130
JUN												
01...	670	.95	12	7	150	40	1	80	90	1.0	1	620

05064500 RED RIVER OF THE NORTH AT HALSTAD, MN

LOCATION.--Lat 47°21'10", long 96°50'50", on line between secs.24 and 25, T.145 N., R.49 W., Traill County, Hydrologic Unit 09020107, on left bank on upstream side of highway bridge, 0.5 mi west of Halstad, 2.5 mi downstream from Wild Rice River, and at mile 375.2.

DRAINAGE AREA.--21,800 mi^2, approximately, including 3,800 mi^2 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 National Geodetic Vertical Datum of 1929. Prior to July 17, 1961, nonrecording gage at same site and datum.

REMARKS.--Records fair. Some regulation by many controlled lakes and reservoirs on tributaries.

AVERAGE DISCHARGE.--22 years (1961-83), 1,740 ft^3/s, 1,261,000 acre-ft/yr; median of yearly mean discharges, 1,530 ft^3/s, 1,108,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,000 ft^3/s Apr. 22, 1979, gage height, 39.00 ft; minimum observed, 5.4 ft^3/s Oct. 8, 9, 12-14, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1897 reached a stage of about 38.5 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,800 ft^3/s July 6, gage height, 14.98 ft. Maximum gage height, 17.10 ft, Mar. 7, backwater from ice; minimum daily, 250 ft^3/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	250	886	870	480	320	500	5400	1360	843	3760	1310	832
2	259	870	880	470	310	550	5400	1290	808	3130	1230	870
3	269	854	890	470	300	580	5350	1220	776	3860	1190	946
4	312	832	970	470	290	650	5350	1160	762	5740	1140	930
5	312	830	1010	470	280	930	5300	1100	739	6660	1080	850
6	325	850	1050	470	280	2400	5200	1040	729	7050	1030	822
7	362	880	1060	470	280	5000	4900	990	710	6750	954	798
8	472	890	1010	470	280	5110	4270	980	675	6020	874	812
9	585	900	920	480	270	4200	3650	990	659	5430	812	858
10	1050	910	800	470	270	3370	3120	1000	630	5100	759	864
11	2200	900	760	460	270	2900	2700	1020	588	4660	710	850
12	2390	890	590	450	280	2680	2440	1090	700	4080	684	850
13	2380	910	580	440	290	2600	2270	1210	1130	3510	671	843
14	2300	930	570	420	300	2570	2160	1300	994	3050	649	833
15	2140	950	570	400	320	2740	2150	1290	790	2620	633	818
16	1960	940	570	390	320	3060	2240	1240	770	2230	617	790
17	1820	1000	600	380	320	3430	2300	1210	814	1920	607	776
18	1700	1050	580	370	320	3760	2290	1170	798	1760	598	716
19	1620	1100	550	370	320	4140	2270	1100	812	1920	614	684
20	1640	1100	540	360	330	4480	2210	1050	804	2320	591	684
21	1600	1050	540	360	330	4750	2100	1010	946	2600	575	675
22	1500	1000	540	370	330	4900	2000	1010	2120	2650	572	665
23	1390	960	540	380	330	5200	1880	978	2800	2670	575	652
24	1280	900	540	380	340	5400	1730	922	2930	2710	575	620
25	1190	840	530	370	340	5400	1620	918	4270	2710	605	595
26	1140	840	550	360	350	5350	1560	906	4340	2570	625	572
27	1110	850	530	360	370	5400	1500	902	3630	2330	665	547
28	1060	840	520	360	470	5500	1470	826	3560	2060	735	528
29	1010	850	510	360	---	5500	1460	812	3970	1800	775	514
30	954	860	490	350	---	5450	1430	822	4100	1610	805	503
31	914	---	480	330	---	5400	---	840	---	1410	825	---
TOTAL	37494	27462	21140	12740	8810	113900	87720	32756	48197	106690	24085	22297
MEAN	1209	915	682	411	315	3674	2924	1057	1607	3442	777	743
MAX	2390	1100	1060	480	470	5500	5400	1360	4340	7050	1310	946
MIN	250	830	480	330	270	500	1430	812	588	1410	572	503
AC-FT	74370	54470	41930	25270	17470	225900	174000	64970	95600	211600	47770	44230

WTR YR 1983 TOTAL 543291 MEAN 1488 MAX 7050 MIN 250 AC-FT 1078000

05064500 RED RIVER OF THE NORTH AT HALSTAD, MN
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1961-67, 1972 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT											
25...	1535	1180	708	8.3	12.0	7.5	44	10.8	93	K63	330
DEC											
08...	1500	1010	896	--	-1.9	.0	--	--	--	--	--
JAN											
11...	1625	461	840	7.7	-1.9	.0	5.5	12.8	89	K130	K580
MAR											
21...	1355	4700	540	7.9	- .4	.0	30	11.0	78	--	K3900
APR											
11...	1445	2680	515	--	14.0	2.5	--	--	--	--	--
MAY											
17...	1020	1160	660	8.0	20.5	11.0	33	8.1	--	K5	K15
JUL											
07...	1110	6590	417	--	23.5	20.0	--	--	--	--	--
13...	1345	3330	595	8.1	33.0	27.0	100	4.2	55	130	310
SEP											
01...	1550	807	458	8.1	32.0	28.0	98	6.1	81	720	340

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
OCT											
25...	270	45	58	31	33	20	.9	7.9	228	2.2	130
JAN											
11...	340	38	66	42	49	23	1.2	8.6	300	12	130
MAR											
21...	210	26	47	22	31	23	1.0	11	182	4.4	79
MAY											
17...	280	39	61	32	30	18	.8	8.2	246	4.7	100
JUL											
13...	200	0	47	20	15	14	.5	6.3	205	3.1	76
SEP											
01...	220	37	48	25	17	14	.5	6.2	186	2.8	50

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)
OCT											
25...	16	.20	15	459	429	.62	1460	.28	.15	1.70	.130
JAN											
11...	21	.20	15	537	512	.73	668	.30	.31	1.50	.130
MAR											
21...	13	.20	17	313	331	.43	3970	1.4	.30	2.40	.380
MAY											
17...	14	.20	8.6	416	402	.57	1300	.10	.09	2.20	.190
JUL											
13...	11	.30	21	356	320	.48	3200	.61	.22	2.60	.360
SEP											
01...	11	.20	16	272	286	.37	593	.47	.08	1.40	.240

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)
OCT 25...	.40	.250	.170	.52	20	5	77	<1	<1	<3
JAN 11...	.40	.100	.060	.18	--	--	--	--	--	--
MAR 21...	1.2	.260	.190	.58	70	4	65	<1	<1	<3
MAY 17...	.58	.070	.050	.15	20	3	80	<1	<1	<3
JUL 13...	1.1	.280	.210	.64	--	--	--	--	--	--
SEP 01...	.74	.110	.100	.31	20	6	67	26	<1	<3

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)
OCT 25...	4	15	4	43	5	<.1	<10	2	1	<1
JAN 11...	--	--	--	--	--	--	--	--	--	--
MAR 21...	2	76	<1	34	46	<.1	<10	5	1	<1
MAY 17...	3	10	<1	41	3	<.1	<10	3	1	<1
JUL 13...	--	--	--	--	--	--	--	--	--	--
SEP 01...	7	6	190	26	2	<.1	<10	4	1	<1

DATE	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90) (80060)	RADIUM 226, DIS-SOLVED, RADON METHOD (PCI/L) (09511)
OCT 25...	240	<6.0	6	--	--	--	--	--	--	--
JAN 11...	--	--	--	--	--	--	--	--	--	--
MAR 21...	170	<6.0	110	<6.3	11	13	7.3	13	6.9	.08
MAY 17...	240	<6.0	6	--	--	--	--	--	--	--
JUL 13...	--	--	--	--	--	--	--	--	--	--
SEP 01...	190	<6.0	32	--	--	--	--	--	--	--

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 25...	1535	1180	91	290	100
MAR 21...	1355	4700	102	1290	100
MAY 17...	1300	1160	85	266	95
JUL 13...	1345	3330	286	2570	100
SEP 01...	1550	807	233	508	--

05064500 RED RIVER OF THE NORTH AT HALSTAD, MN--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLE LOCATION, CROSS SECTION (FT FM L BANK) (00009)	TEMPERATURE (DEG C) (00010)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	OXYGEN, DISSOLVED (MG/L) (00300)
MAY						
17...	1047	17.0	11.5	655	6.8	8.0
17...	1049	27.0	11.1	655	7.3	8.1
17...	1051	27.0	11.1	657	7.4	8.1
17...	1053	37.0	10.9	658	7.6	8.2
17...	1055	37.0	10.9	658	7.7	8.2
17...	1057	47.0	10.8	659	7.8	8.2
17...	1059	47.0	10.9	662	7.8	8.2
17...	1100	57.0	10.7	663	7.9	8.2
17...	1102	57.0	10.9	663	7.9	8.2
17...	1104	67.0	11.0	662	8.0	8.2
17...	1106	67.0	10.9	663	8.0	8.2
17...	1108	77.0	10.9	664	8.1	8.2
17...	1110	77.0	11.0	664	8.0	8.1
17...	1112	92.0	10.9	664	8.1	8.1
17...	1114	92.0	11.0	664	8.1	8.1
17...	1116	107	10.9	665	8.2	8.2
17...	1118	107	11.1	665	8.2	8.1
17...	1120	122	11.5	660	8.3	8.2
17...	1122	122	11.6	659	8.3	8.2
17...	1124	137	11.2	658	8.3	8.0
17...	1126	137	11.2	659	8.3	8.0
17...	1128	152	11.1	660	8.3	8.1
17...	1130	152	11.2	659	8.3	8.0
17...	1132	167	11.2	660	8.3	8.1
17...	1134	167	11.2	659	8.3	8.1
17...	1136	182	11.2	662	8.3	8.1

05064900 BEAVER CREEK NEAR FINLEY, ND
(Hydrologic bench-mark station)

LOCATION.--Lat 47°35'40", long 97°42'18", in NE¼ 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 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1946 to current year.

GAGE.--Water-stage recorder and concrete broad-crested weir. Datum of gage is 1,170.08 ft National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--19 years, 9.09 ft^3/s, 6,590 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,900 ft^3/s Apr. 19, 1979, gage height, 8.35 ft, backwater from ice; maximum gage height, 9.70 ft Mar. 14, 1966, backwater from ice; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 10	0700	94	3.73	Apr. 6	0015	95	3.78
Mar. 7	--	80	Ice jam	June 21	2400	*259	4.53
Mar. 14	--	155	Ice jam	Aug. 25	1700	256	a*4.68

No flow for several days.

a - Observed

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	3.3	.02	.00	.00	10	35	5.8	.82	10	2.1	28
2	.00	3.1	1.5	.00	.00	15	40	5.3	.82	7.9	1.8	23
3	.00	2.9	1.6	.00	.00	20	45	4.6	.69	8.7	1.6	19
4	.00	2.6	1.5	.00	.00	30	60	4.1	.59	8.7	1.6	16
5	.00	2.1	.69	.02	.00	40	70	4.0	.59	7.9	1.4	14
6	.01	2.0	.51	.05	.00	60	80	3.7	.51	5.8	1.4	14
7	.24	2.1	.31	.08	.00	80	82	3.4	.47	15	1.5	12
8	.11	2.2	.15	.10	.00	70	70	3.1	.43	12	1.1	11
9	14	2.1	.10	.10	.00	60	50	2.9	.35	8.3	.82	10
10	56	2.0	.10	.10	.00	55	25	2.6	.27	5.8	.82	9.4
11	28	2.0	.05	.10	.00	60	20	2.9	.21	6.8	.69	7.9
12	19	1.9	.05	.10	.00	90	15	4.3	.21	8.5	.55	7.4
13	25	1.8	.05	.10	.00	100	12	5.3	.35	7.0	.35	6.6
14	22	1.7	.00	.08	.00	113	11	4.3	.35	6.3	.24	6.0
15	16	1.6	.00	.07	.05	117	10	3.8	.39	6.4	.15	11
16	13	1.5	.00	.05	.10	67	11	3.5	.39	6.4	.09	14
17	11	1.4	.00	.02	.20	58	13	3.0	.35	6.4	.05	14
18	12	1.3	.00	.00	.20	65	17	2.9	.31	6.4	.03	14
19	11	1.2	.00	.00	.20	84	16	2.5	.27	6.4	.03	12
20	9.3	1.5	.00	.00	.20	84	14	2.5	.24	6.4	.03	10
21	7.6	1.2	.00	.00	.30	77	13	2.2	6.6	6.4	.03	8.4
22	6.4	.51	.00	.00	.40	68	11	2.0	61	6.0	.03	7.4
23	5.5	.15	.00	.00	.40	58	9.7	1.8	12	4.3	.03	6.9
24	4.9	.07	.00	.00	.40	49	8.4	1.8	22	3.9	.70	6.0
25	4.4	.05	.00	.00	.60	38	7.6	1.6	27	3.5	166	5.2
26	4.1	.02	.00	.00	1.0	30	6.9	1.6	36	3.2	150	4.6
27	3.9	.02	.00	.00	5.0	24	6.2	1.3	27	3.2	74	4.8
28	3.8	.02	.00	.00	7.0	23	6.6	1.3	20	3.2	42	5.2
29	3.8	.02	.00	.00	---	23	7.1	1.0	15	3.0	42	5.2
30	3.6	.02	.00	.00	---	24	6.4	.96	14	2.5	42	4.8
31	3.5	---	.00	.00	---	30	---	.89	---	2.4	33	---
TOTAL	288.16	42.38	6.63	.97	16.05	1722	778.9	90.95	249.21	198.7	566.14	317.8
MEAN	9.30	1.41	.21	.031	.57	55.5	26.0	2.93	8.31	6.41	18.3	10.6
MAX	56	3.3	1.6	.10	7.0	117	82	5.8	61	15	166	28
MIN	.00	.02	.00	.00	.00	10	6.2	.89	.21	2.4	.03	4.6
AC-FT	572	84	13	1.9	32	3420	1540	180	494	394	1120	630

CAL YR 1982 TOTAL 2197.72 MEAN 6.02 MAX 300 MIN .00 AC-FT 4360
WTR YR 1983 TOTAL 4277.89 MEAN 11.7 MAX 166 MIN .00 AC-FT 8490

05064900 BEAVER CREEK NEAR FINLEY, ND
(Hydrologic bench-mark station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1965 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT											
28...	1355	3.9	1450	8.2	6.5	8.0	6.0	11.0	99	50	56
DEC											
07...	1115	.80	1900	7.8	-1.9	.0	--	12.7	89	420	820
JAN											
10...	1210	.11	2490	7.5	- .4	.0	--	12.0	87	K133	K940
MAR											
14...	1420	102	352	7.6	- .9	.0	53	11.6	83	<1	K600
APR											
20...	1450	15	900	--	17.0	8.0	--	--	--	--	--
MAY											
17...	1535	3.3	1280	8.0	22.5	15.5	1.0	8.3	--	K630	K40
JUL											
14...	1500	6.3	1160	8.2	33.0	29.5	--	6.6	91	2600	1733
AUG											
26...	1455	124	486	--	25.5	26.0	--	--	--	--	--
31...	1600	32	920	--	32.0	--	2.4	7.6	--	340	380

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
OCT											
28...	550	284	130	54	120	32	2.3	12	264	3.2	500
MAR											
14...	140	19	35	12	9.6	11	.4	19	118	5.7	50
MAY											
17...	560	211	130	58	110	29	2.1	11	353	6.8	400
AUG											
31...	340	102	82	34	76	32	1.8	11	243	--	260

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)
OCT											
28...	27	.20	20	1070	1020	1.5	11.3	.10	.13	1.50	.130
MAR											
14...	4.2	.10	14	228	216	.31	62.8	1.3	.27	2.30	.280
MAY											
17...	27	.20	110	977	1060	1.3	8.7	<.10	.10	1.30	.080
AUG											
31...	14	.20	35	712	659	.97	61.5	<.10	.15	1.60	.400

DATE	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)
OCT										
28...	.40	.130	.070	.21	--	--	--	--	--	--
MAR										
14...	.86	.220	.190	.58	90	2	34	<1	<1	<3
MAY										
17...	.25	.060	.040	.12	--	--	--	--	--	--
AUG										
31...	1.2	.390	.350	1.1	--	--	--	--	--	--

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

05064900 BEAVER CREEK NEAR FINLEY, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)
OCT										
28...	--	--	--	--	--	--	--	--	--	--
MAR										
14...	4	110	<1	16	70	<.1	<10	5	1	<1
MAY										
17...	--	--	--	--	--	--	--	--	--	--
AUG										
31...	--	--	--	--	--	--	--	--	--	--

DATE	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90) (80060)	RADIUM 226, DIS-SOLVED, RADON METHOD (PCI/L) (09511)
OCT										
28...	--	--	--	--	--	--	--	--	--	--
MAR										
14...	110	<6.0	<3	7.9	<1.2	20	1.6	20	1.6	.07
MAY										
17...	--	--	--	--	--	--	--	--	--	--
AUG										
31...	--	--	--	--	--	--	--	--	--	--

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT					
28...	1355	3.9	42	.44	94
MAY					
27...	1535	--	17	--	81

DATE	TIME	SAMPLE LOC-ATION, CROSS SECTION (FT FM L BANK) (00009)	DEPTH TO TOP OF SAMPLE INTER-VAL (FT) (72015)	TEMPER-ATURE (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	OXYGEN, DIS-SOLVED (MG/L) (00300)
OCT							
28...	1355	.00	.0	8.0	1450	8.2	11.0
28...	1357	8.00	.0	8.0	1450	8.2	11.0
28...	1359	16.0	.0	8.0	1440	8.2	11.0
MAY							
17...	1537	9.00	--	15.4	1118	7.9	8.4
17...	1539	10.0	--	15.4	1245	7.9	8.4
17...	1541	11.0	--	15.4	1242	7.9	8.4
17...	1543	12.0	--	15.4	1247	7.9	8.4
17...	1545	13.0	--	15.4	1320	7.9	8.4
17...	1547	14.0	--	15.4	1320	8.0	8.4
17...	1549	15.0	--	15.4	1321	8.0	8.3
17...	1551	16.0	--	15.4	1320	8.0	8.3
17...	1553	17.0	--	15.4	1320	8.0	8.3
17...	1555	18.0	--	15.4	1321	8.0	8.3

05065500 GOOSE RIVER NEAR PORTLAND, ND

LOCATION.--Lat 47°32'20", long 97°27'20", in SE¼NE¼ sec.19, T.147 N., R.53 W., Traill County, Hydrologic Unit 09020101, on left bank 75 ft upstream from bridge on State Highway 18, 1.2 mi upstream from unnamed tributary 4 mi downstream from Beaver Creek, and 5 mi northwest of Portland.

DRAINAGE AREA.--517 mi^2, of which about 110 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1939 to September 1975, October 1980 to current year (seasonal records only since 1982).

GAGE.--Water stage recorder. Datum of gage is 967.48 ft National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1956, nonrecording gages at site 2 mi upstream at datum 11.28 ft higher.

AVERAGE DISCHARGE.--38 years (1940-75, 1980-82), 29.8 ft^3/s, 21,590 acre-ft/yr; median of yearly mean discharges, 15 ft^3/s, 10,900 acre-ft/yr.

REMARKS.--Records fair except those for period Mar. 1 to Apr. 5 which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,530 ft^3/s, May 9, 1950, gage height, 20.12 ft, on basis of contracted opening measurement, present site and datum; no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 20-21, 1979, reached a stage of 20.96, present datum, from floodmark; discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 450 ft^3/s Mar. 16, gage height, 9.97 ft. Maximum gage height 12.88 ft, Mar. 8, backwater from ice, from floodmark; no flow for several days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						.50	110	46	13	40	7.5	
2						1.0	105	45	11	36	6.8	
3						2.0	120	44	14	34	7.1	
4						10	165	43	13	31	8.3	
5						80	207	42	11	28	9.8	
6						180	208	41	9.8	28	11	
7						175	221	40	9.2	25	11	
8						175	251	38	9.4	23	12	
9						175	278	36	9.1	33	12	
10						150	239	35	7.7	46	13	
11						160	200	36	7.2	44	12	
12						193	163	38	7.2	38	13	
13						205	124	41	7.2	32	15	
14						215	87	42	7.4	27	17	
15						354	86	43	7.4	23	18	
16						425	82	43	6.3	20	19	
17						366	74	44	4.4	18	20	
18						267	68	42	3.7	16	19	
19						215	60	40	3.1	13	22	
20						196	56	36	3.0	11	21	
21						160	54	34	3.0	9.8	20	
22						130	50	32	61	8.6	19	
23						107	49	29	83	7.8	18	
24						87	47	27	52	6.8	20	
25						80	48	24	47	6.0	34	
26						72	50	22	40	5.4	50	
27						71	48	20	48	5.0	244	
28						77	47	19	52	5.0	182	
29						75	48	17	48	5.2	159	
30						74	46	16	45	6.0	114	
31						87	---	14	---	7.5	87	
TOTAL						4564.50	3391	1069	643.1	639.1	1221.5	
MEAN						147	113	34.5	21.4	20.6	39.4	
MAX						425	278	46	83	46	244	
MIN						.50	46	14	3.0	5.0	6.8	
AC-FT						9050	6730	2120	1280	1270	2420	

RED RIVER OF THE NORTH BASIN

05065500 GOOSE RIVER NEAR PORTLAND, ND

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
APR											
11...	1015	211	428	8.8	9.0	1.0	234	105	51	26	8.0
JUN											
01...	1330	12	1415	--	20.5	16.0	--	--	--	--	--
22...	1545	92	--	--	21.5	20.5	--	--	--	--	--
JUL											
15...	1525	23	1325	--	34.0	27.0	--	--	--	--	--
SEP											
12...	1420	9.8	980	8.4	14.0	14.0	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
APR												
11...	7	.2	11	158	0	130	.4	84	4.8	.10	13	257

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
APR												
11...	277	.35	146	2	50	90	0	13	180	1.9	0	46

RED RIVER OF THE NORTH BASIN

05066500 GOOSE RIVER AT HILLSBORO, ND

LOCATION.--Lat 47°24'34", long 97°03'39", in NW¼ 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 mi^2, of which 110 mi^2 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 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.

AVERAGE DISCHARGE.--50 years (1931-32, 1934-83), 68.0 ft^3/s, 49,270 acre-ft/yr; median of yearly mean discharges, 41 ft^3/s, 29,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,800 ft^3/s Apr. 21, 1979, gage height, 16.76 ft; no flow at times.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 14	0600	212	2.45	Apr. 7	1515	475	2.88
Mar. 9	--	580	a*6.63	June 27	0245	885	3.45
Mar. 17	--	*1140	ice jam	Aug. 29	1015	224	2.40

Minimum daily, 0.34 ft^3/s Oct. 8.

a - Ice Jam

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	30	18	10	8.4	8.5	372	60	37	189	15	128
2	1.1	29	26	9.4	8.4	8.5	425	60	35	167	15	98
3	.35	26	33	9.4	8.2	9.0	419	55	30	146	15	92
4	1.5	23	45	9.4	8.2	25	390	55	22	128	15	95
5	.36	24	47	9.4	8.2	210	407	52	20	114	12	83
6	11	21	42	9.4	8.0	425	431	50	20	101	12	69
7	4.1	23	37	9.1	8.0	475	450	47	18	92	12	56
8	.34	22	35	9.1	8.0	444	456	45	15	86	9.4	48
9	38	22	33	9.1	7.8	419	444	42	14	77	8.0	39
10	84	23	30	9.1	7.8	413	444	42	12	69	11	32
11	125	24	27	9.1	7.8	356	437	45	11	63	8.0	28
12	154	18	23	9.1	7.8	321	361	52	50	72	8.0	24
13	178	18	20	9.1	7.8	514	287	55	45	74	8.0	22
14	207	17	18	9.1	7.8	752	208	58	26	69	6.8	21
15	180	17	16	9.1	7.8	920	160	66	28	58	5.6	21
16	146	18	15	9.0	7.8	1050	124	80	28	50	5.6	19
17	116	18	15	9.0	7.8	1130	118	80	22	45	6.8	20
18	91	18	15	9.0	7.8	1020	108	80	22	40	8.0	22
19	73	19	15	8.8	7.8	775	95	80	20	37	6.8	29
20	59	22	15	8.8	7.8	555	89	77	18	35	4.7	42
21	51	22	15	8.8	7.8	419	83	72	18	35	5.6	45
22	51	21	15	8.8	8.0	351	77	66	40	28	6.8	46
23	56	20	15	8.8	8.0	306	77	63	40	28	9.4	43
24	50	20	15	8.8	8.0	292	74	60	267	22	14	40
25	46	20	15	8.6	8.0	287	74	58	501	20	17	36
26	43	19	15	8.6	8.2	267	69	52	700	17	15	30
27	37	17	14	8.4	8.5	250	66	50	835	17	17	28
28	37	17	14	8.4	8.5	233	63	47	487	17	55	24
29	37	17	14	8.4	---	228	60	45	282	15	212	25
30	35	17	13	8.4	---	228	60	40	224	17	193	25
31	34	---	12	8.4	---	287	---	37	---	17	163	---
TOTAL	1948.55	622	682	277.9	224.0	12978.0	6928	1771	3887	1945	900.5	1330
MEAN	62.9	20.7	22.0	8.96	8.00	419	231	57.1	130	62.7	29.0	44.3
MAX	207	30	47	10	8.5	1130	456	80	835	189	212	128
MIN	.34	17	12	8.4	7.8	8.5	60	37	11	15	4.7	19
AC-FT	3860	1230	1350	551	444	25740	13740	3510	7710	3860	1790	2640

CAL YR 1982 TOTAL 33740.12 MEAN 92.4 MAX 2800 MIN .18 AC-FT 66920
WTR YR 1983 TOTAL 33493.95 MEAN 91.8 MAX 1130 MIN .34 AC-FT 66440

05066500 GOOSE RIVER AT HILLSBORO, ND

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 25...	1245	44	1160	--	16.0	6.0	--	--	--	--	--
DEC 08...	1055	35	1710	--	-1.9	.0	--	--	--	--	--
JAN 07...	1535	9.1	--	--	- .9	.0	--	--	--	--	--
MAR 28...	1300	218	590	7.5	5.0	.5	233	25	57	22	24
JUN 01...	1040	37	1405	--	21.0	16.0	--	--	--	--	--
JUL 22...	1135	27	1270	--	27.0	26.0	--	--	--	--	--
SEP 22...	1300	46	910	--	5.0	10.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 28...	17	.7	16	254	0	210	13	110	12	.10	17	392

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 28...	386	.53	231	3	50	90	2	19	90	.1	0	140

05082500 RED RIVER OF THE NORTH AT GRAND FORKS, ND

LOCATION.--Lat 47°56'34", long 97°03'10", in SW¼NE¼ sec.33, T.152 N., R.50 W., Grand Forks County, Hydrologic Unit 09020301, on left bank on second floor of old sewage plant in Grand Forks, 2.3 mi downstream from Red Lake River, and at mile 295.7.

DRAINAGE AREA.--30,100 mi^2, approximately, including 3,800 mi^2 in closed basins.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1882 to current year. Monthly discharge only prior to May 1901, 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.--Water-stage recorder. Datum of gage is 778.35 ft National Geodetic Vertical Datum of 1929. Nov. 3, 1933, to Apr. 13, 1965, water-stage recorder 0.3 mi upstream at present datum. See WSP 1728 or 1913 for history of changes prior to Nov. 3, 1933.

REMARKS.--Records good.

AVERAGE DISCHARGE.--101 years, 2,558 ft^3/s, 1,853,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 85,000 ft^3/s Apr. 10, 1897, gage height, 50.2 ft, site and datum then in use, from rating curve extended above 54,000 ft^3/s; minimum, 1.8 ft^3/s Sept. 2, 1977, caused by unusual regulation during repair of dam at Grand Forks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,300 ft^3/s Apr. 6, gage height, 29.17 ft; minimum daily, 1,270 ft^3/s Feb. 24-25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1300	3320	1980	1470	1570	1370	9150	3550	2310	6960	2860	3650
2	1370	3240	2080	1470	1590	1380	10100	3370	2310	6770	2710	3150
3	1420	3180	2140	1520	1600	1440	11200	3250	2280	6520	2530	2750
4	1440	3100	2260	1530	1600	1560	12500	3140	2170	7140	2440	2430
5	1430	3010	2530	1520	1600	1980	13600	2990	2080	9900	2400	2260
6	1590	2920	2760	1560	1560	3770	14200	2900	2150	11300	2290	2130
7	1770	2850	2840	1590	1500	8400	13600	2890	2110	11800	2180	2080
8	1720	2760	2700	1650	1510	10700	12400	2800	2060	11500	2140	2020
9	1940	2760	2430	1660	1490	13200	10300	2660	2040	10500	1940	1930
10	2570	2800	2100	1690	1460	13800	8620	2610	1940	9150	1860	1890
11	3310	2800	1800	1700	1460	12100	7320	2670	1840	8130	1760	1920
12	4980	2770	1680	1720	1500	11900	6500	2820	1750	7300	1650	1900
13	6250	2200	1740	1710	1510	9560	5990	2860	2200	6520	1570	1930
14	6640	1800	1780	1700	1530	8770	5600	3000	5700	5840	1530	1920
15	6570	1700	1800	1650	1550	8590	5300	3340	8600	5310	1490	1970
16	6220	1730	1810	1610	1580	8700	5130	3640	8700	4850	1430	2060
17	5770	1880	1760	1660	1600	8940	5060	3700	6640	4360	1390	2410
18	5350	2040	1720	1660	1600	9120	5000	3660	5660	3940	1370	3230
19	5000	2270	1740	1630	1550	9120	4940	3440	4980	3610	1420	3710
20	4700	2660	1740	1620	1450	8900	4830	3300	4270	3540	1390	4060
21	4500	2450	1720	1600	1350	8560	4740	3180	3730	3710	1420	3970
22	4410	2110	1690	1590	1290	8180	4600	3060	3730	3970	1420	3530
23	4330	2010	1670	1590	1280	7880	4440	3000	5440	4100	2600	3050
24	4190	1760	1670	1610	1270	7680	4260	2930	9250	4120	3720	2650
25	3980	1560	1670	1610	1270	7520	4000	2860	11600	4110	3960	2430
26	3840	1540	1620	1580	1280	7500	3760	2790	12000	4100	4270	2190
27	3690	1680	1560	1580	1340	7410	3660	2650	10200	4030	4540	2050
28	3610	1780	1560	1540	1360	7340	3590	2550	8620	3820	5470	1860
29	3550	1820	1550	1500	---	7420	3500	2430	7550	3580	5820	1770
30	3460	1900	1540	1530	---	7650	3520	2420	7180	3310	5160	1680
31	3390	---	1540	1550	---	8120	---	2340	---	3070	4300	---
TOTAL	114290	70400	59180	49600	41250	238560	211410	92800	151090	186860	81030	74580
MEAN	3687	2347	1909	1600	1473	7695	7047	2994	5036	6028	2614	2486
MAX	6640	3320	2840	1720	1600	13800	14200	3700	12000	11800	5820	4060
MIN	1300	1540	1540	1470	1270	1370	3500	2340	1750	3070	1370	1680
AC-FT	226700	139600	117400	98380	81820	473200	419300	184100	299700	370600	160700	147900

CAL YR 1982 TOTAL 1388110 MEAN 3803 MAX 23900 MIN 990 AC-FT 2753000
WTR YR 1983 TOTAL 1371050 MEAN 3756 MAX 14200 MIN 1270 AC-FT 2719000

05082500 RED RIVER OF THE NORTH AT GRAND FORKS, ND

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949, 1956 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
25...	1100	3910	595	--	7.0	6.5	--	--	--	--	--
NOV											
19...	1515	2340	540	--	8.0	.5	--	--	--	--	--
DEC											
27...	1130	1560	615	--	- .9	.0	--	--	--	--	--
JAN											
27...	1200	1600	554	--	- .9	.0	--	--	--	--	--
FEB											
25...	1315	7550	521	--	--	--	--	--	--	--	--
MAR											
17...	1510	8940	521	--	--	--	--	--	--	--	--
25...	1300	7540	528	7.8	3.5	.0	199	19	45	21	24
25...	1301	7540	528	7.8	3.5	.0	212	36	50	21	25
APR											
05...	0945	13400	392	--	2.0	.5	--	--	--	--	--
08...	1155	12400	455	--	8.0	1.0	--	--	--	--	--
15...	1400	5280	600	--	6.5	4.0	--	--	--	--	--
25...	1215	3930	492	--	16.0	11.5	--	--	--	--	--
MAY											
23...	1100	2830	560	--	22.0	15.0	--	--	--	--	--
JUN											
16...	1105	8920	348	--	17.0	18.0	--	--	--	--	--
27...	1040	10400	442	--	25.0	25.5	--	--	--	--	--
JUL											
06...	1055	11300	420	--	21.0	20.5	--	--	--	--	--
14...	1100	5880	510	--	27.5	26.0	--	--	--	--	--
25...	1105	4160	540	--	27.0	26.0	--	--	--	--	--
AUG											
25...	1210	4190	--	--	--	--	--	--	--	--	--
SEP											
27...	1100	2120	506	--	20.0	12.0	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
MAR										
25...	20	.8	10	220	0	180	5.5	70	9.3	.10
25...	19	.8	11	--	--	176	5.4	74	10	.20

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BORON, DIS-SOLVED (UG/L AS B) (01020)
MAR										
25...	14	319	307	.43	6490	--	--	3	--	0
25...	15	294	313	.40	5990	1.3	.140	3	52	60

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
MAR									
25...	--	50	1	20	50	.2	0	160	--
25...	2	47	<1	28	43	<.1	<1	160	11

05083000 TURTLE RIVER AT MANVEL, N. DAK.

WATER-QUALITY RECORDS

LOCATION.--Lat 48°04'43", long 97°11'03", in SE¼ sec.10, T.153 N., R.51 W., Grand Forks County, Hydrologic Unit 09020307, on left bank 10 ft downstream from bridge on State Highway No. 33, 0.3 mi west of Manvel, and 10 mi upstream from mouth.

DRAINAGE AREA.--613 mi^2, of which 57 mi^2 is probably noncontributing.

PERIOD OF RECORD.--Water years 1972-73, 1980 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
MAY 04...	1615	39	2410	8.3	12.0	11.5	569	298
AUG 22...	1240	12	4200	--	27.0	20.5	--	--

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
MAY 04...	130	59	280	51	5.3	17	270	2.6	340

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)
MAY 04...	430	.50	11	1470	1432	2.0	155	0	270

DATE	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAY 04...	40	0	130	310	.2	4	0	1600

05083600 MIDDLE BRANCH FOREST RIVER NEAR WHITMAN, ND

LOCATION.--Lat 48°14'50", long 98°07'00", in SE¼NW¼ sec.16, T.155 N., R.58 W., Walsh County, Hydrologic Unit 09020308, 150 ft downstream from bridge on State Highway 35, and 6 mi north of Whitman.

DRAINAGE AREA.--47.7 mi^2, of which 8.8 mi^2 is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1960 to current year (seasonal records only since 1982).

GAGE.--Water-stage recorder. Altitude of gage is 1,510 ft from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--23 years (water years 1960-82), 3.14 ft^3/s, 2,270 acre-ft/yr; median of yearly mean discharges, 2.2 ft^3/s, 1,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 984 ft^3/s May 19, 1974, gage height, 7.11 ft; no flow for many months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 67 ft^3/s April 8, gage height, 5.03; no peak discharges above base of 70 ft^3/s; no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.17					.00	9.4	3.1	.23	1.7	.00	.00
2	.22					.50	13	2.8	.20	2.2	.00	.00
3	.15					1.0	15	2.6	.16	1.5	.00	.00
4	.14					2.0	15	2.4	.13	.82	.00	.00
5	.12					3.0	18	2.2	.11	.60	.00	.00
6	.50					3.0	23	2.0	.09	.47	.00	.00
7	1.0					2.0	30	1.8	.07	.35	.00	.00
8	1.3					1.5	40	1.6	.05	.24	.00	.00
9	1.6					1.0	49	1.2	.04	.17	.00	.00
10	2.7					1.0	38	1.2	.03	.10	.00	.00
11	5.7					2.0	33	1.1	.01	.04	.00	.00
12	6.3					10	25	1.3	.03	.01	.00	.00
13	7.0					22	18	1.3	.29	.00	.00	.00
14	11					20	19	1.1	.25	.00	.00	.00
15	8.7					19	16	1.1	.15	.00	.00	.00
16	6.9					17	14	.97	.12	.00	.00	.00
17	5.5					15	12	.91	.08	.00	.00	.00
18	4.8					15	10	.91	.05	.00	.00	.00
19	4.8					13	8.3	.90	.10	.00	.00	.00
20	5.1					11	7.0	.90	.15	.00	.00	.00
21	4.8					9.8	6.2	.81	.13	.00	.00	.00
22	4.8					8.3	5.8	.80	.37	.00	.00	.00
23	4.5					7.1	5.0	.75	4.1	.00	.00	.00
24	3.9					6.9	5.9	.97	7.6	.00	.00	.00
25	3.2					6.1	6.2	.81	4.9	.00	.00	.00
26	2.6					3.8	5.6	.72	2.9	.00	.00	.00
27	2.3					2.9	5.1	.62	1.8	.00	.00	.00
28	2.2					2.0	5.1	.54	1.8	.00	.00	.00
29	1.9					2.3	4.3	.43	2.6	.00	.00	.00
30	1.7					4.1	3.5	.34	2.3	.00	.00	.00
31	1.5					8.4	---	.29	---	.00	.00	---
TOTAL	107.10					220.70	465.4	38.47	30.84	8.20	.00	.00
MEAN	3.45					7.12	15.5	1.24	1.03	.26	.000	.000
MAX	11					22	49	3.1	7.6	2.2	.00	.00
MIN	.12					.00	3.5	.29	.01	.00	.00	.00
AC-FT	212					438	923	76	61	16	.00	.00

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
04...	1115	.14	2690	--	8.0	10.0	--	--	--	--	--
MAR											
04...	1635	2.2	725	--	.5	.0	--	--	--	--	--
15...	1435	20	372	7.3	.0	.0	130	28	32	13	17
28...	1615	1.9	762	--	2.5	.0	--	--	--	--	--
MAY											
12...	1640	1.7	1740	--	12.0	6.0	--	--	--	--	--
JUL											
01...	1140	1.6	1540	8.2	26.0	19.0	530	273	110	63	170

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
15...	20	.7	15	129	0	110	10	72	5.0	.10	14	266
JUL												
01...	41	3.3	7.3	320	0	260	3.2	550	40	.20	13	1130

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
15...	236	.36	14.4	2	60	60	0	9	60	.1	0	120
JUL												
01...	1110	1.5	5.0	4	100	40	2	50	80	.3	0	570

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 mi^2, of which about 120 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 1,035 ft, from topographic map. Prior to July 21, 1951, non-recording gage at site 50 ft downstream at same datum.

REMARKS.--Records good. 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.

AVERAGE DISCHARGE.--43 years, 38.7 ft^3/s, 28,000 acre-ft/yr; median of yearly mean discharges, 36 ft^3/s, 26,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,400 ft^3/s Apr. 18, 1950, gage height, 14.48 ft, from flood-mark, from rating curve extended above 5,600 ft^3/s on basis of contracted opening and slope-area measurements of peak flow; no flow Apr. 1-13, Sept. 3, 1940.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 7	0415	*995	5.23	Apr. 1	--	280	unknown
Mar. 13	--	582	Ice jam				

Minimum daily, 3.1 ft^3/s Aug. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	38	13	11	8.0	29	274	40	20	21	20	12
2	14	38	18	11	8.0	28	266	37	20	21	16	9.9
3	14	37	69	11	8.0	27	257	36	19	21	13	7.8
4	11	35	63	11	8.0	27	249	33	18	47	12	7.7
5	14	35	38	11	8.0	36	241	31	17	70	10	7.1
6	50	35	29	11	7.5	529	233	30	16	55	9.6	7.7
7	56	35	25	11	6.9	775	224	29	16	40	9.1	19
8	56	32	19	11	6.2	299	216	28	16	32	8.8	56
9	63	31	18	12	5.6	261	218	28	16	27	9.3	58
10	82	31	17	11	5.6	269	209	28	15	23	10	55
11	123	31	16	11	5.6	212	196	30	15	21	9.8	55
12	122	24	15	11	5.6	197	180	32	16	19	9.2	34
13	108	23	16	11	5.6	440	146	40	19	17	9.2	10
14	101	20	16	11	15	352	131	41	19	15	9.2	10
15	93	20	16	9.7	85	201	126	40	18	14	8.4	16
16	90	19	16	9.7	63	181	111	38	16	13	8.4	17
17	87	19	16	9.7	34	142	102	36	15	13	7.7	19
18	73	19	16	9.7	22	117	95	35	14	12	3.5	16
19	57	19	16	9.7	22	129	91	33	16	13	3.1	14
20	59	19	14	9.7	22	92	91	32	19	13	3.8	13
21	59	18	14	9.7	22	85	86	31	20	12	16	13
22	55	19	14	9.7	20	77	80	30	24	11	15	12
23	52	18	13	9.7	19	73	71	29	34	11	12	11
24	49	16	13	9.7	18	72	66	28	41	11	11	10
25	46	14	12	9.7	19	72	65	28	34	11	11	10
26	44	13	11	9.2	22	66	65	26	29	11	13	10
27	42	13	11	8.6	23	64	62	25	26	11	29	11
28	42	13	11	8.6	24	66	56	24	22	11	19	11
29	41	13	10	8.6	---	66	50	22	20	10	21	11
30	40	14	9.7	8.0	---	62	44	22	22	14	17	12
31	40	---	10	8.0	---	168	---	21	---	19	13	---
TOTAL	1794	711	594.7	312.7	518.6	5214	4301	963	612	639	367.1	555.2
MEAN	57.9	23.7	19.2	10.1	18.5	168	143	31.1	20.4	20.6	11.8	18.5
MAX	123	38	69	12	85	775	274	41	41	70	29	58
MIN	11	13	9.7	8.0	5.6	27	44	21	14	10	3.1	7.1
AC-FT	3560	1410	1180	620	1030	10340	8530	1910	1210	1270	728	1100

CAL YR 1982 TOTAL 23804.1 MEAN 65.2 MAX 1660 MIN 1.5 AC-FT 47220
WTR YR 1983 TOTAL 16582.3 MEAN 45.4 MAX 775 MIN 3.1 AC-FT 32890

05084000 FOREST RIVER NEAR FORDVILLE, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 04...	1535	11	120	--	11.0	13.0	--	--	--	--	--
NOV 26...	1235	13	960	--	- .9	.0	--	--	--	--	--
JAN 07...	1315	11	845	--	- .9	.5	--	--	--	--	--
FEB 17...	1210	31	440	--	- .9	.0	--	--	--	--	--
MAR 24...	1130	74	560	7.9	2.5	2.0	219	39	53	21	25
MAY 13...	1535	42	740	--	7.5	8.0	--	--	--	--	--
JUL 01...	1510	21	830	--	21.5	21.5	--	--	--	--	--
AUG 19...	1350	3.3	684	--	22.5	22.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 24...	19	.8	13	220	0	180	4.4	100	8.1	.10	17	368

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 24...	349	.50	73.5	2	0	70	0	20	330	.1	0	180

05085000 FOREST RIVER AT MINTO, ND

LOCATION.--Lat 48°16'10", long 97°22'10", in SE¼ 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 mi^2, of which about 120 mi^2 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 National Geodetic Vertical Datum of 1929. Prior to July 15, 1954, nonrecording gage at site 400 ft upstream at same datum.

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

AVERAGE DISCHARGE.--39 years, 50.8 ft^3/s, 36,800 acre-ft/yr; median of yearly mean discharges, 49 ft^3/s, 35,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,600 ft^3/s Apr. 18, 1950, gage height, 11.80 ft from flood-marks, from rating curve extended above 7,200 ft^3/s on basis of contracted opening measurement of peak flow; no flow at times each year 1945-47, 1953-55, 1959-64.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 8	--	795	[a]5.14	Apr. 10	1630	382	2.57
Mar. 15	1945	*820	3.52				

Minimum daily, 4.3 ft^3/s Sept. 7.

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	43	11	12	9.6	26	244	61	40	22	7.8	13
2	14	41	17	12	9.5	26	271	54	41	23	14	11
3	14	39	19	12	9.3	26	353	62	41	23	13	7.9
4	16	36	17	11	9.1	33	303	58	41	23	13	7.0
5	16	23	18	9.1	9.0	48	302	58	40	21	10	6.2
6	19	30	19	9.1	8.8	96	316	54	39	47	7.6	4.6
7	32	35	18	8.4	8.6	394	331	52	40	59	6.0	4.3
8	53	36	18	8.3	8.4	645	342	49	40	49	5.0	4.5
9	56	27	17	9.6	8.2	300	357	46	39	38	4.6	4.7
10	67	36	16	9.4	7.9	200	339	46	35	31	4.8	39
11	80	31	16	9.4	7.3	170	309	48	33	25	4.9	53
12	103	17	15	9.4	6.9	250	263	52	33	23	5.0	56
13	131	17	14	9.4	8.3	350	230	60	35	20	4.9	56
14	118	17	12	9.4	8.7	510	186	65	30	17	5.1	43
15	107	20	12	9.4	8.6	700	174	70	29	14	5.0	25
16	101	22	11	9.4	8.5	535	167	70	26	13	4.9	22
17	97	22	11	9.4	8.4	340	151	63	24	12	4.7	22
18	89	21	10	9.4	8.3	297	136	61	21	10	4.8	19
19	86	22	10	9.4	10	282	128	59	19	11	5.6	17
20	68	24	10	9.4	14	275	121	55	19	13	5.9	15
21	58	18	10	9.4	15	240	115	53	20	12	5.8	13
22	57	16	10	9.4	13	206	108	51	25	9.4	5.0	12
23	55	19	10	9.4	17	172	102	47	28	8.3	5.6	8.3
24	53	18	11	9.4	33	165	96	47	30	7.8	7.3	8.3
25	50	17	11	9.4	28	151	88	46	43	7.6	8.4	8.3
26	50	16	11	9.4	22	151	83	44	50	6.9	12	7.4
27	46	14	12	9.4	22	140	79	43	34	6.7	10	6.6
28	48	12	12	9.4	22	143	81	42	30	6.3	9.7	5.9
29	48	10	12	10	---	148	75	38	28	6.0	15	5.9
30	43	10	12	9.8	---	145	68	36	24	7.2	16	5.9
31	43	---	12	9.7	---	180	---	37	---	6.8	14	---
TOTAL	1832	709	414	299.6	349.4	7344	5918	1627	977	579.0	245.4	511.8
MEAN	59.1	23.6	13.4	9.66	12.5	237	197	52.5	32.6	18.7	7.92	17.1
MAX	131	43	19	12	33	700	357	70	50	59	16	56
MIN	14	10	10	8.3	6.9	26	68	36	19	6.0	4.6	4.3
AC-FT	3630	1410	821	594	693	14570	11740	3230	1940	1150	487	1020

CAL YR 1982	TOTAL	28398.62	MEAN 77.8	MAX 1140	MIN .05	AC-FT	56330	
WTR YR 1983	TOTAL	20806.20	MEAN 57.0	MAX 700	MIN 4.3	AC-FT	41270	

05085000 FOREST RIVER AT MINTO, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 19...	1440	86	910	--	1.5	6.5	--	--	--	--	--
NOV 23...	1155	19	980	--	- .9	.0	--	--	--	--	--
JAN 03...	1350	14	960	--	- .9	.0	--	--	--	--	--
FEB 18...	1410	7.9	930	--	.0	.0	--	--	--	--	--
MAY 04...	1430	56	780	8.5	11.0	11.0	334	80	81	32	39
JUL 08...	1400	48	887	--	31.0	21.5	--	--	--	--	--
AUG 22...	1440	5.0	902	--	34.0	22.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAY 04...	20	1.0	10	310	0	250	1.6	150	17	.20	12	500

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAY 04...	494	.68	75.6	0	60	20	0	23	130	.2	0	340

05088500 HOMME RESERVOIR NEAR PARK RIVER, ND

LOCATION.--Lat 48°24'20", long 97°47'10", in SE¼NW¼ sec.19, T.157 N., R.55 W., Walsh County, Hydrologic Unit 09020310, at Homme Dam on South Branch Park River, and 2 mi west of town of Park River.

DRAINAGE AREA.--226 mi^2.

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by an earth-fill dam, 865 ft long; storage began in September 1949, dam completed in October 1950. Usable capacity between invert of outlet, elevation, 1,048.0 ft, and crest of spillway, elevation, 1,080.0 ft, is 3,550 acre-ft. Dead storage is 100 acre-ft. Low flows are controlled by two sluice gates 3 x 5 ft. The spillway, which is 150 ft long, is uncontrolled. The records herein represent total contents. The reservoir is operated for flood control, water supply, and pollution abatement during low-flow periods.

COOPERATION.--Records furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 4,710 acre-ft Apr. 20, 1979, elevation, 1,084.58 ft; minimum since first reaching spillway level, 184 acre-ft Feb. 8, 1952, elevation, 1,051.22 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 3,929 acre-ft Mar. 7, elevation, 1,081.33 ft; minimum, 2,691 acre-ft Feb. 28, elevation, 1,074.90 ft.

MONTHEND ELEVATION AND CONTENTS AT 0800, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,079.15	3,498	--
Oct. 31	1,080.19	3,696	+198
Nov. 30	1,080.08	3,675	-21
Dec. 31	1,078.70	3,413	-262
CAL YR 1982	--	--	+124
Jan. 31	1,076.43	2,982	-431
Feb. 28	1,074.90	2,691	-291
Mar. 31	1,079.92	3,645	+954
Apr. 30	1,080.25	3,707	+62
May 31	1,080.14	3,687	-20
June 30	1,080.23	3,704	+17
July 31	1,079.95	3,650	-54
Aug. 31	1,079.43	3,552	-98
Sept. 30	1,079.25	3,518	-34
WTR YR 1983	--	--	+20

05089000 SOUTH BRANCH PARK RIVER BELOW HOMME DAM, ND

LOCATION.--Lat 48°24'07", long 97°46'55", in SE¼ sec.19, T.157 N., R.55 W., Walsh County, Hydrologic Unit 09020310, on right bank 0.5 mi downstream from Homme Dam, and 2 mi west of town of Park River.

DRAINAGE AREA.--226 mi^2.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,000.00 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Flow regulated by Homme Lake (station 05088500).

AVERAGE DISCHARGE.--34 years, 27.2 ft^3/s, 19,710 acre-ft/yr; median of yearly mean discharges, 23 ft^3/s, 16,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 13,000 ft^3/s Apr. 24, 1950, gage height, 37.52 ft, from rating curve extended above 5,500 ft^3/s, result of failure of emergency embankment at site of Homme Dam; no flow Oct. 1 to Dec. 3, 1949, Oct. 1-4, 1969, Sept. 21, 1970, July 1, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,200 ft^3/s Mar. 6, gage height, 27.10 ft; minimum daily, 0.18 ft^3/s Sept. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	13	5.5	12	12	9.3	245	28	13	12	1.5	1.7
2	1.7	14	11	12	12	5.8	161	26	13	13	1.5	1.7
3	1.5	15	29	12	12	5.2	141	24	18	15	1.5	1.7
4	1.5	8.9	23	12	12	5.0	156	19	11	14	1.5	1.9
5	1.5	8.1	22	11	12	4.8	189	21	7.5	10	1.5	1.9
6	1.7	9.0	16	11	12	372	248	23	14	11	1.5	1.9
7	1.6	14	12	11	12	564	278	22	2.6	12	1.5	1.4
8	1.5	7.4	11	11	12	128	310	21	12	12	1.5	.88
9	1.6	8.3	11	12	12	44	265	20	1.2	9.8	1.8	.57
10	6.1	9.5	11	11	12	29	228	21	3.6	10	1.8	2.1
11	72	13	11	11	12	42	195	21	6.0	15	1.9	.70
12	86	16	11	11	12	68	112	23	16	1.2	1.8	.61
13	78	6.6	11	11	12	230	114	27	20	1.1	1.7	.64
14	72	5.6	11	11	12	288	71	24	16	.96	1.6	.88
15	56	6.0	10	11	12	178	67	24	16	.96	1.5	1.7
16	41	6.7	10	11	12	34	65	23	1.5	1.0	1.7	1.0
17	38	7.0	10	11	12	33	58	23	5.4	1.0	1.8	.73
18	36	5.4	11	11	12	33	54	20	6.4	1.0	1.9	.88
19	35	5.9	11	11	12	33	47	20	8.6	1.1	1.5	.92
20	34	11	11	11	12	32	46	19	18	1.1	1.5	.64
21	31	9.7	11	11	12	22	46	21	105	2.4	2.2	.48
22	28	6.2	11	12	12	15	43	18	141	4.8	1.5	.64
23	25	6.4	11	12	12	15	41	17	126	1.4	1.4	.57
24	23	5.9	11	12	12	15	40	17	79	1.2	1.4	.51
25	19	5.6	11	12	12	15	41	16	32	1.3	2.4	.36
26	18	5.2	11	12	12	14	54	16	25	1.3	2.6	.18
27	17	4.8	11	12	12	14	38	16	20	1.4	1.5	.24
28	17	3.8	11	12	12	14	37	20	16	1.4	1.4	.30
29	22	3.8	11	12	---	14	33	12	15	1.5	3.3	.27
30	15	3.1	11	12	---	17	30	12	17	1.6	1.4	.48
31	13	---	11	12	---	64	---	12	---	1.5	1.5	---
TOTAL	796.6	244.9	379.5	356	336	2357.1	3453	626	785.8	163.02	53.1	28.48
MEAN	25.7	8.16	12.2	11.5	12.0	76.0	115	20.2	26.2	5.26	1.71	.95
MAX	86	16	29	12	12	564	310	28	141	15	3.3	2.1
MIN	1.5	3.1	5.5	11	12	4.8	30	12	1.2	.96	1.4	.18
AC-FT	1580	486	753	706	666	4680	6850	1240	1560	323	105	56

CAL YR 1982 TOTAL 12749.62 MEAN 34.9 MAX 842 MIN .39 AC-FT 25290
WTR YR 1983 TOTAL 9579.50 MEAN 26.2 MAX 564 MIN .18 AC-FT 19000

05089000 SOUTH BRANCH PARK RIVER BELOW HOMME DAM, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 07...	1355	1.6	685	7.8	10.0	8.5	250	52	61	23	51
DEC 06...	1220	18	1100	—	- .9	.5	—	—	—	—	—
JAN 06...	1450	12	990	—	- .9	1.0	—	—	—	—	—
FEB 17...	1430	12	1030	—	- .9	.5	—	—	—	—	—
MAR 15...	1630	36	957	7.9	.5	2.5	360	114	87	34	70
MAY 13...	1335	27	552	—	8.0	10.0	—	—	—	—	—
JUL 06...	1420	11	719	—	31.0	22.5	—	—	—	—	—
AUG 19...	1110	1.4	760	—	21.0	20.5	—	—	—	—	—

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
OCT 07...	30	1.5	8.9	238	0	200	6.0	160	15	.30	22	503
MAR 15...	29	1.7	11	298	0	240	6.0	250	20	.20	23	673

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
OCT 07...	460	.68	2.2	10	70	10	0	34	570	.3	0	270
MAR 15...	644	.92	65.4	2	90	20	1	35	520	.1	1	260

05089100 MIDDLE BRANCH PARK RIVER NEAR UNION, ND

LOCATION.--Lat 48°32'32", long 98°01'10", on north line of sec.5, T.158 N., R.57 W., Walsh County, Hydrologic Unit 09020310, on left bank 20 ft downstream from bridge on county highway between Walsh and Cavalier Counties, and 3.5 mi southwest of Union.

DRAINAGE AREA.--15.3 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1965 to current year (seasonal records only since 1983).

GAGE.--Water-stage recorder. Altitude of gage is 1,495 ft, from topographic map.

REMARKS.--Records good except those for August and September, which are poor.

AVERAGE DISCHARGE.--17 years (1965 to 1982), 2.18 ft^3/s, 1,580 acre-ft/yr.
EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 960 ft^3/s Apr. 20, 1979, gage height, 6.16 ft, backwater from ice; maximum gage height, 7.51 ft May 4, 1966, from floodmark, backwater from snowdrift; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 91 ft^3/s Apr. 5, gage height, 3.83 ft. Maximum gage height, 4.14 Mar. 12, backwater from ice; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						.00	19	.37	.26	.18	.06	.06
2						.00	18	.29	.23	.15	.02	.06
3						.00	14	.23	.17	.30	.01	.04
4						.50	30	.15	.20	.70	.02	.17
5						1.0	36	.12	.20	.31	.02	.63
6						1.2	37	.12	.20	.21	.00	.59
7						1.4	35	.12	.13	.13	.00	.34
8						1.6	30	.09	.09	.10	.00	.40
9						1.8	21	.07	.09	.11	.00	.43
10						2.0	16	.07	.03	.13	.00	.33
11						3.0	12	.17	.06	.11	.00	.19
12						4.0	7.9	.42	.23	.08	.00	.15
13						6.7	7.4	1.4	.63	.02	.00	.11
14						5.3	7.6	.90	.69	.02	.00	.10
15						4.3	4.8	.77	.32	.02	.00	1.0
16						3.5	3.4	.63	.08	.02	.00	.63
17						3.0	2.5	.69	.04	.02	.00	.13
18						2.5	2.2	.90	.08	.01	.00	.08
19						1.5	2.2	.52	.08	.04	.00	.06
20						1.0	3.2	.26	.42	.08	.00	.05
21						.63	3.9	.29	.69	.04	.00	.04
22						.47	2.2	.37	5.3	.02	.00	.04
23						.32	1.8	.37	5.6	.02	.00	.04
24						2.2	1.4	.47	2.1	.02	.00	.10
25						1.5	1.2	.26	1.1	.02	.00	.12
26						2.4	1.5	.23	.50	.02	.08	.12
27						2.2	2.2	.23	.22	.03	.08	.12
28						2.6	1.4	.17	.14	.08	.21	.12
29						1.8	.97	.13	.14	.07	.10	.12
30						8.7	.47	.17	.37	.06	.11	.12
31						35	---	.23	---	.05	.07	---
TOTAL						102.12	326.24	11.21	20.39	3.17	.78	6.49
MEAN						3.29	10.9	.36	.68	.10	.025	.22
MAX						35	37	1.4	5.6	.70	.21	1.0
MIN						.00	.47	.07	.03	.01	.00	.04
AC-FT						203	647	22	40	6.3	1.5	13

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 07...	1220	.83	582	--	7.0	6.5	--	--	--	--	--
MAR 24...	1335	.39	410	7.6	2.5	.0	120	0	28	11	31
30...	1635	11	212	--	3.5	.5	--	--	--	--	--
APR 07...	1410	49	222	--	6.0	1.5	--	--	--	--	--
MAY 13...	1135	1.4	638	--	6.5	5.5	--	--	--	--	--
JUL 01...	0855	.22	734	7.8	18.0	15.5	200	0	50	19	83

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 24...	33	1.3	18	180	0	150	7.2	36	7.5	.10	15	256
JUL 01...	46	2.6	7.6	331	0	270	8.3	74	31	.40	25	468

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 24...	242	.35	.27	1	0	430	2	30	470	.1	0	60
JUL 01...	454	.64	.28	4	150	140	1	50	810	.3	0	260

05089500 CART CREEK AT MOUNTAIN, ND

LOCATION.--Lat 48°40'37", long 97°51'41", in SW¼ sec.15, T.160 N., R.56 W., Pembina County, Hydrologic Unit 09020310, on right bank 50 ft downstream from bridge on State Highway 32, and 0.7 mi south of Mountain.

DRAINAGE AREA.--16.9 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1954 to current year.

GAGE.--Water-stage recorder and wooden control. Datum of gage is 1,027.40 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--29 years, 2.85 ft^3/s, 2,060 acre-ft/yr; median of yearly mean discharges, 2.7 ft^3/s, 1,960 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,300 ft^3/s June 18, 1964, gage height, 9.18 ft; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 30 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 2	2345	63	3.10	Mar. 30	--	*215	--
Mar. 6	--	170	a*5.84	Apr. 6	2000	161	4.05
Mar. 12	--	179	--				

No flow for several months.

a - Backwater from ice
b - Observed

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.42	.69	.35	.38	.00	.20	29	1.2	1.8	.87	.00	.00
2	.59	.69	18	.38	.00	.10	9.2	1.3	1.7	1.5	.00	.00
3	.50	.69	27	.38	.00	3.0	18	1.3	1.6	2.0	.00	.00
4	.46	.64	8.9	.38	.00	25	48	1.1	1.4	2.6	.00	.00
5	.46	.69	5.2	.38	.00	60	50	.92	1.4	.92	.00	.00
6	.69	.59	3.1	.38	.00	77	44	1.0	1.3	.53	.00	.00
7	1.8	.69	3.1	.34	.00	35	43	.92	1.1	.38	.00	.00
8	.59	.64	2.9	.34	.00	32	41	.81	1.1	.24	.00	.00
9	.79	1.3	.74	1.0	.00	28	32	.91	1.0	.13	.00	.00
10	1.6	1.1	.60	2.0	.00	8.5	28	1.4	1.0	.09	.00	.00
11	.55	1.3	.50	1.5	.00	10	18	2.3	1.0	.00	.00	.00
12	.55	.46	.40	1.1	.00	21	9.8	6.1	1.4	.00	.00	.00
13	.55	.35	.45	.76	5.5	40	2.3	20	1.8	.00	.00	.00
14	.55	.25	.50	.56	11	35	4.1	8.5	1.3	.00	.00	.00
15	.59	.31	.50	.40	6.9	32	3.0	5.8	1.0	.00	.00	.92
16	.64	.55	.50	.43	6.3	25	2.4	4.0	1.0	.00	.00	1.4
17	.64	.98	.45	.29	8.9	6.3	1.2	3.3	.98	.00	.00	.55
18	.59	.79	.45	.21	4.2	3.1	2.3	2.8	.92	.00	.00	.31
19	.59	.85	.40	.24	.92	1.8	3.8	2.4	.98	.01	.00	.21
20	.59	1.7	.40	.22	.31	.92	8.6	2.4	1.1	.00	.00	.21
21	.59	.79	.40	.27	.27	.46	7.5	2.4	1.3	.00	.00	.24
22	.59	.35	.40	.27	.27	.34	6.2	2.2	1.7	.00	.00	.21
23	.59	.33	.40	.27	.27	.20	4.9	2.1	1.1	.00	.00	.16
24	.59	.31	.40	.25	.25	2.6	5.0	2.1	.92	.00	.00	.18
25	.64	.35	.40	.15	.14	9.2	5.3	2.1	.92	.00	.00	.16
26	.64	.59	.40	.07	.34	2.9	6.4	1.9	.92	.00	.00	.16
27	.69	2.4	.40	.13	.79	3.3	4.0	1.9	.50	.00	.00	.16
28	.69	.79	.40	.09	1.1	3.5	2.4	1.9	.46	.00	.00	.11
29	.74	.27	.40	.07	---	4.0	1.6	1.9	.79	.00	.00	.13
30	.69	.24	.38	.04	---	50	1.3	1.9	1.0	.00	.00	.69
31	.69	---	.38	.00	---	92	---	1.9	---	.00	.00	---
TOTAL	20.88	21.68	78.80	13.28	47.46	612.42	442.3	90.76	34.49	9.27	.00	5.80
MEAN	.67	.72	2.54	.43	1.70	19.8	14.7	2.93	1.15	.30	.000	.19
MAX	1.8	2.4	27	2.0	11	92	50	20	1.8	2.6	.00	1.4
MIN	.42	.24	.35	.00	.00	.10	1.2	.81	.46	.00	.00	.00
AC-FT	41	43	156	26	94	1210	877	180	68	18	.00	12

CAL YR 1982 TOTAL 923.83 MEAN 2.53 MAX 90 MIN .00 AC-FT 1830
WTR YR 1983 TOTAL 1377.14 MEAN 3.77 MAX 92 MIN .00 AC-FT 2730

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
07...	1050	4.7	788	--	7.5	6.5	--	--	--	--	--
NOV											
09...	0930	.92	1100	--	- .4	.0	--	--	--	--	--
24...	1605	.32	1100	--	- .4	.0	--	--	--	--	--
JAN											
06...	1305	.40	1000	--	- .9	.0	--	--	--	--	--
FEB											
28...	1700	.74	795	--	- .9	.0	--	--	--	--	--
MAR											
24...	1530	1.1	840	8.0	4.0	.0	339	93	91	27	46
30...	1510	4.3	538	--	4.5	.0	--	--	--	--	--
APR											
07...	1240	18	338	--	7.0	1.0	--	--	--	--	--
MAY											
12...	1455	2.5	840	--	8.0	6.0	--	--	--	--	--
JUL											
01...	0735	.85	928	--	14.5	15.0	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
24...	22	1.1	10	300	0	240	4.8	180	21	.40	18	566

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
24...	545	.77	1.7	1	0	20	0	50	80	.2	0	440

05090000 PARK RIVER AT GRAFTON, ND

LOCATION.--Lat 48°25'24", long 97°24'30", in NE¼ sec.13, T.157 N., R.53 W., Walsh County, Hydrologic Unit 09020310, on right bank 30 ft upstream from Wakeman Avenue bridge in Grafton, and 3.5 mi downstream from South Branch.

DRAINAGE AREA.--695 mi^2, 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 807.39 ft National Geodetic Vertical Datum of 1929. 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. Flow regulated by Homme Lake (station 05088500) and several small reservoirs.

AVERAGE DISCHARGE.--52 years, 58.7 ft^3/s, 42,500 acre-ft/yr; median of yearly mean discharges, 43 ft^3/s, 31,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,600 ft^3/s Apr. 19, 1950, gage height, 20.13 ft, result of dam failure, from rating curve extended above 9,000 ft^3/s; no flow at times in most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,360 ft^3/s Mar. 7, gage height, 12.34 ft; minimum daily, 0.12 ft^3/s Aug. 18-24, Sept. 10-27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	32	9.0	14	8.0	15	271	72	36	65	.80	.20
2	2.4	32	21	14	8.0	15	430	65	34	58	.38	.18
3	1.1	32	19	14	7.8	19	419	63	34	58	6.0	.15
4	1.5	29	19	15	7.6	19	484	67	36	50	2.0	.15
5	1.1	28	36	15	7.4	200	659	65	38	50	4.6	.15
6	5.5	26	32	15	7.2	500	617	65	34	41	1.2	.15
7	3.9	34	28	15	7.0	1360	608	65	28	36	.68	.15
8	5.0	31	26	15	6.8	878	674	56	28	33	.30	.15
9	9.7	28	20	16	6.7	523	773	50	28	32	.20	.15
10	17	30	18	18	6.5	561	704	49	28	27	.20	.12
11	39	30	15	17	6.5	544	623	47	24	26	.20	.12
12	127	18	14	16	6.5	626	520	50	23	23	.15	.12
13	195	18	13	16	8.0	707	340	55	32	23	.15	.12
14	207	18	12	16	12	989	296	60	45	16	.15	.12
15	220	18	11	16	10	962	232	65	56	12	.15	.12
16	200	19	14	15	17	995	219	70	45	12	.14	.12
17	165	20	16	15	14	614	207	74	33	10	.14	.12
18	144	21	16	15	10	509	194	78	28	8.0	.12	.12
19	125	25	16	14	11	425	137	83	24	7.0	.12	.12
20	115	29	16	14	11	315	139	76	23	6.0	.12	.12
21	107	24	16	14	11	245	137	61	26	6.0	.12	.12
22	89	24	16	14	11	192	129	52	83	6.0	.12	.12
23	65	23	16	14	12	144	119	54	209	6.0	.12	.12
24	53	17	16	14	12	129	114	52	326	6.0	.12	.12
25	45	14	15	12	14	119	109	49	349	6.0	.14	.12
26	40	10	15	11	16	116	99	47	169	1.0	.14	.12
27	37	8.0	15	10	20	102	99	47	144	.80	.20	.12
28	36	8.0	15	10	17	99	90	45	102	2.6	.30	.14
29	36	8.0	15	10	---	137	83	43	85	1.0	.59	.14
30	38	8.0	14	9.0	---	144	72	43	72	2.3	.20	.15
31	35	---	14	8.0	---	184	---	38	---	1.2	.18	---
TOTAL	2167.1	662.0	538.0	431.0	292.0	12387	9597	1806	2222	631.90	20.03	4.02
MEAN	69.9	22.1	17.4	13.9	10.4	400	320	58.3	74.1	20.4	.65	.13
MAX	220	34	36	18	20	1360	773	83	349	65	6.0	.20
MIN	1.1	8.0	9.0	8.0	6.5	15	72	38	23	.80	.12	.12
AC-FT	4300	1310	1070	855	579	24570	19040	3580	4410	1250	40	8.0

CAL YR 1982	TOTAL	34972.92	MEAN	95.8	MAX	1320	MIN	.31	AC-FT	69370
WTR YR 1983	TOTAL	30758.05	MEAN	84.3	MAX	1360	MIN	.12	AC-FT	61010

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 19...	1225	124	1100	--	1.0	7.0	--	--	--	--	--
NOV 23...	1420	22	1460	--	- .4	.0	--	--	--	--	--
JAN 03...	1135	14	1450	--	- .9	.0	--	--	--	--	--
FEB 18...	1225	9.7	1380	--	- .9	.0	--	--	--	--	--
MAR 31...	1545	184	520	7.7	3.0	.0	195	39	50	17	27
MAY 10...	1130	47	1140	--	14.0	12.5	--	--	--	--	--
JUL 06...	1125	37	1020	--	28.0	20.0	--	--	--	--	--
AUG 22...	1605	.12	1320	--	27.0	22.0	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 31...	22	.9	11	190	0	160	6.0	91	20	.20	15	314

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 31...	326	.43	156	5	0	50	0	20	100	.2	0	180

05092000 RED RIVER OF THE NORTH AT DRAYTON, ND

LOCATION.--Lat 48°34'20", long 97°08'50", in SE¼SE¼SE¼ sec.24, T.159 N., R.51 W., Pembina County, Hydrologic Unit 09020311, on downstream end of east pier of interstate highway bridge, 1.5 mi northeast of Drayton, and at mile 206.7.

DRAINAGE AREA.--34,800 mi^2, approximately, includes 3,800 mi^2 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 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 good. Some regulation by reservoirs on tributaries.

AVERAGE DISCHARGE.--34 years (1949-83), 3,797 ft^3/s, 2,751,000 acre-ft/yr; median of yearly mean discharges, 2,770 ft^3/s, 2,007,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 92,900 ft^3/s Apr. 28, 1979, gage height, 43.66 ft; minimum observed, 7.7 ft^3/s Oct. 16, 1936, gage height, 1.75 ft, former site and datum.

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.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,300 ft^3/s Apr. 9, gage height, 30.88 ft; minimum daily, 1250 ft^3/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1250	3760	1980	1590	1570	1320	11000	3800	2600	8500	3460	5780
2	1260	3640	2160	1550	1550	1370	11500	3800	2510	7950	3200	4840
3	1260	3540	2340	1490	1550	1400	12000	3750	2500	7400	3030	4040
4	1290	3440	2480	1490	1550	1440	12800	3650	2500	7200	2930	3460
5	1330	3320	2590	1520	1530	1610	14200	3480	2460	7350	2690	3010
6	1380	3240	2710	1530	1530	2690	17100	3340	2410	8500	2600	2710
7	1530	3160	2970	1540	1530	5720	19800	3200	2360	9500	2480	2480
8	1760	3090	3220	1550	1530	8120	21000	3160	2260	11100	2380	2270
9	1920	2950	3220	1610	1530	9530	21300	3070	2190	11400	2240	2230
10	2190	2930	3030	1650	1520	11000	20800	2950	2120	11100	2080	2100
11	3030	2930	2660	1650	1510	11800	19800	2860	2060	10200	2000	2040
12	4080	2690	2310	1650	1490	12600	18400	2880	2000	9480	1880	2000
13	6000	2120	2040	1670	1490	12700	16900	2950	1960	8600	1750	2000
14	7710	1940	1880	1710	1510	12800	15100	3030	2090	7630	1670	1980
15	8260	1690	1850	1690	1510	12700	13200	3180	3730	6780	1590	2020
16	8200	1610	1850	1670	1520	12700	11000	3620	5810	5900	1570	2060
17	7900	1710	1870	1660	1520	12700	9020	4080	8510	5200	1520	2100
18	7400	1850	1870	1660	1530	12500	7200	4280	7700	4580	1460	2500
19	6810	1980	1850	1660	1530	12100	6240	4220	6500	4300	1430	3140
20	6190	2180	1830	1660	1510	12000	5620	4080	5420	4000	1430	3840
21	5690	2180	1810	1640	1460	11900	5220	3840	4720	3900	1460	4380
22	5310	2130	1810	1610	1430	11700	5000	3660	4220	3920	1520	4520
23	5100	2200	1810	1610	1370	11400	4880	3520	4000	4160	1660	4220
24	5000	2160	1780	1580	1300	11200	4650	3380	5920	4360	2210	3640
25	4860	2050	1720	1590	1260	11000	4520	3360	9800	4480	3640	3160
26	4750	1980	1700	1600	1270	10700	4280	3280	11200	4500	4440	2780
27	4580	1800	1700	1600	1290	10600	4100	3160	11800	4500	5020	2510
28	4320	1740	1660	1610	1300	10400	4000	2990	11800	4480	5520	2260
29	4160	1800	1630	1610	---	10400	3900	2900	10900	4280	6460	2230
30	4020	1910	1600	1590	---	10400	3820	2820	9600	4040	7260	1940
31	3880	---	1590	1570	---	10700	---	2730	---	3760	6880	---
TOTAL	132420	73720	65520	49810	41190	289200	328350	105020	153650	203050	89460	88240
MEAN	4272	2457	2114	1607	1471	9329	10950	3388	5122	6550	2886	2941
MAX	8260	3760	3220	1710	1570	12800	21300	4280	11800	11400	7260	5780
MIN	1250	1610	1590	1490	1260	1320	3820	2730	1960	3760	1430	1940
AC-FT	262700	146200	130000	98800	81700	573600	651300	208300	304800	402700	177400	175000

CAL YR 1982 TOTAL 1698924 MEAN 4655 MAX 35400 MIN 912 AC-FT 3370000
WTR YR 1983 TOTAL 1619630 MEAN 4437 MAX 21300 MIN 1250 AC-FT 3213000

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
20...	1300	6190	735	--	5.0	7.5	--	--	--	--	--
DEC											
15...	1325	1840	920	--	- .9	.0	--	--	--	--	--
JAN											
12...	1230	1750	680	--	- .9	.0	--	--	--	--	--
FEB											
16...	1330	1520	472	--	.0	.0	--	--	--	--	--
APR											
08...	1455	20900	410	--	6.5	.5	--	--	--	--	--
09...	1230	21300	416	--	12.0	.5	--	--	--	--	--
19...	1145	6250	554	8.1	10.5	5.5	221	33	52	22	28
MAY											
16...	1300	3650	770	--	13.0	11.0	--	--	--	--	--
JUN											
17...	1220	8520	600	--	22.0	22.0	--	--	--	--	--
28...	1300	11800	468	--	26.0	25.0	--	--	--	--	--
JUL											
08...	1110	11100	400	--	28.0	22.0	--	--	--	--	--
15...	1350	6770	561	--	32.0	27.0	--	--	--	--	--
AUG											
04...	1110	1590	580	--	24.5	24.0	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
APR												
19...	21	.8	7.6	229	0	190	2.9	71	28	.10	10	321

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
APR												
19...	333	.44	5420	1	60	30	0	28	0	.2	0	110

05092200 PEMBINA COUNTY DRAIN 20 NEAR GLASSTON, ND

LOCATION.--Lat 48°41'49", long 97°23'03", in NW¼ sec.8, T.160 N., R.52 W., Pembina County, Hydrologic Unit 09020311, on left bank 50 ft downstream from bridge on county highway, and 3 mi southeast of Glasston.

DRAINAGE AREA.--80 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1971 to current year (seasonal records only since 1983).

REVISED RECORDS.--WDR ND-78:Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 808 ft, from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--11 years (water years 1972-82), 2.29 ft^3/s, 1,660 acre-ft/yr; median of yearly mean discharges, 1.08 ft^3/s, 783 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 940 ft^3/s Apr. 20, 1979, gage height, 9.3 ft; maximum gage height, 14.64 ft Apr. 19, 1979, backwater from ice; no flow most of time.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 166 ft^3/s Apr. 4, gage height, 7.95 ft; maximum gage height, 9.25 ft Mar. 14, backwater from ice. No flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						.00	92	.10	.00	.24	.00	.00
2						.00	64	.05	.00	.24	.00	.00
3						.50	87	.01	.00	.38	.00	.00
4						2.0	136	.00	.00	.46	.00	.00
5						1.0	140	.00	.00	.46	.00	.00
6						.10	126	.00	.00	.32	.00	.00
7						.00	110	.00	.00	.10	.00	.00
8						.00	97	.00	.00	.00	.00	.00
9						.00	85	.00	.00	.00	.00	.00
10						.00	59	.00	.00	.00	.00	.00
11						.00	46	.00	.00	.00	.00	.00
12						.00	40	.00	.00	.00	.00	.00
13						.00	35	.28	.00	.00	.00	.00
14						.00	32	.46	.00	.00	.00	.00
15						.00	30	.35	.00	.00	.00	.00
16						.00	28	.19	.00	.00	.00	.00
17						.00	26	.08	.00	.00	.00	.00
18						.00	23	.03	.00	.00	.00	.00
19						.00	21	.00	.00	.00	.00	.00
20						.00	18	.00	1.6	.00	.00	.00
21						.00	16	.00	38	.00	.00	.00
22						.00	14	.00	16	.00	.00	.00
23						.00	11	.00	8.4	.00	.00	.00
24						.50	9.1	.00	3.5	.00	.00	.00
25						1.0	6.8	.00	1.7	.00	.00	.00
26						3.0	4.4	.00	.93	.00	.00	.00
27						5.0	2.0	.00	.42	.00	.00	.00
28						5.0	1.5	.00	.13	.00	.00	.00
29						10	1.0	.00	.01	.00	.00	.00
30						23	.50	.00	.21	.00	.00	.00
31						61	---	.00	---	.00	.00	---
TOTAL						112.10	1361.30	1.55	70.90	2.20	.00	.00
MEAN						3.62	45.4	.050	2.36	.071	.000	.000
MAX						61	140	.46	38	.46	.00	.00
MIN						.00	.50	.00	.00	.00	.00	.00
AC-FT						222	2700	3.1	141	4.4	.00	.00

05092200 PEMBINA COUNTY DRAIN 20 NEAR GLASSTON, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
APR 01...	1210	69	333	7.6	.5	.5	150	27	37	14	3.0
JUN 28...	1515	.10	1020	8.0	24.5	29.5	530	322	100	68	21

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
APR 01...	4	.1	10	150	0	130	6.0	38	3.5	.20	12	208
JUN 28...	8	.4	7.7	254	0	210	4.0	360	17	.30	14	767

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
APR 01...	194	.28	38.8	5	0	20	1	10	70	.1	0	90
JUN 28...	714	1.0	.21	8	90	30	2	60	40	.3	0	490

05098700 HIDDEN ISLAND COULEE NEAR HANSBORO, ND
(International gaging station)

LOCATION.--Lat 48°57'10", long 99°25'35", in SE¼SW¼ sec.11, T.163 N., R.68 W., Towner County, Hydrologic Unit 09020313, on right bank 400 ft downstream from bridge on county highway, and 2.5 mi west of Hansboro.

DRAINAGE AREA.--38 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,615 ft, from topographic map. Prior to May 20, 1962, nonrecording gage 400 ft upstream at same datum.

REMARKS.--Records fair.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--22 years, 3.68 ft^3/s, 2,670 acre-ft/yr; median of yearly mean discharges, 2.6 ft^3/s, 1,880 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 1,200 ft^3/s Apr. 23, 1979, gage height, 10.50 ft, from floodmark, backwater from ice; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 25 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Apr. 2	1130	*155	a7.99	Apr. 6	--	133	Ice jam

No flow for several months.

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.15	.10	.00	.00	.00	34	5.6	.26	7.1	.02	.00
2	.00	.17	1.3	.00	.00	.00	54	2.9	.21	7.4	.00	.00
3	.00	.15	14	.00	.00	.00	59	.83	.18	7.7	.00	.00
4	.00	.15	12	.00	.00	.00	76	.35	.15	6.1	.00	.00
5	.00	.16	2.6	.00	.00	.00	68	.28	.14	3.8	.00	.00
6	.00	.16	.83	.00	.00	.00	80	.31	.11	3.0	.00	.00
7	.00	.15	.35	.00	.00	.00	70	.25	.09	2.2	.00	.00
8	.00	.13	.22	.00	.00	.00	68	.22	.08	.97	.00	.00
9	.01	.13	.10	.00	.00	.00	52	.22	.07	.28	.00	.00
10	.04	.13	.06	.00	.00	.00	41	.35	.09	.19	.00	.00
11	.03	.13	.01	.00	.00	.01	34	.27	.08	.15	.00	.00
12	.05	.11	.00	.00	.00	.15	30	3.0	.06	.13	.00	.00
13	.20	.10	.00	.00	.00	4.4	28	8.1	.05	.10	.00	.00
14	.38	.10	.00	.00	.00	5.5	25	7.1	.05	.07	.00	.00
15	.24	.10	.00	.00	.00	16	18	5.7	.04	.06	.00	.00
16	.15	.09	.00	.00	.00	5.3	18	5.5	.03	.06	.00	.00
17	.10	.10	.00	.00	.00	4.5	16	7.5	.02	.06	.00	.00
18	.07	.10	.00	.00	.00	4.0	14	8.7	.00	.06	.00	.00
19	.05	.10	.00	.00	.00	3.0	15	6.8	.10	.12	.00	.00
20	.06	.10	.00	.00	.00	2.0	14	5.2	.15	.10	.00	.00
21	.10	.10	.00	.00	.00	1.0	14	4.2	.11	.08	.00	.00
22	.12	.10	.00	.00	.00	.50	12	3.7	.49	.08	.00	.00
23	.14	.10	.00	.00	.00	.40	12	3.2	1.1	.08	.00	.00
24	.15	.10	.00	.00	.00	.30	11	2.8	.83	.08	.00	.00
25	.13	.10	.00	.00	.00	.20	5.3	1.6	.21	.08	.00	.00
26	.14	.10	.00	.00	.00	.10	14	1.3	.14	.08	.00	.00
27	.14	.10	.00	.00	.07	.20	11	1.5	.10	.08	.00	.00
28	.15	.10	.00	.00	.00	.30	11	1.1	.07	.06	.00	.00
29	.18	.10	.00	.00	---	.40	9.1	.81	.04	.04	.00	.00
30	.18	.10	.00	.00	---	2.7	7.0	.39	.13	.07	.00	.00
31	.17	---	.00	.00	---	37	---	.36	---	.05	.00	---
TOTAL	2.98	3.51	31.57	.00	.07	87.96	920.4	90.14	5.18	40.43	.02	.00
MEAN	.096	.12	1.02	.000	.003	2.84	30.7	2.91	.17	1.30	.001	.000
MAX	.38	.17	14	.00	.07	37	80	8.7	1.1	7.7	.02	.00
MIN	.00	.09	.00	.00	.00	.00	5.3	.22	.00	.04	.00	.00
AC-FT	5.9	7.0	63	.00	.1	174	1830	179	10	80	.04	.00

CAL YR 1982 TOTAL 905.65 MEAN 2.48 MAX 92 MIN .00 AC-FT 1800
WTR YR 1983 TOTAL 1182.26 MEAN 3.24 MAX 80 MIN .00 AC-FT 2350

RED RIVER OF THE NORTH BASIN

05098700 HIDDEN ISLAND COULEE NEAR HANSBORO, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
DEC 02...	1040	.65	1280	--	2.0	.5	--	--	--	--	--
MAR 30...	0935	4.2	880	8.2	3.0	.0	260	91	54	31	35
MAY 11...	0925	.24	1100	--	2.0	9.5	--	--	--	--	--
JUN 08...	1110	.08	1520	7.7	20.5	14.5	700	277	150	78	82
JUL 07...	1140	2.2	1570	--	33.5	21.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 30...	21	1.0	18	210	0	170	2.1	170	13	.10	17	470
JUN 08...	20	1.4	15	512	0	420	16	430	24	.20	13	1090

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 30...	443	.64	5.3	3	0	160	0	40	350	.3	0	230
JUN 08...	1050	1.5	.24	5	110	100	3	90	450	1.3	2	710

05098800 CYPRESS CREEK NEAR SARLES, ND
(International gaging station)

LOCATION.--Lat 48°56'35", long 98°57'05", in SW¼SE¼ sec.9, T.163 N., R.64 W., Cavalier County, Hydrologic Unit 09020313, on right bank 150 ft downstream from twin multiplate culverts on county highway, and 2.5 mi east of Sarles.

DRAINAGE AREA.--71 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1961 to current year. Prior to October 1973, published as Long River near Sarles.

GAGE.--Water-stage recorder. Altitude of gage is 1,545 ft, from topographic map.

REMARKS.--Records fair.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--22 years, 6.16 ft^3/s, 4,460 acre-ft/yr; median of yearly mean discharges, 4.8 ft^3/s, 3,480 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 2,000 ft^3/s Apr. 21, 1979, gage height, 10.35 ft, backwater from ice and snow; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 13	--	86	Ice jam	Apr. 2	2045	*148	4.88

No flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.68	.00	.00	.00	.00	88	1.7	.04	1.5	.00	.00
2	.00	.63	.40	.00	.00	.00	118	1.7	.01	1.5	.00	.00
3	.00	.52	.37	.00	.00	.00	120	1.6	.00	1.5	.00	.00
4	.00	.44	.40	.00	.00	.00	97	1.7	.00	1.2	.00	.00
5	.00	.40	.84	.00	.00	.08	97	1.5	.00	.95	.00	.00
6	.00	.35	6.8	.00	.00	15	115	1.2	.00	.82	.00	.00
7	.00	.32	1.4	.00	.00	16	114	1.0	.00	.66	.00	.00
8	.00	.29	.10	.00	.00	2.0	90	.76	.00	.63	.00	.00
9	.00	.24	.08	.00	.00	.05	86	.60	.00	.40	.00	.00
10	.04	.24	.05	.00	.00	.05	59	.56	.00	.40	.00	.00
11	.21	.24	.00	.00	.00	.12	41	.53	.00	.20	.00	.00
12	1.5	.14	.00	.00	.00	13	32	.57	.00	.12	.00	.00
13	15	.08	.00	.00	.00	54	13	1.1	.00	.03	.00	.00
14	11	.06	.00	.00	.00	45	12	.94	.00	.00	.00	.00
15	6.0	.05	.00	.00	.00	20	9.6	.72	.00	.00	.00	.00
16	4.2	.03	.00	.00	.00	43	8.8	.61	.00	.00	.00	.00
17	4.1	.03	.00	.00	.00	28	8.8	.58	.00	.00	.00	.00
18	3.8	.03	.00	.00	.00	14	8.8	.55	.00	.00	.00	.00
19	3.4	.04	.00	.00	.00	9.2	7.7	.47	.00	.00	.00	.00
20	3.0	.05	.00	.00	.00	7.0	7.0	.42	.00	.00	.00	.00
21	2.6	.01	.00	.00	.00	5.8	6.0	.42	.00	.00	.00	.00
22	2.3	.00	.00	.00	.00	5.6	5.8	.37	.00	.00	.00	.00
23	2.1	.00	.00	.00	.00	4.3	5.2	.36	.00	.00	.00	.00
24	1.8	.00	.00	.00	.00	3.7	4.8	.27	.00	.00	.00	.00
25	1.6	.00	.00	.00	.00	4.8	4.5	.22	.00	.00	.00	.00
26	1.5	.00	.00	.00	.00	4.2	4.5	.19	.00	.00	.00	.00
27	1.4	.00	.00	.00	.00	3.5	3.9	.14	.00	.00	.00	.00
28	1.3	.00	.00	.00	.00	4.8	2.9	.10	.00	.00	.00	.00
29	1.2	.00	.00	.00	---	7.0	2.3	.05	.20	.00	.00	.00
30	1.0	.00	.00	.00	---	15	1.9	.04	1.2	.00	.00	.00
31	.80	---	.00	.00	---	65	---	.04	---	.00	.00	---
TOTAL	69.85	4.87	10.44	.00	.00	390.20	1174.5	21.01	1.45	9.91	.00	.00
MEAN	2.25	.16	.34	.000	.000	12.6	39.2	.68	.048	.32	.000	.000
MAX	15	.68	6.8	.00	.00	65	120	1.7	1.2	1.5	.00	.00
MIN	.00	.00	.00	.00	.00	.00	1.9	.04	.00	.00	.00	.00
AC-FT	139	9.7	21	.00	.00	774	2330	42	2.9	20	.00	.00

CAL YR 1982 TOTAL 3149.32 MEAN 8.63 MAX 768 MIN .00 AC-FT 6250
WTR YR 1983 TOTAL 1682.23 MEAN 4.61 MAX 120 MIN .00 AC-FT 3340

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
DEC 02...	1150	.76	490	--	6.5	.5	--	--	--	--	--
MAR 30...	1115	8.7	505	7.5	6.5	.5	200	29	49	19	23
MAY 11...	1135	.51	900	--	6.0	12.0	--	--	--	--	--
JUL 07...	0935	.72	1008	8.0	27.0	23.5	410	135	94	43	73

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 30...	19	.7	12	210	0	170	11	91	5.1	.10	19	327
JUL 07...	27	1.6	8.9	339	0	280	5.4	290	13	.30	21	709

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 30...	323	.44	7.7	4	0	40	0	20	580	.1	0	140
JUL 07...	711	.96	1.4	8	60	30	2	40	80	.6	0	470

05099100 SNOWFLAKE CREEK NEAR SNOWFLAKE, MAN
(International gaging station)

LOCATION.--Lat 49°01'17", long 98°36'13", in SW¼ sec.10, T.1, R.9 W., 1st meridian, at traffic bridge, 2.5 mi east, and 1.5 mi south of Snowflake.

DRAINAGE AREA.--348 mi^2.

PERIOD OF RECORD.--March 1961 to current year.

GAGE.--Water-stage recorder since March 1968 and nonrecording gage prior thereto. Datum of gage is 1,221.66 ft, Geodetic Survey of Canada datum. 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 furnished by the Water Survey of Canada.

AVERAGE DISCHARGE.--22 years, 16.3 ft^3/s, 11,810 acre-ft/yr; median of yearly mean discharges, 10 ft^3/s, 7,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,130 ft^3/s Apr. 21, 1979, gage height, 8.28 ft; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 56 ft^3/s Apr. 6, gage height, 4.21 ft; no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.36	.04	.00	.00	.00	13	31	.11	.80	7.2	.01
2	.00	.35	5.8	.00	.00	.00	16	30	.09	.81	6.7	.00
3	.00	.31	3.2	.00	.00	.00	17	23	.07	.79	6.3	.00
4	.00	.26	3.0	.00	.00	.00	22	18	.05	.59	5.8	.00
5	.00	.21	4.9	.00	.00	1.5	22	18	.03	.36	5.2	.00
6	.01	.25	4.3	.00	.00	9.5	38	17	.02	.19	4.8	.00
7	.10	.28	.60	.00	.00	7.8	40	16	.04	.09	4.5	.00
8	.02	.23	.46	.00	.00	17	32	16	.04	.03	4.0	.00
9	.02	.16	.39	.00	.00	12	23	9.9	.04	.04	3.7	.00
10	.49	.28	.32	.00	.00	6.6	20	7.4	.04	.04	3.4	.00
11	.21	.38	.07	.00	.00	5.0	20	5.3	.04	.04	3.0	.00
12	.07	.60	.04	.00	.00	16	18	5.1	.04	8.0	2.6	.00
13	.48	.04	.00	.00	.00	27	17	4.8	.04	9.4	2.2	.00
14	.43	.04	.00	.00	.11	34	19	3.7	.04	9.3	1.8	.00
15	.45	.03	.00	.00	.04	18	18	3.4	.04	8.4	1.4	.15
16	.34	.02	.00	.00	.00	6.6	19	2.7	.04	8.2	1.2	.10
17	.69	.03	.00	.00	.00	5.2	18	2.4	.04	7.8	1.1	.05
18	.51	.03	.00	.00	.00	3.9	19	2.3	.04	7.5	.81	.01
19	.31	.06	.00	.00	.00	3.5	21	2.3	.04	7.4	.57	.00
20	.20	.28	.00	.00	.00	2.0	22	2.1	.04	7.1	.45	.00
21	.14	.03	.00	.00	.00	1.0	22	1.9	.03	7.5	.36	.00
22	.14	.04	.00	.00	.00	.27	23	1.6	3.6	7.7	.21	.00
23	.12	.04	.00	.00	.00	.16	27	1.4	.37	7.4	.47	.00
24	.09	.09	.00	.00	.00	2.1	27	1.2	.09	7.5	.37	.00
25	.08	.03	.00	.00	.00	6.1	29	.95	.25	7.9	.18	.00
26	.09	.04	.00	.00	.00	2.7	29	.83	.92	7.4	.11	.00
27	.08	.02	.00	.00	.00	4.1	28	.58	1.1	7.5	.05	.00
28	.21	.02	.00	.00	.00	7.0	29	.42	1.0	7.6	.08	.00
29	.51	.02	.00	.00	---	5.7	30	.21	.95	7.4	.09	.00
30	.29	.04	.00	.00	---	9.3	30	.14	1.0	7.8	.04	.00
31	.28	---	.00	.00	---	14	---	.13	---	7.5	.00	---
TOTAL	6.36	4.57	23.12	.00	.15	228.03	708	229.76	10.24	160.08	68.69	.32
MEAN	.21	.15	.75	.000	.005	7.36	23.6	7.41	.34	5.16	2.22	.011
MAX	.69	.60	5.8	.00	.11	34	40	31	3.6	9.4	7.2	.15
MIN	.00	.02	.00	.00	.00	.00	13	.13	.02	.03	.00	.00
AC-FT	13	9.1	46	.00	.3	452	1400	456	20	318	136	.6

CAL YR 1982 TOTAL 4964.73 MEAN 13.6 MAX 505 MIN .00 AC-FT 9850
WTR YR 1983 TOTAL 1439.32 MEAN 3.94 MAX 40 MIN .00 AC-FT 2850

05099150 MOWBRAY CREEK NEAR MOWBRAY, MAN

LOCATION.--Lat 49°00'00", long 98°27'15", in SE¼ sec.3, T.1, R.8 W., 1st meridian, on downstream side of bridge on Municipal Road on international boundary, and 1.5 mi east of Mowbray.

DRAINAGE AREA.--93.9 mi^2.

PERIOD OF RECORD.--March to October, 1962 to current year (seasonal records only most years).

GAGE.--Water-stage recorder operated March 1 to October 31 each year. Nonrecording gage prior to 1971.

COOPERATION.--Records furnished by Water Survey of Canada.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 777 ft^3/s Apr. 24, 1979, gage height, 7.02 ft; maximum gage height, 7.88 ft Mar. 29, 1966, backwater from ice; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 155 ft^3/s Apr. 7, gage height, 5.51 ft; no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.28					.00	23	4.0	.31	1.7	.00	.00
2	.33					.00	30	5.1	.32	1.5	.00	.00
3	.24					.00	36	4.7	.35	1.4	1.6	.00
4	.12					.00	42	4.1	.32	1.1	1.6	.00
5	.07					.00	49	3.4	.25	.95	1.0	.00
6	.77					.00	102	2.7	.08	.84	.60	.00
7	1.4					.00	155	2.4	.00	.75	.32	.00
8	1.5					.00	130	2.0	.00	.65	.09	.00
9	1.5					.95	106	1.7	.00	.58	.00	.00
10	3.3					3.5	81	1.5	.00	.52	.00	.00
11	5.2					19	56	1.1	.00	.42	.00	.00
12	5.1					61	31	13	.00	.35	.00	.00
13	6.7					54	29	15	.00	.36	.00	.00
14	6.5					47	26	10	.00	.35	.00	.00
15	7.2					44	24	4.7	.00	.30	.00	.00
16	6.1					37	21	2.9	.00	.22	.00	.00
17	4.8					33	18	2.3	.00	.13	.00	.00
18	3.7					30	16	1.8	.00	.00	.00	.00
19	3.1					24	13	1.4	.00	.00	.00	.00
20	2.8					21	11	1.2	.00	.00	.00	.00
21	2.3					18	8.3	.98	.00	.00	.00	.00
22	2.0					15	8.1	.81	3.4	.00	.00	.00
23	1.9					13	7.5	.72	3.4	.00	.00	.00
24	1.8					13	11	.65	3.6	.00	.00	.00
25	1.6					14	12	.58	2.2	.00	.00	.00
26	1.5					14	10	.53	3.0	.00	.00	.00
27	1.5					14	5.5	.44	3.7	.00	.00	.00
28	1.5					16	6.1	.45	3.3	.00	.00	.00
29	1.7					17	5.3	.39	2.7	.00	.00	.00
30	1.4					19	4.0	.35	2.2	.00	.00	.00
31	1.2					21	---	.35	---	.00	.00	---
TOTAL	79.11					548.45	1076.8	91.25	29.13	12.12	5.21	.00
MEAN	2.55					17.7	35.9	2.94	.97	.39	.17	.000
MAX	7.2					61	155	15	3.7	1.7	1.6	.00
MIN	.07					.00	4.0	.35	.00	.00	.00	.00
AC-FT	157					1090	2140	181	58	24	10	.00

05099300 PEMBINA RIVER NEAR WINDYGATES, MAN
(International gaging station)

LOCATION.--Lat 49°01'53", long 98°16'40", in SE¼ sec.13, T.1, R.7 W., 1st meridian, on left bank 0.2 mi downstream from bridge, and 3 mi northeast of Windygates.

DRAINAGE AREA.--3,020 mi^2.

PERIOD OF RECORD.--April 1962 to current year.

GAGE.--Water-stage recorder and nonrecording gage. Datum of recording gage is 1,102.02 ft. Datum of nonrecording gage is 1,105.00 ft, both gages referred to Geodetic Survey of Canada datum.

REMARKS.--Records fair.

COOPERATION.--This station is one of the international gaging stations maintained by Canada under agreement with the United States. Records furnished by Water Survey of Canada.

AVERAGE DISCHARGE.--21 years, 221 ft^3/s, 160,100 acre-ft/yr; median of yearly mean discharges, 134 ft^3/s, 97,080 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,500 ft^3/s Apr. 26, 1974, gage height, 19.50 ft; no flow in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,160 ft^3/s Apr. 8, gage height, 7.27 ft; minimum daily, 0.28 ft^3/s Feb. 8-11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	28	9.9	4.1	.57	1.2	176	649	261	103	34	4.9
2	44	28	11	4.6	.49	1.4	283	635	255	102	35	4.7
3	43	25	12	4.7	.46	1.9	427	620	244	100	31	4.3
4	42	25	14	4.9	.42	2.5	572	599	239	95	26	4.2
5	42	25	14	4.9	.39	18	703	582	237	90	24	4.5
6	41	24	14	3.9	.35	71	833	566	232	88	23	4.9
7	48	24	11	3.0	.32	60	918	544	225	84	23	4.4
8	51	24	7.4	2.5	.28	58	1010	527	216	80	20	4.5
9	49	23	6.9	2.8	.28	55	929	511	208	75	19	4.9
10	56	22	6.2	3.2	.28	53	924	476	203	72	17	4.2
11	54	22	5.8	2.5	.28	51	908	444	192	66	15	3.6
12	50	20	6.4	2.1	.71	49	816	448	182	62	14	3.7
13	48	21	6.7	2.8	1.2	141	715	459	181	60	13	3.6
14	47	20	6.0	3.9	1.8	124	636	449	175	60	12	3.3
15	45	19	6.1	4.2	1.4	124	645	429	172	61	10	5.1
16	44	20	6.1	4.4	1.2	120	628	417	169	61	9.4	7.2
17	47	22	6.2	4.6	1.1	63	671	404	157	60	8.8	5.2
18	45	20	6.4	4.8	1.1	42	668	391	150	56	8.5	4.9
19	43	18	6.0	5.1	1.2	33	661	360	144	57	7.6	5.0
20	42	16	5.5	5.4	1.2	32	678	363	140	51	6.4	5.1
21	39	14	4.9	6.2	1.4	27	676	356	134	50	6.2	5.0
22	38	14	5.1	7.1	1.4	23	681	339	147	50	5.6	4.5
23	38	15	5.3	5.7	1.2	18	673	330	141	45	6.7	4.3
24	36	14	5.7	3.9	1.1	17	685	326	137	41	10	3.6
25	35	14	5.3	2.8	1.2	18	697	317	132	38	8.0	3.1
26	34	13	4.2	2.1	1.8	16	697	312	127	36	8.5	2.7
27	33	12	4.4	1.4	1.6	16	683	300	119	35	7.1	4.4
28	33	12	4.6	1.1	1.4	17	678	283	115	34	5.1	14
29	32	11	4.1	.88	---	17	672	275	112	31	6.9	6.5
30	31	10	3.5	.71	---	30	657	274	110	34	6.2	6.1
31	30	---	3.7	.64	---	96	---	268	---	32	5.4	---
TOTAL	1303	575	218.4	110.93	26.13	1396.0	20600	13253	5256	1909	432.4	146.4
MEAN	42.0	19.2	7.05	3.58	.93	45.0	687	428	175	61.6	13.9	4.88
MAX	56	28	14	7.1	1.8	141	1010	649	261	103	35	14
MIN	30	10	3.5	.64	.28	1.2	176	268	110	31	5.1	2.7
AC-FT	2580	1140	433	220	52	2770	40860	26290	10430	3790	858	290

CAL YR 1982 TOTAL 57210.57 MEAN 157 MAX 1580 MIN .00 AC-FT 113500
WTR YR 1983 TOTAL 45226.26 MEAN 124 MAX 1010 MIN .28 AC-FT 89710

05099600 PEMBINA RIVER AT WALHALLA, ND

LOCATION.--Lat 48°54'50", long 97°55'00", in NE¼NE¼ sec.29, T.163 N., R.56 W., Pembina County, Hydrologic Unit 09020313, on left bank at downstream side of bridge on State Highway 32, at south edge of Walhalla, and 7 mi downstream from Little South Pembina River.

DRAINAGE AREA.--3,350 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1939 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. Altitude of gage is 934 ft, from topographic map. 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.

AVERAGE DISCHARGE.--44 years, 235 ft^3/s, 170,300 acre-ft/yr; median of yearly mean discharges, 170 ft^3/s, 123,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,400 ft^3/s Apr. 18, 1950, gage height, 19.2 ft former site and datum, 16.2 ft present site and datum, from rating curve extended above 7,000 ft^3/s on basis of contracted-opening measurement of peak flow; no flow at times in some years.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 11	--	520	Ice jam	Apr. 8	2400	*1660	6.32
(a)	--	Ice jam	[b]*6.55				

Minimum daily discharge, 3.5 ft^3/s Feb. 26.

a - Sometime during period Apr. 5-6.
b - From floodmark.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	46	20	13	7.0	8.5	700	650	293	115	31	10
2	62	46	43	13	7.0	8.5	750	625	284	113	32	9.1
3	58	46	53	13	7.0	9.0	800	615	280	117	30	8.1
4	55	42	60	14	7.0	11	928	595	268	103	28	7.8
5	54	41	65	12	7.0	19	1180	570	262	92	25	8.1
6	61	40	70	12	6.5	150	1230	540	258	86	22	8.4
7	92	35	61	12	6.5	150	1370	545	250	81	21	8.8
8	81	35	46	12	6.5	150	1430	545	242	77	20	10
9	76	28	41	12	6.5	140	1440	525	236	70	19	12
10	194	30	29	11	6.5	140	1280	485	230	66	18	11
11	212	31	14	10	6.5	442	1120	460	222	58	17	9.7
12	155	31	14	10	6.0	487	1010	493	216	54	16	9.1
13	116	32	14	10	6.0	472	868	508	220	52	15	8.4
14	94	32	14	10	6.0	396	824	493	212	48	14	8.1
15	82	33	14	9.0	5.5	368	695	478	202	46	13	11
16	73	32	14	9.0	5.5	386	680	460	198	46	13	13
17	77	29	15	9.0	5.5	346	690	445	190	45	14	13
18	76	22	16	8.5	5.0	268	732	430	182	45	13	12
19	70	16	16	8.5	5.0	266	728	418	172	44	11	11
20	65	16	16	8.0	5.0	266	752	407	170	46	11	10
21	62	14	15	8.0	4.5	264	740	399	162	42	11	9.7
22	60	12	15	7.5	4.5	254	740	388	242	41	10	9.7
23	57	11	15	7.5	4.0	230	732	376	178	41	10	10
24	55	12	15	7.0	4.0	185	740	366	162	40	10	9.7
25	53	13	15	7.0	4.0	138	748	356	155	38	11	9.1
26	52	16	15	7.0	3.5	138	750	346	145	36	12	8.8
27	51	16	15	7.0	4.0	136	725	338	136	38	11	8.1
28	52	19	15	7.0	9.1	136	685	326	122	36	11	7.5
29	52	21	14	7.0	---	109	680	310	120	34	11	7.5
30	49	21	11	7.0	---	130	660	308	125	32	10	13
31	47	---	13	7.0	---	300	---	306	---	34	10	---
TOTAL	2400	818	793	295.0	161.1	6503.0	26407	14106	6134	1816	500	291.7
MEAN	77.4	27.3	25.6	9.52	5.75	210	880	455	204	58.6	16.1	9.72
MAX	212	46	70	14	9.1	487	1440	650	293	117	32	13
MIN	47	11	11	7.0	3.5	8.5	660	306	120	32	10	7.5
AC-FT	4760	1620	1570	585	320	12900	52380	27980	12170	3600	992	579

CAL YR 1982 TOTAL 72516.24 MEAN 199 MAX 1490 MIN .20 AC-FT 143800
WTR YR 1983 TOTAL 60224.80 MEAN 165 MAX 1440 MIN 3.5 AC-FT 119500

05099600 PEMBINA RIVER AT WALHALLA, ND

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1962 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 06...	1255	53	778	--	5.0	8.0	--	--	--	--	--
NOV 24...	1240	12	1100	--	- .9	.0	--	--	--	--	--
JAN 05...	1545	12	1010	--	- .9	.0	--	--	--	--	--
FEB 28...	1420	9.1	935	--	- .9	.0	--	--	--	--	--
MAR 15...	1740	341	390	8.1	- .9	.0	134	15	32	13	21
29...	1340	122	720	--	.5	.5	--	--	--	--	--
APR 07...	1020	1190	295	--	7.0	.5	--	--	--	--	--
MAY 12...	1140	456	525	--	5.0	9.0	--	--	--	--	--
JUN 30...	1120	135	778	--	20.0	19.0	--	--	--	--	--
AUG 18...	0815	14	855	--	22.0	20.0	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 15...	24	.8	12	145	0	120	1.8	63	6.9	.10	12	265

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 15...	235	.36	244	2	80	210	0	15	190	.2	0	130

05100000 PEMBINA RIVER AT NECHE, ND
(International gaging station)

LOCATION.--Lat 48°59'20", long 97°33'05", in SE¼NW¼ sec.31, T.164 N., R.53 W., Pembina County, Hydrologic Unit 09020313, on right bank 0.3 mi east of State Highway 18, and at north edge of Neche.

DRAINAGE AREA.--3,410 mi^2, 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 and concrete control. Datum of gage is 809.69 ft National Geodetic Vertical Datum of 1929. Prior to May 24, 1932, nonrecording gage at Burlington Northern Railway bridge 1 mi upstream, at same datum. May 25, 1932, to Apr. 17, 1939, nonrecording gage on bridge on State Highway 18, 500 ft downstream from railway bridge, at same datum.

REMARKS.--Records good.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--75 years (1903-8, 1909-15, 1919-83), 192 ft^3/s, 139,100 acre-ft/yr; median of yearly mean discharges, 146 ft^3/s, 105,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,700 ft^3/s Apr. 20, 1950, gage height, 21.58 ft, backwater from ice; from rating curve extended above 5,300 ft^3/s; maximum gage height, 23.64 ft Apr. 20, 1979, backwater from ice; no flow at times each year 1932-41, 1953, 1960-62.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Apr. 9	--	*1630	11.86	June 2	2330	423	9.14

Minimum daily, 3.5 ft^3/s Feb. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	70	55	11	18	6.2	7.2	303	658	284	147	37	15
2	68	52	14	18	5.7	14	698	646	313	137	35	13
3	64	50	16	18	5.6	26	698	626	421	137	38	13
4	61	37	17	18	5.6	39	795	613	400	130	33	13
5	58	30	16	18	5.1	57	1120	594	377	129	31	13
6	56	31	16	18	4.8	91	1390	570	367	120	29	13
7	60	39	22	18	5.9	80	1490	540	360	113	23	13
8	65	41	43	16	6.2	80	1490	546	352	99	23	13
9	72	33	64	18	6.7	80	1600	546	339	93	24	13
10	80	41	44	17	6.7	85	1560	523	328	87	25	15
11	91	41	37	17	6.7	90	1490	484	316	80	26	15
12	194	23	25	17	6.7	140	1340	458	308	75	26	15
13	173	28	16	17	6.2	159	984	453	309	72	25	15
14	141	31	17	17	6.2	469	814	486	299	68	25	15
15	115	30	17	16	6.2	540	847	474	291	59	25	14
16	102	28	16	15	5.7	377	710	450	280	57	24	14
17	90	28	16	15	5.6	338	698	440	275	53	22	14
18	85	28	17	14	5.6	328	704	444	263	52	21	14
19	83	26	17	8.7	5.1	286	743	426	248	50	19	14
20	83	26	16	8.3	5.1	243	743	409	203	51	17	13
21	78	25	16	8.3	5.1	220	750	398	196	50	17	13
22	75	26	17	7.2	4.6	235	756	386	204	50	17	12
23	70	23	17	7.2	4.6	242	750	381	245	42	17	11
24	67	21	17	7.2	4.1	210	750	361	246	41	17	9.4
25	65	18	17	6.7	4.1	163	736	354	202	41	17	9.4
26	62	14	17	6.7	4.1	139	736	342	187	40	17	9.4
27	62	11	17	6.7	3.5	129	750	333	172	39	15	9.4
28	62	9.4	17	6.7	4.2	127	724	318	160	39	15	9.4
29	57	9.4	17	6.7	---	110	684	306	149	40	17	8.3
30	55	10	17	6.2	---	109	678	292	145	38	16	8.3
31	55	---	17	6.2	---	129	---	286	---	37	16	---
TOTAL	2519	864.8	643	397.8	151.9	5342.2	27531	14143	8239	2266	709	376.6
MEAN	81.3	28.8	20.7	12.8	5.43	172	918	456	275	73.1	22.9	12.6
MAX	194	55	64	18	6.7	540	1600	658	421	147	38	15
MIN	55	9.4	11	6.2	3.5	7.2	303	286	145	37	15	8.3
AC-FT	5000	1720	1280	789	301	10600	54610	28050	16340	4490	1410	747

CAL YR 1982 TOTAL 72939.98 MEAN 200 MAX 1430 MIN .00 AC-FT 144700
WTR YR 1983 TOTAL 63183.30 MEAN 173 MAX 1600 MIN 3.5 AC-FT 125300

05100000 PEMBINA RIVER AT NECHE, ND
(International gaging station)

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 06...	1030	57	880	--	5.0	8.5	--	--	--	--	--
NOV 24...	1010	19	1040	--	- .9	.0	--	--	--	--	--
JAN 06...	1015	18	1050	--	- .9	.0	--	--	--	--	--
FEB 28...	1200	3.6	1020	--	- .9	.0	--	--	--	--	--
MAR 31...	1155	120	630	7.8	2.0	.0	236	39	58	22	37
MAY 10...	1505	504	518	--	13.0	12.0	--	--	--	--	--
JUN 30...	0905	145	778	--	18.5	20.0	--	--	--	--	--
AUG 16...	1515	24	898	--	18.0	22.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 31...	24	1.1	12	240	0	200	6.0	110	11	.20	16	408

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 31...	386	.55	132	2	0	30	0	50	60	.1	0	350

05101000 TONGUE RIVER AT AKRA, ND

LOCATION.--Lat 48°46'42", long 97°44'43", in SW¼ 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 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to June 1950 (WSP 1137-B), October 1951 to 1983. Seasonal record since 1982.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 930.00 ft 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 fair except those for January and February, 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.

AVERAGE DISCHARGE.--31 years (water years 1952-82), 21.4 ft^3/s, 15,500 acre-ft/yr; median of yearly mean discharges, 19 ft^3/s, 13,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,800 ft^3/s Apr. 18, 1950, gage height, 48.7 ft, from flood-marks, site and datum then in use, from rating curve extended above 1,500 ft^3/s on basis of contracted-opening measurement of peak flow; no flow Dec. 1-27, 1952, Aug. 13, 14, 1961.

This flood is the highest known since settlement of the region in about 1860.

FXTREMES FOR CURRENT YEAR.--Maximum discharge, 354 ft^3/s Apr. 8, gage height, 12.89 ft; minimum recorded discharge 0.33 ft^3/s, Aug. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						5.0	66	22	11	5.4	.65	1.9
2						10	152	21	11	5.8	.67	1.9
3						20	150	20	10	6.9	.53	1.9
4						50	122	19	11	7.6	.52	1.8
5						100	127	18	11	7.2	.52	1.9
6						150	203	18	9.8	6.7	.46	1.9
7						200	298	17	8.7	6.0	.43	1.9
8						220	345	16	8.0	5.5	1.2	1.9
9						97	339	16	7.2	4.8	1.4	1.9
10						73	288	16	6.8	4.3	1.3	1.9
11						56	228	18	6.3	3.5	3.2	1.9
12						54	184	19	6.2	2.6	5.1	1.9
13						53	133	25	7.2	2.9	5.1	1.9
14						72	85	32	7.9	3.4	4.9	1.9
15						101	65	33	8.5	3.1	2.6	1.9
16						73	55	29	8.9	2.9	.75	1.9
17						47	49	25	8.2	2.6	.52	2.3
18						58	46	23	7.2	2.4	.44	4.0
19						53	43	21	6.5	2.4	.34	3.6
20						52	42	19	6.4	2.5	.33	3.9
21						50	42	18	6.1	2.4	.35	4.3
22						24	41	17	7.4	2.5	1.0	4.7
23						20	38	16	7.9	2.5	1.6	5.2
24						16	36	14	7.9	2.5	1.8	5.6
25						12	33	14	7.9	2.5	1.8	5.8
26						10	31	13	7.2	2.4	1.8	5.2
27						6.0	30	13	6.0	2.0	1.8	4.1
28						2.7	26	12	5.5	1.1	1.8	2.4
29						2.7	24	11	5.1	.90	1.8	1.2
30						2.8	23	11	5.7	.89	1.8	2.9
31						3.6	---	11	---	.73	1.9	---
TOTAL						1693.8	3344	577	234.5	108.92	48.41	85.5
MEAN						54.6	111	18.6	7.82	3.51	1.56	2.85
MAX						220	345	33	11	7.6	5.1	5.8
MIN						2.7	23	11	5.1	.73	.33	1.2
AC-FT						3360	6630	1140	465	216	96	170

RED RIVER OF THE NORTH BASIN

05101000 TONGUE RIVER AT AKRA, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
MAR											
09...	1620	103	525	7.6	- .4	2.0	208	36	55	17	23
29...	1620	2.7	542	--	1.0	2.0	--	--	--	--	--
MAY											
12...	0935	18	460	--	2.0	9.0	--	--	--	--	--
JUN											
30...	1515	5.7	519	--	21.0	22.0	--	--	--	--	--
AUG											
17...	1540	.52	561	--	34.0	25.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
09...	18	.7	12	209	0	170	8.3	84	7.8	.20	18	360

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
09...	327	.49	100	2	70	110	0	17	590	.1	1	150

05102500 RED RIVER OF THE NORTH AT EMERSON, MAN
(National stream-quality accounting network station)
(International gaging station)

LOCATION.--Lat 49°00'30", long 97°12'40", in sec.2, T.1, R.2 E., 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 mi^2, approximately, includes 3,800 mi^2 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 700.00 ft National Geodetic Vertical Datum of 1929, by Geodetic Survey of Canada. See WSP 1728 or 1913 for history of changes prior to Apr. 10, 1953.

REMARKS.--Records good. Discharge partially regulated by reservoirs on tributaries.

COOPERATION.--This station is one of the international gaging stations maintained by Canada under agreement with the United States.

AVERAGE DISCHARGE.--70 years (water years 1913-82), 3,313 ft^3/s, 2,400,000 acre-ft/yr; median of yearly mean discharges, 2,760 ft^3/s, 1,910,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 95,500 ft^3/s May 13, 1950, gage height, 90.89 ft, gage height, 91.19 ft May 1, 1979; minimum observed discharge, 0.9 ft^3/s Feb. 6-8, 1937.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 24,600 ft^3/s Apr. 9; minimum daily, 1180 ft^3/s Feb. 27, 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1360	3700	1900	1540	1510	1180	11300	4700	3090	9460	3340	5010
2	1400	3620	1920	1510	1500	1200	11800	4590	2990	8760	3140	4550
3	1400	3540	1960	1500	1480	1230	12400	4520	2940	8230	2980	4060
4	1410	3440	2020	1480	1480	1260	13000	4410	2910	7840	2900	3600
5	1430	3330	2120	1460	1470	1340	14000	4270	2870	7520	2770	3200
6	1490	3210	2210	1470	1470	2180	15600	4170	2820	7630	2620	2880
7	1640	3160	2330	1490	1450	4800	18700	4030	2760	8370	2510	2640
8	1970	3110	2470	1510	1450	6070	21900	3880	2670	9290	2430	2450
9	2450	3010	2590	1550	1430	7560	24600	3740	2580	9920	2350	2330
10	1690	2960	2620	1600	1400	9460	24500	3600	2500	10200	2240	2220
11	3330	2770	2620	1650	1380	11200	23400	3510	2420	10000	2130	2130
12	4360	2480	2480	1700	1360	12300	21600	3450	2350	9570	2040	2050
13	5350	2110	2260	1730	1350	13200	19400	3460	2300	8930	1940	2000
14	6590	2150	2020	1750	1340	13700	17400	3500	2260	8160	1840	1980
15	7820	2190	1840	1770	1340	13700	15400	3670	2390	7380	1740	2010
16	8080	2130	1770	1780	1350	13700	13400	3920	4030	6600	1660	2040
17	8110	2070	1730	1760	1360	13600	11500	4200	6110	5860	1620	2070
18	7890	2030	1720	1720	1380	13300	9850	4450	7030	5230	1570	2100
19	7290	2000	1720	1690	1400	13000	8500	4590	6960	4630	1540	2260
20	6710	2010	1700	1680	1420	12800	7700	4550	6460	4200	1470	2640
21	6170	2050	1680	1670	1420	12500	7170	4450	5830	3810	1460	3110
22	5700	2130	1680	1650	1390	12300	6890	4270	5260	3570	1480	3480
23	5340	2200	1680	1630	1350	11900	6670	4100	4770	3500	1530	3640
24	5090	2240	1670	1610	1290	11600	6390	3920	4590	3570	1630	3500
25	4890	2260	1660	1610	1240	11300	6110	3810	5680	3710	2090	3230
26	4700	2230	1650	1590	1200	11000	5860	3710	7910	3740	2910	2950
27	4490	2140	1630	1600	1180	10700	5580	3600	9570	3780	3490	2700
28	4290	2010	1610	1600	1180	10500	5330	3500	10400	3780	3890	2500
29	4100	1900	1600	1600	---	10400	5080	3370	10500	3740	4270	2320
30	3940	1870	1570	1590	---	10500	4870	3280	10100	3670	4800	2160
31	3810	---	1560	1550	---	10700	---	3180	---	3530	5120	---
TOTAL	134290	76050	59990	50040	38570	290180	375900	122400	145050	198180	77500	83810
MEAN	4332	2535	1935	1614	1378	9361	12530	3948	4835	6393	2500	2794
MAX	8110	3700	2620	1780	1510	13700	24600	4700	10500	10200	5120	5010
MIN	1360	1870	1560	1460	1180	1180	4870	3180	2260	3500	1460	1980
AC-FT	266400	150800	119000	99250	76500	575600	745600	242800	287700	393100	153700	166200

CAL YR 1982 TOTAL 1698510 MEAN 4753 MAX 34000 MIN 975 AC-FT 3369000
WTR YR 1983 TOTAL 1651960 MEAN 4526 MAX 24600 MIN 1180 AC-FT 3277000

05102500 RED RIVER AT EMERSON, MANITOBA--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT 14...	1000	E3670	E513	8.2	--	9.0	--	10.0	--	90	--
NOV 22...	1120	E2800	680	8.1	-15.0	1.0	10	14.0	100	K10	K68
JAN 13...	1315	1770	685	8.2	-2.0	.0	5.1	--	--	K10	--
MAR 09...	1810	E20000	435	7.7	-5.5	.0	2.7	--	--	K400	K200
APR 27...	1210	5470	558	8.2	9.0	11.0	140	6.9	65	--	--
JUN 29...	1105	10300	439	7.8	20.5	23.0	160	4.2	51	210	1400
AUG 17...	0925	1770	582	8.2	23.0	22.5	45	7.1	85	K7	47

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
OCT 14...	220	61	50	23	33	1	5.8	160	54	40	.17
NOV 22...	280	53	63	29	34	.9	5.4	224	91	38	.20
JAN 13...	290	49	67	30	34	.9	4.9	242	71	37	.20
MAR 09...	170	28	40	18	20	.7	6.9	146	37	22	.20
APR 27...	220	39	51	22	30	.9	7.5	180	77	26	.20
JUN 29...	200	43	48	19	11	.4	4.3	155	61	11	.20
AUG 17...	260	35	60	26	23	.6	4.9	223	66	22	.20

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
OCT 14...	11	317	310	.43	--	.900	--	--	--	--	40
NOV 22...	8.2	435	400	.59	--	.130	.210	1.9	.090	.060	13
JAN 13...	8.5	407	400	.55	1950	.230	.170	1.4	.020	.040	--
MAR 09...	11	265	240	.36	--	1.80	.270	2.1	.260	.250	36
APR 27...	12	340	330	.46	5020	.270	.060	1.8	.100	.080	42
JUN 29...	13	278	260	.38	7750	.670	.100	1.5	.170	.130	--
AUG 17...	17	371	350	.50	1770	.240	.070	1.2	.080	.110	13

DATE	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
OCT 14...	--	3	--	--	--	--	--	--	--	--	10
NOV 22...	10	2	100	<.5	<1	<1	<3	1	<1	45	10
MAR 09...	80	3	44	.5	<1	<1	<3	4	<1	23	43
APR 27...	60	2	210	<.5	<1	<1	<3	7	1	29	5
AUG 17...	10	5	180	<.5	<1	<1	<3	5	<1	28	15

RED RIVER OF THE NORTH BASIN

05102500 RED RIVER AT EMERSON, MANITOBA--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT 14...	1000	E3670	E513	8.2	--	9.0	--	10.0	--	90	--
NOV 22...	1120	E2800	680	8.1	-15.0	1.0	10	14.0	100	K10	K68
JAN 13...	1315	1770	685	8.2	-2.0	.0	5.1	--	--	K10	--
MAR 09...	1810	E20000	435	7.7	-5.5	.0	2.7	--	--	K400	K200
APR 27...	1210	5470	558	8.2	9.0	11.0	140	6.9	65	--	--

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
OCT 14...	220	61	50	23	33	1	5.8	160	54	40	.17
NOV 22...	280	53	63	29	34	.9	5.4	224	91	38	.20
JAN 13...	290	49	67	30	34	.9	4.9	242	71	37	.20
MAR 09...	170	28	40	18	20	.7	6.9	146	37	22	.20
APR 27...	220	39	51	22	30	.9	7.5	180	77	26	.20

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
OCT 14...	11	317	310	.43	--	.900	--	--	--	--	40
NOV 22...	8.2	435	400	.59	--	.130	.210	1.9	.090	.060	13
JAN 13...	8.5	407	400	.55	1950	.230	.170	1.4	.020	.040	--
MAR 09...	11	265	240	.36	--	1.80	.270	2.1	.260	.250	36
APR 27...	12	340	330	.46	5020	.270	.060	1.8	.100	.080	42

DATE	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
OCT 14...	--	3	--	--	--	--	--	--	--	--	10
NOV 22...	10	2	100	<.5	<1	<1	<3	1	<1	45	10
MAR 09...	80	3	44	.5	<1	<1	<3	4	<1	23	43
APR 27...	60	2	210	<.5	<1	<1	<3	7	1	29	5

05102500 RED RIVER AT EMERSON, MANITOBA--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)
APR				
27...	1300	530	6.3	9.0
27...	1302	530	6.8	11.0
27...	1304	532	6.8	11.0
27...	1306	520	7.1	10.5
27...	1308	528	7.2	11.0
27...	1310	530	7.2	11.0
27...	1312	530	7.3	11.0
27...	1314	529	7.3	11.0
27...	1316	530	7.3	11.0
27...	1318	530	7.4	11.0
27...	1320	530	7.4	11.0
27...	1322	530	7.4	11.0
27...	1324	530	7.3	11.0
27...	1326	530	7.5	11.0
27...	1328	530	7.5	11.0
27...	1330	530	7.5	11.0
27...	1332	530	7.5	11.0
27...	1334	530	7.5	11.0
27...	1336	529	7.5	11.0
27...	1338	529	7.6	11.0
27...	1340	529	7.6	11.0
27...	1342	529	7.6	11.0
27...	1344	529	7.5	11.0
27...	1346	530	7.6	11.0
27...	1348	529	7.6	11.0
27...	1350	530	7.6	11.0
27...	1352	530	7.5	11.0
27...	1354	528	7.7	11.0
27...	1356	530	7.7	11.0
27...	1358	530	7.7	11.0
27...	1400	529	7.7	11.0
27...	1402	529	7.6	11.0
27...	1404	529	7.7	11.0
27...	1406	529	7.7	11.0
27...	1408	530	7.7	11.0
27...	1410	531	7.7	11.0
27...	1412	531	7.7	11.0
27...	1414	526	7.7	11.0
27...	1416	532	7.7	11.0
27...	1418	532	7.7	11.0
27...	1420	531	7.7	11.0
27...	1422	531	7.7	11.0
27...	1424	531	7.8	11.0
27...	1426	532	7.8	11.0
27...	1428	532	7.8	11.0
27...	1430	532	7.7	11.0
27...	1432	532	7.7	11.0
27...	1434	532	7.7	11.0
27...	1436	531	7.8	11.5
27...	1438	531	7.8	11.5
27...	1440	530	7.8	11.5
27...	1442	530	7.8	11.5
27...	1444	530	7.8	11.5
27...	1446	531	7.6	11.5
27...	1448	530	7.7	11.5
27...	1450	531	7.7	11.5
27...	1452	531	7.7	11.5
27...	1454	530	7.7	11.0
27...	1456	530	7.6	11.0
27...	1458	530	7.6	11.0
27...	1500	530	7.6	11.5
27...	1502	530	7.6	11.5
27...	1504	531	7.5	11.0
27...	1506	531	7.5	11.0
27...	1508	531	7.4	11.0
27...	1510	531	7.2	11.0
27...	1512	531	7.2	11.0
27...	1514	531	7.2	11.0
27...	1516	531	7.2	11.0
27...	1518	531	7.2	11.0

05113360 LONG CREEK AT WESTERN CROSSING OF INTERNATIONAL BOUNDARY, SASK.
(International gaging station)

LOCATION.--Lat 49°00'01", long 103°21'08", in SE¼ sec.1, T.1, R.11 W., 2d meridian, Hydrologic Unit 09010001, and on right bank 10 mi south of Outram.

DRAINAGE AREA.--1,320 mi^2.

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

GAGE.--Water-stage recorder and artificial control. Datum of gage is 1,894.00 ft 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.

AVERAGE DISCHARGE.--23 years, 41.9 ft^3/s, 30,360 acre-ft/yr; median of yearly mean discharges, 31 ft^3/s, 22,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,690 ft^3/s Apr. 1, 1976, gage height, 12.05 ft; maximum gage height, 12.70 ft Mar. 31, 1976 backwater from ice; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 897 ft^3/s Apr. 17, gage height, 5.83 ft; no flow for many months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	378	68	19	1.8	3.7	.00
2	.00	.00	.00	.00	.00	.00	374	62	18	1.9	2.8	.00
3	.00	.00	.00	.00	.00	.00	459	59	16	2.3	1.9	.00
4	.00	.00	.00	.00	.00	.81	424	53	13	3.0	1.5	.00
5	.00	.00	.00	.00	.00	3.3	360	48	12	3.0	1.1	.00
6	.00	.00	.00	.00	.00	3.0	320	45	12	2.5	.78	.00
7	.00	.00	.00	.00	.00	3.3	346	41	10	2.1	.56	.00
8	.00	.00	.00	.00	.00	2.7	512	37	8.7	1.6	.42	.00
9	.00	.00	.00	.00	.00	2.3	650	36	7.1	1.4	.35	.00
10	.00	.00	.00	.00	.00	1.8	625	33	6.2	1.1	.32	.00
11	.00	.00	.00	.00	.00	1.9	674	32	4.7	.81	.25	.00
12	.00	.00	.00	.00	.00	2.2	720	35	4.3	.64	.21	.00
13	.00	.00	.00	.00	.00	2.7	763	38	3.9	.56	.14	.00
14	.00	.00	.00	.00	.00	4.1	794	40	3.9	.49	.11	.00
15	.00	.00	.00	.00	.00	5.1	763	40	3.7	.42	.07	.00
16	.00	.00	.00	.00	.00	7.8	851	44	3.3	.42	.04	.00
17	.00	.00	.00	.00	.00	5.7	840	50	3.0	.42	.00	.00
18	.00	.00	.00	.00	.00	4.4	625	48	3.6	.46	.00	.00
19	.00	.00	.00	.00	.00	3.9	441	44	3.8	.81	.00	.00
20	.00	.00	.00	.00	.00	3.8	357	41	3.3	.74	.00	.00
21	.00	.00	.00	.00	.00	3.5	297	37	2.9	.64	.00	.00
22	.00	.00	.00	.00	.00	2.8	261	32	2.9	.49	.00	.00
23	.00	.00	.00	.00	.00	2.2	227	28	2.8	.42	.00	.00
24	.00	.00	.00	.00	.00	2.2	199	27	2.7	.35	.00	.00
25	.00	.00	.00	.00	.00	3.3	170	26	2.4	16	.00	.00
26	.00	.00	.00	.00	.00	6.4	140	27	1.9	22	.00	.00
27	.00	.00	.00	.00	.00	9.7	113	27	1.6	18	.00	.00
28	.00	.00	.00	.00	.00	13	99	25	1.5	13	.00	.00
29	.00	.00	.00	.00	---	94	87	22	1.3	8.9	.00	.00
30	.00	.00	.00	.00	---	381	77	22	1.8	5.9	.00	.00
31	.00	---	.00	.00	---	427	---	20	---	4.5	.00	---
TOTAL	.00	.00	.00	.00	.00	1003.91	12946	1187	181.3	116.67	14.25	.00
MEAN	.000	.000	.000	.000	.000	32.4	432	38.3	6.04	3.76	.46	.000
MAX	.00	.00	.00	.00	.00	427	851	68	19	22	3.7	.00
MIN	.00	.00	.00	.00	.00	.00	77	20	1.3	.35	.00	.00
AC-FT	.00	.00	.00	.00	.00	1990	25680	2350	360	231	28	.00

WTR YR 1983 TOTAL 15449.13 MEAN 42.3 MAX 851 MIN .00 AC-FT 30640

05113600 LONG CREEK NEAR NOONAN, ND
(International gaging station)

LOCATION.--Lat 48°58'52", long 103°04'34", near north line of NE¼ 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 mi^2, approximately, of which about 1,160 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 2113: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,840 ft, from topographic map. Prior to Aug. 18, 1960, non-recording gage at same site and datum.

REMARKS.--Records good.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--24 years, 54.2 ft^3/s, 39,270 acre-ft/yr; median of yearly mean discharges, 44 ft^3/s, 31,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,310 ft^3/s Mar. 31, 1976, gage height, 17.61 ft; no flow at times most years.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 31	--	768	ab*8.89	Apr. 17	1200	*841	8.57

No flow Aug. 31 to Sept. 30.

a - Backwater from ice
b - Observed

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.46	.89	.70	.30	.24	32	738	94	22	1.4	9.4	.00
2	.60	.95	.82	.35	.23	29	708	82	20	1.6	7.9	.00
3	.56	.90	.82	.40	.25	28	650	74	19	1.5	5.6	.00
4	.55	.82	.82	.44	.28	29	622	63	17	1.3	4.3	.00
5	.52	.87	.82	.46	.26	28	548	56	15	1.3	2.6	.00
6	.50	.90	.76	.59	.27	21	440	51	14	1.1	2.2	.00
7	.56	.93	.70	.59	.28	20	414	47	13	1.2	1.5	.00
8	.46	1.3	.65	.55	.27	18	458	42	13	1.1	.96	.00
9	.64	.81	.60	.55	.24	12	612	42	12	1.2	.69	.00
10	.76	.78	.55	.55	.26	11	635	39	11	1.4	.60	.00
11	.73	.71	.50	.52	.22	11	640	34	10	1.2	.42	.00
12	.71	.59	.45	.43	.27	14	675	34	9.0	1.3	.32	.00
13	.68	.56	.45	.39	.37	13	709	42	8.2	1.3	.24	.00
14	.72	.65	.40	.43	.52	12	745	41	7.8	1.2	.15	.00
15	.70	.70	.39	.42	.57	17	749	41	6.3	1.1	.14	.00
16	.70	.67	.42	.38	.58	28	738	41	5.6	.97	.09	.00
17	.69	.60	.42	.38	.50	26	825	47	4.8	.81	.07	.00
18	.70	.60	.42	.34	.44	21	725	54	4.1	.67	.05	.00
19	.76	.61	.42	.31	.52	21	538	53	3.6	2.7	.02	.00
20	.69	.60	.40	.31	.44	19	427	48	3.1	3.5	.01	.00
21	.72	.55	.40	.31	.62	18	364	44	2.6	2.9	.01	.00
22	.67	.55	.40	.30	.93	16	317	39	4.3	1.4	.01	.00
23	.65	.50	.38	.31	2.2	14	284	32	4.2	1.1	.03	.00
24	.65	.50	.35	.30	21	13	253	31	3.7	.96	.04	.00
25	.72	.55	.32	.28	26	14	229	29	2.6	.76	.04	.00
26	.82	.61	.29	.20	43	14	202	27	1.5	.60	.03	.00
27	.80	.69	.28	.24	47	12	164	28	1.6	.50	.02	.00
28	1.1	.76	.27	.23	30	20	135	28	1.4	.46	.01	.00
29	1.0	1.3	.26	.27	---	82	118	26	1.3	7.9	.01	.00
30	.92	.95	.25	.27	---	335	106	24	1.8	14	.01	.00
31	.89	---	.27	.25	---	730	---	23	---	12	.00	---
TOTAL	21.63	22.40	14.98	11.65	177.76	1678	14768	1356	243.5	70.43	37.47	.00
MEAN	.70	.75	.48	.38	6.35	54.1	492	43.7	8.12	2.27	1.21	.000
MAX	1.1	1.3	.82	.59	47	730	825	94	22	14	9.4	.00
MIN	.46	.50	.25	.20	.22	11	106	23	1.3	.46	.00	.00
AC-FT	43	44	30	23	353	3330	29290	2690	483	140	74	.00

CAL YR 1982 TOTAL 27992.27 MEAN 76.7 MAX 3600 MIN .00 AC-FT 55520
WTR YR 1983 TOTAL 18401.82 MEAN 50.4 MAX 825 MIN .00 AC-FT 36500

05113600 LONG CREEK NEAR NOONAN, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 06...	1315	.50	1000	--	4.5	6.0	--	--	--	--	--
NOV 30...	1250	.96	1250	--	3.0	1.5	--	--	--	--	--
JAN 11...	1130	.50	1250	--	-2.9	.0	--	--	--	--	--
FEB 15...	1200	.53	1350	--	-2.9	.0	--	--	--	--	--
MAR 15...	1330	17	600	--	.0	.0	--	--	--	--	--
31...	1210	763	995	7.6	--	.5	94	18	18	12	32
APR 12...	1235	695	825	--	- .4	1.0	--	--	--	--	--
MAY 04...	1300	66	730	--	16.0	12.0	--	--	--	--	--
31...	1100	23	--	--	14.0	15.0	--	--	--	--	--
JUN 07...	1220	14	1380	--	20.0	18.0	--	--	--	--	--
JUL 07...	1125	1.3	1390	8.4	31.0	24.0	390	144	66	55	160
AUG 17...	1250	.07	1370	--	30.0	24.0	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 31...	39	1.5	10	93	0	76	3.7	82	5.6	.10	6.4	244
JUL 07...	46	3.6	13	302	0	250	1.9	510	21	.20	.7	945

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 31...	213	.33	503	1	0	210	1	15	120	.1	0	70
JUL 07...	975	1.3	3.3	5	100	20	1	90	10	3.4	2	360

05113750 EAST BRANCH SHORT CREEK RESERVOIR NEAR COLUMBUS, ND

LOCATION.--Lat 48°59'26", long 102°47'07", in SW¼NW¼ 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 mi^2, of which 175 mi^2 is noncontributing.

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

GAGE.--Water-stage recorder. Datum of gage is 1,860.00 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by earth-fill dam; storage began April 1963. Outlet of lake is a fixed-crest concrete dam; average crest elevation, 1,886.90 ft National Geodetic Vertical Datum of 1929. Reservoir capacity at crest elevation, 1,200 acre-ft. The reservoir is operated for water supply and recreation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,850 acre-ft Mar. 28, 1976, gage height, 32.13 ft; minimum, 890 acre-ft Dec. 10, 1977, gage height, 23.92 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,470 acre-ft Apr. 1, gage height, 29.23 ft; minimum recorded, 1,020 acre-ft Sept. 29, gage height, 25.35 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	26.33	1,130	--
Oct. 31	26.54	1,150	+20
Nov. 30	26.56	1,150	0
Dec. 31	--	*1,150	0
CAL YR 1982	--	--	+30
Jan. 31	26.62	1,160	+10
Feb. 28	27.94	1,310	+150
Mar. 31	29.15	1,460	+150
Apr. 30	27.96	1,320	-140
May 31	27.57	1,270	-50
June 30	27.08	1,210	-60
July 31	26.29	1,120	-90
Aug. 31	25.72	1,060	-60
Sept. 30	25.39	1,030	-30
WTR YR 1983	--	--	-100

* - Estimated

05113800 SHORT CREEK BELOW INTERNATIONAL BOUNDARY NEAR ROCHE PERCEE, SASK.
(International gaging station)

LOCATION.--Lat 49°01'42", long 102°51'00", in SW¼ sec.14, T.1, R.7 W., 2d meridian, Hydrologic Unit 09010001, 4 mi southwest of Roche Percee, Saskatchewan, and 5 mi upstream from mouth.

DRAINAGE AREA.--480 mi^2.

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

GAGE.--Water-stage recorder.

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

COOPERATION.--This station is one of the international gaging stations maintained by Canada under agreement with the United States.

AVERAGE DISCHARGE.--23 years, 13.7 ft^3/s, 9,930 acre-ft/yr; median of yearly mean discharges, 4.8 ft^3/s, 3,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,700 ft^3/s Apr. 7, 1969, gage height, 14.33 ft; maximum gage height, 14.39 ft Mar. 28, 1960; no flow on many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 498 ft^3/s Apr. 14, gage height, 8.82 ft; no flow for many months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	26	378	11	2.5	.39	2.4	.07
2	.00	.00	.00	.00	.00	25	327	10	2.4	.35	1.9	.07
3	.00	.00	.00	.00	.00	22	219	10	2.1	.32	1.9	.04
4	.00	.00	.00	.00	.00	22	150	8.3	1.8	.32	1.4	.04
5	.00	.00	.00	.00	.00	20	150	7.1	1.7	.28	1.2	.04
6	.00	.00	.00	.00	.00	16	165	6.3	1.5	.25	.88	.04
7	.00	.00	.00	.00	.00	12	153	5.3	1.3	.28	.78	.04
8	.00	.00	.00	.00	.00	11	139	4.7	1.1	1.7	.53	.04
9	.00	.00	.00	.00	.00	7.0	129	4.3	1.0	1.3	.35	.04
10	.00	.00	.00	.00	.00	6.0	117	4.1	1.0	1.1	.28	.07
11	.00	.00	.00	.00	.00	8.2	107	3.5	.85	.56	.21	.07
12	.00	.00	.00	.00	.00	11	97	3.9	.67	.42	.21	.14
13	.00	.00	.00	.00	.00	13	81	5.0	.71	.32	.18	.18
14	.00	.00	.00	.00	.00	19	67	5.4	.60	.25	.18	.18
15	.00	.00	.00	.00	.00	24	64	5.3	.53	.25	.18	.14
16	.00	.00	.00	.00	.00	27	58	5.3	.42	.25	.11	.11
17	.00	.00	.00	.00	3.4	23	51	6.4	.39	.21	.11	.07
18	.00	.00	.00	.00	56	18	47	12	2.2	2.1	.07	.11
19	.00	.00	.00	.00	130	20	44	12	2.8	2.2	.07	.07
20	.00	.00	.00	.00	93	11	40	10	1.8	4.1	.07	.07
21	.00	.00	.00	.00	87	7.0	37	8.6	1.0	11	.07	.07
22	.00	.00	.00	.00	120	5.0	32	6.8	1.1	16	.07	.07
23	.00	.00	.00	.00	85	3.5	30	5.8	1.2	17	.11	.07
24	.00	.00	.00	.00	53	7.0	27	6.0	1.1	13	.11	.07
25	.00	.00	.00	.00	47	9.4	24	6.3	.78	11	.07	.07
26	.00	.00	.00	.00	43	8.3	21	5.0	.71	11	.07	.07
27	.00	.00	.00	.00	36	8.8	18	4.0	.53	8.5	.07	.00
28	.00	.00	.00	.00	28	35	18	3.7	.39	6.6	.40	.00
29	.00	.00	.00	.00	---	97	15	3.3	.32	6.2	.07	.00
30	.00	.00	.00	.00	---	191	14	2.8	.35	4.5	.07	.00
31	.00	---	.00	.00	---	416	---	2.7	---	3.2	.07	---
TOTAL	.00	.00	.00	.00	781.40	1129.2	2819	194.9	34.85	124.95	14.19	2.05
MEAN	.000	.000	.000	.000	27.9	36.4	94.0	6.29	1.16	4.03	.46	.068
MAX	.00	.00	.00	.00	130	416	378	12	2.8	17	2.4	.18
MIN	.00	.00	.00	.00	.00	3.5	14	2.7	.32	.21	.07	.00
AC-FT	.00	.00	.00	.00	1550	2240	5590	387	69	248	28	4.1

WTR YR 1983 TOTAL 5100.54 MEAN 14.0 MAX 416 MIN .00 AC-FT 10120

05114000 SOURIS (MOUSE) RIVER NEAR SHERWOOD, ND
(International gaging station)

LOCATION.--Lat 48°59'24", long 101°57'28", in NW¼SE¼NE¼ 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 mi^2, approximately, of which about 5,900 mi^2 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 National Geodetic Vertical Datum of 1929. Prior to Apr. 8, 1935, nonrecording gage at same site and datum.

REMARKS.--Records fair. Some regulation by reservoirs in Canada. Some small 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.

AVERAGE DISCHARGE.--53 years, 143 ft^3/s, 103,600 acre-ft/yr; median of yearly mean discharges, 80 ft^3/s, 58,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,800 ft^3/s Apr. 10, 1976, gage height, 25.15 ft; no flow at times in some years.

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.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,980 ft^3/s Apr. 22, gage height, 16.11 ft; minimum daily, 1.0 ft^3/s Sept. 28, 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	12	7.3	5.5	4.0	110	920	1400	254	72	27	2.8
2	6.2	12	7.4	6.2	4.0	110	1080	1350	222	80	28	2.6
3	11	11	7.3	6.2	4.0	110	1100	1260	202	79	26	2.4
4	6.2	10	7.3	6.2	4.0	110	1110	1200	182	85	23	2.2
5	9.4	9.7	7.3	6.2	4.0	110	1150	1180	160	83	20	2.0
6	7.4	9.4	7.1	6.0	4.0	115	1300	1150	148	79	17	1.8
7	5.7	9.2	6.6	6.0	4.0	110	1360	1130	136	74	15	1.6
8	5.6	8.8	5.4	6.0	4.0	115	1300	1110	125	69	14	1.4
9	6.2	8.5	5.0	6.0	4.0	130	1300	1000	115	65	13	1.4
10	6.9	8.5	4.8	6.0	4.0	120	1450	916	113	69	12	1.4
11	7.8	8.5	4.4	5.8	4.0	120	1480	818	111	75	11	1.4
12	7.8	8.0	4.4	5.5	4.0	100	1290	763	106	81	10	1.6
13	7.4	9.4	4.4	5.5	5.0	110	1150	752	87	67	9.1	1.8
14	7.8	9.7	4.4	5.5	6.5	120	1060	728	79	57	8.5	2.0
15	6.6	10	4.6	5.0	6.5	130	1120	673	75	51	9.0	2.0
16	6.9	11	4.7	4.5	7.5	160	1230	669	69	46	8.0	2.0
17	6.6	11	4.8	4.5	10	190	1360	662	65	42	6.7	1.9
18	8.1	11	5.1	4.0	10	160	1450	600	59	38	6.3	1.9
19	7.8	11	5.4	4.0	6.5	130	1500	548	57	39	5.6	1.8
20	6.9	9.9	5.6	4.0	6.0	110	1540	511	54	35	5.3	1.7
21	6.3	9.0	5.7	4.0	6.0	110	1760	495	51	40	5.4	1.7
22	6.6	8.8	5.7	4.0	10	100	1960	478	51	41	5.2	1.6
23	7.8	8.5	5.6	4.0	20	100	1880	450	48	36	6.2	1.5
24	7.8	8.3	5.4	4.0	25	90	1580	407	46	31	5.9	1.5
25	14	8.3	5.4	4.0	25	90	1220	373	45	27	5.5	1.4
26	14	8.1	5.2	4.0	30	90	1060	354	41	25	5.7	1.3
27	13	8.1	5.2	4.0	80	110	1060	343	40	25	5.0	1.2
28	14	7.8	5.2	4.0	110	160	1140	357	45	30	4.3	1.0
29	15	7.8	5.1	4.0	---	280	1290	343	55	26	3.9	1.0
30	12	7.3	5.1	4.0	---	550	1390	309	68	24	3.5	1.2
31	11	---	5.1	4.0	---	800	---	279	---	23	3.0	---
TOTAL	264.1	280.6	172.0	152.6	412.0	4950	39590	22608	2909	1614	328.1	51.1
MEAN	8.52	9.35	5.55	4.92	14.7	160	1320	729	97.0	52.1	10.6	1.70
MAX	15	12	7.4	6.2	110	800	1960	1400	254	85	28	2.8
MIN	4.3	7.3	4.4	4.0	4.0	90	920	279	40	23	3.0	1.0
AC-FT	524	557	341	303	817	9820	78530	44840	5770	3200	651	101

CAL YR 1982 TOTAL 87012.40 MEAN 238 MAX 3840 MIN .10 AC-FT 172600
WTR YR 1983 TOTAL 73331.50 MEAN 201 MAX 1960 MIN 1.0 AC-FT 145500

RED RIVER OF THE NORTH BASIN

05114000 SOURIS RIVER NEAR SHERWOOD, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT										
06...	1315	7.4	1100	7.7	--	7.0	7.8	64	K44	--
20...	1215	6.8	1040	7.8	3.0	5.0	9.2	72	120	140
NOV										
30...	1525	7.4	1630	8.0	5.0	.0	12.5	88	K2	--
JAN										
05...	1235	8.4	1680	7.5	.0	.0	5.9	41	K4	28
FEB										
15...	1430	6.5	1650	7.5	5.0	.0	4.4	--	K90	1600
APR										
07...	0950	1340	535	7.7	6.0	.0	10.8	--	<5	420
19...	1350	1850	540	7.7	16.5	6.5	9.7	79	K25	K70
JUN										
16...	1920	73	785	8.1	22.0	19.5	8.5	92	110	K40
JUL										
19...	1200	38	900	7.9	26.0	22.5	6.0	69	8300	4600
AUG										
24...	1800	5.7	930	7.9	27.0	20.0	7.0	77	360	700

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
OCT										
20...	350	17	78	37	110	3	7.4	331	170	56
NOV										
30...	420	0	89	49	230	5	12	443	400	61
APR										
07...	110	0	26	11	65	3	9.7	115	130	18
19...	140	14	33	14	57	2	9.8	127	130	12
JUN										
16...	250	0	50	30	78	2	11	252	160	19
JUL										
19...	240	0	50	27	110	3	11	269	180	26
AUG										
24...	270	0	59	30	100	3	10	298	160	36

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)
OCT										
06...	--	--	--	--	--	--	--	--	2.2	--
20...	.20	8.5	675	670	.92	12	<.100	.100	.80	.070
NOV										
30...	.30	4.5	1110	1100	1.5	22	<.100	--	--	.070
FEB										
15...	--	--	--	--	--	--	--	.600	2.1	--
APR										
07...	.20	6.1	316	340	.43	1140	.110	--	--	.090
19...	--	--	--	--	--	--	--	.460	2.3	--
19...	.20	4.7	393	340	.53	1960	.190	--	--	.130
JUN										
16...	.20	7.8	517	510	.70	102	<.100	--	--	.040
JUL										
19...	.20	8.2	573	570	.78	59	<.100	--	--	.120
AUG										
24...	.20	12	597	590	.81	9.2	<.100	.060	1.5	.090

05114000 SOURIS RIVER NEAR SHERWOOD--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
OCT 20...	.040	45	20	1	100	<1	<10	2	2	12
FEB 15...	.070	--	--	--	--	--	--	--	--	--
APR 19...	.080	--	--	--	--	--	--	--	--	--
19...	--	85	40	3	91	<1	<10	1	3	1
AUG 24...	.060	7	10	4	110	<1	<10	1	1	<1

DATE	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
OCT 20...	48	74	<.1	2	6	<1	450	<1	7
APR 19...	28	17	<.1	5	5	2	350	2	5
AUG 24...	50	180	<.1	<1	3	<1	400	<1	7

05115500 LAKE DARLING NEAR FOXHOLM, ND

LOCATION.--Lat 48°27'27", long 101°35'14", in NE¼NE¼ sec.1, T.157 N., R.85 W., Ward County, Hydrologic Unit 09010001, on control structure 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 mi^2, approximately, of which about 6,200 mi^2 is probably noncontributing.

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 National Geodetic Vertical Datum of 1929. April 1936 to Aug. 8, 1963, nonrecording gages at same site and datum.

REMARKS.--Gage heights frequently affected by wind. Reservoir is formed by earth dam; storage began in April 1936; dam completed in July 1936. Usable capacity, 108,500 acre-ft between gage heights of 0.0 ft, sill of control gages, and 21.0 ft, crest of spillway. Dead storage, 3,500 acre-ft. Figures given herein represent total contents based on capacity table dated June 7, 1943. Water is used during periods of low flow at wildlife refuge downstream.

COOPERATION.--Supplementary gage readings furnished by Fish and Wildlife Service.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 145,400 acre-ft Apr. 17, 1976, gage height, 24.24 ft; minimum observed since April 1943 when reservoir was first filled to spillway level, 31,200 acre-ft Feb. 18, 25, 1963, gage height, 10.04 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 104,000 acre-ft May 12, gage height, 20.18 ft; minimum, 75,200 acre-ft Apr. 11, gage height, 16.97 ft.

MONTHEND GAGE HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Gage height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	*18.30	86,700	--
Oct. 31	18.38	87,400	+700
Nov. 30	18.18	85,600	-1,800
Dec. 31	17.96	83,700	-1,900
CAL YR 1982	--	--	+19,300
Jan. 31	17.77	82,000	-1,700
Feb. 28	17.58	80,400	-1,600
Mar. 31	17.42	79,100	-1,300
Apr. 30	18.90	91,200	+12,100
May 31	19.39	96,500	+5,300
June 30	19.38	96,400	-100
July 31	*19.10	93,900	-2,500
Aug. 31	18.50	88,500	-5,400
Sept. 30	18.20	85,800	-2,700
WTR YR 1983	--	--	-900

* - Estimated

05116000 SOURIS (MOUSE) RIVER NEAR FOXHOLM, ND

LOCATION.--Lat 48°22'20", long 101°30'18", in SW¼SE¼ 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 mi^2, approximately, of which about 6,200 mi^2 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, 1904-6.

REVISED RECORDS.--WSP 1308: 1905. WSP 2113: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,560.73 ft 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 and several small reservoirs, combined capacity, about 184,000 acre-ft. Some small diversions for irrigation and municipal supply.

AVERAGE DISCHARGE.--48 years, 149 ft^3/s, 108,000 acre-ft/yr; median of yearly mean discharges, 65 ft^3/s 47,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,600 ft^3/s Apr. 17, 1976, gage height, 17.17 ft; maximum reverse flow, 25 ft^3/s Apr. 4, 1949 caused by backwater from the Des Lacs River; no flow at times in many years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,780 ft^3/s Apr. 24, gage height, 13.24 ft; minimum daily, 5.6 ft^3/s Aug. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80	36	43	41	46	30	754	472	109	60	43	8.9
2	70	40	53	41	46	30	976	369	35	67	42	11
3	60	38	52	41	46	26	1060	329	66	67	41	12
4	57	34	50	41	46	22	1100	332	66	64	41	11
5	50	34	49	41	46	23	1120	346	62	56	41	14
6	50	34	48	44	46	39	1140	453	61	55	41	15
7	39	34	47	43	46	37	1180	836	59	55	40	12
8	32	34	46	43	46	28	1280	888	58	51	40	13
9	40	34	46	43	46	24	1430	867	54	51	39	14
10	41	36	46	42	51	81	1530	809	55	52	40	16
11	34	37	45	37	68	266	1630	800	54	50	39	15
12	28	36	45	35	77	267	1680	817	56	46	40	20
13	25	36	45	35	78	263	1540	827	58	47	39	21
14	24	35	46	35	89	227	1390	830	55	46	39	20
15	23	35	45	35	99	211	1300	831	53	49	39	29
16	21	34	44	35	96	225	1240	833	49	47	40	22
17	20	35	41	35	92	234	1200	833	48	46	35	21
18	20	35	38	35	87	229	1180	834	46	56	22	19
19	19	35	37	35	84	237	1170	839	50	67	17	15
20	20	35	35	35	82	217	1170	838	50	64	12	15
21	20	35	35	35	83	205	1220	837	54	61	12	12
22	20	34	35	35	85	232	1380	836	72	54	11	11
23	19	30	35	36	79	316	1610	832	65	51	12	11
24	20	26	37	36	53	306	1750	831	62	48	11	11
25	20	26	38	38	40	294	1560	830	61	45	10	11
26	20	31	39	43	35	336	1010	835	58	47	10	11
27	22	36	40	45	32	367	287	740	53	47	9.4	12
28	36	36	40	46	30	483	196	288	51	46	9.4	12
29	39	38	41	45	---	636	258	202	56	46	6.9	12
30	36	41	41	45	---	631	464	194	63	47	5.6	12
31	35	---	42	45	---	640	---	193	---	45	8.9	---
TOTAL	1040	1040	1324	1221	1754	7162	34805	20601	1739	1633	836.2	438.9
MEAN	33.5	34.7	42.7	39.4	62.6	231	1160	665	58.0	52.7	27.0	14.6
MAX	80	41	53	46	99	640	1750	888	109	67	43	29
MIN	19	26	35	35	30	22	196	193	35	45	5.6	8.9
AC-FT	2060	2060	2630	2420	3480	14210	69040	40860	3450	3240	1660	871

CAL YR 1982 TOTAL 74032.9 MEAN 203 MAX 2670 MIN 2.3 AC-FT 146800
WTR YR 1983 TOTAL 73594.1 MEAN 202 MAX 1750 MIN 5.6 AC-FT 146000

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
05...	0900	48	650	7.8	--	8.5	--	--	--	--	--
05...	1430	48	660	7.8	4.0	8.5	--	--	--	--	--
23...	1445	20	645	--	21.0	8.0	--	--	--	--	--
DEC											
07...	1440	46	670	--	- .9	.5	--	--	--	--	--
JAN											
06...	1045	46	652	--	- .9	1.5	--	--	--	--	--
FEB											
18...	0935	93	670	--	- .4	1.0	--	--	--	--	--
MAR											
18...	1005	232	575	--	- .9	.0	--	--	--	--	--
APR											
05...	1130	1120	620	8.0	2.5	5.0	190	10	44	20	57
JUN											
27...	1545	50	630	--	21.0	23.5	--	--	--	--	--
JUL											
21...	1205	61	575	--	23.5	23.0	--	--	--	--	--
AUG											
31...	1330	9.4	595	7.6	34.0	23.5	180	0	41	19	60
SEP											
13...	1130	22	640	8.0	12.5	12.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
APR												
05...	38	1.8	11	223	0	180	3.5	120	11	.20	5.0	407
AUG												
31...	40	2.0	12	236	0	190	9.4	100	18	.30	7.4	383

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
APR												
05...	380	.55	1230	4	290	0	0	38	150	.0	0	240
AUG												
31...	374	.52	9.7	11	300	20	1	20	30	.3	0	260

05116500 DES LACS RIVER AT FOXHOLM, ND

LOCATION.--Lat 48°22'14", long 101°34'11", in NW¼NE¼NW¼ 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 mi^2, of which about 400 mi^2 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 National Geodetic Vertical Datum of 1929. June 14 to Oct. 23, 1955, nonrecording 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 fair. Some regulation at low flow by a series of wildlife refuge ponds, beginning about 53 mi upstream, combined capacity about 64,000 acre-ft. Some small diversions for irrigation above station.

AVERAGE DISCHARGE.--40 years, 31.5 ft^3/s, 22,820 acre-ft/yr; median of yearly mean discharges, 17 ft^3/s, 12,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,260 ft^3/s Apr. 19, 1979, gage height, 21.23 ft, from highwater mark; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,000 ft^3/s Mar. 31, gage height, 13.76 ft, backwater from ice; minimum daily, 0.86 ft^3/s Aug. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	25	4.5	2.5	1.9	14	760	78	42	26	9.0	1.3
2	11	19	4.7	2.4	1.8	13	500	76	42	26	8.5	1.3
3	10	16	4.9	2.4	1.7	13	320	74	41	27	8.1	1.3
4	9.5	12	5.0	2.4	1.7	12	225	72	41	27	7.5	1.4
5	9.1	13	5.1	2.3	1.5	19	159	71	41	27	7.0	1.4
6	9.0	13	5.1	2.3	1.5	122	124	69	40	27	6.8	1.3
7	9.1	13	5.1	2.3	1.4	112	102	68	40	25	7.2	1.3
8	9.2	12	4.9	2.3	1.3	47	96	66	39	23	6.4	1.3
9	9.6	12	4.6	2.4	1.3	34	88	65	39	21	6.0	1.3
10	11	12	4.3	2.5	1.3	25	78	62	38	20	5.9	1.4
11	13	12	4.0	2.5	1.0	20	69	59	38	16	5.5	1.4
12	16	9.4	3.6	2.5	1.0	81	61	59	37	10	4.3	4.9
13	18	9.0	3.3	2.5	1.0	260	52	63	36	7.5	3.2	7.3
14	18	8.8	3.1	1.8	2.0	280	46	64	36	5.4	2.1	7.3
15	17	8.4	3.1	1.8	4.0	230	47	65	35	5.2	1.7	8.1
16	16	8.7	3.0	1.8	8.0	141	48	66	34	4.7	1.3	8.1
17	15	9.0	2.9	1.9	20	83	51	65	34	4.6	1.2	8.1
18	15	9.1	2.8	2.2	34	53	55	62	33	4.8	1.2	7.9
19	15	9.2	2.8	1.9	26	35	61	61	32	5.8	1.3	7.5
20	14	9.2	2.8	2.0	13	30	67	59	31	8.1	1.2	7.5
21	14	8.1	2.8	2.0	26	24	71	60	30	8.2	1.2	7.5
22	14	7.2	2.8	2.2	27	20	74	60	30	5.9	1.2	7.3
23	13	5.8	2.8	2.2	54	15	75	58	30	5.6	2.1	7.3
24	13	5.1	2.8	2.1	104	13	77	56	29	11	2.3	7.3
25	13	4.8	2.9	1.9	70	25	78	54	29	11	2.3	7.2
26	13	4.5	2.9	2.2	38	56	80	52	28	11	2.2	7.2
27	13	4.3	2.9	2.2	32	45	81	50	27	11	1.1	7.2
28	13	4.2	2.8	2.1	21	92	80	48	26	11	.86	7.0
29	15	4.3	2.8	2.1	---	200	79	46	25	10	.93	7.0
30	51	4.5	2.6	1.8	---	390	78	44	26	9.6	1.0	7.2
31	43	---	2.5	1.9	---	780	---	43	---	9.4	1.2	---
TOTAL	470.5	292.6	110.2	67.4	497.4	3284	3782	1895	1029	424.8	111.79	153.6
MEAN	15.2	9.75	3.55	2.17	17.8	106	126	61.1	34.3	13.7	3.61	5.12
MAX	51	25	5.1	2.5	104	780	760	78	42	27	9.0	8.1
MIN	9.0	4.2	2.5	1.8	1.0	12	46	43	25	4.6	.86	1.3
AC-FT	933	580	219	134	987	6510	7500	3760	2040	843	222	305

CAL YR 1982 TOTAL 10816.82 MEAN 29.6 MAX 800 MIN .00 AC-FT 21460
WTR YR 1983 TOTAL 12118.29 MEAN 33.2 MAX 780 MIN .86 AC-FT 24040

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-51, 1969-70, 1972 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
23...	1300	14	1220	--	12.0	5.5	--	--	--	--	--
DEC											
07...	1520	5.2	2010	--	- .9	.0	--	--	--	--	--
FEB											
18...	1040	33	410	--	- .4	.0	--	--	--	--	--
MAR											
18...	1130	52	217	--	- .9	.0	--	--	--	--	--
APR											
05...	1325	152	375	7.5	5.0	.5	120	0	26	13	28
JUN											
28...	1250	25	1000	--	25.0	21.5	--	--	--	--	--
JUL											
21...	1025	7.6	1110	--	23.0	26.0	--	--	--	--	--
AUG											
31...	1355	1.2	1240	8.1	34.0	24.0	380	0	73	47	160
31...	1356	1.2	1240	8.1	34.0	51.0	360	0	66	47	160

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
APR										
05...	30	1.2	16	162	0	130	8.1	54	5.6	.10
AUG										
31...	47	3.7	18	476	0	390	6.0	300	23	.30
31...	48	3.8	16	--	--	401	6.1	270	30	.30

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BORON, DIS-SOLVED (UG/L AS B) (01020)
APR										
05...	9.2	253	233	.34	104	--	--	1	--	60
AUG										
31...	14	875	870	1.2	2.9	--	--	18	--	130
31...	13	872	845	1.2	2.8	<.10	.450	14	76	140

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
APR									
05...	--	230	0	15	160	.0	0	74	--
AUG									
31...	--	30	1	60	10	.3	0	440	--
31...	1	9	<1	65	9	<.1	<1	420	7

05117500 SOURIS (MOUSE) RIVER ABOVE MINOT, ND

LOCATION.--Lat 48°14'45", long 101°22'15", in NW¼NW¼SE¼ 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 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 river between the sites.

REMARKS.--Records good except for winter periods, which are fair. Flow almost completely regulated by Lake Darling (station 05115500), 41 mi upstream and several smaller reservoirs; combined capacity, about 248,000 acre-ft. Some small diversions for irrigation and municipal supply.

AVERAGE DISCHARGE.--80 years, 171 ft³/s, 123,900 acre-ft/yr; median of yearly mean discharges, 90 ft³/s, 65,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s Apr. 20, 1904, gage height, 21.9 ft at site in Minot, from rating curve extended above 8,100 ft³/s; no flow at times in some years. Maximum stage at present site, about 23 ft in April 1904.

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.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,000 ft³/s Mar. 31, gage height, 11.58 ft; minimum daily, 6.8 ft³/s Sept. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	118	91	44	43	45	60	1580	574	252	83	57	8.0
2	108	72	50	40	45	40	1620	564	190	89	54	6.8
3	157	65	56	40	45	40	1570	483	103	91	50	7.0
4	95	59	58	36	45	40	1420	450	108	88	47	8.4
5	66	52	57	35	45	40	1340	451	111	85	44	10
6	56	52	53	40	45	50	1280	460	107	79	42	11
7	49	54	49	40	45	70	1250	622	105	72	41	10
8	43	51	48	40	45	100	1260	825	102	68	41	11
9	38	53	46	40	45	130	1290	861	98	65	41	11
10	43	54	42	40	45	160	1370	842	93	61	40	9.6
11	64	51	42	40	50	200	1430	814	89	57	39	10
12	60	50	42	40	60	260	1480	827	87	55	38	13
13	58	48	42	38	80	400	1510	841	86	49	36	12
14	51	48	42	35	100	680	1460	842	86	45	35	15
15	42	45	42	35	140	660	1350	842	84	42	35	27
16	35	45	42	35	180	560	1250	845	81	42	36	31
17	35	45	41	35	220	431	1170	843	78	41	35	33
18	36	45	35	35	200	324	1130	840	76	43	34	29
19	36	45	30	35	180	260	1120	842	76	51	27	25
20	37	45	26	35	160	230	1110	842	76	63	20	24
21	36	38	24	35	140	210	1100	843	75	64	16	22
22	36	38	23	35	120	200	1150	844	96	58	14	22
23	37	36	22	35	110	200	1250	835	101	51	14	21
24	37	34	22	35	120	240	1380	827	92	47	14	20
25	36	33	24	38	130	260	1490	818	85	51	14	20
26	38	29	31	40	120	300	1450	809	81	58	12	20
27	38	29	31	40	100	400	979	805	77	61	11	20
28	50	34	40	40	80	600	470	625	74	60	10	21
29	65	38	45	40	---	980	318	341	73	59	9.9	21
30	75	40	47	40	---	1480	449	269	80	59	10	29
31	110	---	45	42	---	1880	---	255	---	59	10	---
TOTAL	1785	1419	1241	1177	2740	11485	37026	21781	2922	1896	926.9	527.8
MEAN	57.6	47.3	40.0	38.0	97.9	370	1234	703	97.4	61.2	29.9	17.6
MAX	157	91	58	43	220	1880	1620	861	252	91	57	33
MIN	35	29	22	35	45	40	318	255	73	41	9.9	6.8
AC-FT	3540	2810	2460	2330	5430	22780	73440	43200	5800	3760	1840	1050

CAL YR 1982 TOTAL 85139.3 MEAN 233 MAX 3000 MIN 2.4 AC-FT 168900
WTR YR 1983 TOTAL 84926.7 MEAN 233 MAX 1880 MIN 6.8 AC-FT 168500

RED RIVER OF THE NORTH BASIN

05117500 SOURIS RIVER ABOVE MINOT, ND

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT											
05...	1100	66	880	8.1	--	8.0	--	10.6	89	K19	--
05...	1600	66	860	8.0	4.0	--	--	8.9	--	K20	--
19...	1800	38	890	8.1	4.0	7.5	40	11.0	91	--	860
DEC											
03...	1105	56	835	8.0	- .4	.0	30	12.5	86	K10	--
JAN											
06...	1325	40	835	7.7	- .9	.0	<1	9.5	65	K9	K7
FEB											
17...	1800	224	1040	7.8	- .9	.0	35	10.5	72	40	3600
APR											
04...	1800	1390	520	7.8	2.5	3.5	35	10.5	--	K20	570
21...	1025	1110	660	8.2	11.0	8.0	--	12.0	101	K2	K2
JUN											
14...	1100	81	795	7.8	21.0	19.0	30	6.3	68	58	110
JUL											
21...	1400	69	700	7.8	25.0	26.5	30	5.7	70	165	100
AUG											
23...	1645	15	655	8.0	24.0	21.5	15	8.0	90	520	570
SEP											
13...	0945	12	678	8.3	11.0	12.5	--	8.0	74	50	--

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
OCT											
19...	240	0	50	28	110	48	3.2	12	262	4.0	190
DEC											
03...	250	7	55	27	88	42	2.5	11	242	4.7	180
JAN											
06...	240	6	53	27	86	42	2.5	12	238	9.2	180
FEB											
17...	300	0	63	35	120	45	3.1	14	308	9.4	240
APR											
04...	170	10	39	17	44	34	1.5	12	158	4.8	110
21...	--	--	--	--	--	--	--	--	--	--	--
21...	200	3	47	21	67	40	2.1	9.6	201	2.4	140
JUN											
14...	220	0	48	25	90	45	2.7	12	236	7.2	170
JUL											
21...	190	0	40	22	79	46	2.6	11	217	6.6	130
AUG											
23...	200	0	44	22	71	42	2.2	11	213	4.1	120
SEP											
13...	--	--	--	--	--	--	--	--	--	--	--

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

05117500 SOURIS RIVER ABOVE MINOT, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)
OCT											
05...	--	--	--	--	--	--	--	<.020	<.10	--	.080
05...	--	--	--	--	--	--	--	<.020	<.10	--	.090
19...	19	.20	2.7	587	570	.80	60.2	.020	<.10	<.10	.120
DEC											
03...	20	.30	2.0	527	529	.72	80.0	--	--	<.10	--
JAN											
06...	18	.30	2.8	531	522	.72	57.3	--	--	<.10	--
FEB											
17...	24	.20	8.9	715	692	.97	432	.020	.20	.22	.450
APR											
04...	10	.20	6.6	293	334	.40	1100	--	--	<.10	--
21...	--	--	--	--	--	--	--	<.020	<.10	--	.060
21...	11	.20	9.0	429	426	.58	1290	--	--	<.10	--
JUN											
14...	16	.20	5.0	518	508	.70	113	--	--	<.10	--
JUL											
21...	18	.20	3.5	452	434	.61	84.2	--	--	<.10	--
AUG											
23...	16	.30	5.9	429	419	.58	17.4	<.020	<.10	<.10	.030
SEP											
13...	--	--	--	--	--	--	--	<.020	<.10	--	.100

DATE	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, AMMONIA DISSOLVED (MG/L AS NH4) (71846)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N) (00607)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS TOTAL (MG/L AS PO4) (71886)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)
OCT											
05...	--	--	1.4	--	1.50	--	--	--	.210	.64	--
05...	--	--	1.4	--	1.50	--	--	--	.200	.61	--
19...	--	.15	1.9	1.7	2.00	.20	1.8	--	.150	.46	.140
DEC											
03...	--	--	--	--	--	--	--	--	--	--	.100
JAN											
06...	--	--	--	--	--	--	--	--	--	--	.100
FEB											
17...	2.7	.53	2.1	2.3	2.50	.00	2.7	12	.370	1.1	.280
APR											
04...	--	--	--	--	--	--	--	--	--	--	.090
21...	--	--	1.4	--	1.50	.30	1.2	--	.210	.64	--
21...	--	--	--	--	--	--	--	--	--	--	.160
JUN											
14...	--	--	--	--	--	--	--	--	--	--	.190
JUL											
21...	--	--	--	--	--	--	--	--	--	--	.290
AUG											
23...	--	.03	1.5	.98	1.50	.50	1.0	--	.360	1.1	.240
SEP											
13...	--	--	1.5	--	1.60	--	--	--	.200	.61	--

RED RIVER OF THE NORTH BASIN

05117500 SOURIS RIVER ABOVE MINOT, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P) (70507)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	PHOS-PHORUS, HYDRO-LYZABLE TOTAL (MG/L AS P) (00669)	PHOS-PHORUS, HYDRO-LYZABLE DIS. (MG/L AS P) (00672)	PHOS-PHORUS, HYDRO. + ORTHO TOTAL (MG/L AS P) (00678)	PHOS-PHORUS, HYDRO. + ORTHO DIS. (MG/L AS P) (00677)	PHOS-PHORUS, ORGANIC TOTAL (MG/L AS P) (00670)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)
OCT											
05...	.190	--	--	--	--	--	--	--	--	--	--
05...	.180	--	--	--	--	--	--	--	--	--	--
19...	.140	.100	.31	.01	.07	.15	.17	.00	20	4	56
DEC											
03...	--	--	--	--	--	--	--	--	--	--	--
JAN											
06...	--	--	--	--	--	--	--	--	--	--	--
FEB											
17...	.260	.230	.71	.03	.00	.29	.22	.08	30	3	73
APR											
04...	--	--	--	--	--	--	--	--	--	--	--
21...	.100	.110	.34	.11	.04	.21	.15	.00	--	--	--
21...	--	--	--	--	--	--	--	--	20	4	60
JUN											
14...	--	--	--	--	--	--	--	--	--	--	--
JUL											
21...	--	--	--	--	--	--	--	--	--	--	--
AUG											
23...	.260	.220	.67	.00	.00	.20	.19	.16	10	9	52
SEP											
13...	.160	--	--	--	--	--	--	--	--	--	--

DATE	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)
OCT											
19...	270	<1	<10	<1	1	35	1	42	49	.1	3
DEC											
03...	430	--	--	--	--	--	--	--	--	--	--
JAN											
06...	490	--	--	--	--	--	--	--	--	--	--
FEB											
17...	280	<1	<10	1	1	61	<1	51	370	<.1	3
APR											
04...	340	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--
21...	310	<1	<10	2	1	19	<1	37	47	<.1	2
JUN											
14...	270	--	--	--	--	--	--	--	--	--	--
JUL											
21...	330	--	--	--	--	--	--	--	--	--	--
AUG											
23...	350	<1	<10	1	1	8	<1	35	110	<.1	2
SEP											
13...	--	--	--	--	--	--	--	--	--	--	--

05117500 SOURIS RIVER ABOVE MINOT, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)
OCT											
19...	2	1	<1	310	<1.0	10	6	4	--	--	<.01
DEC											
03...	--	--	--	--	--	--	--	--	--	--	--
JAN											
06...	--	--	--	--	--	--	--	--	--	--	--
FEB											
17...	4	0	1	360	<1.0	20	--	<3	--	--	<.01
APR											
04...	--	--	--	--	--	--	--	--	11	.9	--
21...	--	--	--	--	--	--	--	--	--	--	--
21...	5	7	<1	290	1.8	20	10	10	10	.5	<.01
JUN											
14...	--	--	--	--	--	--	--	--	--	.2	--
JUL											
21...	--	--	--	--	--	--	--	--	12	--	--
AUG											
23...	3	6	<1	300	1.5	70	60	6	11	.5	<.01
SEP											
13...	--	--	--	--	--	--	--	--	--	--	--

05120000 SOURIS (MOUSE) RIVER NEAR VERENDRYE, ND

LOCATION.--Lat 48°09'35", long 100°43'45", in NW¼SW¼ 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 Wintering River and at mile 302.0.

DRAINAGE AREA.--11,300 mi^2, approximately, of which about 6,900 mi^2 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 National Geodetic Vertical Datum of 1929. February to June 1933, at site 4 mi upstream at datum 1.65 ft higher. April 1, 1937, to Mar. 3, 1938, nonrecording gage at present site, at datum 1.97 ft higher.

REMARKS.--Records good. Flow regulated by reservoirs on Souris and Des Lacs Rivers, the largest of which is Lake Darling (station 05115500), 128 mi upstream, combined capacity about 248,000 acre-ft. Some small diversions for irrigation and municipal supply.

AVERAGE DISCHARGE.--46 years, 220 ft^3/s, 159,400 acre-ft/yr; median of yearly mean discharges, 120 ft^3/s, 86,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,900 ft^3/s Apr. 19, 1976, gage height, 17.84 ft; minimum daily flows of .3 ft^3/s or less occurred in Aug., Sept 1937, Oct 1939 and Feb. 1963.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,650 ft^3/s Apr. 7, gage height, 15.40 ft; minimum daily discharge 15 ft^3/s Sept. 6-10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	177	88	37	45	50	450	1100	677	531	129	63	21
2	146	86	45	45	50	390	1280	616	446	180	61	20
3	132	105	48	48	50	320	1430	683	406	522	58	20
4	132	115	50	48	50	230	1590	715	367	936	56	18
5	122	75	56	48	50	230	1740	691	289	761	54	16
6	141	80	62	50	50	380	2000	654	212	454	52	15
7	149	80	63	50	50	700	2300	636	195	266	50	15
8	139	70	61	50	50	950	1780	638	188	203	47	15
9	146	70	54	50	50	930	1520	686	177	169	45	15
10	141	70	47	50	50	840	1410	794	169	144	42	15
11	141	65	45	50	50	680	1370	866	164	124	40	16
12	140	80	46	50	50	560	1370	900	159	115	41	18
13	140	50	43	50	56	600	1380	916	134	105	44	18
14	130	50	43	50	65	850	1400	926	127	96	44	19
15	120	50	45	50	65	1000	1420	934	124	84	42	24
16	110	50	46	50	170	1030	1420	920	110	76	44	27
17	100	50	47	50	380	1030	1390	907	105	69	46	35
18	90	50	47	50	440	1020	1330	899	103	70	46	47
19	80	50	47	50	480	960	1260	899	105	81	50	39
20	70	50	46	50	480	880	1200	906	104	100	46	35
21	60	50	46	50	420	790	1150	910	103	120	41	35
22	56	45	44	50	410	710	1130	906	139	140	40	35
23	56	40	42	50	450	670	1110	901	708	122	40	35
24	54	40	41	45	460	620	1110	898	822	100	40	36
25	53	40	40	45	460	570	1150	892	489	86	38	34
26	53	40	38	45	480	540	1220	898	258	73	34	31
27	51	40	38	45	520	570	1280	886	190	67	31	30
28	54	40	39	50	480	620	1300	872	164	63	29	29
29	56	38	42	50	---	670	1190	860	144	69	26	28
30	61	37	44	50	---	740	908	810	132	67	25	32
31	80	---	44	50	---	900	---	674	---	65	23	---
TOTAL	3180	1794	1436	1514	6416	21430	41238	25370	7364	5656	1338	773
MEAN	103	59.8	46.3	48.8	229	691	1375	818	245	182	43.2	25.8
MAX	177	115	63	50	520	1030	2300	934	822	936	63	47
MIN	51	37	37	45	50	230	908	616	103	63	23	15
AC-FT	6310	3560	2850	3000	12730	42510	81800	50320	14610	11220	2650	1530

CAL YR 1982 TOTAL 106813.4 MEAN 293 MAX 2330 MIN 1.8 AC-FT 211900
WTR YR 1983 TOTAL 117509.0 MEAN 322 MAX 2300 MIN 15 AC-FT 233100

PERIOD OF RECORD.--Water years 1950-51, 1957 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
OCT										
05...	0930	120	848	7.8	1.0	8.0	--	8.8	74	--
22...	1830	56	1040	--	7.0	6.0	50	9.0	72	--
DEC										
01...	1215	37	1460	--	- .9	.0	--	--	--	--
JAN										
03...	1545	48	1070	--	2.0	.0	--	--	--	--
FEB										
14...	1650	65	950	7.5	.5	.0	10	6.3	43	--
MAR										
17...	1120	1040	315	--	1.0	.0	--	--	--	--
31...	1130	876	840	8.0	3.5	.5	50	10.6	74	--
APR										
19...	1118	1270	670	--	17.0	5.0	--	--	--	--
MAY										
05...	1126	670	790	7.5	19.5	12.0	15	4.0	37	--
JUN										
22...	1053	137	845	7.7	19.0	21.0	--	5.6	62	--
JUL										
20...	1302	99	960	7.8	32.0	26.0	25	7.4	91	--
SEP										
08...	1328	14	1180	7.6	18.0	17.0	--	5.5	57	--
27...	1115	30	1080	8.0	22.0	13.5	--	10.0	96	40

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
OCT											
05...	--	--	--	--	--	--	--	--	--	--	--
22...	290	30	62	33	120	46	3.1	10	261	--	270
FEB											
14...	290	9	65	31	95	40	2.5	11	281	17	200
MAR											
31...	180	3	39	19	62	42	2.1	11	173	3.3	130
MAY											
05...	210	2	48	23	86	45	2.6	10	213	13	150
JUL											
20...	270	0	58	31	110	46	3.0	9.5	299	9.2	190
SEP											
27...	--	--	--	--	--	--	--	--	--	--	--

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
OCT										
05...	--	--	--	--	--	--	--	.080	.60	--
22...	23	.20	11	712	686	.97	107	--	--	.24
FEB										
14...	21	.30	6.7	622	599	.85	110	--	--	.32
MAR										
31...	15	.20	7.5	387	388	.53	915	--	--	.19
MAY										
05...	18	.20	9.1	486	472	.66	879	--	--	.16
JUL										
20...	20	.20	12	630	610	.86	168	--	--	<.10
SEP										
27...	--	--	--	--	--	--	--	.030	.30	--

RED RIVER OF THE NORTH BASIN

05120000 SOURIS RIVER NEAR VERENDRYE, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS TOTAL (MG/L AS PO4) (71886)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P) (70507)	BORON, DISSOLVED (UG/L AS B) (01020)
OCT										
05...	.650	3.0	1.8	2.40	13	.780	2.4	--	.670	--
22...	--	--	--	--	--	--	--	.230	--	260
FEB										
14...	--	--	--	--	--	--	--	.090	--	470
MAR										
31...	--	--	--	--	--	--	--	.460	--	280
MAY										
05...	--	--	--	--	--	--	--	.390	--	260
JUL										
20...	--	--	--	--	--	--	--	.270	--	290
SEP										
27...	.070	2.0	1.6	1.70	8.9	.260	.80	--	.240	--

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)
OCT				
22...	1830	56	8	1.2
DEC				
01...	1215	37	10	1.0
FEB				
14...	1650	65	7	1.2
MAR				
31...	1130	876	59	139
MAY				
05...	1126	670	40	72
JUN				
22...	1053	137	59	22
JUL				
20...	1302	99	59	16

05120500 WINTERING RIVER NEAR KARLSRUHE, ND

LOCATION.--Lat 48°10'14", long 100°32'20", on line between secs.10 and 11, T.154 N., R.77 W., McHenry County, Hydrologic Unit 09010003, on left bank 30 ft upstream from county highway bridge, 4 mi upstream from mouth, and 7 mi northeast of Karlsruhe.

DRAINAGE AREA.--705 mi^2, of which about 420 mi^2 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 1728: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 1,480 ft, from river-profile map.

REMARKS.--Records fair. Some regulation by Fish and Wildlife Service dams on Cottonwood and Wintering Lakes; controlled capacity, about 850 acre-ft.

AVERAGE DISCHARGE.--46 years, 13.1 ft^3/s, 9,490 acre-ft/yr; median of yearly mean discharges, 11 ft^3/s, 8,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,000 ft^3/s Apr. 7, 1949, by velocity-area studies; maximum gage height, 12.0 ft Apr. 7, 1949, channel choked by packed snow; no flow at times in many years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 180 ft^3/s Mar. 26, gage height, 6.60 ft, maximum gage height, 7.48 ft Mar. 20, backwater from ice; minimum daily, 1.0 ft^3/s Aug. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.2	14	7.4	5.0	3.2	14	142	35	23	13	3.4	1.7
2	9.2	14	19	4.9	3.1	12	129	34	22	29	3.2	1.5
3	8.1	13	18	4.8	3.0	12	126	32	22	27	2.9	1.7
4	7.5	13	12	5.0	3.0	10	121	30	22	25	2.6	1.6
5	6.9	12	11	4.8	3.0	14	106	28	22	21	2.5	1.5
6	8.1	12	9.0	4.9	3.0	17	102	26	21	19	2.2	1.9
7	10	13	10	5.0	3.0	24	110	26	21	20	2.1	2.0
8	13	12	9.0	5.0	3.0	35	119	25	20	19	1.8	2.1
9	17	14	7.6	5.0	3.0	30	125	24	19	18	1.5	2.2
10	25	14	5.0	5.0	3.0	25	125	23	19	16	1.6	2.5
11	30	14	5.0	4.8	3.0	23	119	23	18	13	1.5	2.6
12	25	11	6.0	4.8	3.0	22	116	35	17	12	1.2	3.2
13	20	12	6.0	4.8	3.5	25	108	52	16	10	1.2	3.4
14	17	12	5.8	4.8	4.0	30	94	47	14	8.1	1.0	4.7
15	17	11	4.5	4.8	4.0	35	88	46	14	7.5	1.2	9.6
16	18	11	4.5	4.5	5.0	38	89	41	13	7.8	1.2	9.2
17	19	11	5.7	4.5	10	42	79	37	12	6.9	1.4	10
18	18	11	6.2	4.4	12	50	74	32	11	12	1.6	8.4
19	17	11	5.6	4.2	23	60	68	35	12	15	1.9	6.3
20	16	11	5.3	4.0	24	80	64	39	12	12	1.5	5.0
21	15	10	6.0	3.8	9.6	100	60	34	12	10	1.6	4.0
22	14	10	5.9	3.8	7.2	120	55	32	22	9.6	1.6	3.6
23	14	9.7	6.6	3.8	10	135	51	30	23	8.4	2.4	3.6
24	14	7.8	6.5	3.6	12	150	48	29	20	7.5	3.0	3.4
25	13	6.7	6.1	3.6	14	160	45	27	18	6.9	3.1	3.4
26	13	5.8	6.1	3.5	20	168	43	27	20	6.6	3.9	3.2
27	14	5.8	6.0	3.5	30	165	39	27	19	6.3	3.6	3.2
28	16	5.9	5.4	3.4	20	163	34	26	17	5.8	3.0	3.2
29	18	6.8	5.1	3.4	---	160	37	24	15	5.0	2.8	4.0
30	17	7.1	4.8	3.4	---	155	35	23	15	4.4	2.5	6.9
31	15	---	5.0	3.2	---	150	---	23	---	4.0	1.9	---
TOTAL	474.0	321.6	226.1	134.0	244.6	2224	2551	972	531	385.8	66.9	119.6
MEAN	15.3	10.7	7.29	4.32	8.74	71.7	85.0	31.4	17.7	12.4	2.16	3.99
MAX	30	14	19	5.0	30	168	142	52	23	29	3.9	10
MIN	6.9	5.8	4.5	3.2	3.0	10	34	23	11	4.0	1.0	1.5
AC-FT	940	638	448	266	485	4410	5060	1930	1050	765	133	237

CAL YR 1982 TOTAL 8081.50 MEAN 22.1 MAX 300 MIN .00 AC-FT 16030
WTR YR 1983 TOTAL 8250.60 MEAN 22.6 MAX 168 MIN 1.0 AC-FT 16370

PERIOD OF RECORD.--Water years 1954-56, 1972 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
05...	1830	6.8	770	8.1	.5	8.0	--	--	--	--	--
24...	1250	14	930	--	17.0	8.0	--	--	--	--	--
DEC											
01...	1535	7.5	1240	--	.0	.0	--	--	--	--	--
JAN											
07...	1505	5.1	750	--	- .9	.0	--	--	--	--	--
FEB											
18...	1445	12	510	--	5.0	.0	--	--	--	--	--
MAR											
31...	1534	150	380	8.3	--	.5	90	51	18	11	43
APR											
19...	1402	67	570	--	14.5	7.0	--	--	--	--	--
MAY											
04...	1450	31	870	--	15.5	13.0	--	--	--	--	--
JUN											
22...	1330	22	1160	--	24.0	21.0	--	--	--	--	--
JUL											
20...	1013	12	1000	--	30.0	24.0	--	--	--	--	--
SEP											
08...	1002	2.0	670	7.9	20.5	16.0	--	--	--	--	--
27...	1320	3.3	690	8.0	29.0	13.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
31...	47	2.0	13	172	0	140	1.4	47	5.0	.10	9.3	261

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
31...	232	.36	106	2	100	270	1	15	20	1.7	0	53

05122000 SOURIS (MOUSE) RIVER NEAR BANTRY, ND

LOCATION.--Lat 48°30'20", long 100°26'04", in SE¼NW¼SE¼ 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 mi^2, approximately, of which about 7,600 mi^2 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 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 those for the winter periods, which are fair. Flow regulated by reservoirs on Souris, Des Lacs, and Wintering Rivers, total capacity, about 249,000 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.

AVERAGE DISCHARGE.--46 years, 239 ft^3/s, 173,200 acre-ft/yr; median of yearly mean discharges, 140 ft^3/s, 101,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,330 ft^3/s Apr. 23, 1976, gage height, 14.59 ft; no flow at times each year 1937-40, 1963.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,940 ft^3/s Apr. 16, gage height, 12.27 ft; minimum daily discharge, 22 ft^3/s Sept. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	94	94	58	48	310	980	1390	868	328	87	45
2	78	94	94	56	48	320	980	1360	846	294	85	41
3	93	94	94	55	48	330	970	1280	808	280	83	37
4	120	94	94	54	48	340	960	1180	752	278	82	33
5	143	94	94	53	48	330	960	1100	697	317	80	31
6	163	92	94	53	48	370	990	1030	647	456	78	28
7	169	92	94	54	48	360	1030	974	604	568	78	26
8	174	92	90	54	48	350	1070	938	557	602	77	26
9	182	92	86	54	48	400	1260	897	506	574	77	26
10	203	92	87	54	48	480	1380	861	449	502	76	25
11	229	90	86	54	48	530	1470	832	401	411	71	23
12	256	90	86	54	49	630	1500	835	364	337	66	23
13	278	90	85	54	50	720	1650	889	336	277	61	22
14	288	90	79	54	52	720	1700	926	307	230	59	23
15	290	90	77	54	54	720	1760	942	281	195	58	31
16	290	88	74	54	56	730	1940	960	262	169	56	32
17	288	88	72	54	60	750	1930	978	245	150	56	33
18	274	88	71	54	70	780	1910	992	230	136	56	35
19	260	88	70	54	74	810	1850	1010	218	128	56	37
20	226	88	69	54	85	840	1820	1020	208	123	55	38
21	201	90	71	53	107	880	1770	1020	195	120	55	40
22	176	90	71	52	140	920	1710	1020	198	115	55	44
23	153	90	73	49	220	960	1680	1000	192	115	57	46
24	137	90	73	48	290	980	1650	984	189	117	59	47
25	124	90	71	48	290	1000	1630	966	236	124	59	47
26	113	92	70	48	300	1000	1540	958	395	129	57	47
27	105	92	70	48	310	1000	1500	944	494	129	55	46
28	102	92	68	48	310	1000	1470	926	493	123	54	45
29	100	92	64	48	---	980	1450	906	436	112	53	45
30	97	92	62	48	---	980	1430	889	376	102	51	45
31	96	---	59	48	---	980	---	877	---	93	48	---
TOTAL	5473	2730	2442	1623	3045	21500	43940	30884	12790	7634	2000	1067
MEAN	177	91.0	78.8	52.4	109	694	1465	996	426	246	64.5	35.6
MAX	290	94	94	58	310	1000	1940	1390	868	602	87	47
MIN	65	88	59	48	48	310	960	832	189	93	48	22
AC-FT	10860	5410	4840	3220	6040	42650	87150	61260	25370	15140	3970	2120

CAL YR 1982 TOTAL 121368.0 MEAN 333 MAX 1720 MIN 5.8 AC-FT 240700
WTR YR 1983 TOTAL 135128.0 MEAN 370 MAX 1940 MIN 22 AC-FT 268000

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT											
05...	0850	142	970	8.1	--	8.0	--	10.3	--	165	--
22...	1415	169	990	--	14.0	6.0	50	9.4	75	K20	K33
DEC											
06...	1725	95	1280	8.3	- .9	.0	50	19.2	130	K15	450
JAN											
07...	1045	54	970	7.3	- .9	.0	5	1.6	11	K1	K3
FEB											
16...	1710	57	1000	7.3	.0	.0	--	1.2	8	K24	64
APR											
08...	0915	1240	385	7.6	8.0	3.5	50	10.1	75	<5	K90
18...	1820	1860	550	7.8	6.0	4.0	30	10.4	79	K7	K13
JUN											
15...	1415	280	850	8.0	16.0	18.5	30	7.9	83	K60	K15
JUL											
20...	1415	123	950	7.9	27.0	27.0	40	6.3	79	110	160
AUG											
25...	1330	58	1010	8.0	28.5	23.0	30	8.0	92	500	240
SEP											
28...	1640	45	960	8.5	12.5	14.0	--	13.1	125	120	--

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
OCT											
05...	--	--	--	--	--	--	--	--	--	--	--
22...	290	31	61	33	120	46	3.2	9.7	258	--	260
DEC											
06...	360	14	75	42	170	50	4.0	12	347	3.3	280
JAN											
07...	310	0	70	34	98	39	2.5	9.7	319	31	190
FEB											
16...	340	17	75	36	100	39	2.4	9.4	319	31	200
APR											
08...	120	0	27	12	31	34	1.3	11	121	5.9	69
18...	--	--	--	--	--	--	--	--	--	--	--
18...	170	0	40	18	50	37	1.7	10	177	5.4	100
JUN											
15...	240	0	50	29	99	46	2.8	9.7	286	5.5	160
JUL											
20...	280	0	61	32	110	45	2.9	11	321	7.8	190
AUG											
25...	280	0	54	34	120	47	3.2	13	318	6.1	180
SEP											
28...	--	--	--	--	--	--	--	--	--	--	--

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)
OCT											
05...	--	--	--	--	--	--	--	<.020	<.10	--	.070
22...	21	.20	14	692	675	.94	316	.030	.30	.32	.120
DEC											
06...	54	.40	9.4	871	851	1.2	223	--	--	.60	--
JAN											
07...	21	.20	11	679	626	.92	99.0	--	--	.27	--
FEB											
16...	23	.20	12	656	648	.89	100	.020	.50	--	.190
APR											
08...	7.7	.10	8.4	224	239	.30	750	--	--	<.10	--
18...	--	--	--	--	--	--	--	<.020	<.10	--	.070
18...	11	.20	8.7	345	345	.47	1730	--	--	<.10	--
JUN											
15...	21	.30	7.6	557	548	.76	421	--	--	<.10	--
JUL											
20...	21	.20	16	636	634	.87	211	--	--	.38	--
AUG											
25...	46	.30	9.6	661	649	.90	104	.020	<.10	<.10	.060
SEP											
28...	--	--	--	--	--	--	--	.020	<.10	--	.090

DATE	NITROGEN, TOTAL (MG/L AS N) (00600)	NITROGEN, AMMONIA DISSOLVED (MG/L AS NH4) (71846)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N) (00607)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS TOTAL (MG/L AS PO4) (71886)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)
OCT											
05...	--	--	2.3	--	2.40	--	--	--	.420	1.3	--
22...	2.0	.15	1.6	1.5	1.70	.10	1.6	8.9	.330	1.0	.280
DEC											
06...	--	--	--	--	--	--	--	--	--	--	.660
JAN											
07...	--	--	--	--	--	--	--	--	--	--	.120
FEB											
16...	1.6	.23	.91	.62	1.10	.30	.80	7.1	.140	.43	--
APR											
08...	--	--	--	--	--	--	--	--	--	--	.120
18...	--	--	1.7	--	1.80	.70	1.1	--	.160	.49	--
18...	--	--	--	--	--	--	--	--	--	--	.130
JUN											
15...	--	--	--	--	--	--	--	--	--	--	.180
JUL											
20...	--	--	--	--	--	--	--	--	--	--	.310
AUG											
25...	--	--	1.9	--	2.00	.50	1.5	--	.500	1.5	.360
SEP											
28...	--	--	1.7	--	1.80	--	--	--	.440	1.4	--

05122000 SOURIS RIVER NEAR BANTRY, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	PHOS-PHORUS, ORTHO, TOTAL (MG/L AS P) (70507)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	PHOS-PHORUS, HYDRO-LYZABLE TOTAL (MG/L AS P) (00669)	PHOS-PHORUS, HYDRO-LYZABLE DIS. (MG/L AS P) (00672)	PHOS-PHORUS, HYDRO. + ORTHO TOTAL (MG/L AS P) (00678)	PHOS-PHORUS, HYDRO. + ORTHO DIS. (MG/L AS P) (00677)	PHOS-PHORUS, ORGANIC TOTAL (MG/L AS P) (00670)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)
OCT											
05...	.330	--	--	--	--	--	--	--	--	--	--
22...	.360	.290	.89	.00	.00	.32	.25	.01	10	3	97
DEC											
06...	--	--	--	--	--	--	--	--	--	--	--
JAN											
07...	--	--	--	--	--	--	--	--	--	--	--
FEB											
16...	.100	.070	.21	.00	.00	.09	.05	.05	<10	2	--
APR											
08...	--	--	--	--	--	--	--	--	--	--	--
18...	.070	.080	.25	.24	.20	.31	.28	.00	--	--	--
18...	--	--	--	--	--	--	--	--	30	3	64
JUN											
15...	--	--	--	--	--	--	--	--	--	--	--
JUL											
20...	--	--	--	--	--	--	--	--	--	--	--
AUG											
25...	.400	.350	1.1	.01	.00	.41	.27	.09	10	10	89
SEP											
28...	.370	--	--	--	--	--	--	--	--	--	--

DATE	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)
OCT											
05...	--	--	--	--	--	--	--	--	--	--	--
22...	250	<1	<10	<1	1	41	1	54	43	<.1	4
DEC											
06...	330	--	--	--	--	--	--	--	--	--	--
JAN											
07...	350	--	--	--	--	--	--	--	--	--	--
FEB											
16...	--	<1	<10	--	<1	32	<1	--	210	<.1	6
APR											
08...	160	--	--	--	--	--	--	--	--	--	--
18...	280	<1	<10	10	1	34	<1	31	15	<.1	2
JUN											
15...	290	--	--	--	--	--	--	--	--	--	--
JUL											
20...	240	--	--	--	--	--	--	--	--	--	--
AUG											
25...	330	<1	<10	1	2	7	<1	52	4	<.1	2
SEP											
28...	--	--	--	--	--	--	--	--	--	--	--

05122000 SOURIS RIVER NEAR BANTRY, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)
OCT											
05...	--	--	--	--	--	--	--	--	--	--	--
22...	2	3	<1	340	1.0	20	20	5	--	--	<.01
DEC											
06...	--	--	--	--	--	--	--	--	--	--	--
JAN											
07...	--	--	--	--	--	--	--	--	--	--	--
FEB											
16...	--	--	1	--	--	--	--	<3	--	--	<.01
APR											
08...	--	--	--	--	--	--	--	--	13	1.5	--
18...	11	0	<1	210	1.8	10	6	4	14	.3	<.01
JUN											
15...	--	--	--	--	--	--	--	--	--	.8	--
JUL											
20...	--	--	--	--	--	--	--	--	13	--	--
AUG											
25...	4	6	1	330	2.2	150	150	4	12	.8	<.01
SEP											
28...	--	--	--	--	--	--	--	--	--	--	--

05123000 LAKE METIGOSHE NEAR BOTTINEAU, ND

LOCATION.--Lat 48°59'05", long 100°20'52", in SE¼SW¼ sec.35, T.164 N., R.75 W., Bottineau County, Hydrologic Unit 09010004, 25 ft east from northeast corner of bridge over Lake Metigoshe, and 11.7 mi northeast of Bottineau.

DRAINAGE AREA.--59 mi^2.

PERIOD OF RECORD.--June 1931 to September 1932, September 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,130.00 ft National Geodetic Vertical Datum of 1929. 1931-32, nonrecording gage on north abutment of bridge at datum 6.32 ft lower (reduced to elevations NGVD). Sept. 4, 1953, to Jan. 19, 1955, nonrecording gage at present datum on east end of south abutment of bridge.

REMARKS.--Outlet of lake is a concrete dam with removable stoplogs; average crest elevation without stoplogs about 2,138.0 ft National Geodetic Vertical Datum of 1929. Lake level regulated since 1959 by dam and control works in the outlet of Sharpe Lake located on the principal tributary in Manitoba.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 9.70 ft May 3, 1975; minimum, 4.28 ft Sept. 17, 1932, present datum.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 8.74 ft May 21; minimum, 6.90 ft Oct. 1.

MONTHEND GAGE HEIGHT, IN FEET, AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Oct. 31--------	7.37	Jan. 31--------	*7.51	Apr. 30--------	8.41	July 31--------	8.36
Nov. 30--------	7.41	Feb. 28--------	7.57	May 31--------	8.58	Aug. 31--------	7.97
Dec. 31--------	7.50	Mar. 31--------	7.70	June 30--------	8.54	Sept. 30--------	7.88

* - Estimate

05123400 WILLOW CREEK NEAR WILLOW CITY, ND

LOCATION.--Lat 48°35'20", long 100°26'30", in NE¼NW¼ sec.23, T.159 N., R.76 W., McHenry County, Hydrologic Unit 09010004, on left bank 50 ft downstream from bridge on county road, 1.5 mi upstream from Snake Creek, and 7 mi west of Willow City.

DRAINAGE AREA.--1,160 mi^2, approximately, of which about 430 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 1,430 ft, from topographic map. Prior to Oct. 5, 1956, non-recording gage at site 50 ft upstream at same datum.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--27 years, 46.3 ft^3/s, 33,540 acre-ft/yr; median of yearly mean discharges, 24 ft^3/s, 17,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,900 ft^3/s Apr. 12, 1969, gage height, 16.76 ft; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Apr. 7	0700	740	12.40				

No flow Aug. 24 - Dec. 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.30	23	9.0	2.6	.60	12	320	161	62	31	5.5	.00
2	1.0	23	14	2.6	.60	10	400	148	59	36	5.0	.00
3	1.7	22	14	2.5	.60	9.0	470	138	56	40	4.5	.00
4	2.0	19	13	2.4	.60	10	520	130	54	34	4.0	.00
5	4.5	19	12	2.3	.60	12	580	124	50	32	3.5	.00
6	7.5	18	11	2.3	.50	15	700	115	47	32	3.0	.00
7	13	18	10	2.2	.50	25	740	108	43	30	2.5	.00
8	17	17	9.0	2.1	.50	45	720	104	38	26	2.0	.00
9	18	16	8.0	2.0	.50	35	690	100	33	22	1.5	.00
10	27	15	7.0	1.9	.50	25	660	96	26	20	1.0	.00
11	27	14	6.0	1.9	.50	30	630	91	22	20	.80	.00
12	28	14	6.5	1.8	.50	35	610	92	20	19	.60	.00
13	32	13	6.5	1.7	.50	50	590	96	19	18	.40	.00
14	34	13	6.0	1.6	.50	70	570	95	18	16	.20	.00
15	35	13	6.0	1.5	.50	100	550	93	19	15	.20	.00
16	35	13	5.5	1.4	.50	130	530	92	18	12	.20	.00
17	36	13	5.5	1.4	.50	150	510	92	17	10	.20	.00
18	36	13	5.0	1.3	.50	170	490	90	16	10	.15	.00
19	35	13	5.0	1.2	.50	200	460	90	19	12	.10	.00
20	34	13	4.5	1.2	.50	240	430	89	16	12	.07	.00
21	32	13	4.5	1.1	.60	250	380	89	18	13	.04	.00
22	30	12	4.0	1.1	1.0	250	330	88	28	12	.02	.00
23	29	12	4.0	1.0	2.0	240	290	87	26	11	.01	.00
24	28	11	3.5	.90	4.0	240	260	89	29	10	.00	.00
25	27	11	3.5	.90	5.0	230	250	89	41	9.0	.00	.00
26	24	10	3.2	.80	6.0	230	227	86	43	8.5	.00	.00
27	23	10	3.1	.80	8.0	225	214	83	41	8.0	.00	.00
28	23	10	3.0	.70	11	220	199	78	40	7.5	.00	.00
29	23	10	2.9	.70	---	230	186	74	38	7.0	.00	.00
30	23	9.0	2.8	.70	---	240	174	71	36	6.5	.00	.00
31	23	---	2.7	.60	---	270	---	67	---	6.0	.00	---
TOTAL	709.00	430.0	200.7	47.20	48.10	3998.0	13680	3045	992	545.5	35.49	.00
MEAN	22.9	14.3	6.47	1.52	1.72	129	456	98.2	33.1	17.6	1.14	.000
MAX	36	23	14	2.6	11	270	740	161	62	40	5.5	.00
MIN	.30	9.0	2.7	.60	.50	9.0	174	67	16	6.0	.00	.00
AC-FT	1410	853	398	94	95	7930	27130	6040	1970	1080	70	.00

CAL YR 1982 TOTAL 12077.90 MEAN 33.1 MAX 690 MIN .00 AC-FT 23960
WTR YR 1983 TOTAL 23730.99 MEAN 65.0 MAX 740 MIN .00 AC-FT 47070

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1960-62, 1964-65, 1972 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
05...	1655	4.5	970	8.3	--	8.0	--	--	--	--	--
DEC											
02...	1725	14	2500	--	4.5	.0	--	--	--	--	--
JAN											
04...	1614	3.2	2420	--	- .9	.0	--	--	--	--	--
FEB											
16...	1410	E.50	2610	--	--	.5	--	--	--	--	--
APR											
07...	1750	739	395	7.4	8.0	8.0	115	18	23	14	35
07...	1751	739	--	--	8.0	8.0	118	13	24	14	34
JUN											
15...	1840	19	1160	--	17.5	17.0	--	--	--	--	--
JUL											
20...	1030	12	1620	--	28.0	26.0	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
APR										
07...	36	1.5	14	162	0	130	10	60	5.9	.00
07...	35	1.4	14	--	--	131	--	72	7.0	<.10

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BORON, DIS-SOLVED (UG/L AS B) (01020)
APR										
07...	14	278	247	.38	555	--	--	2	--	90
07...	15	250	259	.34	499	<.10	.130	2	43	70

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
APR									
07...	--	0	0	30	20	.0	0	64	--
07...	1	160	5	31	27	<.1	<1	96	8

E - Estimated.

05124000 SOURIS (MOUSE) RIVER NEAR WESTHOPE, ND
(International gaging station)
(Radiochemical station)

LOCATION.--Lat 48°59'47", long 100°57'29", in SW¼SE¼ 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 mi^2, approximately, of which about 10,300 mi^2 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 concrete control. Datum of gage is 1,402.45 ft 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. Flow regulated by dams on Souris River and tributaries, combined capacity, about 321,000 acre-ft. Diversion at Eaton Dam for irrigation of about 7,600 acres and other small diversions for irrigation and municipal supply above station.

COOPERATION.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

AVERAGE DISCHARGE.--53 years (1930-83), 263 ft^3/s, 190,500 acre-ft/yr; median of yearly mean discharges, 142 ft^3/s, 103,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,600 ft^3/s Apr. 26, 1976, gage height, 19.16 ft; maximum daily reverse flow, 35 ft^3/s Apr. 8, 1943, caused by backwater from downstream tributary inflow; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum recorded discharge, 2,700 ft^3/s Apr. 13, gage height, 12.52 ft, may have been greater during missing record, Apr. 13-17; minimum daily discharge, 38 ft^3/s Nov. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	122	306	48	59	58	210	1700	2490	294	193	210	269
2	122	300	49	59	58	210	1740	2470	85	203	193	325
3	122	289	49	59	58	210	1840	2440	83	197	187	322
4	122	348	49	59	58	210	1900	2360	85	177	184	318
5	122	408	51	59	58	220	2000	2380	112	193	160	315
6	117	306	51	59	58	240	2130	2350	126	197	184	387
7	117	278	52	59	58	240	2260	2280	177	184	141	586
8	117	256	53	59	58	240	2330	2230	200	184	141	622
9	112	272	55	59	58	240	2430	2240	292	187	157	642
10	109	278	55	59	58	240	2500	2200	282	197	129	642
11	156	289	55	59	58	250	2590	2130	348	177	141	622
12	272	360	56	59	58	260	2660	2060	332	177	151	616
13	300	390	58	59	58	260	2690	2020	269	177	160	517
14	262	372	59	59	58	320	2700	1980	265	187	180	361
15	310	348	59	59	58	730	2700	1930	232	177	197	328
16	378	336	59	59	114	850	2690	1870	299	177	239	322
17	384	318	59	59	174	980	2670	1800	279	180	184	318
18	310	294	59	59	174	1130	2620	1650	308	193	180	305
19	212	278	59	59	174	1200	2590	1560	232	210	184	305
20	121	289	59	59	174	1240	2570	1420	210	220	217	325
21	262	520	59	59	174	1250	2540	1350	223	220	213	380
22	289	472	59	59	174	1260	2510	1260	239	220	217	390
23	294	95	59	58	195	1260	2480	1180	249	213	220	396
24	300	59	59	58	210	1250	2470	1010	255	226	220	393
25	300	51	59	58	210	1260	2480	897	232	245	223	384
26	306	44	59	58	210	1320	2500	712	217	245	223	380
27	306	38	59	58	210	1360	2490	606	220	232	223	371
28	318	43	59	58	210	1370	2530	562	226	226	220	322
29	312	43	59	58	---	1380	2510	540	220	210	213	308
30	312	46	59	58	---	1410	2500	533	203	180	217	289
31	306	---	59	58	---	1560	---	479	---	180	213	---
TOTAL	7192	7726	1743	1820	3273	24160	72320	50989	6794	6184	5921	12060
MEAN	232	258	56.2	58.7	117	779	2411	1645	226	199	191	402
MAX	384	520	59	59	210	1560	2700	2490	348	245	239	642
MIN	109	38	48	58	58	210	1700	479	83	177	129	269
AC-FT	14270	15320	3460	3610	6490	47920	143400	101100	13480	12270	11740	23920

CAL YR 1982 TOTAL 132657.00 MEAN 363 MAX 2370 MIN .00 AC-FT 263100
WTR YR 1983 TOTAL 200182.00 MEAN 548 MAX 2700 MIN 38 AC-FT 397100

05124000 SOURIS RIVER NEAR WESTHOPE, ND
(International gaging station)
(Radiochemical station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1954-64, 1966 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT												
06...	1255	117	865	8.4	--	5.5	--	--	13.3	--	520	--
21...	1300	200	--	--	8.0	--	--	--	--	--	--	--
21...	1315	80	890	8.4	--	4.0	60	4.4	13.5	101	--	--
DEC												
02...	1230	49	1220	7.7	2.0	1.5	50	--	12.6	91	K2	--
JAN												
04...	1050	58	1630	7.5	- .9	1.0	30	--	8.4	59	K1	30
FEB												
17...	1200	172	2020	7.2	- .9	1.0	80	12	6.3	44	<1	<1
MAR												
15...	1905	755	745	--	- .9	.0	--	--	--	--	--	--
APR												
06...	1330	2000	400	7.5	2.5	1.0	50	--	7.5	--	<5	K25
20...	1450	2550	420	7.5	16.0	5.5	45	3.2	10.7	84	<2	K4
JUN												
16...	1325	261	825	8.3	23.0	18.0	20	--	9.6	100	K4	105
JUL												
19...	2030	203	810	9.0	26.0	25.5	35	--	12.5	151	K5	K10
AUG												
30...	1445	207	875	8.4	31.0	24.0	--	--	8.5	100	--	--
30...	1550	207	875	8.4	31.0	24.0	40	--	8.5	100	K5	K60

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
OCT											
06...	--	--	--	--	--	--	--	--	--	--	--
21...	270	0	52	35	100	43	2.7	11	321	2.7	150
DEC											
02...	390	0	75	49	140	43	3.2	14	394	15	260
JAN											
04...	490	0	92	62	180	44	3.6	17	513	31	340
FEB											
17...	730	40	140	91	240	41	4.0	20	686	84	420
APR											
06...	130	0	29	14	28	29	1.1	14	142	8.7	60
20...	140	0	30	15	34	33	1.3	11	144	8.8	67
JUN											
16...	260	0	51	31	87	41	2.4	11	282	2.7	160
JUL											
19...	260	0	50	32	93	43	2.6	12	287	.5	150
AUG											
30...	270	0	50	34	110	46	3.0	13	332	--	140
30...	260	0	50	34	100	44	2.7	13	332	2.5	140

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

05124000 SOURIS RIVER NEAR WESTHOPE, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)
OCT											
06...	--	--	--	--	--	--	--	<.020	<.10	--	.090
21...	28	.20	4.4	590	574	.80	127	<.020	<.10	<.10	.090
DEC											
02...	40	.30	6.8	833	822	1.1	111	--	--	<.10	--
JAN											
04...	44	.30	10	1080	1050	1.5	169	--	--	<.10	--
FEB											
17...	65	.40	18	1460	1410	2.0	678	<.020	<.10	<.10	<.060
APR											
06...	8.9	<.10	11	230	250	.31	1240	--	--	<.10	--
20...	15	<.10	8.9	266	268	.36	1830	<.020	<.10	<.10	.130
JUN											
16...	17	.20	3.2	515	530	.70	363	--	--	<.10	--
JUL											
19...	23	.20	8.2	547	541	.74	300	--	--	<.10	--
AUG											
30...	20	.20	10	587	577	.80	--	<.020	<.10	<.10	.040
30...	20	.20	9.8	583	566	.79	326	--	--	<.10	--

DATE	NITROGEN, AMMONIA DISSOLVED (MG/L AS NH4) (71846)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N) (00607)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS TOTAL (MG/L AS PO4) (71886)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P) (70507)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P) (00671)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4) (00660)
OCT											
06...	--	3.1	--	3.20	--	.230	.71	--	.100	--	--
21...	.19	2.3	2.5	2.40	2.6	.160	.49	.070	.060	.030	.09
DEC											
02...	--	--	--	--	--	--	--	.110	--	--	--
JAN											
04...	--	--	--	--	--	--	--	.190	--	--	--
FEB											
17...	.08	--	--	2.90	2.5	.540	1.7	.390	.400	.310	.95
APR											
06...	--	--	--	--	--	--	--	.140	--	--	--
20...	.08	1.8	--	1.90	1.4	.200	.61	.160	.100	.090	.28
JUN											
16...	--	--	--	--	--	--	--	.250	--	--	--
JUL											
19...	--	--	--	--	--	--	--	.320	--	--	--
AUG											
30...	.08	1.8	1.6	1.80	1.7	.290	.89	.200	.180	.190	.58
30...	--	--	--	--	--	--	--	.230	--	--	--

DATE	PHOSPHORUS, HYDROLYZABLE TOTAL (MG/L AS P) (00669)	PHOSPHORUS, HYDRO. + ORTHO TOTAL (MG/L AS P) (00678)	PHOSPHORUS, HYDRO. + ORTHO DIS. (MG/L AS P) (00677)	PHOSPHORUS, ORGANIC TOTAL (MG/L AS P) (00670)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)
OCT											
06...	--	--	--	--	--	--	--	--	--	--	--
21...	.03	.09	.05	.07	10	2	99	200	1	<1	<3
DEC											
02...	--	--	--	--	--	--	--	270	--	--	--
JAN											
04...	--	--	--	--	--	--	--	330	--	--	--
FEB											
17...	.06	.46	.31	.08	10	3	200	370	<1	<1	<3
APR											
06...	--	--	--	--	--	--	--	80	--	--	--
20...	.06	.16	.12	.04	50	2	52	100	<1	<1	<3
JUN											
16...	--	--	--	--	--	--	--	260	--	--	--
JUL											
19...	--	--	--	--	--	--	--	280	--	--	--
AUG											
30...	.00	.15	.15	.14	<10	4	92	--	1	<1	<3
30...	--	--	--	--	--	--	--	230	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
OCT											
06...	--	--	--	--	--	--	--	--	--	--	--
21...	1	17	14	53	11	.2	<10	7	<1	<1	280
DEC											
02...	--	--	--	--	--	--	--	--	--	--	--
JAN											
04...	--	--	--	--	--	--	--	--	--	--	--
FEB											
17...	<1	140	<1	130	1600	<.1	<10	5	<1	<1	630
APR											
06...	--	--	--	--	--	--	--	--	--	--	--
20...	2	89	<1	27	11	<.1	<10	4	<1	<1	120
JUN											
16...	--	--	--	--	--	--	--	--	--	--	--
JUL											
19...	--	--	--	--	--	--	--	--	--	--	--
AUG											
30...	4	24	1	60	29	<.1	<10	4	<1	<1	300
30...	--	--	--	--	--	--	--	--	--	--	--

DATE	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90) (80060)	RADIUM 226, DIS-SOLVED, RADON METHOD (PCI/L) (09511)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)
OCT											
06...	--	--	--	--	--	--	--	--	--	--	--
21...	<6.0	20	19	<1.3	16	<1.3	16	<1.3	.10	--	--
DEC											
02...	--	--	--	--	--	--	--	--	--	--	--
JAN											
04...	--	--	--	--	--	--	--	--	--	--	--
FEB											
17...	<6.0	10	--	--	--	--	--	--	--	--	--
APR											
06...	--	--	--	--	--	--	--	--	--	16	1.3
20...	<6.0	5	<9.2	<.6	13	.9	12	.9	.06	13	.7
JUN											
16...	--	--	--	--	--	--	--	--	--	15	.2
JUL											
19...	--	--	--	--	--	--	--	--	--	16	--
AUG											
30...	<6.0	11	<14	<.4	15	<.5	15	<.4	.13	--	--
30...	--	--	--	--	--	--	--	--	--	18	.8

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT					
21...	1315	80	15	3.2	84
FEB					
17...	1200	172	80	37	97
APR					
20...	1450	2550	10	69	98
AUG					
30...	1550	207	16	8.9	99

RED RIVER OF THE NORTH BASIN

05124000 SOURIS RIVER NEAR WESTHOPE, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLE LOCATION, CROSS SECTION (FT FM L BANK) (00009)	DEPTH TO TOP OF SAMPLE INTERVAL (FT) (72015)	TEMPERATURE (DEG C) (00010)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	OXYGEN, DISSOLVED (MG/L) (00300)
APR							
20...	1300	.00	3.0	6.5	410	7.4	10.6
20...	1305	10.0	3.0	7.0	420	7.4	11.0
20...	1310	20.0	3.0	6.5	420	7.4	11.0
20...	1315	30.0	3.0	5.5	420	7.4	10.9
20...	1320	40.0	3.0	5.0	415	7.4	10.7
20...	1325	50.0	3.0	5.0	415	7.4	10.7
20...	1330	60.0	3.0	5.0	415	7.4	10.8
20...	1335	70.0	3.0	5.0	415	7.5	10.9
20...	1340	80.0	3.0	5.0	415	7.5	10.9
20...	1345	90.0	3.0	6.0	415	7.5	10.8
20...	1350	100	3.0	5.0	415	7.5	10.7
20...	1400	110	3.0	5.0	415	7.6	10.3
AUG							
30...	1445	10.0	.7	24.0	875	8.4	8.5
30...	1450	20.0	1.1	24.0	875	8.4	8.5
30...	1455	30.0	1.1	24.0	875	8.4	8.5
30...	1500	40.0	1.2	24.0	875	8.4	8.5
30...	1505	50.0	1.2	24.0	875	8.4	8.5
30...	1510	60.0	1.3	24.0	875	8.4	8.5
30...	1515	70.0	1.5	24.0	875	8.4	8.5
30...	1520	80.0	1.6	24.0	875	8.4	8.5
30...	1525	90.0	1.1	24.0	875	8.4	8.5
30...	1530	100	.7	24.0	875	8.4	8.5
30...	1535	110	.5	24.5	875	8.4	8.9

MISSOURI RIVER MAIN STEM

06185500 MISSOURI RIVER NEAR CULBERTSON, MT

LOCATION.--Lat 48°07'20", long 104°28'31", in SE¼NW¼ sec.3, T.27 N., R.56 E., Richland County, Hydrologic Unit 10060005, on right bank at downstream side of bridge on State Highway 16, 3 mi southeast of Culbertson, 9.6 mi downstream from Big Muddy Creek, and at mile 1,620.76.

DRAINAGE AREA.--91,557 mi^2.

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. Datum of gage is 1,883.4 ft National Geodetic Vertical Datum of 1929, (Corps of Engineers bench mark). July 1 to Nov. 6, 1941, water-stage recorder at site 400 ft upstream at datum 0.11 ft higher. Nov. 7, 1941, to Aug. 17, 1950, water-stage recorder at site 580 ft downstream at present datum. Aug. 18, 1950, to Dec. 31, 1951, nonrecording gage on bridge at present datum. Apr. 1, 1958, to Nov. 1, 1967, water-stage recorder at site 580 ft downstream at present datum.

REMARKS.--Water-discharge records good except those for winter periods, which are fair. Flow partly regulated by Fort Peck Lake (station number 06131500) and many other reservoirs above station. Diversions for irrigation of about 1,030,400 acres above station.

AVERAGE DISCHARGE.--33 years (1943-51, 1958-83, after operational level at Fort Peck Lake was reached), 11,000 ft^3/s, 7,990,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 78,200 ft^3/s Mar. 26, 1943, gage height, 14.80 ft, from rating curve extended above 30,000 ft^3/s; maximum gage height observed, 19.66 ft Apr. 14, 1979 (backwater from ice jam); minimum daily discharge, 575 ft^3/s Nov. 22, 1941.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 15,000 ft^3/s Feb. 18, 19; maximum gage height, 11.34 ft Feb. 19 (backwater from ice); minimum daily discharge, 5,600 ft^3/s Oct. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8430	6400	8800	14500	13500	13500	6870	7400	7260	8100	9850	11100
2	11500	6370	9000	14000	13500	13500	6850	7260	7110	8200	9610	11200
3	11700	6370	9000	13000	13500	13000	6850	7130	7240	9120	9480	10800
4	8740	6510	9600	12000	13500	13500	6720	7020	6980	9780	9590	11400
5	7330	6640	9600	13000	13500	13500	6850	7110	7000	9350	9600	11300
6	7150	6760	9220	13000	13500	12000	6980	6980	7000	9020	9570	9980
7	7540	6810	8200	13000	13500	10000	7200	7130	6800	8850	9350	9730
8	9910	7060	8800	13500	14000	11000	8680	7350	6930	9140	9490	9660
9	10600	7550	10000	13000	14500	10000	9510	7040	7060	8900	9060	9370
10	7930	7440	12000	13000	14000	10000	9530	6820	7000	8980	9500	8660
11	7300	8070	14000	13000	14000	11000	9270	6890	6630	9630	9670	8710
12	7000	8110	14000	13000	14500	10500	8560	7310	6480	10500	9350	8120
13	6600	8000	14000	13000	14500	10400	7470	7880	6590	9850	9350	7710
14	7350	8280	14000	13000	14500	9910	7380	8100	6350	9590	9590	8080
15	7080	8680	13500	14000	14500	9780	7350	8000	6000	9580	9720	8010
16	6600	8450	13000	14000	14500	9320	7330	7790	6740	9860	10200	7850
17	6400	8220	12500	14000	14500	9520	7110	7540	6930	10400	10600	7830
18	6300	8580	12000	14000	15000	9730	7180	7560	6900	11000	10700	7640
19	7000	8360	12000	14000	15000	9630	7150	8320	6570	11400	10500	7540
20	7450	8590	12000	14500	14000	9520	6960	9090	6570	11700	10700	7710
21	8450	8710	12000	14000	13500	9500	7420	9460	6360	11800	10400	7690
22	9660	8430	11000	14000	13000	10100	7350	9620	6450	12100	10700	8020
23	8870	8170	12000	13000	14000	9610	7040	9430	6710	11600	10600	8050
24	7000	8000	12000	13000	14000	9480	7060	8810	6630	11400	10600	7820
25	5600	8500	12000	13000	13500	9350	7090	8510	8030	10700	10700	7880
26	5800	9000	12000	11000	14000	9240	7090	8070	9260	10500	10600	7670
27	6000	9400	12000	13000	13500	8810	7350	7860	8780	10800	10800	7530
28	5800	8900	13000	13500	14000	8680	7600	7720	8190	10700	10500	7520
29	6100	8800	12000	13500	---	7630	7290	7350	8250	10300	10700	8040
30	6400	8800	12000	13500	---	7220	7090	7310	8030	10000	10400	7900
31	6300	---	13000	13500	---	7150	---	7560	---	9790	10600	---
TOTAL	235890	237960	358220	413500	391500	316080	224180	241420	212830	312640	312080	260520
MEAN	7609	7932	11560	13340	13980	10200	7473	7788	7094	10090	10070	8684
MAX	11700	9400	14000	14500	15000	13500	9530	9620	9260	12100	10800	11400
MIN	5600	6370	8200	11000	13000	7150	6720	6820	6000	8100	9060	7520
AC-FT	467900	472000	710500	820200	776500	626900	444700	478900	422100	620100	619000	516700

CAL YR 1982 TOTAL 4695430 MEAN 12860 MAX 33800 MIN 5600 AC-FT 9313000
WTR YR 1983 TOTAL 3516820 MEAN 9635 MAX 15000 MIN 5600 AC-FT 6976000

06185500 MISSOURI RIVER NEAR CULBERTSON, MT.
(National stream-quality accounting network station)

PERIOD OF RECORD.--Water years 1946, 1965, to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT											
27...	1245	6030	690	8.5	8.0	10.0	15	7.6	73	K1	K4
JAN											
28...	1100	--	720	8.1	-1.0	.0	6.3	12.6	93	54	K3
APR											
01...	1030	6910	692	8.0	1.0	3.5	36	10.5	83	K5	150
27...	1345	7470	755	--	12.5	7.0	--	--	--	--	--
JUN											
01...	1230	7340	713	8.2	15.0	14.0	28	9.6	100	K9	K38
AUG											
04...	0800	9870	600	8.2	24.0	22.0	33	8.2	100	K34	62
29...	1515	10900	650	8.2	30.0	19.0	--	7.5	86	--	--
SEP											
29...	1100	7850	682	8.3	3.0	11.0	26	7.4	71	K39	94

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
OCT											
27...	230	67	55	23	52	2	3.8	166	180	10	.70
JAN											
28...	240	69	56	24	56	2	4.0	170	190	9.7	.70
APR											
01...	240	68	55	25	61	2	4.1	173	190	9.4	.70
JUN											
01...	240	68	55	24	62	2	3.9	168	190	9.6	.70
AUG											
04...	220	60	52	22	48	1	4.1	161	160	10	.70
SEP											
29...	230	70	55	23	49	1	3.5	163	170	8.7	.70

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
OCT											
27...	7.7	429	430	.58	6980	<.100	.060	.90	.040	<.010	6
JAN											
28...	7.3	453	450	.62	14700	<.100	.160	.90	.040	.010	--
APR											
01...	6.3	446	460	.61	8320	<.100	.120	.80	.010	.020	5
JUN											
01...	6.0	456	450	.62	9040	<.100	<.060	.60	.030	.010	--
AUG											
04...	6.6	395	400	.54	10500	<.100	.110	.90	.090	.010	4
SEP											
29...	7.0	417	420	.57	8840	<.100	.120	.90	.020	.050	<3

06185500 MISSOURI RIVER NEAR CULBERTSON, MT--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BERYLLIUM, DISSOLVED (UG/L AS BE) (01010)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	LEAD, DISSOLVED (UG/L AS PB) (01049)	LITHIUM DISSOLVED (UG/L AS LI) (01130)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)
OCT											
27...	20	3	41	<1	<1	<1	<3	3	3	63	2
APR											
01...	10	3	38	<1	<1	<1	<3	2	2	60	5
AUG											
04...	<10	4	39	<1	<1	<1	<3	2	<1	64	3
SEP											
29...	10	2	37	<1	<1	<1	<3	3	4	61	5

DATE	MERCURY DISSOLVED (UG/L AS HG) (71890)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SILVER, DISSOLVED (UG/L AS AG) (01075)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT											
27...	<.1	<10	1	1	<1	530	<6	3	35	570	99
JAN											
28...	--	--	--	--	--	--	--	--	34	1100	--
APR											
01...	.1	<10	2	1	<1	540	<6	<3	162	3020	56
27...	--	--	--	--	--	--	--	--	--	--	--
JUN											
01...	--	--	--	--	--	--	--	--	79	1570	--
AUG											
04...	.1	<10	1	1	<1	510	<6	4	209	5570	76
29...	--	--	--	--	--	--	--	--	--	--	--
SEP											
29...	<.1	<10	5	1	<1	520	<6	3	102	2160	96

06185600 MISSOURI RIVER STAGE GAGE NO. 4 NEAR NOHLY, MT

LOCATION.--Lat 48°02'10", long 104°09'40", in NE¼ sec.1, T.26 N., R.58 E., Richland County, Hydrologic Unit 10060005, on right bank 4.5 mi northwest of Nohly, and at mile 1,595.7.

DRAINAGE AREA.--93,000 mi^2, approximately.

PERIOD OF RECORD.--March 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,860.00 ft National Geodetic Vertical Datum of 1929. Prior to Apr. 18, 1962 at datum 60.00 ft lower.

REMARKS.--Stage regulated by Fort Peck Reservoir.

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 ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	10.42					---	10.20	10.33	10.75	11.76	12.32
2	---	10.40					---	10.27	10.21	10.85	11.75	12.47
3	---	10.38					---	10.17	10.23	11.32	11.59	12.33
4	---	10.42					---	10.14	10.21	11.63	11.67	12.37
5	---	10.49					---	10.12	10.09	11.41	11.69	12.56
6	---	10.52					---	10.03	10.15	11.27	11.67	12.14
7	---	10.60					---	10.08	10.05	11.17	11.59	11.80
8	---	10.62					---	10.12	10.07	11.25	11.67	11.77
9	---	10.85					---	10.16	10.12	11.30	11.43	11.72
10	---	10.88					---	9.95	10.15	11.20	11.59	11.43
11	---	---					---	10.00	9.98	11.35	11.65	11.32
12	---	---					---	10.20	9.90	11.81	11.73	11.18
13	---	---					---	10.40	9.93	11.84	11.48	10.98
14	10.59	---					---	---	9.89	11.65	11.68	10.96
15	10.40	---					---	---	9.73	11.57	11.74	11.06
16	10.27	---					---	---	10.08	11.60	11.82	10.94
17	9.97	---					---	---	10.10	11.78	12.16	10.97
18	10.02	---					---	10.39	10.11	12.07	12.21	10.89
19	10.25	---					---	10.59	9.97	12.30	12.23	10.82
20	10.49	---					10.12	10.96	9.96	12.38	12.27	10.87
21	10.83	---					10.20	11.21	9.92	12.51	12.17	10.88
22	11.50	---					10.30	11.28	9.94	12.63	12.23	10.92
23	11.59	---					10.15	11.30	10.04	12.66	12.26	10.99
24	10.76	---					10.07	11.07	10.03	12.47	12.20	10.92
25	10.17	---					10.11	10.85	10.75	12.20	12.28	10.87
26	10.28	---					10.14	10.76	11.23	12.00	12.22	10.83
27	10.29	---					10.13	10.53	10.99	12.08	12.29	10.76
28	10.22	---					10.33	10.60	10.82	12.12	12.22	10.72
29	10.20	---					10.23	10.38	10.88	11.95	12.22	---
30	10.30	---					10.11	10.29	10.78	11.90	12.19	---
31	10.38	---					---	10.34	---	11.78	12.12	---
TOTAL	---	---					---	---	306.64	364.80	369.78	---
MEAN	---	---					---	---	10.22	11.77	11.93	---
MAX	---	---					---	---	11.23	12.66	12.29	---
MIN	---	---					---	---	9.73	10.75	11.43	---

06185650 MISSOURI RIVER STAGE GAGE NO. 5 AT NOHLY, MT

LOCATION.--Lat 48°00'10", long 104°05'30", in SE¼ sec.16, T.26 N., R.59 E., Richland County, Hydrologic Unit 10060005, at downstream side of bridge, 0.2 mi northwest of Nohly, and at mile 1,587.7.

DRAINAGE AREA.--93,000 mi^2, approximately.

PERIOD OF RECORD.--April 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,800.00 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Stage regulated by Fort Peck Reservoir.

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 ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63.59	63.40					---	63.25	64.15	65.16	64.92	65.34
2	64.21	63.30					---	63.30	64.38	65.29	64.90	65.50
3	65.26	63.40					---	63.25	64.52	65.20	64.75	65.42
4	63.55	63.40					---	63.14	64.32	65.38	64.78	65.41
5	63.36	63.32					---	63.14	63.93	65.39	64.81	65.61
6	63.31	63.56					---	63.06	63.79	65.38	64.78	65.30
7	63.29	63.82					---	63.12	63.68	65.30	64.73	64.92
8	63.38	63.87					---	63.15	63.70	65.08	64.75	64.88
9	63.43	64.03					---	63.24	63.75	64.92	64.62	64.85
10	63.38	64.29					---	62.98	63.76	64.72	64.67	64.57
11	63.29	64.33					---	63.00	64.67	65.03	64.73	64.43
12	63.21	---					---	63.23	63.71	65.44	64.82	64.31
13	63.20	---					---	63.49	63.94	65.60	64.58	64.12
14	63.49	---					---	63.65	64.34	65.95	64.74	64.03
15	63.39	---					---	63.70	64.79	65.59	64.80	64.18
16	63.26	---					---	63.65	65.08	65.19	64.86	64.08
17	62.93	---					---	63.53	64.76	65.14	65.15	64.10
18	62.92	---					---	63.48	64.42	65.42	65.24	64.02
19	63.15	---					---	63.64	64.15	65.63	65.28	63.94
20	63.39	---					63.23	63.95	64.25	65.70	56.28	63.97
21	63.70	---					63.28	64.21	64.30	65.71	65.23	63.98
22	64.28	---					63.43	64.29	64.55	65.69	65.25	64.02
23	64.50	---					63.31	64.34	64.61	65.68	65.31	64.12
24	63.87	---					63.18	64.18	64.27	65.48	65.25	64.06
25	63.07	---					63.22	63.98	64.16	65.36	65.30	64.01
26	63.12	---					63.23	63.88	64.62	65.20	65.30	63.98
27	63.20	---					63.24	63.65	64.87	65.19	65.32	63.88
28	63.28	---					63.40	63.71	64.98	65.25	65.30	63.83
29	63.26	---					63.36	63.54	65.07	65.12	65.27	64.02
30	63.32	---					63.19	63.57	65.03	65.05	65.28	64.04
31	63.42	---					---	63.80	---	64.93	65.20	---
TOTAL	1968.01	---					---	1970.10	1930.55	2025.17	2006.20	1932.92
MEAN	63.48	---					---	63.55	64.35	65.33	64.72	64.43
MAX	65.26	---					---	64.34	65.08	65.95	65.32	65.61
MIN	62.92	---					---	62.98	63.68	64.72	56.28	63.83

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT

LOCATION.--Lat 47°40'42", long 104°09'22", in SW¼NE¼SW¼ 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 mile 29.2.

DRAINAGE AREA.--69,103 mi^2. Area at site 4.5 mi upstream, 68,812 mi^2.

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.

GAGE.--Water-stage recorder. Datum of gage is 1,881.3 ft National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Jan. 1, 1911, to Sept. 30, 1931, nonrecording gage at site 32 mi upstream at different datum. 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 datum 1.36 ft higher. Apr. 4, 1952, to Nov. 19, 1967, water-stage recorder at site 4.5 mi upstream at different datum.

REMARKS.--Water-discharge records good except those for the winter periods, which are poor. Some regulation on tributary streams. Diversion for irrigation of about 1,250,000 acres above station. Lower Yellowstone Project Main Canal diverts from left bank in NW¼ 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 above station.

AVERAGE DISCHARGE.--71 years, 13,080 ft^3/s, 9,476,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 159,000 ft^3/s June 2, 1921, gage height, 12.6 ft, site and datum then in use; maximum gage height observed, 21.85 ft Mar. 22, 1947, site and datum then in use, backwater from ice; minimum discharge, 470 ft^3/s May 17, 1961, gage height, 2.73 ft, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 41,900 ft^3/s June 15, July 14, gage height, 12.44 ft; mimimum daily 6,500 ft^3/s Dec. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12700	12400	11000	7500	9000	11500	8860	8680	29500	36800	16100	7620
2	13300	11600	11000	7000	9000	11000	8820	8650	32700	35600	14800	7310
3	13700	11000	10500	8000	8500	10500	8750	8230	32100	33500	14000	7070
4	13700	11200	10500	8000	8000	10500	8790	7890	28800	32800	13600	6880
5	13900	11400	10500	8500	7500	10500	8880	7760	24800	33200	13500	6730
6	14100	11400	10000	9000	7500	10300	8900	7720	23100	34800	13700	6650
7	13700	11400	9500	8500	7500	9980	8880	7430	23200	32700	13200	6700
8	13700	11300	9000	9000	8000	9680	8890	7100	24000	29300	12000	6740
9	14300	11400	9500	9500	8500	9540	8750	6750	23700	27700	11000	6790
10	15200	11400	8500	9500	9000	9400	8610	7930	23300	30000	10600	6910
11	14700	11400	8000	9000	9500	9480	8470	10000	24600	31500	10100	7140
12	14400	11400	8500	10000	10000	10300	8460	11100	27600	32100	9190	7130
13	13900	11800	8500	10000	10500	11300	8480	11100	30500	37200	8510	7200
14	13500	12000	8000	9500	10500	10500	8540	12600	35800	38900	8300	7350
15	13300	11900	7000	9500	11000	9810	8580	15000	41300	31200	8280	7460
16	12900	11000	7500	9000	11000	9790	8720	15300	37800	26200	8400	7540
17	12200	10800	8000	8500	11500	9610	8690	15000	32700	27000	8360	7650
18	11300	10800	8000	9000	12000	9450	8700	14800	29600	28500	8160	7560
19	9240	11000	8000	9000	13000	9360	8460	14000	30200	27900	7890	7590
20	9490	11200	7500	9000	14000	9200	8400	13400	32100	25900	7680	7960
21	9510	11000	7500	9000	13500	9040	7830	12900	32800	23500	7670	8220
22	9570	10000	7500	9000	13000	8950	7150	12400	36000	21500	7720	8560
23	9580	9500	7500	9000	12500	8930	7030	13700	31700	20300	7820	9520
24	9920	9500	7000	8500	12000	8880	7370	13400	29200	19600	8060	9910
25	9830	9000	6500	8000	11500	8770	7520	12800	27600	19000	8420	10100
26	9760	9000	7500	7500	11000	8690	7640	13100	27600	18100	8700	10000
27	9770	10000	7500	8500	11500	8770	7920	13200	31000	17400	8920	9800
28	10700	10500	7500	10000	11500	8810	8130	14200	33700	17300	8790	9660
29	11500	11000	7000	9500	---	8990	8510	17500	33600	16900	8590	9610
30	12000	11000	7000	9500	---	8970	8890	20800	34200	17100	8300	9130
31	12100	---	7500	9500	---	8850	---	24600	---	16900	7990	---
(†)	0	0	0	0	0	0	0	52200	61000	60800	63600	49900
TOTAL	377470	328300	259000	275000	292000	299350	251620	379040	904800	840400	308350	238490
MEAN	12180	10940	8355	8871	10430	9656	8387	12230	30160	27110	9947	7950
MAX	15200	12400	11000	10000	14000	11500	8900	24600	41300	38900	16100	10100
MIN	9240	9000	6500	7000	7500	8690	7030	6750	23100	16900	7670	6650
AC-FT	748700	651200	513700	545500	579200	593800	499100	751800	1795000	1667000	611600	473000

CAL YR 1982	TOTAL	5310540	MEAN	14550	MAX	62200	MIN	3300	AC-FT	10530000
WTR YR 1983	TOTAL	4753820	MEAN	13020	MAX	41300	MIN	6500	AC-FT	9429000

†Diversions, in acre-feet, by Yellowstone Canal, furnished by the Bureau of Reclamation.

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--Continued
(National Stream Quality Accounting Network)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1948 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: January 1951 to current year.
SUSPENDED-Sediment Discharge: October 1971 to September 1981, October 1982 to September 1983.

INSTRUMENTATION.--Temperature recorder April to November 1974, May to September 1975, July 1977 to current year.

REMARKS.--Missing record for period Oct. 1 to Dec. 2 and May 10-20, 22, 29 due to equipment malfunctions.
Prior to July 1972, sediment sampling and record computation under supervision of U.S. Army Corps of Engineers. Flow affected by ice during most of winter months.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 29.0°C July 23, 1960; minimum, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 26,800 mg/L May 8, 1975; minimum daily mean, 8 mg/L Jan. 9, 1973.
SEDIMENT LOADS: Maximum daily, 3,030,000 tons May 8, 1975; minimum daily, 112 tons Jan. 12, 1980.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 27.5°C Aug. 3, 4, 6, 7; minimum, 0.0°C on many days during period December to March.
SEDIMENT CONCENTRATIONS: Maximum daily mean 3,770 mg/L June 22; minimum daily mean, 20 mg/L Dec. 28.
SEDIMENT LOADS: Maximum daily, 366,000 tons June 22; minimum daily, 405 tons Dec. 28.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)
OCT								
28...	1100	9990	718	8.5	5.0	6.5	65	8.3
DEC								
28...	1500	7310	800	7.9	- .9	.0	6.0	12.5
JAN								
31...	1300	9260	778	--	- .9	.0	--	--
MAR								
08...	1000	9530	880	8.1	- .9	1.0	240	--
31...	1330	8850	860	--	1.0	6.5	--	--
APR								
28...	1100	7950	1020	8.3	9.0	7.0	260	9.1
MAY								
31...	1330	25700	--	--	17.0	18.0	--	--
JUN								
20...	1045	32800	370	8.2	21.0	20.0	200	7.8
AUG								
03...	1700	13900	482	--	30.0	22.0	--	--
30...	0830	8060	680	8.5	21.0	23.5	500	7.2
SEP								
28...	1140	10100	630	--	5.0	13.5	--	--

DATE	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	PERCENT SODIUM (00932)
OCT							
28...	73	220	K31	100	54	51	38
DEC							
28...	91	240	K16	68	51	57	38
JAN							
31...	--	--	--	--	--	--	--
MAR							
08...	--	270	K2	K100	95	63	42
31...	--	--	--	--	--	--	--
APR							
28...	80	270	K44	K23	120	62	44
MAY							
31...	--	--	--	--	--	--	--
JUN							
20...	92	130	120	290	35	33	32
AUG							
03...	--	--	--	--	--	--	--
30...	91	200	110	240	59	49	40
SEP							
28...	--	--	--	--	--	--	--

DATE	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
OCT												
28...	2	3.6	165	1.0	180	13	.40	9.7	441	440	.60	11900
DEC												
28...	2	3.5	186	4.5	--	--	.40	11	492	--	.67	9710
MAR												
08...	2	3.8	170	2.6	260	21	.40	9.1	587	570	.80	15100
APR												
28...	3	3.7	158	1.5	290	26	.50	7.3	622	610	.85	13400
JUN												
20...	1	2.2	97	1.2	90	6.4	.20	12	243	240	.33	21500
AUG												
30...	2	3.7	142	.9	170	16	.50	10	420	420	.57	9140

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)
OCT											
28...	.120	.150	.90	.100	.31	.040	<.010	5	55	<1	<1
DEC											
28...	.400	.090	.90	.030	.09	.030	.030	--	--	--	--
MAR											
08...	.240	.180	1.0	.230	.71	.040	<.010	5	46	<1	<1
APR											
28...	<.100	.420	1.1	.230	.71	.020	.010	--	--	--	--
JUN											
20...	.210	.330	1.2	.430	1.3	.050	.040	3	36	<1	<1
AUG											
30...	.160	.780	--	--	--	<.010	.020	4	57	<1	<1

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
OCT											
28...	4	54	2	44	17	.3	1	1	<1	550	8
DEC											
28...	--	--	--	--	--	--	--	--	--	--	--
MAR											
08...	1	23	3	49	61	.3	2	1	<1	680	4
APR											
28...	--	--	--	--	--	--	--	--	--	--	--
JUN											
20...	1	44	<1	23	5	.2	3	1	<1	310	<3
AUG											
30...	1	22	<1	43	2	<.1	<1	1	<1	--	<3

YELLOWSTONE RIVER BASIN

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT.--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPERATURE (DEG C) (00010)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM (70337)	SED. SUSP. FALL DIAM. % FINER THAN .004 MM (70338)	SED. SUSP. FALL DIAM. % FINER THAN .008 MM (70339)	SED. SUSP. FALL DIAM. % FINER THAN .016 MM (70340)	SED. SUSP. FALL DIAM. % FINER THAN .062 MM (70342)	SED. SUSP. FALL DIAM. % FINER THAN .125 MM (70343)
OCT											
28...	1100	6.5	9990	--	--	--	--	--	--	--	--
DEC											
28...	1500	.0	7310	23	454	--	--	--	--	--	--
JAN											
31...	1300	.0	9260	179	4480	--	--	--	--	76	80
MAR											
08...	1000	1.0	9530	372	9570	--	--	--	--	--	--
31...	1330	6.5	8850	168	4010	--	--	--	--	--	--
APR											
28...	1100	7.0	7950	586	12600	70	81	88	98	--	--
MAY											
31...	1330	18.0	25700	2670	185000	23	28	36	46	76	91
JUN											
20...	1045	20.0	32800	701	62100	29	30	39	49	81	96
AUG											
03...	1700	22.0	13900	--	--	48	52	57	64	79	93
30...	0830	23.5	8060	987	21500	77	84	92	96	--	--
SEP											
28...	1140	13.5	10100	92	2510	--	--	--	--	--	--

DATE	SED. SUSP. FALL DIAM. % FINER THAN .250 MM (70344)	SED. SUSP. FALL DIAM. % FINER THAN .500 MM (70345)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)
OCT										
28...	--	--	--	24	73	99	100	--	--	--
DEC										
28...	--	--	69	--	--	--	--	--	--	--
JAN										
31...	100	--	--	--	--	--	--	--	--	--
MAR										
08...	--	--	98	49	83	99	99	100	--	--
31...	--	--	95	43	80	100	--	--	--	--
APR										
28...	--	--	99	--	1	33	99	99	99	100
MAY										
31...	99	100	--	--	--	--	--	--	--	--
JUN										
20...	100	--	--	61	97	100	--	--	--	--
AUG										
03...	100	--	--	--	--	--	--	--	--	--
30...	--	--	99	--	4	87	100	--	--	--
SEP										
28...	--	--	61	61	95	99	100	--	--	--

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1							---	---	---	.0	.0	.0
2							---	---	---	.0	.0	.0
3							.0	.0	.0	.0	.0	.0
4							.0	.0	.0	.0	.0	.0
5							.0	.0	.0	.0	.0	.0
6							.0	.0	.0	.0	.0	.0
7							.0	.0	.0	.0	.0	.0
8							.5	.0	.0	.0	.0	.0
9							.5	.0	.0	.0	.0	.0
10							.5	.0	.0	.0	.0	.0
11							.5	.0	.0	.0	.0	.0
12							.5	.0	.0	.0	.0	.0
13							.0	.0	.0	.0	.0	.0
14							.0	.0	.0	.0	.0	.0
15							.0	.0	.0	.0	.0	.0
16							.0	.0	.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	.0	.0	.0	.0	.0
21							.0	.0	.0	.0	.0	.0
22							.0	.0	.0	.0	.0	.0
23							.0	.0	.0	.0	.0	.0
24							.0	.0	.0	.0	.0	.0
25							.0	.0	.0	.0	.0	.0
26							.0	.0	.0	.0	.0	.0
27							.0	.0	.0	.0	.0	.0
28							.0	.0	.0	.0	.0	.0
29							.0	.0	.0	.0	.0	.0
30							.0	.0	.0	.0	.0	.0
31							.0	.0	.0	.0	.0	.0
MONTH							.5	.0	.0	.0	.0	.0

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	.0	.0	.0	.0	.0	.0	7.0	5.5	6.0	11.5	10.0	10.5
2	.0	.0	.0	.0	.0	.0	6.0	5.0	5.5	11.5	10.5	11.0
3	.0	.0	.0	.0	.0	.0	5.5	4.5	5.0	12.0	11.0	11.5
4	.0	.0	.0	.0	.0	.0	5.5	4.0	5.0	14.0	11.0	13.0
5	.0	.0	.0	3.0	.0	2.0	6.0	4.0	5.0	13.5	12.0	13.0
6	.0	.0	.0	2.5	1.0	2.0	6.5	4.5	5.5	13.5	13.0	13.0
7	.0	.0	.0	1.0	.5	1.0	7.5	5.0	6.5	13.5	12.0	12.5
8	.0	.0	.0	1.0	.5	.5	8.0	6.0	7.0	14.0	12.0	13.0
9	.0	.0	.0	2.5	1.0	1.5	9.0	7.0	8.0	14.5	13.5	14.0
10	.0	.0	.0	3.5	2.0	2.5	9.0	8.0	8.5	---	---	---
11	.0	.0	.0	4.5	3.0	4.0	9.0	7.0	8.5	---	---	---
12	.0	.0	.0	5.5	4.5	5.0	6.5	5.0	5.5	---	---	---
13	.0	.0	.0	6.0	4.5	5.5	5.5	3.5	5.0	---	---	---
14	.0	.0	.0	5.5	5.5	5.5	6.0	4.0	5.5	---	---	---
15	.0	.0	.0	5.5	5.5	5.5	7.0	5.5	6.5	---	---	---
16	.0	.0	.0	5.5	5.5	5.5	7.5	5.5	6.5	---	---	---
17	.0	.0	.0	6.0	5.0	5.5	8.5	6.5	7.5	---	---	---
18	.0	.0	.0	5.5	4.5	5.0	10.5	7.5	9.5	---	---	---
19	.0	.0	.0	4.5	3.5	4.0	12.0	9.5	11.0	---	---	---
20	.0	.0	.0	3.5	2.5	3.0	13.0	11.0	12.5	---	---	---
21	.0	.0	.0	4.5	1.5	2.5	14.0	12.0	13.5	15.5	14.5	15.0
22	.0	.0	.0	3.0	1.5	2.5	14.0	13.0	13.5	---	---	---
23	.0	.0	.0	3.5	2.0	2.5	13.5	12.5	13.0	17.5	15.5	16.5
24	.0	.0	.0	5.0	3.0	4.0	13.0	12.0	12.5	17.5	16.0	17.0
25	.0	.0	.0	4.5	4.5	4.5	13.5	12.5	13.0	19.0	16.5	18.0
26	.0	.0	.0	4.5	3.5	4.0	13.0	9.5	10.5	20.5	18.5	19.5
27	.0	.0	.0	5.5	4.0	4.5	10.5	8.5	9.0	21.5	19.5	20.5
28	.0	.0	.0	6.0	4.5	5.5	8.5	7.5	8.0	21.0	19.5	20.0
29	---	---	---	7.5	5.5	6.5	9.5	7.5	8.5	---	---	---
30	---	---	---	7.5	6.5	7.0	11.0	8.5	9.5	18.5	17.0	18.0
31	---	---	---	7.5	6.0	6.5	---	---	---	18.0	16.5	17.5
MONTH	.0	.0	.0	7.5	.0	3.5	14.0	3.5	8.5	21.5	10.0	15.0

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT.--CONTINUED

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	18.0	17.0	17.5	20.5	20.0	20.0	24.5	23.0	24.0	24.5	23.5	24.0
2	17.5	17.0	17.5	20.5	19.5	20.0	26.0	24.0	25.0	24.5	22.0	23.5
3	17.0	16.0	16.5	20.5	19.5	20.0	27.5	25.0	26.0	22.0	21.0	21.5
4	16.0	15.0	15.5	19.5	19.0	19.0	27.5	26.0	26.5	21.5	20.5	21.0
5	16.5	15.0	16.0	19.5	18.5	19.0	27.0	26.0	26.5	21.0	18.5	20.0
6	17.5	15.5	16.5	20.0	19.5	19.5	27.5	25.5	26.5	18.0	16.5	17.5
7	18.5	17.0	17.5	22.0	20.0	20.5	27.5	26.0	26.5	18.5	16.5	17.5
8	19.5	18.0	18.5	23.5	22.0	22.5	26.0	24.5	25.0	19.0	18.0	18.5
9	19.5	18.5	19.0	25.0	23.5	24.5	24.5	23.0	24.0	19.5	19.0	19.5
10	21.5	19.5	20.5	24.5	22.0	24.0	25.5	24.0	24.5	19.0	17.5	18.0
11	22.5	21.0	21.5	21.5	21.0	21.5	25.5	24.0	24.5	18.0	16.5	17.0
12	21.5	19.0	20.5	22.0	20.5	21.0	24.5	24.0	24.0	17.0	16.0	16.5
13	19.0	18.5	19.0	22.0	21.0	21.5	24.0	22.5	23.5	16.0	15.0	15.5
14	19.0	18.5	18.5	22.5	21.5	22.0	24.5	23.0	23.5	16.0	15.0	15.5
15	18.5	17.0	17.5	22.0	19.5	21.0	24.5	23.5	24.0	16.0	14.5	15.0
16	17.5	16.5	17.0	20.0	18.5	19.5	25.0	24.0	24.5	15.5	14.0	15.0
17	18.0	16.5	17.5	20.5	19.5	20.0	25.0	24.0	24.5	15.5	14.0	15.0
18	18.5	17.5	18.0	21.5	20.0	20.5	24.5	23.5	24.0	13.5	13.0	13.0
19	20.0	18.5	19.0	23.0	21.0	22.0	23.5	22.0	22.5	13.0	11.0	12.0
20	20.0	20.0	20.0	24.0	23.0	23.0	22.5	21.5	22.0	10.5	10.0	10.5
21	20.5	18.0	19.5	24.0	23.5	23.5	22.5	21.5	22.0	10.0	9.0	9.5
22	19.0	17.5	18.5	24.0	23.0	23.5	22.0	21.0	21.0	10.0	8.5	9.0
23	20.5	18.5	19.5	24.0	22.5	23.5	22.0	21.0	21.5	11.0	9.0	10.0
24	22.5	20.5	21.5	23.5	22.5	23.0	23.5	21.0	22.5	12.5	10.5	11.5
25	23.0	22.0	23.0	24.0	22.5	23.5	24.5	23.0	24.0	13.5	12.0	13.0
26	22.0	21.0	21.5	25.5	23.5	24.5	25.0	23.5	24.0	15.0	13.0	14.0
27	21.5	21.0	21.0	25.5	24.0	25.0	25.0	23.5	24.0	15.0	14.5	14.5
28	21.0	20.5	20.5	25.5	24.5	25.0	24.5	23.5	24.0	15.0	13.5	14.0
29	20.5	20.0	20.0	25.0	24.0	24.5	24.0	23.0	23.5	13.0	11.0	12.0
30	20.5	20.5	20.5	24.5	23.0	23.5	24.5	23.5	24.0	11.0	9.5	10.5
31	---	---	---	24.5	22.5	23.5	24.5	23.5	24.0	---	---	---
MONTH	23.0	15.0	19.0	25.5	18.5	22.0	27.5	21.0	24.0	24.5	8.5	15.5
YEAR	27.5	.0	10.5									

06329500 YELLOWSTONE RIVER NEAR SIDNEY, MT--CONTINUED

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)	MEAN CONCEN-TRATION (MG/L)	LOADS (T/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	819	28100	352	11800	96	2850	26	526	100	2430	1480	46000
2	700	25100	308	9650	86	2550	26	491	84	2040	1200	35600
3	558	20600	262	7780	24	680	22	475	62	1420	270	7650
4	675	25000	332	10000	74	2100	23	497	60	1300	1440	40800
5	975	36600	305	9390	69	1960	23	528	65	1320	870	24700
6	1100	41900	190	5850	65	1760	38	923	50	1010	600	16700
7	1090	40300	131	4030	88	2260	50	1150	56	1130	350	9430
8	1060	39200	140	4270	82	1990	72	1750	41	886	575	15000
9	1220	47100	150	4620	66	1690	96	2460	47	1080	800	20600
10	2640	108000	110	3390	58	1330	119	3050	62	1510	490	12400
11	2150	85300	77	2370	45	972	131	3180	65	1670	450	11500
12	1850	71900	98	3020	45	1030	165	4450	77	2080	645	17900
13	1480	55500	122	3890	48	1100	150	4050	88	2490	1820	55500
14	1050	38300	160	5180	45	972	145	3720	121	3430	1610	45600
15	650	23300	185	5940	46	869	141	3620	146	4340	1080	28600
16	390	13600	152	4510	55	1110	149	3620	375	11100	625	16500
17	440	14500	138	4020	65	1400	136	3120	472	14700	375	9730
18	440	13400	142	4140	68	1470	95	2310	481	15600	350	8930
19	402	10000	140	4160	70	1510	87	2110	660	23200	285	7200
20	302	7740	130	3930	64	1300	60	1460	755	28500	209	5190
21	250	6420	126	3740	73	1480	60	1460	595	21700	198	4830
22	240	6200	87	2350	61	1240	56	1360	450	15800	188	4540
23	230	5950	50	1280	64	1300	55	1340	419	14100	158	3810
24	192	5140	32	821	45	850	56	1290	455	14700	142	3400
25	170	4510	45	1090	54	948	54	1170	460	14300	116	2750
26	150	3950	81	1970	37	749	41	830	519	15400	117	2750
27	150	3960	125	3380	23	466	44	1010	580	18000	109	2580
28	370	10700	97	2750	20	405	56	1510	890	27600	89	2120
29	368	11400	108	3210	33	624	53	1360	---	---	99	2400
30	350	11300	84	2490	26	491	33	846	---	---	88	2130
31	337	11000	---	---	33	668	92	2360	---	---	148	3540
TOTAL	---	825970	---	135021	---	40124	---	58026	---	262836	---	470380
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	124	2970	960	22500	2640	210000	670	66600	230	10000	715	14700
2	81	1930	880	20600	2200	194000	610	58600	301	12000	600	11800
3	80	1890	800	17800	2060	179000	480	43400	518	19600	458	8740
4	82	1950	760	16200	1430	111000	365	32300	442	16200	315	5850
5	88	2110	650	13600	1140	76300	350	31400	341	12400	275	5000
6	91	2190	690	14400	895	55800	410	38500	271	10000	275	4940
7	97	2330	400	8020	750	47000	370	32700	280	9980	275	4970
8	99	2380	345	6610	725	47000	339	26800	320	10400	260	4730
9	98	2320	250	4560	610	39000	305	22800	260	7720	147	2690
10	101	2350	345	7390	680	42800	410	33200	247	7070	108	2010
11	103	2360	385	10400	690	45800	420	35700	220	6000	90	1740
12	82	1870	450	13500	1020	76000	399	34600	190	4710	76	1460
13	83	1900	350	10500	1080	88900	615	61800	165	3790	68	1320
14	92	2120	820	27900	1710	165000	760	79800	159	3560	68	1350
15	98	2270	2420	98000	2050	229000	630	53100	162	3620	69	1390
16	89	2100	2670	110000	1640	167000	395	27900	176	3990	70	1430
17	80	1880	2050	83000	1270	112000	345	25200	281	6340	67	1380
18	71	1670	1450	57900	1310	105000	700	53900	391	8610	64	1310
19	111	2540	1040	39300	995	81100	430	32400	430	9160	62	1270
20	128	2900	640	23200	895	77600	378	26400	459	9520	83	1780
21	147	3110	620	21600	2080	184000	535	33900	410	8490	122	2710
22	121	2340	490	16400	3770	366000	450	26100	295	6150	132	3050
23	182	3450	500	18500	1640	140000	312	17100	180	3800	147	3780
24	219	4360	475	17200	840	66200	310	16400	158	3440	144	3850
25	425	8630	365	12600	660	49200	285	14600	147	3340	125	3410
26	525	10800	445	15700	435	32400	280	13700	110	2580	104	2810
27	590	12600	365	13000	570	47700	330	15500	110	2650	88	2330
28	575	12600	700	26800	720	65500	309	14400	100	2370	80	2090
29	800	18400	1210	57200	515	46700	263	12000	107	2480	82	2130
30	950	22800	1950	110000	560	51700	271	12500	800	17900	88	2170
31	---	---	2680	178000	---	---	282	12900	880	19000	---	---
TOTAL	---	143120	---	1092380	---	3198700	---	1006200	---	246870	---	108190

TOTAL LOAD FOR YEAR: 7587817 TONS.

06329590 YELLOWSTONE RIVER STAGE GAGE NO. 1 NEAR FAIRVIEW, MT

LOCATION.--Lat 47°48'34", long 104°02'36", sec. 18, T.150 N., R.104 W., McKenzie County, Hydrologic Unit 10100004, on left bank 3 mi south of Fairview, and at mile 15.2.

DRAINAGE AREA.--70,000 mi^2, approximately.

PERIOD OF RECORD.--March 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,860.00 ft 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, 9.10 ft May 16-17, Aug. 12-13, 1961, present datum.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.61	13.59					---	11.00	16.62	17.55	---	11.21
2	13.79	13.44					---	11.01	17.27	17.66	---	11.07
3	13.90	13.13					---	10.89	17.21	17.43	---	10.95
4	13.97	13.10					---	10.81	16.54	17.20	13.17	10.90
5	13.95	13.25					---	10.69	15.79	17.20	13.10	10.83
6	12.48	13.27					---	10.72	15.41	17.47	13.14	10.75
7	12.42	13.24					---	10.58	15.39	17.30	13.17	10.78
8	12.37	13.22					---	10.48	15.51	16.59	12.85	---
9	12.28	13.20					---	10.31	15.46	16.25	12.47	---
10	12.12	---					---	---	15.39	16.32	12.34	---
11	12.00	---					---	---	15.51	16.79	12.12	---
12	14.23	---					---	11.72	16.07	16.92	11.78	---
13	14.05	---					---	11.89	16.77	17.48	11.46	---
14	13.96	---					---	12.23	17.53	18.24	11.41	---
15	13.88	---					---	12.95	18.52	17.06	---	---
16	13.77	---					---	13.29	18.12	16.14	---	---
17	13.53	---					---	13.22	17.33	16.08	---	---
18	13.22	---					---	13.06	16.76	16.39	---	---
19	12.54	---					---	12.79	16.69	16.38	---	---
20	12.44	---					11.10	12.58	16.94	16.04	---	---
21	12.50	---					10.95	12.46	16.97	15.62	---	---
22	12.53	---					10.69	12.29	17.62	15.20	---	---
23	12.52	---					10.48	12.54	16.98	14.93	---	---
24	12.61	---					---	12.61	16.43	14.89	---	---
25	12.59	---					---	12.42	16.11	14.68	---	---
26	12.55	---					---	12.41	15.96	14.38	11.54	---
27	12.54	---					---	12.45	16.47	14.20	11.69	---
28	12.82	---					---	12.59	17.05	---	11.60	---
29	13.17	---					---	13.51	17.15	---	11.52	---
30	13.40	---					11.04	14.61	17.11	---	11.40	---
31	13.48	---					---	15.68	---	---	11.31	---
TOTAL	405.22	---					---	---	498.68	---	---	---
MEAN	13.07	---					---	---	16.62	---	---	---
MAX	14.23	---					---	---	18.52	---	---	---
MIN	12.00	---					---	---	15.39	---	---	---

06329610 YELLOWSTONE RIVER STAGE GAGE NO. 2 NEAR CARTWRIGHT, ND

LOCATION.--Lat 47°51'50", long 103°58'06", on south line sec.26, T.151 N., R.104 W., McKenzie County, Hydrologic Unit 10100004, on bridge on State Highway 23, 2 mi west of Cartwright, and at mile 8.6.

DRAINAGE AREA.--70,000 mi^2, approximately.

PERIOD OF RECORD.--April 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,800.00 ft 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 ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66.89	66.81					---	65.48	70.69	---	68.12	65.44
2	67.13	66.78					---	65.50	71.28	---	67.75	65.35
3	67.32	66.42					---	65.40	71.22	---	67.58	65.20
4	67.37	66.32					---	65.33	70.60	---	67.42	65.16
5	67.34	66.48					---	65.22	70.03	---	67.37	65.09
6	67.46	66.53					---	65.27	69.68	---	67.42	65.00
7	67.38	66.51					---	65.15	69.62	---	67.35	65.05
8	67.36	66.47					---	65.12	69.83	---	67.00	65.09
9	67.44	66.44					---	65.00	69.90	---	66.66	65.10
10	67.77	.00					---	65.03	69.87	---	66.51	65.07
11	67.72	---					---	65.70	70.02	---	66.36	65.15
12	67.64	---					---	66.18	70.50	71.45	66.18	65.18
13	67.48	---					---	66.25	71.08	71.86	65.88	65.16
14	67.40	---					---	66.36	71.74	72.73	65.91	65.23
15	67.28	---					---	67.05	72.65	71.44	65.92	65.29
16	67.21	---					---	67.53	72.47	71.50	65.91	65.34
17	67.00	---					---	67.54	71.73	70.44	65.76	65.36
18	66.69	---					---	67.59	71.15	70.71	65.69	65.32
19	66.10	---					65.45	67.42	71.01	70.72	65.54	65.31
20	65.88	---					65.46	67.22	71.40	70.38	65.49	65.36
21	65.92	---					65.36	67.15	71.41	69.87	65.48	65.48
22	65.94	---					65.17	67.02	---	69.40	65.47	65.56
23	65.97	---					65.02	67.21	---	69.08	65.48	65.91
24	66.05	---					65.10	67.26	---	68.95	65.60	66.10
25	66.03	---					65.19	67.04	---	68.85	65.71	66.18
26	65.99	---					65.16	67.03	---	68.59	65.78	66.17
27	65.95	---					65.19	67.19	---	68.38	65.85	66.11
28	66.20	---					65.24	67.32	---	68.35	65.83	66.02
29	66.49	---					65.31	67.99	---	68.25	65.76	65.95
30	66.66	---					65.49	68.98	---	68.26	65.64	65.99
31	66.72	---					---	69.86	---	68.23	65.54	---
TOTAL	2071.78	---					---	2065.39	---	---	2053.96	1963.72
MEAN	66.83	---					---	66.63	---	---	66.26	65.46
MAX	67.77	---					---	69.86	---	---	68.12	66.18
MIN	65.88	---					---	65.00	---	---	65.47	65.00

06329620 YELLOWSTONE RIVER STAGE GAGE NO. 3 NEAR BUFORD, ND

LOCATION.--Lat 47°56'16", long 103°57'52", in SW¼ sec.35, T.152 N., R.104 W., McKenzie County, Hydrologic Unit 10100004, on left bank 4 mi south of Buford, and at mile 3.3.

DRAINAGE AREA.--70,000 mi^2, approximately.

PERIOD OF RECORD.--April 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,850.00 ft National Geodetic Vertical Datum of 1929. Prior to Apr. 19, 1962, at datum 50.00 ft lower.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 29.55 ft Mar. 15, 1972; minimum daily recorded, 6.18 ft Aug. 24, 1961, present datum.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.00	11.34					---	10.43	15.70	---	13.20	---
2	11.21	11.29					---	10.43	16.32	---	---	---
3	11.39	11.29					---	10.32	16.42	---	---	---
4	11.57	11.23					---	10.20	15.89	---	---	---
5	11.70	11.20					---	10.00	15.23	---	12.21	---
6	11.81	11.19					---	10.03	14.78	---	12.22	---
7	11.83	11.20					---	9.95	14.70	---	12.18	---
8	11.80	11.21					---	9.81	14.86	---	11.90	---
9	11.69	11.25					---	9.71	14.80	---	11.48	---
10	11.58	11.29					---	9.68	14.74	---	11.27	---
11	11.47	11.37					---	10.56	14.80	---	11.20	---
12	11.41	11.42					---	11.27	15.29	16.19	11.18	---
13	11.40	---					---	11.48	15.87	16.59	11.13	---
14	12.41	---					---	11.71	16.58	17.60	---	---
15	12.28	---					---	12.38	17.52	16.58	---	---
16	12.19	---					---	12.77	17.48	15.51	---	---
17	11.94	---					---	12.77	16.72	15.20	---	---
18	11.70	---					---	12.72	16.03	15.49	---	---
19	11.02	---					---	12.59	---	15.69	---	---
20	10.69	---					10.31	12.36	---	15.38	---	---
21	10.80	---					10.23	12.23	---	14.98	---	---
22	10.81	---					9.97	12.08	---	14.53	---	---
23	10.87	---					9.77	12.15	---	14.24	---	---
24	10.89	---					9.77	12.33	---	14.03	---	---
25	10.91	---					9.87	12.16	---	13.89	---	---
26	10.89	---					9.94	12.08	---	13.68	---	---
27	10.82	---					10.02	12.14	---	13.48	---	11.01
28	11.12	---					10.14	12.21	---	13.40	---	10.96
29	11.50	---					10.22	12.89	---	13.30	---	10.88
30	11.75	---					10.45	13.84	---	13.27	---	10.96
31	11.38	---					---	14.81	---	13.30	---	---
TOTAL	353.83	---					---	360.09	---	---	---	---
MEAN	11.41	---					---	11.62	---	---	---	---
MAX	12.41	---					---	14.81	---	---	---	---
MIN	10.69	---					---	9.68	---	---	---	---

06329640 MISSOURI RIVER STAGE GAGE NO. 5A AT BUFORD, ND

LOCATION.--Lat 47°59'06", long 103°59'05", in SE¼ sec.15, T.152 N., R.104 W., Williams County, Hydrologic Unit 10110101, on left bank 1.5 mi southwest of Buford, and at mile 1,580.7.

DRAINAGE AREA.--164,000 mi^2, approximately.

PERIOD OF RECORD.--April 1960 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,850.00 ft 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, 19.37 ft Mar. 23, 1978; minimum daily recorded, 2.63 ft Aug. 15-16, 1966.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---						---	7.10	12.29	---	---	8.31
2	---						---	7.11	12.98	---	---	8.32
3	---						---	7.00	13.18	---	---	8.25
4	---						---	6.80	---	---	---	8.15
5	---						---	6.65	---	---	9.65	8.23
6	---						---	---	---	---	9.64	8.05
7	---						---	---	---	---	9.59	7.78
8	---						---	---	11.32	---	9.38	7.76
9	---						---	---	11.32	---	8.97	---
10	---						---	---	11.12	---	8.79	---
11	---						---	---	11.02	---	8.72	---
12	---						---	---	11.55	13.50	8.58	---
13	---						---	---	12.29	13.85	8.21	---
14	8.76						---	---	12.82	14.78	8.15	---
15	8.62						---	---	---	14.20	8.16	---
16	8.47						---	---	---	13.36	8.20	---
17	8.14						---	---	---	13.02	8.37	---
18	---						---	9.32	---	13.31	8.39	---
19	---						---	9.28	---	13.58	8.38	---
20	---						6.98	9.24	---	13.41	8.30	---
21	---						6.92	9.29	---	13.12	8.27	---
22	---						6.77	9.25	---	12.77	8.27	---
23	---						6.53	9.30	---	12.46	8.34	---
24	---						6.48	9.45	---	12.18	8.35	---
25	---						6.53	9.17	---	11.98	8.48	---
26	---						6.55	8.99	---	11.68	---	---
27	---						6.68	8.92	---	11.48	---	---
28	---						6.86	8.95	---	11.32	---	8.13
29	---						6.97	9.46	---	11.22	---	8.12
30	---						7.07	10.35	---	---	---	8.28
31	---						---	11.35	---	---	8.36	---
TOTAL	---						---	---	---	---	---	---
MEAN	---						---	---	---	---	---	---
MAX	---						---	---	---	---	---	---
MIN	---						---	---	---	---	---	---

06329650 MISSOURI RIVER STAGE GAGE NO. 6 NEAR BUFORD, ND

LOCATION.--Lat 47°57'18", long 103°54'36", in SE¼ sec.30, T.152 N., R.103 W., Williams County, Hydrologic Unit 10110101, on right bank 5 mi southeast of Buford, and at mile 1,576.0.

DRAINAGE AREA.--164,000 mi^2, approximately.

PERIOD OF RECORD.--December 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,840.00 ft 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, 24.15 ft June 29, 1975; minimum daily recorded, 8.23 ft Aug. 15 and 22, 1963.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.56	15.21					---	14.18	19.35	20.92	17.66	15.43
2	15.98	15.11					---	14.18	20.13	21.19	17.33	15.45
3	16.76	15.06					---	14.10	20.41	20.86	16.99	15.34
4	16.73	15.08					---	13.88	19.98	20.75	16.80	15.24
5	15.42	15.02					---	13.74	19.20	20.77	16.77	15.31
6	15.46	15.01					---	---	18.58	20.88	16.76	15.16
7	15.51	15.17					---	---	18.34	20.86	16.71	14.86
8	15.47	15.30					---	---	18.40	20.30	16.52	14.83
9	15.46	15.43					---	---	18.47	19.82	16.09	14.82
10	15.34	15.67					---	---	18.41	19.75	15.85	14.69
11	15.22	15.85					---	---	18.40	20.15	15.79	14.64
12	15.11	15.74					---	---	18.80	20.50	15.67	14.65
13	15.09	15.79					---	---	19.44	20.87	15.27	14.48
14	15.96	15.90					---	---	20.16	21.75	15.22	14.43
15	15.82	---					---	---	21.24	21.15	15.25	14.56
16	15.67	---					---	---	21.50	20.10	15.29	14.57
17	15.32	---					---	---	20.84	19.59	15.46	14.58
18	15.05	---					---	---	20.09	19.90	15.54	14.54
19	14.88	---					---	16.31	19.71	20.25	15.52	14.49
20	15.29	---					14.21	16.26	19.96	20.05	15.44	14.54
21	9.00	---					14.10	16.29	20.08	19.71	15.38	14.70
22	.00	---					13.98	16.24	20.56	19.31	15.38	14.77
23	.00	---					13.70	16.27	20.58	19.03	15.47	15.02
24	14.62	---					13.64	16.45	19.89	18.76	15.47	15.24
25	14.65	---					13.73	16.20	19.45	18.58	15.58	15.26
26	14.81	---					13.72	16.02	19.48	18.27	15.67	15.26
27	14.93	---					13.75	15.95	19.88	18.04	15.77	15.16
28	15.17	---					13.94	15.96	20.49	17.97	15.80	15.08
29	15.21	---					14.04	16.39	20.72	17.88	15.72	15.09
30	15.22	---					14.07	17.27	20.68	17.77	15.66	15.23
31	15.20	---					---	18.31	---	17.77	15.46	---
TOTAL	439.91	---					---	---	593.22	613.50	493.29	447.42
MEAN	14.19	---					---	---	19.77	19.79	15.91	14.91
MAX	16.76	---					---	---	21.50	21.75	17.66	15.45
MIN	.00	---					---	---	18.34	17.77	15.22	14.43

06329660 MISSOURI RIVER STAGE GAGE NO. 7 NEAR TRENTON, ND

LOCATION.--Lat 47°59'21", long 103°47'57", in NE¼ 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 mi^2, approximately.

PERIOD OF RECORD.--March 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,840.00 ft 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, 21.56 ft July 10, 1975; minimum daily recorded, 4.34 ft Aug. 19, 22, 1963.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.03	11.81					---	10.59	---	16.77	---	11.72
2	12.31	11.90					---	10.59	---	17.08	---	11.76
3	12.95	11.67					---	10.51	---	---	---	11.65
4	12.99	11.49					---	10.33	---	---	---	11.54
5	12.50	11.56					---	10.21	---	---	13.13	11.62
6	12.26	11.65					---	10.19	---	---	13.12	11.51
7	12.25	11.67					---	10.17	---	---	13.08	11.22
8	12.44	11.71					---	10.11	---	---	12.90	11.16
9	13.00	11.83					---	10.00	14.55	---	12.57	11.15
10	13.25	11.90					---	9.82	14.49	---	12.31	11.01
11	13.09	11.76					---	10.34	14.44	---	12.33	10.93
12	12.87	11.75					---	11.19	14.78	16.48	12.13	10.96
13	12.63	11.75					---	11.60	15.39	16.69	11.75	10.78
14	12.68	11.87					---	11.71	16.02	17.54	11.65	10.75
15	12.59	11.88					---	---	16.98	17.42	11.71	10.83
16	12.48	---					---	---	17.39	16.50	11.71	10.82
17	12.21	---					---	---	16.95	15.90	11.83	10.82
18	11.95	---					---	---	16.28	16.08	11.92	10.77
19	11.74	---					---	12.47	15.85	16.35	11.90	10.76
20	11.49	---					10.59	12.28	15.98	16.27	11.82	10.75
21	11.60	---					10.56	12.28	16.12	16.02	11.79	10.91
22	11.88	---					10.39	12.21	16.47	15.64	11.75	10.98
23	12.07	---					10.17	12.23	16.62	15.33	11.86	11.19
24	11.89	---					10.05	12.51	16.01	15.07	11.83	11.43
25	11.49	---					10.18	12.32	15.57	14.83	11.89	11.48
26	11.19	---					10.17	---	15.47	14.60	11.96	11.47
27	11.05	---					10.23	---	15.72	---	12.05	11.36
28	11.36	---					10.40	---	16.23	---	12.10	11.29
29	11.54	---					10.55	---	16.58	---	12.01	11.26
30	11.69	---					10.60	---	15.62	---	11.93	11.42
31	11.76	---					---	---	---	---	11.76	---
TOTAL	377.23	---					---	---	---	---	---	335.30
MEAN	12.17	---					---	---	---	---	---	11.18
MAX	13.25	---					---	---	---	---	---	11.76
MIN	11.05	---					---	---	---	---	---	10.75

06330000 MISSOURI RIVER NEAR WILLISTON, ND

LOCATION.--Lat 48°06'45", long 103°43'04", in SE¼ sec.31, T.154 N., R.101 W., Williams County, Hydrologic Unit 10110101, at city waterplant on left bank, 5 mi southwest of Williston, 29.3 mi downstream from Yellowstone River, and at mile 1,552.7.

DRAINAGE AREA.--164,500 mi^2, 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 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 recorded, 26.46 ft Mar. 26, 1978; minimum daily recorded, 7.80 ft Nov. 2, 1966.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.58	16.61	19.96	17.58	18.48	20.18	14.88	14.46	17.29	18.95	18.19	16.34
2	16.61	16.46	20.02	17.81	18.69	20.19	14.86	14.45	17.88	19.12	17.94	16.18
3	17.00	16.33	19.98	17.97	18.73	20.09	14.82	14.40	18.24	19.06	17.78	16.06
4	16.97	16.37	19.86	18.10	18.70	19.95	14.76	14.31	18.24	18.94	17.74	16.07
5	16.94	16.55	19.76	18.09	18.61	19.92	14.73	14.23	17.81	18.96	17.60	15.94
6	16.77	16.44	19.71	18.11	18.48	19.90	14.74	14.36	17.47	19.02	17.57	15.80
7	16.78	16.36	19.53	18.18	18.37	19.58	14.76	14.16	17.24	19.06	17.56	15.85
8	16.83	16.44	19.07	18.31	18.26	19.31	14.84	14.12	17.20	18.95	17.54	15.87
9	16.94	16.57	18.53	18.46	18.14	19.14	14.97	14.00	17.24	18.74	17.52	15.87
10	17.01	16.42	17.88	18.54	18.17	19.04	15.11	13.82	17.22	18.43	17.21	15.47
11	17.04	16.27	17.87	18.62	18.38	19.05	15.08	14.02	17.19	18.45	17.27	15.66
12	16.95	16.31	18.24	18.82	18.61	19.18	14.98	14.71	17.26	18.80	17.02	15.62
13	16.83	16.52	18.35	19.05	18.78	19.44	14.86	14.93	17.63	18.99	16.70	15.53
14	16.80	17.03	18.45	19.03	18.97	19.80	14.70	15.09	18.13	19.36	16.78	15.67
15	16.82	18.65	18.67	18.96	19.24	19.93	14.64	15.39	18.69	19.51	16.70	15.40
16	16.86	20.17	18.92	18.99	19.53	19.77	14.73	15.72	18.96	19.08	16.85	15.54
17	16.70	20.59	19.05	18.97	19.84	18.66	14.68	15.84	18.86	18.69	16.71	15.30
18	16.50	20.16	19.08	18.77	20.16	17.38	14.69	15.80	18.64	18.69	16.70	15.03
19	16.41	19.15	19.04	18.55	20.42	16.48	14.67	15.77	18.34	18.81	16.60	15.17
20	16.32	18.64	19.15	18.25	20.61	15.94	14.61	15.71	18.27	19.99	16.74	15.06
21	16.43	18.79	19.18	18.14	20.74	15.76	14.53	15.68	18.41	18.70	16.59	15.25
22	16.53	18.51	19.10	18.26	20.75	15.74	14.44	15.69	18.55	18.54	16.73	15.34
23	16.62	19.15	18.98	18.38	20.63	15.74	14.30	15.69	18.77	18.41	16.67	15.44
24	16.55	19.16	18.84	18.46	20.45	15.61	14.27	15.80	18.56	18.36	16.56	15.55
25	16.41	19.07	18.57	18.49	20.33	15.49	14.17	15.75	18.19	18.36	16.54	15.58
26	16.34	19.08	18.27	18.38	20.23	15.40	14.08	15.61	18.07	18.25	16.51	15.58
27	16.25	19.20	18.08	18.16	20.18	15.36	14.19	15.50	18.20	18.08	16.54	15.54
28	16.04	19.43	17.81	17.82	20.18	15.33	14.27	15.44	18.50	17.97	16.57	15.36
29	16.26	19.71	17.84	17.55	---	15.23	14.37	15.62	18.77	18.01	16.66	15.53
30	16.57	19.87	17.81	17.57	---	15.09	14.42	16.11	18.85	17.98	16.46	15.65
31	16.60	---	17.58	18.04	---	14.94	---	16.66	---	17.96	16.36	---
TOTAL	516.26	540.01	583.18	568.41	542.66	552.62	439.15	468.84	542.67	580.22	526.91	468.25
MEAN	16.65	18.00	18.81	18.34	19.38	17.83	14.64	15.12	18.09	18.72	17.00	15.61
MAX	17.04	20.59	20.02	19.05	20.75	20.19	15.11	16.66	18.96	19.99	18.19	16.34
MIN	16.04	16.27	17.58	17.55	18.14	14.94	14.08	13.82	17.19	17.96	16.36	15.03

WTR YR 1983 TOTAL 6329.18 MEAN 17.34 MAX 20.75 MIN 13.82

06330110 MISSOURI RIVER STAGE GAGE NO. 9 AT WILLISTON, ND

LOCATION.--Lat 48°08'13", long 103°36'16", in NE¼NE¼ 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^2, approximately.

PERIOD OF RECORD.--April 1959 to current year (seasonal).

GAGE.--Water-stage recorder. Datum of gage is 1,820.00 ft 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.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 34.22 ft July 25, 28, 1975; minimum daily recorded, 5.44 ft Aug. 20, 1961, present datum.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25.35	25.64	25.70	---	25.49	27.07	22.92	21.90	---	25.75	26.96	24.97
2	25.20	25.16	25.81	---	25.70	27.02	22.80	21.90	---	26.04	26.67	24.65
3	25.42	25.17	25.85	---	25.75	26.93	22.64	21.83	---	25.85	26.61	24.52
4	25.20	25.42	25.84	---	25.75	26.83	22.45	21.81	---	25.78	26.62	24.55
5	25.51	25.70	25.75	---	25.68	26.70	22.35	21.82	---	25.91	26.51	24.22
6	25.37	25.39	25.72	---	25.60	26.70	22.33	22.19	---	25.97	26.48	23.91
7	25.50	25.12	25.69	---	25.51	26.66	22.36	21.80	---	26.03	26.38	24.52
8	25.49	25.42	25.47	---	25.43	26.42	22.37	21.89	---	26.23	26.47	24.47
9	25.18	25.56	25.03	---	25.34	26.19	22.38	21.78	---	26.07	26.52	24.52
10	25.15	25.15	---	---	25.32	26.09	22.62	21.64	---	25.71	26.15	23.65
11	25.54	24.90	---	---	25.47	26.00	22.46	21.73	---	25.41	26.42	24.29
12	25.53	25.09	---	25.55	25.68	26.08	22.21	21.87	---	26.06	25.95	24.02
13	25.58	25.27	---	25.72	25.82	26.22	22.13	22.12	---	26.20	25.75	24.06
14	25.53	25.48	---	25.75	25.97	26.52	22.00	22.22	24.52	26.60	26.01	24.46
15	25.67	25.87	---	25.74	26.16	26.64	22.00	22.51	25.01	26.51	25.84	23.64
16	25.90	26.67	---	25.77	26.33	26.64	22.28	22.77	25.48	26.51	26.01	---
17	25.72	26.88	---	25.76	26.58	26.56	22.11	22.85	25.47	26.40	25.72	---
18	25.53	26.92	---	25.68	26.87	26.20	22.10	22.94	25.47	26.58	25.70	---
19	25.52	26.89	---	25.56	27.10	25.26	22.15	22.89	24.97	26.66	25.44	---
20	25.60	26.28	---	25.35	27.29	24.51	22.09	22.93	24.90	26.89	25.87	---
21	25.76	25.90	---	25.30	27.44	24.20	22.04	22.85	25.00	26.57	25.44	---
22	25.72	25.69	---	25.37	27.53	24.01	21.99	22.86	25.11	26.60	25.75	---
23	25.73	25.45	---	25.49	27.54	24.02	21.92	22.88	25.49	26.61	25.52	---
24	25.68	25.02	---	25.54	27.46	24.03	22.18	22.93	25.39	26.78	25.39	---
25	25.72	24.82	---	25.59	27.37	23.75	21.85	23.05	24.94	26.93	25.31	---
26	25.69	24.83	---	25.55	27.23	23.64	21.66	---	24.83	26.90	25.21	---
27	25.47	24.90	---	25.43	27.14	23.51	21.68	---	25.03	26.67	25.19	---
28	24.95	25.00	---	25.21	27.12	23.18	21.77	---	25.28	26.50	25.22	23.01
29	25.27	25.27	---	24.98	---	23.06	21.88	---	25.49	26.65	25.38	23.52
30	25.75	25.50	---	24.90	---	22.98	21.88	---	25.60	26.64	25.12	23.68
31	25.68	---	---	25.17	---	22.91	---	---	---	26.68	25.09	---
TOTAL	790.91	766.36	---	---	737.67	786.53	665.60	---	---	816.69	802.70	---
MEAN	25.51	25.55	---	---	26.35	25.37	22.19	---	---	26.34	25.89	---
MAX	25.90	26.92	---	---	27.54	27.07	22.92	---	---	26.93	26.96	---
MIN	24.95	24.82	---	---	25.32	22.91	21.66	---	---	25.41	25.09	---

06331000 LITTLE MUDDY RIVER BELOW COW CREEK NEAR WILLISTON, ND

LOCATION.--Lat 48°17'04", long 103°34'21", in NE¼NW¼ 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 mi^2, approximately, of which about 100 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1954 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,863.18 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Some small diversions for irrigation. Some regulation by Lake Zahl, Fish and Wildlife Service reservoir 22 mi upstream and Blacktail Dam about 15 mi upstream.

AVERAGE DISCHARGE.--29 years, 38.8 ft^3/s, 28,110 acre-ft/yr; median of yearly mean discharges, 31 ft^3/s, 22,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,180 ft^3/s Apr. 18, 1979, gage height, 12.77 ft; maximum gage height, 13.57 ft Mar. 27, 1960; minimum discharge, 0.20 ft^3/s Nov. 27, 1960, Feb. 5, 1963, and June 4, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 250 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 23	--	660	ice jam	Mar. 31	2145	*670	a*8.32
Mar. 13	--	420	ice jam				

Minimum daily, 4.4 ft^3/s Aug. 13, 19.

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	17	12	9.0	10	186	515	21	14	9.6	5.8	5.5
2	16	16	13	9.2	10	129	319	20	13	9.6	5.7	5.2
3	15	14	13	9.4	9.7	96	217	19	13	8.7	5.4	4.7
4	14	14	13	9.5	9.5	79	152	19	13	8.2	5.4	4.8
5	13	13	13	9.5	9.2	65	113	18	12	8.1	5.2	5.0
6	13	13	13	10	9.0	48	95	18	12	8.1	5.1	4.9
7	13	13	12	10	9.0	33	80	21	13	8.0	4.8	4.8
8	13	13	11	10	9.0	35	69	21	13	7.4	4.7	4.7
9	14	13	10	11	9.0	30	60	21	12	8.1	5.0	5.1
10	14	13	10	11	9.0	25	56	20	11	9.8	4.7	5.1
11	14	13	10	11	9.5	28	55	19	11	9.0	4.5	5.4
12	13	12	9.0	12	10	51	52	24	11	8.2	4.5	6.0
13	14	12	9.0	12	11	242	48	26	11	7.4	4.4	6.1
14	13	12	9.0	12	12	347	43	31	10	7.6	4.5	6.1
15	13	12	9.0	12	13	270	40	46	9.9	7.1	4.6	7.3
16	13	12	9.0	12	14	211	37	47	9.4	7.5	4.5	7.3
17	12	13	9.5	12	16	136	35	39	9.1	7.3	4.5	6.8
18	13	13	10	11	22	91	35	34	8.9	8.8	4.5	6.3
19	13	13	10	11	35	65	35	29	9.4	10	4.4	6.4
20	12	12	10	11	45	44	33	27	9.2	9.9	4.8	6.2
21	13	12	10	11	56	33	32	25	9.0	10	5.1	6.0
22	13	12	10	11	100	29	31	24	11	8.9	5.5	5.7
23	13	11	9.8	11	360	27	31	22	10	10	6.1	5.8
24	13	11	9.6	11	515	31	27	21	10	11	6.0	6.0
25	13	11	9.5	10	367	66	24	19	9.5	11	5.8	6.1
26	13	11	9.5	10	296	234	22	18	9.1	9.8	5.5	6.1
27	13	11	9.5	10	367	190	21	17	8.7	8.3	5.7	6.1
28	18	11	9.4	10	272	195	21	15	8.4	7.4	5.7	6.2
29	17	12	9.2	10	---	325	21	14	8.8	6.6	5.3	6.6
30	17	12	9.0	10	---	407	21	15	8.8	6.2	5.4	7.1
31	17	---	9.0	10	---	590	---	14	---	5.9	5.5	---
TOTAL	431	377	319.0	328.6	2613.9	4338	2340	724	318.2	263.5	158.6	175.4
MEAN	13.9	12.6	10.3	10.6	93.4	140	78.0	23.4	10.6	8.50	5.12	5.85
MAX	18	17	13	12	515	590	515	47	14	11	6.1	7.3
MIN	12	11	9.0	9.0	9.0	25	21	14	8.4	5.9	4.4	4.7
AC-FT	855	748	633	652	5180	8600	4640	1440	631	523	315	348

CAL YR 1982 TOTAL 25034.6 MEAN 68.6 MAX 2070 MIN 4.0 AC-FT 49660
WTR YR 1983 TOTAL 12387.2 MEAN 33.9 MAX 590 MIN 4.4 AC-FT 24570

06331000 LITTLE MUDDY RIVER BELOW COW CREEK NEAR WILLISTON, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
07...	1220	13	2150	--	6.5	7.0	--	--	--	--	--
DEC											
07...	1240	12	2000	--	-1.9	.0	--	--	--	--	--
JAN											
12...	1235	11	2000	--	4.0	.0	--	--	--	--	--
FEB											
16...	1255	13	2000	--	2.5	1.5	--	--	--	--	--
MAR											
16...	1130	204	480	--	- .9	.0	--	--	--	--	--
30...	1300	456	1000	7.8	10.5	1.0	120	0	25	15	44
30...	1301	411	1000	7.8	--	1.0	120	0	26	14	45
APR											
13...	1145	47	1150	--	- .9	2.0	--	--	--	--	--
MAY											
03...	1130	20	2000	--	9.0	10.0	--	--	--	--	--
JUN											
09...	1450	12	2130	--	26.0	19.0	--	--	--	--	--
JUL											
06...	1355	7.9	2100	8.5	33.0	23.0	420	0	59	66	350
06...	1356	7.9	2100	8.5	33.0	23.0	350	0	50	54	380
AUG											
18...	0945	4.6	2230	--	23.0	20.0	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
MAR										
30...	41	1.8	8.7	160	0	130	4.0	86	1.3	.10
30...	42	1.8	8.2	--	--	135	4.1	100	2.7	.10
JUL										
06...	64	7.6	13	693	0	570	3.5	650	7.3	.30
06...	70	9.0	9.6	--	--	578	3.5	610	8.2	.40

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BORON, DIS-SOLVED (UG/L AS B) (01020)
MAR										
30...	9.9	287	270	.39	353	--	--	1	--	0
30...	12	295	290	.40	327	<.10	.090	1	42	60
JUL										
06...	7.9	1460	1500	2.0	31.1	--	--	5	--	290
06...	8.5	1460	1470	2.0	31.1	<.10	.060	5	100	340

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
MAR									
30...	--	190	1	10	40	.0	0	160	--
30...	2	290	2	16	35	<.1	<1	180	7
JUL									
06...	--	20	2	100	30	3.8	2	970	--
06...	4	40	15	90	10	3.1	<1	80	30

06332515 BEAR DEN CREEK NEAR MANDAREE, ND
(Hydrologic bench-mark station)

LOCATION.--Lat 47°47'14", long 102°46'05", in NW¼ 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 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,947.58 ft National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--17 years, 9.24 ft^3/s, 6,690 acre-ft/yr; median of yearly mean discharges, 8.6 ft^3/s, 6,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,840 ft^3/s Mar. 13, 1972, gage height, 9.02 ft; maximum gage height, 10.03 ft Apr. 6, 1969; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 9	1715	118	3.61	Feb. 13	--	256	Ice jam
Oct. 28	--	656	5.40	Mar. 12	2100	*760	[a]5.95

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.61	4.1	.45	.10	.22	23	10	.49	.26	.57	.18	.08
2	.57	2.5	.50	.10	.20	73	7.7	.45	.33	1.3	.16	.08
3	.45	1.9	.50	.12	.18	60	6.7	.41	.30	1.0	.16	.07
4	.41	1.3	.55	.15	.16	30	3.6	.37	.28	.53	.18	.06
5	1.3	1.1	.70	.15	.14	30	2.9	.36	.26	.45	.33	.06
6	1.6	.96	.83	3.0	.12	50	2.4	.30	.30	.30	.27	.08
7	1.3	.97	.65	3.5	.10	40	1.8	.27	.22	.24	.20	.08
8	1.1	.87	.50	2.5	.10	30	2.0	.24	.24	.20	.16	.16
9	36	.74	.40	6.0	.12	20	2.0	.22	.27	.16	.16	.17
10	50	.77	.30	9.3	.15	7.0	2.1	.20	.27	.14	.14	.14
11	12	.75	.20	5.0	.25	80	2.4	.22	.24	.15	.14	.17
12	3.2	.70	.18	3.0	2.0	359	1.6	.37	.22	.12	.12	.20
13	1.2	.63	.16	1.3	80	384	1.2	.50	.20	.12	.10	.18
14	.80	.49	.15	1.4	150	77	.97	.65	.18	.10	.20	.18
15	.60	.48	.15	1.5	140	24	.83	.70	.16	.10	.41	.18
16	.53	.43	.18	1.7	120	22	.79	.60	.14	.10	.79	.18
17	.43	.44	.20	1.2	95	8.9	.79	.45	.12	.12	.61	.19
18	.60	.53	.25	.70	110	5.3	.74	.40	.14	.30	.41	.20
19	.41	.67	.25	.50	80	2.3	.83	.55	.22	.22	.45	.20
20	.37	.61	.22	.45	50	1.8	.79	.40	.16	.20	.41	.22
21	.54	.44	.20	.45	65	1.3	.88	.38	.18	.16	.37	.22
22	.53	.37	.20	.41	70	1.0	.88	.36	.33	.14	.49	.22
23	.44	.33	.18	.41	90	.90	.83	.36	.22	.12	.45	.26
24	.41	.30	.18	.37	45	1.5	.79	.34	.18	.10	.24	.33
25	.60	.28	.16	.33	18	6.4	.74	.30	.16	.10	.18	.33
26	.58	.28	.14	.30	18	7.7	.70	.27	.14	.10	.09	.33
27	5.9	.30	.14	.27	18	5.1	.66	.27	.14	.49	.12	.26
28	484	.35	.12	.24	15	12	.61	.24	.16	.37	.16	.28
29	90	.40	.10	.24	---	14	.57	.24	.41	.30	.19	.25
30	11	.40	.10	.22	---	18	.53	.22	.41	.24	.21	.40
31	6.2	---	.10	.22	---	18	---	.22	---	.20	.09	---
TOTAL	713.68	24.39	8.94	45.13	1167.74	1413.20	59.33	11.35	6.84	8.74	8.17	5.76
MEAN	23.0	.81	.29	1.46	41.7	45.6	1.98	.37	.23	.28	.26	.19
MAX	484	4.1	.83	9.3	150	384	10	.70	.41	1.3	.79	.40
MIN	.37	.28	.10	.10	.10	.90	.53	.20	.12	.10	.09	.06
AC-FT	1420	48	18	90	2320	2800	118	23	14	17	16	11

CAL YR 1982 TOTAL 9024.74 MEAN 24.7 MAX 660 MIN .00 AC-FT 17900
WTR YR 1983 TOTAL 3473.27 MEAN 9.52 MAX 484 MIN .06 AC-FT 6890

06332515 BEAR DEN CREEK NEAR MANDAREE, ND
(Hydrologic bench-mark station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1968 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT 12...	1205	3.3	1600	7.6	11.0	6.5	300	11.9	105	K145	K175
DEC 06...	1330	.81	2300	8.0	- .9	.0	--	12.2	90	K50	K60
JAN 10...	1220	9.5	875	7.9	- .9	1.0	--	12.0	92	K50	K45
FEB 14...	1205	83	270	E6.7	- .9	.0	56	12.4	92	K55	K55
MAR 14...	1310	55	230	7.7	- .4	.5	270	12.2	92	--	--
APR 11...	1155	2.4	1300	7.4	3.0	4.5	75	11.6	97	K90	K70
MAY 05...	1135	.33	2500	8.4	12.5	13.0	--	9.8	102	--	--
JUN 06...	1150	.26	2760	8.5	16.0	16.5	--	8.9	99	K90	K70
JUL 11...	1235	.12	2450	8.8	25.0	25.0	49	7.6	100	K80	K70
AUG 29...	1030	.14	2660	8.9	21.0	22.0	31	7.8	98	--	--

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
OCT 12...	120	0	26	14	280	82	11	9.1	280	14	450
DEC 06...	--	--	--	--	--	--	--	--	--	--	--
FEB 14...	43	0	9.8	4.6	41	61	2.8	10	75	--	64
MAR 14...	64	0	16	5.8	27	44	1.5	7.7	83	3.2	45
APR 11...	180	0	39	19	230	73	7.8	6.8	344	26	310
JUN 06...	--	--	--	--	--	--	--	--	--	--	--
JUL 11...	230	0	46	27	570	84	17	8.5	609	1.8	800
AUG 29...	160	0	22	26	600	88	21	7.9	776	1.8	680

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)
OCT 12...	13	.30	9.1	1000	970	1.4	8.9	.14	.31	2.30	.350
DEC 06...	--	--	--	--	--	--	--	<.10	.39	2.20	.050
FEB 14...	4.3	.10	5.4	196	187	.27	43.9	.62	1.1	6.30	.570
MAR 14...	3.1	<.10	14	181	170	.25	26.9	--	--	--	--
APR 11...	5.1	.30	9.5	830	826	1.1	5.4	.10	.21	1.60	.120
JUN 06...	--	--	--	--	--	--	--	<.10	.12	1.10	.050
JUL 11...	4.9	.50	7.6	1790	1830	2.4	.58	--	--	--	--
AUG 29...	3.7	.40	7.1	1800	1810	2.4	.68	.10	.08	.70	.070

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)
OCT 12...	1.1	.080	.040	.12	--	--	--	--	--	--
DEC 06...	.15	.010	.030	.09	--	--	--	--	--	--
FEB 14...	1.7	.470	.420	1.3	--	--	--	--	--	--
MAR 14...	--	--	--	--	880	1	34	<1	<1	<3
APR 11...	.37	.040	.030	.09	--	--	--	--	--	--
JUN 06...	.15	.050	.050	.15	--	--	--	--	--	--
JUL 11...	--	--	--	--	30	3	<100	<1	<1	<1
AUG 29...	.21	.020	.020	.06	--	--	--	--	--	--

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)
OCT 12...	--	--	--	--	--	--	--	--	--	--
DEC 06...	--	--	--	--	--	--	--	--	--	--
FEB 14...	--	--	--	--	--	--	--	--	--	--
MAR 14...	3	740	<1	8	41	.1	<10	<1	<1	<1
APR 11...	--	--	--	--	--	--	--	--	--	--
JUN 06...	--	--	--	--	--	--	--	--	--	--
JUL 11...	9	80	<1	60	20	.2	<1	6	1	<1
AUG 29...	--	--	--	--	--	--	--	--	--	--

DATE	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90) (80060)	RADIUM 226, DIS-SOLVED, RADON METHOD (PCI/L) (09511)
OCT 12...	--	--	--	<24	20	<15	18	<14	17	.10
DEC 06...	--	--	--	--	--	--	--	--	--	--
FEB 14...	--	--	--	--	--	--	--	--	--	--
MAR 14...	82	<6.0	25	--	--	--	--	--	--	--
APR 11...	--	--	--	--	--	--	--	--	--	--
JUN 06...	--	--	--	--	--	--	--	--	--	--
JUL 11...	450	5.8	20	--	--	--	--	--	--	--
AUG 29...	--	--	--	--	--	--	--	--	--	--

06332515 BEAR DEN CREEK NEAR MANDAREE, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT					
12...	1205	3.3	538	4.8	--
DEC					
06...	1330	.81	103	.23	88
JAN					
10...	1220	9.5	42	1.1	--
FEB					
14...	1205	83	94	21	96
APR					
11...	1155	2.4	56	.36	99
AUG					
29...	1030	.14	242	.09	--

06335500 LITTLE MISSOURI RIVER AT MARMARTH, ND

LOCATION.--Lat 46°17'44", long 103°55'06", in SW¼ 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 mi^2, 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 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 those for winter periods, which are fair. Small diversions for irrigation above station.

AVERAGE DISCHARGE.--45 years, 334 ft^3/s, 242,000 acre-ft/yr; median of yearly mean discharges, 275 ft^3/s, 199,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,000 ft^3/s Mar. 23, 1947, gage height, 21.7 ft; maximum gage height, 23.4 ft Mar. 31, 1952, backwater from ice; no flow for part of most years.

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 occurred in March 1913, May 1929, and March 1920 and reached stages of about 21.5 ft, 20.2 ft, and 19.7 ft, respectively. These stages are not comparable to stages during period of record, owing to construction of levees.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 3,450 ft^3/s Feb 21, gage height 9.99 ft, backwater from ice; only peak above base of 3,000 ft^3/s, minimum daily 2.9 ft^3/s Sept. 17, 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	180	60	50	170	1700	192	85	69	54	61	88
2	34	291	60	55	150	1590	172	87	64	46	46	43
3	32	334	60	60	145	1410	164	80	57	44	37	22
4	46	230	55	60	140	1240	157	73	49	41	35	15
5	41	157	50	65	140	1110	198	69	49	41	37	13
6	43	132	50	70	130	1070	216	70	47	41	177	11
7	48	154	45	80	120	806	194	67	43	41	63	8.5
8	58	154	42	100	130	681	163	69	41	39	39	7.1
9	573	129	40	130	160	559	138	73	40	35	25	5.5
10	1390	115	38	140	190	534	124	67	37	29	16	4.6
11	672	100	36	160	220	561	118	63	33	22	12	4.2
12	387	100	35	200	290	1130	116	82	35	16	7.9	4.2
13	1350	95	38	370	790	1270	112	103	34	14	5.1	3.8
14	1620	90	40	450	1310	771	113	323	42	11	4.2	3.8
15	1260	95	45	450	1340	762	129	1050	40	6.6	3.4	3.2
16	1180	90	45	400	1140	1080	130	460	42	7.1	3.4	3.8
17	912	95	45	290	1080	1650	121	279	203	7.1	6.0	2.9
18	620	90	45	210	1500	1390	109	203	330	6.0	6.0	2.9
19	420	85	50	150	1950	992	103	200	316	6.6	6.0	8.5
20	331	80	50	140	2250	734	109	361	160	76	5.5	16
21	288	80	55	130	3000	588	106	338	327	94	5.5	12
22	255	80	60	120	3350	478	134	261	510	46	7.1	10
23	226	80	60	110	2840	407	163	200	259	27	27	8.5
24	198	75	60	100	2600	371	153	157	135	15	32	7.9
25	177	75	55	90	2470	336	134	134	112	11	43	7.1
26	157	70	55	85	2370	315	113	116	109	13	35	6.6
27	160	70	55	100	2310	298	105	105	94	408	25	6.0
28	1440	70	50	120	2030	276	103	93	69	600	22	6.6
29	988	65	50	150	---	260	92	83	63	266	15	8.5
30	482	65	50	140	---	232	87	76	61	316	32	7.9
31	270	---	50	120	---	214	---	72	---	101	37	---
TOTAL	15697	3526	1529	4895	34315	24815	4068	5499	3470	2480.4	876.1	352.1
MEAN	506	118	49.3	158	1226	800	136	177	116	80.0	28.3	11.7
MAX	1620	334	60	450	3350	1700	216	1050	510	600	177	88
MIN	32	65	35	50	120	214	87	63	33	6.0	3.4	2.9
AC-FT	31130	6990	3030	9710	68060	49220	8070	10910	6880	4920	1740	698

CAL YR 1982 TOTAL 178003.40 MEAN 488 MAX 8570 MIN .00 AC-FT 353100
WTR YR 1983 TOTAL 101522.60 MEAN 278 MAX 3350 MIN 2.9 AC-FT 201400

06335500 LITTLE MISSOURI RIVER AT MARMARTH, ND

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-51, 1970 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 27...	1115	140	958	--	8.0	7.0	--	--	--	--	--
DEC 08...	1225	43	1870	--	- .9	.0	--	--	--	--	--
JAN 19...	1345	156	978	--	8.0	.0	--	--	--	--	--
MAR 02...	1450	1590	480	7.8	--	4.0	120	32	29	12	47
APR 06...	1130	218	1290	--	7.0	5.5	--	--	--	--	--
MAY 11...	1135	62	1740	--	.5	5.5	--	--	--	--	--
JUN 20...	1945	135	1220	--	20.0	25.0	--	--	--	--	--
AUG 23...	1330	62	2410	8.8	--	20.5	150	0	28	20	500

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 02...	44	1.9	6.0	110	0	92	2.8	140	3.9	.20	7.0	300
AUG 23...	86	18	15	512	0	420	1.3	800	17	.50	5.0	1630

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 02...	300	.41	1290	0	0	40	0	30	10	.2	0	190
AUG 23...	1640	2.2	271	3	430	40	1	100	0	.1	0	410

06335750 DEEP CREEK NEAR AMIDON, ND

LOCATION.--Lat 46°34'37", long 103°33'26", in SE¼SW¼NE¼ sec.24, T.136 N., R.103 W., Slope County, Hydrologic Unit 10110203, on left bank 100 ft downstream from county bridge, 3.0 mi above mouth, and 13 mi northwest of Amidon.

DRAINAGE AREA.--250 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to September 1983 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 2,450 ft, from topographic map. Prior to Oct. 1, 1979, at datum 10.00 ft lower.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,680 ft^3/s Mar. 27, 1978, gage height, 8.28 ft; maximum gage height, 8.37 ft Mar. 26, 1978; no flow at times in most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 161 ft^3/s Mar. 13, gage height, 12.85 ft; minimum daily discharge .04 ft^3/s Sept. 8-9, 12-16, 18, 20, 23-28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						20	7.8	3.9	2.3	3.8	.09	.16
2						30	7.4	4.2	2.4	2.3	.09	.13
3						25	7.5	4.1	2.2	1.6	.09	.10
4						22	6.9	4.1	2.2	1.4	.12	.09
5						22	6.6	3.9	2.0	1.0	.14	.08
6						21	6.4	5.0	3.0	1.2	.13	.06
7						25	7.3	6.9	2.2	1.1	.12	.06
8						20	6.7	6.0	1.7	.84	.11	.04
9						15	5.8	11	1.5	.72	.10	.04
10						12	5.5	12	1.4	.43	.09	.05
11						15	5.6	9.1	1.3	.32	.08	.05
12						59	5.0	10	1.3	.25	.07	.04
13						111	6.8	11	1.4	.23	.06	.04
14						94	7.7	16	1.1	.20	.05	.04
15						66	7.9	25	.78	.18	.06	.04
16						42	8.4	59	.66	.16	.08	.04
17						34	9.5	55	.84	.13	.08	.05
18						24	9.3	39	.97	.11	.07	.04
19						20	9.3	29	3.0	.14	.06	.05
20						16	8.7	22	10	.35	.06	.04
21						15	8.5	19	4.8	.32	.06	.05
22						12	8.0	15	6.0	.56	.07	.05
23						8.9	6.8	12	23	.39	.08	.04
24						7.0	6.1	11	65	.32	.08	.04
25						8.3	5.8	10	28	.20	.06	.04
26						8.6	5.2	8.0	15	.18	.06	.04
27						8.5	4.8	6.7	9.3	.23	2.1	.04
28						7.6	4.8	5.4	6.4	.23	5.1	.04
29						8.3	4.4	4.6	4.8	.16	1.4	.05
30						8.1	4.3	3.8	4.3	.14	.56	.05
31						8.4	---	3.4	---	.11	.25	---
TOTAL						793.7	204.8	435.1	208.85	19.30	11.57	1.68
MEAN						25.6	6.83	14.0	6.96	.62	.37	.056
MAX						111	9.5	59	65	3.8	5.1	.16
MIN						7.0	4.3	3.4	.66	.11	.05	.04
AC-FT						1,570	406	863	414	38	23	3.3

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
OCT 27...	1600	1.6	3890	8.3	5.0	7.0	11.4	--	--	--
MAR 04...	1130	22	2020	8.7	3.0	.5	12.4	96	567	310
APR 08...	1235	6.8	3280	8.7	13.0	8.5	11.5	--	--	--
MAY 11...	1555	9.2	5200	8.5	1.0	8.5	10.5	100	1479	931
JUN 20...	1445	11	4410	8.6	25.0	25.0	9.5	--	--	--
AUG 24...	1250	.08	3270	8.2	33.0	24.0	9.0	119	643	153

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
MAR 04...	82	88	290	52	5.4	7.8	258	1.0	880	5.8	.20
MAY 11...	180	250	910	57	10	14	549	3.3	2900	15	.30
AUG 24...	76	110	590	66	10	11	490	5.9	1400	9.2	.70

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)
MAR 04...	6.9	1540	1516	2.1	91.5	.11	.200	1.2	1.40	.30	1.1
MAY 11...	3.1	4450	4604	6.1	111	<.10	.070	1.3	1.40	.20	1.2
AUG 24...	10	2510	2502	3.4	.54	<.10	.030	.77	.80	.00	.80

DATE	NITRO-GEN DIS-SOLVED (MG/L AS N) (00602)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)
MAR 04...	1.2	.110	.34	.040	2	760	<1	<10	1	1600
MAY 11...	--	.050	.15	.010	--	2000	--	--	--	510
AUG 24...	--	<.010	--	.010	2	1300	<1	<10	1	440

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)
MAR										
04...	40	1	170	<.1	6	3	9	<1	20	0
MAY										
11...	60	--	30	--	--	--	--	--	--	--
AUG										
24...	80	<1	80	<.1	13	0	10	<1	20	0

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90) (80060)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)
MAR										
04...	20	--	--	--	--	--	--	20	1.7	<.01
MAY										
11...	--	--	--	--	--	--	--	26	.5	--
AUG										
24...	20	<54	<.5	<32	.5	<28	.5	11	.4	<.01

06336500 BEAVER CREEK AT WIBAUX, MT

LOCATION.--Lat 46°59'24", long 104°11'00", in NE¼NE¼ sec.12, T.14 N., R.59 E., Wibaux County, Hydrologic Unit 10110204, on left bank 20 ft upstream from bridge on old U.S. Highway 10, at Wibaux, 12 mi upstream from Little Beaver Creek, and at mile 62.5.

DRAINAGE AREA.--351 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1938 to June 1969, October 1978 to current year.

REVISED RECORDS.--WSP 1309: 1943, 1947-48. WSP 1509: 1942(M), 1944-45, 1946(M).

GAGE.--Water-stage recorder. Altitude of gage is 2,650 ft, by barometer. Prior to Sept. 21, 1940, nonrecording gages at site about 500 ft upstream at different datums.

REMARKS.--Water-discharge records good except those below 1 ft^3/s and those for winter period, which are poor. Several known diversions for irrigation above station.

AVERAGE DISCHARGE.--35 years (1938-68, 1979-83), 21.3 ft^3/s, 15,430 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,780 ft^3/s Mar. 21, 1939, gage height, 10.8 ft, site and datum then in use; maximum gage height observed, 13.44 ft Mar. 24, 1943, ice jam; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 7, 1929, reached a discharge of about 30,000 ft^3/s, from the average of three independent indirect measurements made at different sites. Flood in 1872 reported similar in magnitude. Flood in June 1921 reached a stage of about 8.6 ft lower than 1929 (discharge about 10,000 ft^3/s), estimated on basis of cross-section and information from local residents).

EXTREMES FOR CURRENT YEAR.--Maximum discharge 616 ft^3/s Feb. 15, gage height, 4.97 ft; no flow Sept. 14-17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	26	3.2	1.8	10	28	11	5.6	6.2	2.7	.60	.05
2	1.8	18	3.1	1.8	8.0	25	11	5.8	5.7	2.4	.55	.05
3	1.8	14	3.2	1.8	6.0	22	10	5.6	5.4	1.7	.52	.04
4	1.8	11	3.3	2.0	5.0	20	9.9	5.5	5.1	1.3	1.9	.03
5	2.9	9.0	3.4	2.0	4.5	23	9.6	5.3	4.9	1.9	3.2	.02
6	2.2	7.5	3.3	2.5	4.5	21	9.2	5.3	4.4	1.9	3.2	.02
7	1.9	6.0	2.9	3.5	4.0	19	9.2	5.1	3.8	1.5	2.1	.02
8	1.8	5.1	2.6	4.5	4.0	20	8.6	5.1	3.5	1.4	1.6	.03
9	3.4	4.5	2.5	15	3.5	18	8.4	5.1	3.6	1.2	1.5	.02
10	3.7	4.0	2.5	14	3.5	16	8.2	5.0	3.0	.95	1.2	.02
11	2.5	3.5	2.4	13	4.0	16	7.8	5.0	2.7	.92	.86	.03
12	2.5	3.0	2.3	20	15	17	7.5	7.7	2.8	.88	.66	.02
13	2.9	2.5	2.5	30	75	25	7.5	8.5	2.8	.89	.57	.02
14	2.2	2.5	2.5	20	153	82	7.6	10	2.4	.72	.51	.00
15	1.8	3.0	2.5	17	413	92	7.8	12	2.5	.62	.42	.02
16	1.6	3.2	2.5	15	373	59	7.5	13	2.3	.50	.36	.02
17	1.7	3.3	2.7	12	262	43	7.6	16	2.5	.53	.26	.00
18	1.4	3.2	2.7	10	237	34	7.7	38	2.5	.66	.20	.01
19	1.6	3.2	2.7	9.5	230	26	7.7	37	1.7	1.1	.20	.06
20	1.4	3.0	2.7	8.0	222	22	7.7	30	3.0	.93	.13	.02
21	1.4	2.8	2.7	7.0	148	21	7.7	24	1.8	.80	.13	.02
22	1.4	2.6	2.6	6.0	88	18	7.7	20	3.0	.68	.10	.02
23	1.4	2.5	2.5	5.0	67	17	7.4	17	3.3	.58	.08	.01
24	1.4	2.4	2.5	4.5	50	17	7.4	14	5.1	.52	.08	.02
25	1.4	2.2	2.5	4.0	43	16	6.7	12	12	.51	.06	.02
26	1.4	2.4	2.5	4.0	43	15	6.0	11	9.7	.53	.06	.01
27	1.8	2.6	2.5	4.0	38	14	6.0	9.7	6.9	.46	.07	.01
28	7.2	2.9	2.5	5.0	30	14	6.4	8.8	4.6	.43	.08	.02
29	5.2	3.3	2.3	10	---	13	6.0	7.9	3.9	.41	.06	.03
30	9.9	3.4	2.0	10	---	13	5.9	7.2	3.2	.41	.07	.04
31	23	---	1.9	9.5	---	12	---	6.7	---	.45	.05	---
TOTAL	98.3	162.6	82.0	272.4	2544.0	798	238.7	368.9	124.3	30.48	21.38	.70
MEAN	3.17	5.42	2.65	8.79	90.9	25.7	7.96	11.9	4.14	.98	.69	.023
MAX	23	26	3.4	30	413	92	11	38	12	2.7	3.2	.06
MIN	1.4	2.2	1.9	1.8	3.5	12	5.9	5.0	1.7	.41	.05	.00
AC-FT	195	323	163	540	5050	1580	473	732	247	60	42	1.4

CAL YR 1982 TOTAL 10213.31 MEAN 28.0 MAX 830 MIN .47 AC-FT 20260
WTR YR 1983 TOTAL 4741.76 MEAN 13.0 MAX 413 MIN .00 AC-FT 9410

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC DUCT-ANCE (UMHOS) (00095)	(STAND-ARD UNITS) (00400)	ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	BARO-METRIC PRES-(MM OF HG) (00025)	DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED CENT SATUR-ATION) (00301)	HARD-(MG/L AS CACO3) (00900)	HARD-NESS, BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA (00915)
OCT 07...	1330	2.5	2460	8.1	11.0	8.5	690	9.4	90	650	290	100
DEC 07...	1200	3.3	2830	8.0	-15.0	.0	709	10.8	80	740	300	130
JAN 19...	1200	9.5	1810	7.8	-2.0	.0	690	10.4	79	460	140	83
FEB 23...	1300	70	498	7.6	5.0	.0	696	11.0	83	150	44	32
MAR 08...	1545	21	1200	--	-2.0	.5	--	--	--	--	--	--
APR 05...	1400	10	2160	8.1	7.5	3.5	706	11.6	95	630	310	99
MAY 24...	1115	14	2500	8.3	18.0	15.0	699	7.4	81	750	360	120
JUL 06...	1000	2.0	2580	8.1	26.0	21.5	695	7.0	88	730	320	110
AUG 31...	1100	.06	2740	8.2	28.5	24.0	699	9.5	125	820	440	130
SEP 27...	1200	.01	2890	8.2	18.0	16.0	689	7.4	84	820	410	130

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
OCT 07...	97	350	6	8.9	362	950	8.6	.30	6.6	1700	2.4	12
DEC 07...	100	400	7	8.9	433	1200	9.3	.30	8.1	2100	2.9	19
JAN 19...	61	250	5	9.4	314	670	6.9	.20	8.8	1300	1.7	33
FEB 23...	18	44	2	8.4	110	140	3.0	.10	8.8	320	.44	61
APR 05...	92	280	5	9.6	320	830	7.3	.20	5.8	1500	2.1	41
MAY 24...	110	380	6	8.9	391	1100	8.6	.30	3.7	2000	2.7	74
JUL 06...	110	390	6	9.3	407	1100	16	.30	6.6	2000	2.7	11
AUG 31...	120	370	6	11	382	1200	24	.30	10	2100	2.8	.34
SEP 27...	120	380	6	11	414	1200	18	.20	7.9	2100	2.9	.06

DATE	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	ARSENIC TOTAL (UG/L AS AS) (01002)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BERYL-LIUM, TOTAL RECOV-ERABLE (UG/L AS BE) (01012)
OCT 07...	<.100	.130	.37	.50	.060	7.0	.40	720	30	--	1	--
DEC 07...	<.100	<.060	--	1.5	.020	--	--	700	40	--	--	--
JAN 19...	.300	.380	1.0	1.4	.070	15	.40	440	110	--	--	--
FEB 23...	.200	.580	1.5	2.1	.230	19	1.2	120	230	1	1	<10
APR 05...	<.100	.230	1.1	1.3	.050	--	--	600	20	--	--	--
MAY 24...	<.100	.400	1.5	1.9	.040	--	--	690	40	--	--	--
JUL 06...	<.100	<.060	--	.80	.070	--	--	830	30	--	--	--
AUG 31...	<.100	.060	.64	.70	.050	8.5	.40	930	90	--	--	--
SEP 27...	<.100	.010	.69	.70	<.010	--	--	760	30	--	--	--

06336500 BEAVER CREEK AT WIBAUX MT--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	BERYLLIUM, DISSOLVED (UG/L AS BE) (01010)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD) (01027)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)
OCT 07...	<10	--	<1	--	<10	--	2	--	--	<1	--	80
FEB 23...	<1	<1	<1	<10	<10	5	2	1400	2	<1	100	51

DATE	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	MERCURY DISSOLVED (UG/L AS HG) (71890)	NICKEL, TOTAL RECOVERABLE (UG/L AS NI) (01067)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	SELENIUM, TOTAL (UG/L AS SE) (01147)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 07...	--	<.1	--	4	--	<1	--	10	49	.33	83
DEC 07...	--	--	--	--	--	--	--	--	6	.05	100
JAN 19...	--	--	--	--	--	--	--	--	137	3.5	100
FEB 23...	.1	<.1	5	4	1	<1	20	9	54	10	86
APR 05...	--	--	--	--	--	--	--	--	8	.22	83
MAY 24...	--	--	--	--	--	--	--	--	60	2.3	--
JUL 06...	--	--	--	--	--	--	--	--	54	.29	90
AUG 31...	--	--	--	--	--	--	--	--	9	.00	91
SEP 27...	--	--	--	--	--	--	--	--	6	.00	62

06336600 BEAVER CREEK NEAR TROTTERS, ND

LOCATION.--Lat 47°09'47", long 103°59'32", in SW¼SW¼NE¼ 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 mi^2, revised.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--1977: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 2,370 ft, from topographic map.

REMARKS.--Records good except those for period October to March, which are poor.

AVERAGE DISCHARGE.--6 years, 33.3 ft^3/s, 24,130 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,720 ft^3/s Mar. 29, 1978, gage height, 18.61 ft; maximum gage height, 19.27 ft Mar. 22, 1978, ice jam; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 570 ft^3/s Feb. 16, gage height, 9.97 ft, backwater from ice, only peak above base of 200 ft^3/s; minimum daily, 0.02 ft^3/s Sept. 15, 17, 18, 20-22, 25-27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	8.2	3.9	.50	4.8	66	20	11	10	5.0	.42	.04
2	.80	20	3.4	.50	4.6	55	20	10	9.7	4.3	.35	.04
3	.60	17	3.5	.70	4.2	42	19	10	9.1	3.7	.30	.04
4	.49	14	3.5	.90	4.0	31	18	10	9.6	3.0	.25	.05
5	.95	12	3.4	1.2	4.0	28	17	9.8	9.4	3.1	.20	.05
6	1.3	10	3.2	2.0	4.0	35	17	9.8	8.7	2.4	.17	.06
7	1.8	10	2.8	3.2	4.0	33	16	9.9	8.2	2.4	.15	.05
8	1.8	12	2.3	5.0	4.0	30	16	9.5	7.7	2.1	.13	.05
9	3.5	10	2.0	19	4.2	28	15	9.3	7.0	2.0	.12	.05
10	5.1	8.0	1.8	16	4.5	28	15	9.0	6.7	1.6	.11	.04
11	5.0	6.0	1.6	15	7.0	33	15	8.9	6.8	1.4	.10	.03
12	4.2	4.0	1.5	18	15	39	15	12	6.3	1.1	.09	.03
13	4.2	3.8	1.5	21	76	54	15	13	6.2	1.0	.09	.03
14	3.5	3.8	1.4	39	237	46	14	15	5.1	1.0	.08	.03
15	2.8	3.7	1.3	65	288	89	14	17	3.9	.95	.05	.02
16	2.4	3.6	1.3	55	455	113	14	19	3.8	.82	.05	.03
17	2.6	3.5	1.4	35	525	82	14	18	3.7	.69	.04	.02
18	2.8	3.5	1.5	25	473	63	14	18	3.4	.79	.04	.02
19	2.3	3.3	1.5	21	374	50	13	27	3.2	.90	.04	.03
20	2.0	3.2	1.4	18	299	41	13	40	3.1	1.1	.04	.02
21	1.9	3.0	1.3	15	260	35	13	35	3.4	1.4	.03	.02
22	1.8	2.8	1.2	13	215	33	13	30	5.5	1.8	.03	.02
23	1.7	2.6	1.2	11	161	30	13	25	4.9	1.3	.04	.03
24	1.6	2.4	1.1	10	130	26	13	22	3.4	1.0	.04	.04
25	1.6	2.5	1.1	9.0	114	26	12	19	2.5	.85	.04	.02
26	1.5	2.5	1.0	8.0	101	25	12	17	2.2	.75	.04	.02
27	1.9	3.0	1.0	7.0	101	24	11	15	3.3	.66	.08	.02
28	8.9	3.5	.90	6.5	81	22	11	14	7.8	.60	.07	.03
29	13	4.0	.70	6.0	---	22	11	12	7.1	.54	.07	.04
30	10	4.3	.50	5.5	---	22	11	11	6.3	.51	.05	.03
31	9.0	---	.50	5.0	---	21	---	11	---	.43	.05	---
TOTAL	102.04	190.2	54.70	457.00	3954.3	1272	434	497.2	178.0	49.19	3.36	1.00
MEAN	3.29	6.34	1.76	14.7	141	41.0	14.5	16.0	5.93	1.59	.11	.033
MAX	13	20	3.9	65	525	113	20	40	10	5.0	.42	.06
MIN	.49	2.4	.50	.50	4.0	21	11	8.9	2.2	.43	.03	.02
AC-FT	202	377	108	906	7840	2520	861	986	353	98	6.7	2.0

CAL YR 1982 TOTAL 17431.94 MEAN 47.8 MAX 871 MIN .00 AC-FT 34580
WTR YR 1983 TOTAL 7192.99 MEAN 19.7 MAX 525 MIN .02 AC-FT 14270

06336600 BEAVER CREEK NEAR TROTTERS, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
04...	1120	.48	2600	--	8.0	8.5	--	--	--	--	--
NOV											
30...	1150	4.4	3700	--	6.0	.0	--	--	--	--	--
JAN											
13...	1040	21	1250	--	- .9	.0	--	--	--	--	--
FEB											
17...	1305	530	690	8.1	4.0	1.5	190	54	34	26	71
MAR											
01...	1215	66	820	--	4.0	1.0	--	--	--	--	--
17...	1045	84	1450	--	1.0	1.5	--	--	--	--	--
APR											
15...	1140	14	2300	--	4.0	5.5	--	--	--	--	--
MAY											
20...	1110	41	2500	--	12.5	13.5	--	--	--	--	--
JUN											
14...	1210	5.4	2750	--	21.0	18.5	--	--	--	--	--
JUL											
05...	1205	2.9	2500	--	26.0	21.5	--	--	--	--	--
AUG											
16...	1215	.05	2670	8.3	--	24.0	710	287	86	120	400

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
FEB												
17...	43	2.3	12	169	0	140	2.1	220	3.9	.10	6.8	434
AUG												
16...	54	6.6	15	517	0	420	4.1	1100	10	.30	4.3	2050

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
FEB												
17...	458	.59	621	1	170	140	0	9	50	.3	0	49
AUG												
16...	1990	2.8	.28	7	850	50	1	80	20	.1	0	1400

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND

LOCATION.--Lat 47°35'25", long 103°15'05", in NW¼SE¼SE¼ sec.35, T.148 N., R.99 W., McKenzie County, Hydrologic Unit 10110205, at bridge on U.S. Highway 85, 17 mi upstream from Cherry Creek, and 17.5 mi south of Watford City.

DRAINAGE AREA.--8,310 mi^2 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 and supplemental nonrecording gage. Datum of gage is 1,929.03 ft (587.968 m) National Geodetic Vertical Datum of 1929. Oct. 2, 1959, to June 17, 1963, water-stage recorder at present site and datum. June 18, 1963, to Nov. 28, 1964, at site 700 ft (210 m) upstream at present datum. See WSP 1729 or 1917 for history of changes prior to Oct. 2, 1959.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--49 years, 593 ft^3/s, 429,600 acre-ft/yr; median of yearly mean discharges, 474 ft^3/s, 343,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 110,000 ft^3/s Mar. 25, 1947, gage height, 24.0 ft from flood-mark, site then in use; no flow at times in most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 8,000 ft^3/s maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 19	0200	8,100	[a]*8.56	Mar. 11	0200	8,700	[a]8.21
Feb. 23	2100	*13,500	[a]8.41				

Minimum daily, 17 ft^3/s Sept. 19-24, gage height, 0.23 ft.

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	280	1600	88	55	125	2490	579	216	230	316	705	28
2	194	1300	88	55	115	2500	518	205	205	290	614	25
3	184	950	86	55	110	2430	465	191	188	260	390	30
4	155	740	84	55	100	2100	425	177	170	230	356	40
5	188	530	82	56	95	1910	395	167	158	188	579	40
6	705	650	78	56	90	1960	375	158	146	138	788	37
7	524	340	70	58	85	1650	352	143	132	118	307	32
8	325	500	62	60	85	1600	334	140	122	100	167	30
9	972	420	58	65	85	2100	325	135	112	80	120	28
10	2220	370	56	70	90	3000	325	143	118	65	100	30
11	1790	300	54	70	95	3600	356	177	98	55	112	31
12	1280	180	52	75	100	2800	361	260	88	50	80	28
13	1470	155	50	80	250	4000	343	276	92	46	72	26
14	1500	190	50	85	600	2800	320	470	84	41	58	24
15	924	205	50	90	800	2150	312	705	72	33	52	22
16	656	220	50	100	1600	2150	298	1060	80	31	41	22
17	1480	210	52	120	1700	1500	284	948	70	30	31	21
18	1390	190	55	150	1900	1190	276	980	65	140	80	18
19	1370	170	58	200	3100	1040	272	1660	100	298	105	17
20	1330	160	60	250	2300	1390	268	1040	60	796	68	17
21	1130	150	65	250	2150	1780	264	788	550	450	50	17
22	884	140	65	230	1900	1450	252	628	750	248	149	17
23	663	120	65	215	3840	1130	240	494	800	280	916	17
24	506	110	65	200	3370	940	222	425	1080	233	352	17
25	435	105	62	190	3470	820	212	445	512	272	146	18
26	375	100	60	160	3050	719	194	494	460	174	84	18
27	375	98	60	150	2810	670	184	435	670	465	63	19
28	3640	95	60	145	2740	607	188	366	482	1260	62	19
29	4240	92	58	140	---	586	216	307	350	488	167	22
30	2310	90	55	135	---	593	230	280	325	289	56	27
31	1900	---	55	130	---	614	---	252	---	621	37	---
TOTAL	35395	10480	1953	3750	36755	54269	9385	14165	8369	8085	6907	737
MEAN	1142	349	63.0	121	1313	1751	313	457	279	261	223	24.6
MAX	4240	1600	88	250	3840	4000	579	1660	1080	1260	916	40
MIN	155	90	50	55	85	586	184	135	60	30	31	17
AC-FT	70210	20790	3870	7440	72900	107600	18620	28100	16600	16040	13700	1460

CAL YR 1982 TOTAL 354914.30 MEAN 972 MAX 9500 MIN .00 AC-FT 704000
WTR YR 1983 TOTAL 190250.00 MEAN 521 MAX 4240 MIN 17 AC-FT 377400

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT											
26...	1040	377	833	8.0	19.0	8.0	390	10.8	99	K110	K150
DEC											
08...	1255	62	2100	7.9	-1.9	.0	--	12.0	86	K50	K70
JAN											
17...	1350	114	1500	8.0	- .9	.0	--	12.0	88	K70	K75
FEB											
18...	1340	E1250	640	E7.4	4.0	1.0	410	12.4	95	K90	K75
APR											
14...	1100	324	1650	8.3	1.0	3.5	110	12.0	97	K110	85
MAY											
02...	1230	206	2150	8.7	12.0	10.5	--	10.0	97	--	--
02...	1236	206	2125	8.7	12.0	10.5	--	9.9	96	--	--
JUN											
15...	1135	72	2340	8.7	16.0	18.0	--	9.0	103	K60	K50
JUL											
08...	1235	101	2100	8.5	28.5	26.0	--	7.8	104	K80	K65
AUG											
30...	1045	56	1000	7.9	29.0	23.0	9600	8.0	100	--	--

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
OCT												
26...	190	73	46	18	110	55	3.6	5.6	117	2.3	290	5.9
FEB												
18...	140	10	32	14	91	57	3.5	7.7	128	--	200	9.9
APR												
14...	340	56	72	38	240	60	5.9	8.0	281	2.7	570	10
AUG												
30...	120	0	30	9.9	170	75	7.1	8.0	139	3.4	310	17

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)
OCT											
26...	.30	7.2	545	554	.74	555	.14	.22	3.10	.380	1.2
FEB											
18...	.10	16	456	450	.62	--	.43	.31	3.40	.630	1.9
APR											
14...	.30	8.1	1110	1120	1.5	971	<.10	.08	1.10	.100	.31
AUG											
30...	.30	8.3	656	637	.89	99.2	--	--	--	--	--

E - Estimated; estimated pH indicates laboratory determination.
K - Results based on colony count outside the acceptable range (non-ideal colony count).

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
OCT 26...	.030	<.010	.15	60	1	36	<1	<1	<3	13	85
FEB 18...	.070	.040	.12	820	1	40	<1	<1	<3	8	1000
APR 14...	.010	.020	.06	70	1	57	<1	<1	<3	4	53
AUG 30...	--	--	--	120	1	34	<1	<1	<3	15	82

DATE	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
OCT 26...	2	46	5	<.1	<10	4	1	<1	410	<6.0	10
FEB 18...	1	32	27	<.1	<10	6	1	<1	270	<6.0	23
APR 14...	4	68	3	<.1	<10	4	1	<1	660	<6.0	5
AUG 30...	2	33	3	.2	20	10	2	<1	300	<6.0	3

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 26...	1040	833	721	1620	96
APR 14...	1100	324	122	107	98
AUG 30...	1045	56	10100	1530	100

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLE LOCATION, CROSS SECTION (FT FM L BANK) (00009)	DEPTH TO TOP OF SAMPLE INTERVAL (FT) (72015)	TEMPERATURE (DEG C) (00010)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	OXYGEN, DISSOLVED (MG/L) (00300)
MAY							
02...	1236	8.00	.6	10.5	2125	8.7	9.9
02...	1237	16.0	.7	10.5	2130	8.7	10.0
02...	1238	24.0	.6	10.5	2140	8.7	10.0
02...	1239	32.0	.6	10.5	2140	8.7	10.0
02...	1240	40.0	1.4	10.5	2150	8.7	10.0
02...	1241	48.0	1.6	10.5	2150	8.7	10.0
02...	1242	56.0	2.4	10.5	2150	8.7	10.0
02...	1243	64.0	2.6	10.5	2150	8.7	10.0
02...	1244	72.0	2.3	10.5	2150	8.7	10.0
02...	1245	80.0	1.6	10.5	2150	8.7	10.0
02...	1246	88.0	.9	10.6	2135	8.7	10.0
02...	1247	92.0	.5	10.8	2125	8.6	9.9
AUG							
30...	1047	16.0	.3	23.5	1020	7.9	8.0
30...	1048	24.0	.4	23.2	1010	7.9	8.0
30...	1049	32.0	.5	23.0	1000	7.9	8.0
30...	1050	40.0	.6	23.0	1000	7.9	8.0
30...	1051	48.0	.8	23.0	1000	7.9	8.0
30...	1052	56.0	.9	23.0	1000	7.9	8.0
30...	1053	64.0	1.0	23.0	1000	7.9	8.0
30...	1054	72.0	1.1	23.0	1000	7.9	8.0
30...	1055	80.0	.9	23.0	1000	7.9	8.0
30...	1056	88.0	.8	23.0	1000	7.9	8.0
30...	1057	96.0	.3	23.5	1020	7.9	8.0

06338000 LAKE SAKAKAWEA NEAR RIVERDALE, ND

LOCATION.--Lat 47°30'10", long 101°25'50", in S½ 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 mi^2, approximately.

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 at National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by earth-fill 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.--Elevations and contents are furnished by the Corps of Engineers. Elevations are observed elevations at midnight on the last day of each month. Contents are computed based on reservoir inflow, reservoir outflow, 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, 14,742,000 acre-ft Mar. 13, 1978, elevation, 1,825.2 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 22,226,000 acre-ft July 17, elevation, 1849.5 ft; minimum, 18,781,000 acre-ft Apr. 21, elevation, 1,839.3 ft.

MONTHEND ELEVATION AND CONTENTS, AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1845.0	20,804,000	--
Oct. 31	1845.5	21,000,000	+196,000
Nov. 30	1843.0	20,124,000	-876,000
Dec. 31	1842.0	19,796,000	-328,000
CAL YR 1982	--	--	-2,852,000
Jan. 31	1841.7	19,725,000	-71,000
Feb. 28	1841.2	19,544,000	-181,000
Mar. 31	1840.7	19,379,000	-165,000
Apr. 30	1839.5	19,004,000	-375,000
May 31	1839.9	19,111,000	+107,000
June 30	1843.3	20,242,000	+1,131,000
July 31	1846.6	21,416,000	+1,174,000
Aug. 31	1845.0	20,837,000	-579,000
Sept. 30	1843.1	20,140,000	-697,000
WTR YR 1983	--	--	-664,000

06338490 MISSOURI RIVER AT GARRISON DAM, ND

LOCATION.--Lat 47°30'08", long 101°25'50", in S½ sec.31, T.147 N., R.84 W., Mercer County, Hydrologic Unit 10130101, downstream from dam at National Fish Hatchery's supply line from penstocks 4 and 5, 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 mi^2, 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 Lake Sakakawea (station 06338000). 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 Corps of Engineers for the present site.

COOPERATION.--Records furnished by the Corps of Engineers.

AVERAGE DISCHARGE.--14 years, 25,380 ft^3/s, 18,390,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 65,200 ft^3/s July 25, 1975; minimum daily, 6,000 ft^3/s Sept. 29, 1974.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 31,300 ft^3/s Nov. 12; minimum daily, 14,400 ft^3/s July 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16800	23500	25000	17600	26000	30500	24000	17000	14900	20200	23500	26700
2	16100	23400	23100	17400	27300	30100	24300	18400	15800	20200	26100	27600
3	16700	25300	22200	17800	27700	30300	23800	17800	15500	17000	28900	27700
4	16500	28200	20600	18100	28300	29900	23700	18100	14500	14700	27300	27500
5	16500	27600	21000	17800	28700	29800	23900	17900	15600	15000	26000	27900
6	16300	29000	20800	17500	29200	29100	23500	17700	16400	15300	26300	27400
7	16000	29100	26000	17500	29700	29600	26400	17900	18500	15300	26100	25200
8	15800	30600	28800	19000	29800	30500	23100	17400	18400	15300	25800	23800
9	16800	30500	23400	20100	29900	30400	22800	18600	17600	15100	26000	21600
10	16500	30600	20600	19900	30200	30700	22900	18200	17400	14400	25900	20800
11	16900	30100	21800	20000	30400	30600	23200	18200	17200	15100	26200	21100
12	17100	31300	21300	19000	30400	30800	23000	18100	17000	15300	25100	21400
13	16700	30500	21600	18100	30800	29200	23400	18200	17400	14900	26600	21400
14	17200	31000	21300	18300	30200	31100	22100	16600	18500	15000	26200	20800
15	18300	30800	20800	18400	30000	28900	23100	16000	17700	17500	25900	20900
16	18700	29900	21000	18300	30100	28700	22800	18200	17200	17700	25800	21200
17	19600	30500	21300	18700	30000	29100	21900	16500	17300	17200	25800	21200
18	19600	30300	21000	19800	30000	29000	22600	16400	19300	18200	26400	21400
19	20100	30400	21600	20400	29900	29300	22800	16500	19000	18900	26100	21300
20	19900	30900	21200	21100	29700	26000	22000	15500	19400	18300	26000	21200
21	19700	30400	21300	21400	30300	27000	20600	15100	21800	18900	26500	21200
22	20100	30800	23100	21200	27700	27300	20100	15900	22000	17700	26100	21500
23	20300	31100	25400	20400	28000	27600	20700	15400	22200	17900	26100	21300
24	20100	30300	25600	20800	30200	26600	21200	15400	17500	18000	25800	20800
25	20500	30700	25600	22000	30600	26600	20300	15300	17300	20600	26200	21400
26	20600	30100	22600	22700	30300	25600	18900	15400	17100	20400	26200	21500
27	19000	30600	22900	23400	29700	23600	19500	14700	18000	20200	26400	21900
28	20000	29800	23900	23700	30300	24400	18900	14900	17600	20100	26400	21600
29	20500	29800	21500	24100	---	24200	17600	15200	19100	19900	26200	22300
30	21800	27600	16600	24500	---	24000	17600	15200	20300	20200	26900	19000
31	21700	---	17900	25300	---	23900	---	15000	---	19800	27500	---
TOTAL	572400	884700	690800	624300	825400	874400	660700	516700	537500	544300	812300	680600
MEAN	18460	29490	22280	20140	29480	28210	22020	16670	17920	17560	26200	22690
MAX	21800	31300	28800	25300	30800	31100	26400	18600	22200	20600	28900	27900
MIN	15800	23400	16600	17400	26000	23600	17600	14700	14500	14400	23500	19000
AC-FT	1135000	1755000	1370000	1238000	1637000	1734000	1310000	1025000	1066000	1080000	1611000	1350000

CAL YR 1982	TOTAL	8520100	MEAN	23340	MAX	33000	MIN	9700	AC-FT	16900000
WTR YR 1983	TOTAL	8224100	MEAN	22530	MAX	31300	MIN	14400	AC-FT	16310000

06338490 MISSOURI RIVER AT GARRISON DAM, ND--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Samples collected at National Fish Hatchery's supply line from penstocks 4 and 5, in control structure of Garrison Dam.

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

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1971 to current year.
WATER TEMPERATURES: October 1971 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 870 micromhos May 4, 18, 19, July 4, 1980; minimum daily, 553 micromhos Dec. 24, 1975.
WATER TEMPERATURES: Maximum daily, 18.0°C Sept. 11, 12, 1980 and Sept. 11, 1981; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 740 micromhos Dec. 12, Jan. 20; minimum daily, 560 micromhos May 18.
WATER TEMPERATURES: Maximum daily, 17.0°C Sept. 6, 21, 22; minimum observed 1.5°C Dec. 29, Jan. 2.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS NONCARBONATE (MG/L AS CACO3) (95902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2) (00405)	SULFATE DISSOLVED (MG/L AS SO4) (00945)
NOV 30...	210	55	50	21	58	37	2	4.1	157	2.4	180
JAN 10...	210	57	50	21	59	37	2	4.0	155	2.4	180
MAR 01...	210	62	50	21	60	38	2	4.0	150	1.8	170
MAY 17...	210	60	50	20	58	37	2	3.9	148	.9	170
JUL 06...	210	53	50	20	58	37	2	4.7	154	9.4	170

DATE	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, AMMONIA DISSOLVED (MG/L AS NH4) (71846)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	PHOSPHORUS TOTAL (MG/L AS PO4) (71886)
NOV 30...	9.7	.50	6.1	431	420	.59	.110	.08	.70	.010	.03
JAN 10...	14	.50	6.4	426	430	.58	<.100	.08	.60	<.010	--
MAR 01...	9.3	.50	7.2	414	410	.56	.130	.13	.40	.010	.03
APR 04...	--	--	--	--	--	--	.140	.28	1.0	.020	.06
MAY 17...	10	.50	7.5	401	410	.55	.100	--	.60	.020	.06
JUL 06...	11	.50	7.3	378	410	.51	.120	.09	.50	.030	.09

DATE	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P) (00671)	PHOSPHATE, ORTHO, DISSOLVED (MG/L AS PO4) (00660)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)
NOV 30...	.010	<.010	--	10	2	48	<1	<1	<3	2	7
JAN 10...	<.010	<.010	--	--	--	--	--	--	--	--	--
MAR 01...	.010	.010	.03	<10	2	49	<1	<1	<3	2	5
APR 04...	.020	.050	.15	--	--	--	--	--	--	--	--
MAY 17...	<.010	<.010	--	10	2	55	<1	<1	<3	6	4
JUL 06...	.020	<.010	--	--	--	--	--	--	--	--	--

WATER QUALITY DATA, WATER YEAR OCTOBERD 1982 TO SEPTEMBER 1983

DATE	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
NOV 30...	<1	57	1	.1	<10	<1	1	<1	510	<6	9
MAR 01...	<1	48	<1	<.1	<10	2	1	<1	510	<6	4
MAY 17...	1	53	2	.2	<10	1	1	<1	500	<6	10

06338490 MISSOURI RIVER AT GARRISON DAM, ND--CONTINUED

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.5	12.0	6.0	2.0	2.0	3.5	3.5	5.5	7.5	9.0	11.0	12.0
2	13.5	12.0	6.0	1.5	2.0	3.5	2.5	5.5	7.5	10.0	13.5	14.0
3	11.5	11.5	6.0	2.0	2.0	3.5	2.5	5.0	8.0	10.0	13.5	15.0
4	13.0	11.5	6.0	2.0	2.0	3.0	3.5	5.5	8.0	9.0	13.5	14.5
5	15.0	11.0	6.0	2.0	2.5	3.5	2.5	5.0	8.0	9.0	11.5	12.5
6	13.0	10.0	6.0	3.0	2.0	3.0	2.5	5.0	8.0	9.5	13.5	17.0
7	14.5	10.0	5.0	2.5	3.5	3.0	3.0	5.0	8.0	10.0	13.5	13.5
8	14.0	10.0	5.0	2.5	2.0	3.0	3.0	5.0	11.0	9.5	11.5	12.5
9	13.5	9.5	5.0	3.0	2.0	3.0	3.0	5.0	8.5	10.0	12.0	13.0
10	13.5	10.5	5.0	3.0	2.0	3.5	3.0	5.5	8.0	10.0	12.0	14.0
11	13.5	9.5	5.0	3.0	2.0	3.0	2.5	5.5	8.0	9.5	12.5	14.5
12	13.5	9.0	4.5	3.0	2.0	3.0	3.0	5.5	8.5	9.5	12.0	13.5
13	13.0	9.0	4.5	3.0	2.0	3.0	3.0	5.5	9.0	10.5	15.5	13.5
14	13.0	8.5	4.0	3.0	2.5	3.0	3.0	5.5	10.0	10.0	14.5	12.5
15	13.0	8.5	4.0	3.0	2.5	3.0	3.5	6.0	10.0	10.0	15.0	13.5
16	13.0	9.0	4.5	3.0	3.0	3.0	4.0	6.0	8.5	9.5	14.0	13.5
17	13.5	10.0	4.5	3.0	2.0	3.0	3.5	6.0	9.5	10.0	14.0	14.5
18	13.5	10.0	4.0	3.5	3.0	3.0	3.5	6.0	9.0	10.0	14.0	13.0
19	13.0	10.5	4.0	2.5	3.5	3.0	3.5	7.0	8.5	10.5	14.5	12.5
20	13.5	10.5	4.0	3.0	3.0	3.0	4.0	6.0	8.5	10.5	11.5	13.0
21	13.0	9.0	4.0	3.0	2.5	3.0	3.5	6.0	10.5	11.0	14.5	17.0
22	13.0	8.0	3.5	3.0	2.5	3.0	4.5	6.5	11.0	10.5	12.5	17.0
23	13.0	7.0	3.5	3.0	3.0	3.0	4.5	7.5	10.5	11.0	12.5	14.5
24	13.0	7.0	2.5	2.5	3.0	3.0	3.5	6.5	9.5	11.0	14.0	15.5
25	13.0	7.0	3.0	2.5	3.0	3.0	4.0	7.5	10.5	10.5	14.0	14.0
26	12.5	7.0	2.5	2.5	3.0	2.5	4.5	6.5	9.5	12.5	11.5	15.0
27	12.0	7.0	2.5	2.5	3.0	3.0	4.0	7.5	9.5	11.0	14.5	14.5
28	12.5	7.0	2.0	2.5	3.0	3.0	4.5	7.0	9.0	10.5	15.0	14.5
29	12.0	7.0	1.5	2.5	---	3.0	5.0	7.5	9.0	10.5	14.0	15.5
30	12.0	6.5	3.0	2.5	---	3.5	5.5	8.5	9.0	---	14.5	16.0
31	12.0	---	2.0	2.0	---	3.5	---	8.0	---	---	12.5	---
MEAN	13.0	9.0	4.0	2.5	2.5	3.0	3.5	6.0	9.0	10.0	13.5	14.0

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	700	660	700	650	650	660	655	620	640	630	600	655
2	700	670	690	650	670	670	660	620	650	630	650	665
3	700	675	690	660	660	660	650	630	630	630	655	670
4	690	625	690	650	670	700	630	620	630	630	655	665
5	670	650	680	660	630	690	520	600	630	650	650	655
6	700	660	670	650	645	680	640	610	630	640	670	660
7	670	625	680	650	625	690	640	620	615	620	665	660
8	680	660	690	690	650	650	630	610	620	640	675	655
9	660	675	660	660	620	670	650	600	615	630	660	660
10	670	660	680	660	630	670	640	600	650	635	670	660
11	680	610	690	660	620	680	650	620	630	630	660	660
12	680	610	740	720	630	670	600	620	620	640	660	660
13	680	625	670	680	620	680	640	620	630	630	660	660
14	690	660	680	670	630	670	640	630	620	630	660	680
15	690	625	650	660	630	660	630	630	620	650	660	670
16	690	675	670	670	645	670	655	620	640	610	650	670
17	695	670	670	675	622	660	650	620	620	650	660	660
18	660	650	680	700	620	670	650	560	620	650	670	660
19	670	640	680	670	625	680	660	590	640	640	655	670
20	680	650	680	740	630	680	650	600	640	640	655	660
21	670	670	650	710	630	690	650	600	620	645	660	670
22	660	660	680	690	630	690	650	620	620	645	655	690
23	650	675	680	690	590	685	675	590	630	650	655	690
24	660	675	660	670	620	690	680	610	620	650	660	690
25	660	690	660	640	620	680	675	590	615	640	660	670
26	680	680	660	650	600	685	670	620	630	645	675	660
27	685	690	650	640	650	685	650	600	650	640	665	680
28	680	670	680	660	680	690	645	610	640	640	660	670
29	680	690	580	650	---	685	660	610	640	645	650	680
30	680	670	680	650	---	680	620	600	650	---	655	680
31	675	---	660	640	---	670	---	610	---	---	660	---
MEAN	679	658	674	668	634	677	644	610	630	638	658	668

06339010 MISSOURI RIVER ABOVE STANTON, ND

LOCATION.--Lat 47°21'45", long 101°21'25", SE¼NE¼SE¼ 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 mi^2, approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1600.00 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Stage regulated by Lake Sakakawea (station 06338000).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 72.24 ft Jan. 29, 1977; minimum daily recorded, 64.57 ft Apr. 15, 1982.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66.16	67.17	67.69	66.34	67.82	68.41	67.37	66.31	65.95	67.16	67.55	---
2	65.90	67.46	67.11	66.26	68.00	68.66	67.54	66.60	65.91	67.02	67.82	---
3	66.05	67.64	67.16	66.38	68.24	68.46	67.60	66.70	64.95	66.68	68.46	---
4	66.29	67.83	67.05	66.35	68.24	68.46	67.59	66.47	64.75	66.10	68.36	---
5	65.95	68.28	66.65	66.41	68.35	68.57	67.60	66.78	64.75	66.39	67.88	---
6	66.08	68.00	66.76	66.23	68.60	68.47	67.43	66.55	64.75	65.72	68.30	---
7	66.00	68.15	67.26	66.31	68.52	68.65	68.05	66.53	64.75	66.28	67.95	---
8	66.07	68.40	68.22	66.49	68.61	68.56	67.64	66.21	64.75	66.29	67.89	---
9	65.98	68.48	67.48	66.76	68.57	68.60	67.29	66.79	64.75	66.20	68.13	---
10	66.17	68.57	67.02	66.69	68.56	68.60	67.31	66.53	64.75	66.43	68.04	66.86
11	66.29	68.32	66.92	66.92	68.61	68.72	67.72	66.70	64.75	65.81	67.96	67.04
12	66.16	68.50	67.02	66.72	68.61	68.66	67.45	66.73	64.75	66.38	67.88	66.88
13	66.20	68.47	67.01	66.21	68.60	68.55	67.52	66.59	64.75	66.24	68.21	---
14	66.22	68.60	66.77	66.51	68.65	69.00	67.14	66.24	64.75	66.04	68.01	---
15	66.46	68.51	66.90	66.51	68.44	68.86	67.56	66.31	64.75	66.71	68.20	---
16	66.52	68.41	66.84	66.41	68.58	68.50	67.26	66.68	64.75	---	67.89	---
17	66.79	68.46	66.75	66.42	68.57	68.55	67.31	66.21	64.75	---	68.05	---
18	66.77	68.54	66.86	67.09	68.56	68.45	67.56	66.26	64.75	---	68.05	---
19	66.89	68.26	66.96	66.97	68.51	68.37	67.38	66.28	64.75	66.73	68.02	---
20	66.64	68.68	66.76	67.11	68.46	68.13	67.33	66.14	64.75	66.89	67.86	---
21	66.74	68.42	66.85	66.90	68.56	68.05	67.08	66.06	64.75	66.94	67.97	---
22	66.72	68.49	66.97	67.17	68.29	68.11	66.88	65.67	64.75	66.68	68.13	---
23	66.75	68.66	67.66	66.90	68.09	68.25	67.09	66.35	64.75	66.66	67.97	---
24	66.92	68.36	67.68	66.98	68.51	68.15	66.93	66.04	67.69	66.79	---	---
25	66.65	68.27	67.80	67.15	68.62	67.87	67.03	66.09	66.61	67.07	---	---
26	66.90	68.70	67.32	67.41	68.60	68.04	66.91	66.32	66.37	67.37	---	---
27	66.83	68.54	66.88	67.44	68.39	67.41	66.69	66.04	66.62	67.24	---	---
28	66.86	68.39	67.47	67.53	68.68	67.51	66.86	66.13	66.50	67.06	---	---
29	66.69	68.08	67.33	67.49	---	67.67	66.52	66.08	66.69	66.94	---	---
30	67.22	68.26	66.14	67.76	---	67.57	66.67	65.92	67.01	67.24	---	---
31	67.01	---	66.36	67.69	---	67.73	---	66.28	---	67.00	---	---
TOTAL	2060.88	2048.90	2079.65	2071.51	1916.84	2117.59	2018.31	2056.59	1959.30	---	---	---
MEAN	66.48	68.30	67.09	66.82	68.46	68.31	67.28	66.34	65.31	---	---	---
MAX	67.22	68.70	68.22	67.76	68.68	69.00	68.05	66.79	67.69	---	---	---
MIN	65.90	67.17	66.14	66.21	67.82	67.41	66.52	65.67	64.75	---	---	---

06339100 KNIFE RIVER AT MANNING, ND

LOCATION.--Lat 47°14'10", long 102°46'10", in SE¼NW¼ 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 mi^2, approximately.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 2,156.55 ft National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--16 years, 23.6 ft^3/s, 17,100 acre-ft/yr; median of yearly mean discharges, 26 ft^3/s, 18,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 2,940 ft^3/s June 15, 1970, gage height, 16.20 ft; no flow at times.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 29	1700	842	12.20	Mar. 13	0700	*1,310	a*14.67
Feb. 14	--	470	ice jam	Aug. 23	1400	661	10.91

Minimum daily, 0.07 ft^3/s Aug. 13, 14.

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	36	2.7	1.5	2.4	30	16	3.4	2.2	3.4	.45	2.6
2	2.4	23	3.0	1.4	2.2	27	22	3.4	2.2	4.3	.45	2.0
3	1.6	14	3.2	1.4	2.2	28	22	3.1	2.2	2.9	.39	1.9
4	1.5	11	3.2	1.4	2.0	28	14	2.9	2.1	2.1	.36	1.5
5	1.7	8.7	3.4	1.5	1.9	33	11	2.8	2.0	1.9	.42	1.2
6	3.1	7.9	3.4	2.5	1.8	88	9.8	2.9	1.9	1.7	.42	1.1
7	5.9	7.4	3.2	4.0	1.8	104	8.8	2.9	2.0	1.9	.45	1.2
8	6.0	6.8	3.2	6.0	1.7	90	8.6	2.9	2.0	1.9	.36	1.3
9	10	6.2	3.2	30	1.6	59	8.1	3.2	2.0	1.9	.32	1.3
10	47	6.1	2.5	45	1.5	26	8.6	4.5	1.9	1.7	.23	1.3
11	98	5.8	2.2	40	1.5	42	7.8	6.4	1.7	1.3	.14	1.2
12	80	5.4	2.4	36	2.5	510	8.3	7.8	1.7	1.1	.08	1.2
13	41	4.9	2.4	21	30	1100	8.3	7.1	1.6	.91	.07	1.1
14	23	4.4	2.2	13	250	302	7.8	11	1.5	.64	.07	1.1
15	10	3.9	2.0	15	290	91	7.3	25	1.3	.53	.32	.99
16	6.8	3.9	2.0	18	212	72	6.9	42	1.3	.48	1.6	1.1
17	4.4	3.8	2.1	16	190	52	6.6	38	1.2	.39	55	1.4
18	3.6	3.8	2.4	9.5	213	36	6.4	24	1.2	.32	36	1.2
19	3.3	3.8	2.5	6.0	180	23	6.4	15	1.9	.70	14	1.2
20	3.2	3.8	2.5	4.5	105	14	6.9	10	.76	.77	6.1	1.3
21	3.2	3.8	2.5	3.6	82	11	6.6	8.6	.29	.70	3.6	1.4
22	2.9	3.5	2.4	3.4	67	9.0	6.4	7.3	13	1.1	1.6	2.2
23	2.6	3.2	2.3	3.4	52	8.5	6.4	6.1	4.5	1.2	326	3.2
24	2.3	3.1	2.2	3.2	59	8.0	6.1	5.2	7.8	.91	398	2.8
25	2.3	3.1	2.1	2.9	63	7.8	5.2	4.3	2.8	.91	72	2.9
26	2.3	3.1	2.0	2.6	50	8.0	4.5	3.8	1.5	.84	38	3.1
27	2.4	3.0	2.0	2.6	38	8.3	4.9	3.4	.64	3.6	23	2.9
28	207	2.9	1.8	2.5	29	9.1	4.1	3.2	.70	6.4	14	1.5
29	781	2.8	1.7	2.5	---	9.6	3.9	3.1	1.5	1.5	9.1	2.0
30	257	2.9	1.6	2.5	---	11	3.8	2.9	2.8	.99	5.7	3.9
31	59	---	1.5	2.4	---	14	---	2.5	---	.70	3.9	---
TOTAL	1677.5	202.0	75.8	305.3	1933.1	2859.3	253.5	268.7	70.19	49.69	1012.13	53.09
MEAN	54.1	6.73	2.45	9.85	69.0	92.2	8.45	8.67	2.34	1.60	32.6	1.77
MAX	781	36	3.4	45	290	1100	22	42	13	6.4	398	3.9
MIN	1.5	2.8	1.5	1.4	1.5	7.8	3.8	2.5	.29	.32	.07	.99
AC-FT	3330	401	150	606	3830	5670	503	533	139	99	2010	105

CAL YR 1982 TOTAL 14069.29 MEAN 38.5 MAX 1120 MIN .16 AC-FT 27910
WTR YR 1983 TOTAL 8760.30 MEAN 24.0 MAX 1100 MIN .07 AC-FT 17380

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)
OCT 26...	1345	2.3	1380	--	20.0	7.5	--	--	--	--	--	--
DEC 01...	1250	2.6	1700	--	.0	2.0	--	--	--	--	--	--
JAN 13...	1300	19	1200	--	7.0	3.0	--	--	--	--	--	--
FEB 18...	1400	221	315	--	10.0	--	--	--	--	--	--	--
APR 21...	1610	6.4	1300	--	12.0	13.0	--	--	--	--	--	--
JUN 10...	1245	1.9	2130	--	22.0	24.0	--	--	--	--	--	--
AUG 03...	1440	.35	1100	7.9	38.0	26.0	190	0	36	24	180	66
SEP 21...	1225	1.4	1400	--	3.5	7.0	--	--	--	--	--	--

DATE	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)
AUG 03...	6	13	300	7.4	270	8.1	.50	7.6	744	720	1.0

DATE	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
AUG 03...	.70	1	250	140	0	23	330	.4	4	0	410

06339500 KNIFE RIVER NEAR GOLDEN VALLEY, ND

LOCATION.--Lat 47°09'40", long 102°03'39", in SE¼ sec.34, T.143 N., R.90 W., Mercer County, Hydrologic Unit 10130201, on left 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 mi^2, 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: Drainage area. WSP 1279: 1904, 1914-19(M), 1922-24(M), 1944.

GAGE.--Water-stage recorder. Datum of gage is 1,847.13 ft National Geodetic Vertical Datum of 1929. See WSP 1729 or 1917 for history of changes prior to May 1, 1946.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--57 years, 98.0 ft^3/s, 71,000 acre-ft/yr; median of yearly mean discharges, 86 ft^3/s, 62,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,200 ft^3/s May 9, 1970, gage height, 25.84 ft; maximum gage height, 26.7 ft Mar. 26, 27, 1943, from floodmark; no flow at times in some years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 26, 27, 1943 reached a stage of 26.7 ft, from floodmark, 11,500 ft^3/s. The 1943 flood was the highest since 1903 according to information from local residents.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 30	1015	1680	12.95	Mar. 14	0015	*3630	[a]*19.02

Minimun daily, 9.2 ft^3/s Aug. 14.

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	672	24	10	12	95	141	34	25	40	38	28
2	25	239	35	10	11	85	134	33	24	45	29	24
3	26	147	40	10	11	82	122	32	21	44	23	19
4	29	106	55	10	10	80	106	30	20	38	19	17
5	28	74	55	11	10	100	96	29	19	36	16	15
6	36	72	45	12	10	880	85	27	18	33	15	14
7	36	65	40	12	10	850	78	29	17	30	13	13
8	47	52	30	15	10	600	69	29	16	25	12	12
9	158	52	25	20	10	440	65	29	15	24	12	12
10	655	50	25	30	10	320	60	27	14	22	12	11
11	1030	45	20	90	10	190	57	28	14	19	11	10
12	692	35	20	60	12	550	60	40	13	17	9.9	9.7
13	355	30	20	65	25	2800	60	52	15	17	9.6	10
14	251	28	20	60	50	3130	60	92	16	15	9.2	10
15	174	26	19	55	90	2240	62	217	14	14	10	10
16	119	28	19	60	110	1490	63	315	12	15	11	10
17	87	30	18	55	950	642	68	259	12	14	15	11
18	65	30	18	45	780	323	68	188	11	49	41	10
19	53	30	18	35	750	203	66	177	14	165	29	10
20	47	30	17	30	730	158	68	148	128	126	59	11
21	43	30	17	28	720	134	67	116	405	147	60	10
22	38	28	17	26	665	122	64	89	395	92	41	11
23	37	26	16	24	315	100	59	74	168	47	32	10
24	35	25	16	22	170	98	53	62	267	32	29	11
25	33	24	15	20	95	100	49	53	194	27	107	11
28	165	23	12	13	105	77	38	36	44	18	126	13
29	572	24	11	13	---	93	37	32	43	17	67	12
30	1560	25	10	12	---	93	35	29	41	82	45	13
31	1110	---	10	12	---	102	---	28	---	64	35	---
TOTAL	7586	2092	714	896	5891	16348	2072	2423	2164	1356	1573.7	380.7
MEAN	245	69.7	23.0	28.9	210	527	69.1	78.2	72.1	43.7	50.8	12.7
MAX	1560	672	55	90	950	3130	141	315	405	165	349	28
MIN	21	23	10	10	10	77	35	27	11	14	9.2	9.7
AC-FT	15050	4150	1420	1780	11680	32430	4110	4810	4290	2690	3120	755

CAL YR 1982 TOTAL 95512.1 MEAN 262 MAX 6920 MIN 1.2 AC-FT 189400
WTR YR 1983 TOTAL 43496.4 MEAN 119 MAX 3130 MIN 9.2 AC-FT 86280

06339500 KNIFE RIVER NR GOLDEN VALLEY, ND--CONTINUED

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1950, 1964-65, 1972 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)
OCT 26...	1410	30	1430	--	18.0	12.0	--	--	--	--	--	--
NOV 30...	1325	25	2170	--	9.0	1.5	--	--	--	--	--	--
MAR 18...	1205	343	435	--	-2.0	1.0	--	--	--	--	--	--
APR 21...	1210	67	2150	--	13.0	13.5	--	--	--	--	--	--
JUN 09...	1255	16	2430	--	22.0	21.0	--	--	--	--	--	--
AUG 02...	1145	30	1830	--	26.5	25.5	--	--	--	--	--	--
SEP 08...	1110	12	1140	8.2	--	16.0	210	0	47	22	180	64

DATE	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)
SEP 08...	6	12	290	3.5	310	5.7	.30	10	758	760	1.0

DATE	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
SEP 08...	25	2	160	30	0	20	0	.3	6	0	490

06339550 COYOTE CREEK NEAR ZAP, ND

LOCATION.--Lat 47°11'57", long 101°54'42", in NW¼SW¼SW¼ sec.13, T.143 N., R.89 W., Mercer County, Hydrologic Unit 10130201, on right bank 40 ft upstream from bridge on county road 6.0 mi south of Zap, and 0.8 mi upstream from mouth.

DRAINAGE AREA.--65.2 mi^2.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,809.75 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor.

AVERAGE DISCHARGE.--6 years, 12.1 ft^3/s, 8770 acre-ft/yr; median of yearly mean discharges 10.9 ft^3/s 7820 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,790 ft^3/s Mar. 29, 1982, gage height, 14.03 ft, backwater from ice; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 75 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 10	1945	171	5.48	Mar. 7	--	440	Ice jam
Feb. 16	--	190	Ice jam	Mar. 13	0930	*680	[a]7.96

No flow Aug 14, Sep 4-16.

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.29	17	.85	1.8	.25	7.0	62	3.2	1.6	1.6	.33	.05
2	.43	11	.92	2.0	.15	7.0	43	2.8	1.5	1.6	.26	.05
3	.62	7.1	1.0	2.1	.10	7.0	31	2.7	1.4	1.6	.18	.04
4	.29	4.8	1.1	2.2	.05	10	21	2.5	1.2	1.5	.15	.00
5	1.0	3.6	1.2	2.4	.05	30	14	2.5	1.2	1.8	.12	.00
6	3.4	3.1	1.2	2.5	.03	280	11	2.5	1.1	1.6	.16	.00
7	4.7	2.8	1.2	2.6	.03	150	9.4	2.4	1.1	1.6	.14	.00
8	8.0	2.6	1.2	2.7	.03	30	8.0	2.2	1.1	1.6	.10	.00
9	49	2.2	1.2	2.8	.03	20	7.4	2.1	1.0	1.2	.10	.00
10	132	2.1	1.2	2.9	.03	20	7.0	2.0	1.0	1.1	.15	.00
11	121	2.0	1.2	3.0	.03	15	6.4	2.1	1.1	.73	.12	.00
12	62	1.8	1.0	3.0	.20	100	6.8	4.4	.95	.44	.09	.00
13	42	1.7	.95	3.1	.30	500	7.0	9.8	.91	.45	.04	.00
14	28	1.4	.88	3.2	130	240	6.5	29	.81	.45	.00	.00
15	19	1.4	.80	3.3	150	100	6.7	30	.74	.32	.01	.00
16	12	1.4	.78	3.2	160	80	7.3	20	.85	.25	.09	.00
17	7.4	1.4	.76	3.0	130	70	8.2	14	.68	.24	.14	.03
18	5.0	1.5	.74	2.0	110	60	10	11	.58	.80	.10	.03
19	4.5	1.6	.72	1.5	110	50	13	7.6	1.1	1.9	.06	.06
20	4.1	1.7	.72	1.0	100	40	12	6.0	2.2	1.3	.18	.10
21	3.7	1.8	.78	.80	90	30	9.8	5.4	2.1	.67	.18	.13
22	3.0	1.9	.82	.70	70	24	9.2	4.7	2.7	.56	.13	.16
23	2.3	2.0	.90	.60	30	18	6.8	4.3	1.8	3.1	.17	.14
24	2.2	2.0	.95	.50	20	14	5.9	3.8	1.5	3.0	.18	.13
25	1.8	2.1	1.0	.40	15	15	5.1	3.1	1.2	2.2	.16	.15
26	1.5	2.0	1.1	.30	8.0	31	4.2	2.9	1.1	1.4	.12	.14
27	1.9	1.8	1.2	.25	7.5	50	3.9	2.5	1.0	1.1	.12	.11
28	26	1.5	1.3	.80	7.5	42	3.7	2.2	.93	.91	.10	.10
29	52	1.1	1.5	.90	---	34	3.4	1.8	1.5	.67	.10	.65
30	43	.85	1.6	1.0	---	39	3.2	1.6	1.7	.63	.08	.38
31	27	---	1.7	.40	---	67	---	1.5	---	.40	.07	---
TOTAL	669.13	89.25	32.47	56.95	1139.28	2180.0	352.9	192.6	37.65	36.72	3.93	2.45
MEAN	21.6	2.98	1.05	1.84	40.7	70.3	11.8	6.21	1.26	1.18	.13	.082
MAX	132	17	1.7	3.3	160	500	62	30	2.7	3.1	.33	.65
MIN	.29	.85	.72	.25	.03	7.0	3.2	1.5	.58	.24	.00	.00
AC-FT	1330	177	64	113	2260	4320	700	382	75	73	7.8	4.9

CAL YR 1982 TOTAL 10668.12 MEAN 29.2 MAX 1600 MIN .03 AC-FT 21160
WRT YR 1983 TOTAL 4793.33 MEAN 13.1 MAX 500 MIN .00 AC-FT 9510

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
OCT										
18...	1640	4.7	1160	8.3	11.0	9.0	9.2	81	--	--
JAN										
17...	1650	3.3	995	7.2	-1.9	.0	12.3	86	200	--
MAR										
03...	0920	7.5	780	7.8	4.0	.5	14.4	102	270	--
09...	1225	18	590	--	- .9	.0	--	--	--	--
15...	1405	95	260	--	2.0	.5	--	--	--	--
APR										
05...	1440	13	890	7.2	7.0	4.5	14.4	111	--	--
MAY										
19...	0837	7.7	2440	8.1	13.0	12.5	9.4	90	630	244
JUL										
05...	1840	1.7	2490	8.0	28.0	26.5	9.4	119	--	--
AUG										
15...	1420	.01	2330	8.4	32.0	30.0	13.2	177	--	--

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
JAN												
17...	39	24	110	53	3.5	13	--	--	240	5.6	.20	9.9
MAR												
03...	52	35	180	58	4.8	9.2	--	--	410	5.7	.20	10
MAY												
19...	120	81	350	54	6.2	9.3	390	6.0	900	7.8	.20	<1.2

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN DIS-SOLVED (MG/L AS N) (00602)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)
JAN											
17...	573	.78	5.0	.54	.250	2.6	2.80	.10	2.7	3.2	.150
MAR											
03...	869	1.2	17.6	.48	.260	1.2	1.50	.10	1.4	1.9	.170
MAY											
19...	1780	2.4	37.0	<.10	.060	1.3	1.40	.10	1.3	--	.060

DATE	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
JAN											
17...	.46	.130	--	140	--	--	--	1700	340	--	120
MAR											
03...	.52	.110	1	190	<1	<10	1	770	200	<1	83
MAY											
19...	.18	.010	--	310	--	--	--	650	50	--	20

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)
JAN 17...	--	--	--	--	--	--	--	--	26	.3	--
MAR 03...	.2	5	6	11	<1	20	5	15	17	.4	<.01
MAY 19...	--	--	--	--	--	--	--	--	15	.2	--

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
JAN 17...	1650	3.3	34	.30
MAR 03...	0920	7.5	6	.13
MAY 19...	0837	7.7	79	1.6

06339560 BRUSH CREEK NEAR BEULAH, ND

LOCATION.--Lat 47°10'43", long 101°47'05", in NW¼SW¼NW¼ sec.25, T.143 N., R.88 W., Mercer County, Hydrologic Unit 10130201, on right bank 60 ft upstream from bridge on State Highway 49, and 6 mi south of Beulah.

DRAINAGE AREA.--23.92 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,948 ft from State Highway Department levels.

REMARKS.--Records poor.

AVERAGE DISCHARGE.--9 years, 1.78 ft^3/s, 1,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 940 ft^3/s Mar. 29, 1982, gage height, 8.40 ft, backwater from ice; maximum gage height, 9.26 ft Mar. 21, 1978; no flow at times.

EXTREMES FOR CURRENT YEAR.-- Maximum discharage, 100 ft^3/s Mar. 12, gage height 6.00 ft, backwater from ice; only peak above base of 50 ft^3/s; minimum daily .10 ft^3/s Feb. 13-16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.63	2.5	.69	.40	.20	1.0	5.0	1.6	.73	1.2	.15	.13
2	.66	2.1	.68	.40	.20	1.3	4.5	1.7	.69	.81	.14	.12
3	.66	2.0	.68	.40	.20	1.7	4.0	1.6	.69	.77	.14	.12
4	.66	1.8	.67	.40	.20	2.0	3.5	1.5	.69	.81	.14	.13
5	.69	1.6	.66	.40	.20	2.4	2.5	1.5	.69	1.3	.15	.15
6	.86	1.5	.65	.40	.15	2.7	3.0	1.4	.69	.66	.14	.14
7	1.0	1.4	.65	.40	.15	3.0	3.5	1.4	.69	.46	.14	.14
8	1.4	1.2	.65	.45	.15	3.5	3.5	1.3	.66	.38	.14	.15
9	2.9	1.2	.65	.40	.15	4.5	3.0	1.3	.62	.35	.15	.15
10	5.6	1.2	.65	.40	.15	5.0	2.5	1.1	.59	.28	.14	.15
11	5.9	1.2	.60	.35	.15	4.0	2.5	1.1	.55	.22	.12	.16
12	3.0	1.1	.60	.35	.15	10	2.5	1.6	.46	.22	.12	.15
13	2.7	1.0	.60	.35	.10	50	2.5	2.7	.49	.18	.12	.15
14	2.4	1.0	.60	.35	.10	30	2.5	2.6	.46	.17	.12	.14
15	2.1	1.0	.60	.30	.10	20	2.5	2.0	.43	.15	.14	.16
16	1.8	1.0	.55	.30	.10	15	3.0	1.8	.40	.15	.15	.17
17	1.5	.95	.55	.30	.15	10	3.0	1.6	.38	.18	.14	.17
18	1.1	.90	.55	.30	.15	10	3.0	1.4	.38	1.2	.13	.16
19	1.2	.90	.55	.30	.20	10	3.0	1.1	1.0	.59	.13	.18
20	1.1	.85	.55	.30	.20	10	3.0	1.1	.73	.35	.14	.22
21	1.0	.80	.50	.25	.25	8.0	3.0	1.1	.66	.26	.14	.21
22	1.0	.78	.50	.25	.30	6.0	2.5	1.0	.86	.22	.15	.20
23	1.0	.76	.50	.25	.40	6.0	2.3	.95	.62	.20	.19	.21
24	1.0	.75	.50	.25	.45	6.0	2.2	.90	.46	.20	.20	.20
25	.80	.74	.50	.25	.55	8.0	2.0	.90	.35	.18	.18	.22
26	.78	.74	.45	.25	.70	10	1.9	1.2	.33	.17	.17	.22
27	.70	.73	.45	.25	.80	5.0	1.8	.90	.30	.17	.16	.23
28	1.8	.72	.45	.20	.90	7.0	1.7	.77	.28	.17	.15	.22
29	3.4	.71	.45	.20	---	10	1.7	.77	.62	.18	.15	.25
30	3.2	.70	.45	.20	---	9.0	1.7	.69	.90	.17	.14	.32
31	3.0	---	.45	.20	---	10	---	.69	---	.17	.13	---
TOTAL	55.54	33.83	17.58	9.80	7.50	281.1	83.3	41.27	17.40	12.52	4.50	5.32
MEAN	1.79	1.13	.57	.32	.27	9.07	2.78	1.33	.58	.40	.15	.18
MAX	5.9	2.5	.69	.45	.90	50	5.0	2.7	1.0	1.3	.20	.32
MIN	.63	.70	.45	.20	.10	1.0	1.7	.69	.28	.15	.12	.12
AC-FT	110	67	35	19	15	558	165	82	35	25	8.9	11

CAL YR 1982 TOTAL 2328.43 MEAN 6.38 MAX 590 MIN .00 AC-FT 4620
WTR YR 1983 TOTAL 569.66 MEAN 1.56 MAX 50 MIN .10 AC-FT 1130

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
OCT 18...	1330	1.1	1620	8.0	6.0	8.5	9.4	82	--	--
DEC 06...	1345	.66	2280	7.8	- .9	1.0	12.4	88	620	--
JAN 17...	1300	.29	--	--	- .9	.0	11.3	78	290	--
MAR 03...	1605	1.7	1440	7.9	6.0	1.5	12.2	90	370	--
15...	1650	20	245	7.5	4.0	.5	12.4	87	--	--
APR 05...	0905	2.6	720	7.5	6.0	2.5	13.0	95	--	--
MAY 19...	1250	1.1	2100	8.3	12.0	14.0	13.2	130	500	0
JUL 05...	1650	2.1	1850	8.8	27.0	23.0	6.8	81	--	--
AUG 15...	1235	.14	1830	8.0	32.0	23.0	12.8	151	--	--

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
DEC 06...	110	85	310	51	5.5	12	--	--	610	14	.30	5.5
JAN 17...	56	37	160	53	4.2	14	--	--	330	7.3	.20	14
MAR 03...	70	48	190	52	4.4	8.5	--	--	420	5.9	.20	14
MAY 19...	87	69	280	54	5.6	8.3	530	5.1	600	8.2	.20	5.6

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN DIS-SOLVED (MG/L AS N) (00602)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)
DEC 06...	1380	--	1.9	2.5	.29	.100	2.3	2.40	.10	2.3	2.6	.110
JAN 17...	865	--	1.2	.68	.52	.700	2.3	3.00	1.4	1.6	2.1	.170
MAR 03...	944	--	1.3	4.3	.15	.160	1.1	1.30	.10	1.2	1.4	.110
MAY 19...	1300	1380	1.8	3.9	<.10	.060	1.2	1.30	.10	1.2	--	.060

DATE	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
DEC 06...	.34	.080	--	340	--	--	--	630	110	--	110
JAN 17...	.52	.090	--	200	--	--	--	1300	560	--	300
MAR 03...	.34	.060	1	170	<1	<10	<1	500	180	1	120
MAY 19...	.18	.020	--	280	--	--	--	450	26	--	52

06339560 BRUSH CREEK NEAR BEULAH, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)
DEC 06...	--	--	--	--	--	--	--	--	12	.3	--
JAN 17...	--	--	--	--	--	--	--	--	20	.3	--
MAR 03...	.1	4	4	8	<1	40	30	14	15	.3	<.01
MAY 19...	--	--	--	--	--	--	--	--	12	.1	--

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
DEC 06...	1345	.66	105	.19
JAN 17...	1300	.29	37	.03
MAR 03...	1605	1.7	3	.01
MAY 19...	1250	1.1	56	.17

06340000 SPRING CREEK AT ZAP, ND

LOCATION.--Lat 47°17'10", long 101°55'31", in SW¼ sec.14, T.144 N., R.89 W., Mercer County, Hydrologic Unit 10130201, on right bank 250 ft downstream from Burlington Northern Railway bridge in Zap, and 9 mi upstream from mouth.

DRAINAGE AREA.--549 mi^2.

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 National Geodetic Vertical Datum of 1929. Mar. 4 to Sept. 30, 1924, nonrecording 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 poor. Flow slightly regulated by Lake Ilo 56 mi upstream, capacity, 7,130 acre-ft.

AVERAGE DISCHARGE.--38 years, 43.5 ft^3/s, 31,520 acre-ft/yr; median of yearly mean discharges, 41 ft^3/s, 29,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,130 ft^3/s Apr. 7, 1952, gage height, 20.03 ft; maximum gage height, 20.70 ft Mar. 15, 1972; no flow at times.

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.

EXTREMES FOR CURRENT YEAR.--Maximum discharges, about 1800 ft^3/s, Mar. 13, gage height, 15.68 ft, obtained from once daily gage reading, backwater from ice; only peak above base of 1000 ft^3/s; minimum dial 6.0 ft^3/s, Feb. 7-9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	242	30	10	6.3	76	68	32	21	34	9.9	17
2	24	159	45	10	6.2	72	62	29	21	159	9.6	18
3	22	123	40	10	6.2	70	57	29	20	185	9.2	18
4	21	100	35	10	6.1	70	42	27	19	81	8.8	18
5	23	88	30	10	6.1	80	44	26	19	54	8.8	19
6	30	83	23	15	6.1	200	39	25	19	42	8.8	19
7	28	71	19	20	6.0	150	37	24	20	36	8.8	16
8	27	61	15	30	6.0	100	37	22	21	32	8.3	6.1
9	61	54	13	40	6.0	90	37	22	21	26	8.7	6.1
10	114	49	10	38	6.4	92	37	21	22	25	7.8	6.9
11	129	46	10	36	6.6	100	37	23	21	23	7.3	6.7
12	89	37	10	33	7.0	200	40	34	19	20	7.7	6.3
13	68	41	10	31	18	2300	39	41	19	19	7.4	6.3
14	64	41	10	28	45	1500	38	54	17	17	7.4	6.4
15	58	36	10	23	135	650	39	68	17	16	9.5	6.7
16	51	30	10	17	100	400	38	90	16	17	11	6.7
17	45	25	10	15	100	262	39	72	15	18	11	6.9
18	39	23	10	13	130	189	39	61	17	22	10	7.0
19	35	22	10	12	180	141	40	51	24	19	12	7.1
20	34	22	10	10	150	118	40	46	181	11	12	7.3
21	32	21	10	9.0	140	124	39	43	131	10	12	7.4
22	30	21	10	8.5	130	115	37	40	187	9.5	11	7.6
23	28	21	10	8.0	120	104	36	36	327	9.4	12	7.8
24	26	20	10	7.6	110	102	35	34	128	9.7	19	7.9
25	25	20	10	7.2	100	99	35	35	83	8.8	19	9.4
26	23	20	10	7.0	92	85	31	32	53	8.4	15	9.1
27	24	20	10	6.9	88	83	30	28	37	8.6	16	9.2
28	62	20	10	6.8	80	64	29	26	27	9.3	17	8.3
29	231	20	10	6.6	---	62	35	23	25	9.1	17	9.9
30	407	20	10	6.4	---	67	39	21	29	9.3	17	12
31	435	---	10	6.4	---	60	---	22	---	9.9	17	---
TOTAL	2307	1556	470	491.4	1793.0	7825	1195	1137	1576	958.0	356.0	300.1
MEAN	74.4	51.9	15.2	15.9	64.0	252	39.8	36.7	52.5	30.9	11.5	10.0
MAX	435	242	45	40	180	2300	68	90	327	185	19	19
MIN	21	20	10	6.4	6.0	60	29	21	15	8.4	7.3	6.1
AC-FT	4580	3090	932	975	3560	15520	2370	2260	3130	1900	706	595

CAL YR 1982 TOTAL 35066.8 MEAN 96.1 MAX 3270 MIN 4.2 AC-FT 69550
WTR YR 1983 TOTAL 19964.5 MEAN 54.7 MAX 2300 MIN 6.0 AC-FT 39600

06340000 SPRING CREEK AT ZAP, ND

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969-70, 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
20...	1005	34	1400	--	3.0	3.0	--	--	--	--	--
DEC											
02...	1010	44	1000	--	3.0	.0	--	--	--	--	--
JAN											
11...	1510	36	1440	--	- .9	.0	--	--	--	--	--
MAR											
02...	1455	72	950	8.0	2.0	.0	214	12	41	27	120
09...	1030	90	750	--	- .9	.0	--	--	--	--	--
15...	1735	644	470	--	1.0	.0	--	--	--	--	--
16...	0755	440	490	7.9	--	.0	93	51	19	11	69
APR											
06...	0830	44	1190	7.6	6.0	4.0	--	--	--	--	--
MAY											
18...	1720	59	2430	8.5	18.5	15.0	--	--	--	--	--
JUL											
06...	1735	40	1160	7.5	32.0	25.0	--	--	--	--	--
AUG											
15...	1645	9.9	1730	8.3	31.0	25.0	411	6.8	73	55	250

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
02...	53	3.7	11	276	0	230	4.4	240	4.4	.20	9.3	626
16...	59	3.2	9.4	176	0	140	3.5	98	3.4	.10	6.5	319
AUG												
15...	56	5.5	12	509	0	420	4.1	530	9.2	.40	10	1190

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
02...	591	.85	122	1	160	160	0	21	60	.3	0	350
16...	304	.43	379	1	80	190	0	11	40	.1	0	180
AUG												
15...	1192	1.6	31.8	0	350	20	0	52	20	.3	0	1600

WATER-QUALITY RECORDS

LOCATION.--Lat 47°08'05", long 101°39'35", in NW¼NW¼SW¼ sec.12, T.142 N., R.87 W., Oliver County, Hydrologic Unit 10130201, and on right bank 10 mi southeast of Beulah.

DRAINAGE AREA.--26.5 mi^2.

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
20...	1225	.58	1240	--	--	6.0	--	--	--	--	--
MAR											
02...	1150	2.6	1100	7.7	3.0	.5	234	35	41	32	140
09...	1425	3.0	390	--	- .9	.0	--	--	--	--	--
16...	0945	22	305	7.3	2.0	.0	--	--	--	--	--
APR											
05...	1130	2.3	915	6.9	7.0	2.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
02...	55	4.1	11	243	0	200	7.7	340	2.6	.10	8.4	733

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
02...	696	.00	5.1	1	110	230	0	21	120	.3	0	260

06340500 KNIFE RIVER AT HAZEN, ND

LOCATION.--Lat 47°17'07", long 101°37'18", in SW¼SE¼SE¼ 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 mi^2, 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 National Geodetic Vertical Datum of 1929. Prior to Sept. 25, 1947, nonrecording gages at same site and datum.

REMARKS.--Records good except those for the winter period, which are fair. Small diversions above station. Slight regulation by Lake Ilo 81 mi upstream, capacity, 7,130 acre-ft.

AVERAGE DISCHARGE.--50 years (1929-33, 1937-83), 181 ft^3/s, 131,100 acre-ft/yr; median of yearly mean discharges, 155 ft^3/s, 112,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,300 ft^3/s June 24, 1966, gage height, 27.01 ft; no flow at times in 1933, 1959, 1962.

EXTREMES OUTSIDE PERIOD OF RECORD.--According to local residents, the floods of 1943 and 1950 were not exceeded during the period 1884 to 1942.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 31	0800	2210	12.46	Mar. 13	--	*5300	[ab]23.00
Mar. 7	--	3100	Ice jam				

Minimum daily, 25 ft^3/s Feb. 3-11.

a - Backwater from ice
b - From floodmark

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	1470	72	32	30	140	465	134	112	149	117	74
2	51	905	94	32	30	135	353	126	109	162	95	65
3	54	490	240	32	25	135	301	123	106	348	76	57
4	54	336	240	32	25	135	261	119	103	273	65	49
5	54	248	220	32	25	150	242	119	100	188	57	44
6	83	213	200	40	25	1400	225	116	99	162	51	41
7	98	209	170	90	25	2650	214	112	97	144	47	38
8	92	177	120	90	25	1400	202	113	96	133	43	37
9	174	160	110	240	25	1100	195	115	93	126	42	36
10	768	153	80	320	25	900	188	113	93	118	41	33
11	1270	146	70	220	25	900	184	113	92	104	38	32
12	1260	112	60	100	30	1450	187	133	88	94	36	32
13	824	135	60	110	35	4500	186	164	85	88	35	34
14	524	196	60	150	160	4450	176	198	83	83	34	34
15	382	209	60	130	400	3920	175	246	83	79	32	32
16	281	170	60	120	380	2680	183	352	83	74	34	31
17	211	130	60	100	380	1650	189	395	81	72	34	31
18	179	123	60	90	620	930	189	331	79	81	34	28
19	145	122	60	80	680	599	193	271	89	98	47	29
20	131	123	60	70	500	586	190	244	94	217	58	30
21	128	110	55	65	450	408	186	230	348	180	62	28
22	120	100	50	60	440	372	182	202	674	213	93	28
23	109	90	45	50	470	321	175	184	855	156	77	28
24	103	90	40	45	400	275	167	169	491	121	65	28
25	104	90	37	40	200	261	159	158	474	97	60	28
26	97	85	34	35	170	283	151	150	368	83	109	28
27	96	80	32	35	190	287	142	142	240	77	369	28
28	148	70	32	35	170	254	133	134	178	70	350	28
29	507	70	32	40	---	270	132	123	159	64	186	27
30	1180	72	30	40	---	310	135	117	151	61	117	29
31	2040	---	32	35	---	441	---	112	---	89	89	---
TOTAL	11313	6684	2575	2590	5960	33292	6060	5358	5803	4004	2593	1067
MEAN	365	223	83.1	83.5	213	1074	202	173	193	129	83.6	35.6
MAX	2040	1470	240	320	680	4500	465	395	855	348	369	74
MIN	46	70	30	32	25	135	132	112	79	61	32	27
AC-FT	22440	13260	5110	5140	11820	66030	12020	10630	11510	7940	5140	2120

CAL YR 1982 TOTAL 165575 MEAN 454 MAX 9500 MIN 10 AC-FT 328400
WTR YR 1983 TOTAL 87299 MEAN 239 MAX 4500 MIN 25 AC-FT 173200

06340500 KNIFE RIVER AT HAZEN, ND
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-51, 1969 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT											
20...	1410	132	1420	--	3.0	7.0	--	--	--	--	--
DEC											
01...	1245	72	1840	8.1	.0	.0	1.0	12.0	84	--	--
JAN											
11...	1125	190	1420	7.9	-1.9	.0	--	12.3	83	K630	>3000
MAR											
03...	1100	134	990	8.0	3.0	.5	23	12.0	84	K30	134
16...	1030	2710	500	--	.0	.0	--	--	--	--	--
APR											
06...	1645	219	1170	7.4	11.0	6.0	--	14.4	--	<37	<163
MAY											
18...	1006	340	257	8.4	16.0	11.5	48	92.0	849	370	160
JUL											
06...	1230	162	1260	7.6	28.0	28.0	--	7.2	93	730	720
06...	1306	162	1289	7.6	27.0	27.1	--	7.5	95	--	--
AUG											
17...	0910	33	1530	8.4	28.0	22.0	--	7.8	90	100	420

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
DEC												
01...	410	91	81	51	260	57	5.7	9.2	323	4.9	540	10
MAR												
03...	200	0	41	24	140	59	4.4	9.3	214	4.1	280	5.5
MAY												
18...	450	11	78	62	410	66	8.6	9.0	441	3.4	860	6.8

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)
DEC											
01...	.40	14	1250	1160	1.7	243	.34	.30	1.40	.240	.74
MAR											
03...	.20	9.4	643	639	.87	233	.28	.43	1.60	.210	.64
MAY											
18...	.40	5.1	1890	1700	2.6	1740	.13	--	1.60	.140	.43

DATE	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
DEC											
01...	.200	.140	.43	10	1	89	<1	<1	<3	2	17
MAR											
03...	.110	.060	.18	150	1	52	<1	<1	<3	2	200
MAY											
18...	.020	.020	.06	30	1	100	<1	<1	2	5	40

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
DEC											
01...	<1	62	110	<.1	<10	2	1	<1	1100	<6.0	5
MAR											
03...	<1	28	32	.1	<10	6	<1	<1	520	<6.0	19
MAY											
18...	1	50	10	.3	3	5	1	<1	1200	4.1	20

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
DEC					
01...	1245	72	76	15	88
MAR					
03...	1040	134	62	22	94
MAY					
18...	1006	340	220	202	--
AUG					
17...	0910	33	54	4.8	99

DATE	TIME	SAMPLE LOC-ATION, CROSS SECTION (FT FM L BANK) (00009)	DEPTH TO TOP OF SAMPLE INTER-VAL (FT) (72015)	TEMPER-ATURE (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	OXYGEN, DIS-SOLVED (MG/L) (00300)
JUL							
06...	1306	45.0	.0	27.1	1289	7.6	7.5
06...	1307	43.0	.0	27.2	1285	7.6	7.5
06...	1308	41.0	.0	27.2	1281	7.6	7.3
06...	1309	41.0	1.6	27.2	1281	--	7.3
06...	1310	39.0	.0	27.3	1283	7.6	7.3
06...	1311	39.0	1.6	27.3	1282	--	7.2
06...	1312	37.0	.0	27.3	1283	7.5	7.2
06...	1313	37.0	1.6	27.3	1283	--	7.2
06...	1314	35.0	.0	27.3	1284	7.5	7.2
06...	1315	35.0	1.6	27.3	1282	--	7.1
06...	1316	33.0	.0	27.4	1284	7.5	7.2
06...	1317	33.0	1.6	27.4	1282	--	7.2
06...	1318	31.0	.0	27.5	1284	7.5	7.1
06...	1319	31.0	1.6	27.5	1284	--	7.1
06...	1320	29.0	.0	27.5	1282	7.5	7.3
06...	1321	29.0	1.6	27.5	1281	--	7.2
06...	1322	27.0	.0	27.6	1281	7.5	7.1
06...	1323	27.0	1.6	27.6	1281	--	7.2
06...	1324	25.0	.0	27.6	1280	7.5	7.3
06...	1325	25.0	1.6	27.6	1280	--	7.3
06...	1326	23.0	.0	27.7	1280	--	7.2
06...	1327	23.0	1.6	27.7	1280	--	7.2
06...	1328	21.0	.0	27.7	1280	7.6	7.3
06...	1329	21.0	1.6	27.7	1280	--	7.3
06...	1330	19.0	.0	27.7	1279	--	7.3
06...	1331	19.0	1.6	27.7	1278	--	7.0
06...	1332	17.0	.0	27.7	1280	7.6	7.3
06...	1333	17.0	1.6	27.7	1278	--	7.1
06...	1334	15.0	.0	27.8	1280	7.6	7.2
06...	1335	15.0	1.6	27.8	1280	--	7.1
06...	1336	13.0	.0	27.8	1280	--	7.2
06...	1337	13.0	1.6	27.8	1279	--	7.1
06...	1338	11.0	.0	27.8	1279	7.6	7.2
06...	1339	11.0	1.6	27.8	1278	--	7.1
06...	1340	9.00	.0	27.8	1279	7.6	7.1
06...	1341	9.00	1.6	27.8	1279	--	7.2
06...	1342	7.00	.0	27.8	1279	7.6	7.1
06...	1343	7.00	1.6	27.8	1279	--	7.1
06...	1344	5.00	.0	27.8	1279	--	7.1
06...	1345	5.00	1.6	27.9	1279	--	7.0
06...	1346	3.00	.0	27.8	1279	7.6	6.6

06340520 ANTELOPE CREEK ABOVE HAZEN, ND

LOCATION.--Lat 47°20'07", long 101°41'41", in SE¼SE¼NE¼ sec.36, T.145 N., R.87 W., Mercer County, Hydrologic Unit 10130201, on left bank about 100 ft upstream from bridge on county road, 4.2 mi northwest of Hazen, and 2.0 mi upstream from Schramm Dam.

DRAINAGE AREA.--47.2 mi^2, revised.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 1,800 ft, from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--6 years, 4.43 ft^3/s, 3,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,420 ft^3/s Mar. 29, 1982, from rating curve extended above 350 ft^3/s, gage height, 8.55 ft; maximum gage height, 8.95 ft Mar. 21, 1978, ice jam; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 10	0800	54	3.44	Mar. 13	--	200	Ice jam
Feb. 14	--	145	Ice jam	Mar. 30	--	90	Ice jam
Mar. 6	0200	435	[a]5.99				

No flow for many days.

a - Ice effect

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	2.1	.15	.14	.12	2.2	16	.52	.01	.07	.00	.00
2	.00	1.7	15	.16	.10	2.6	9.7	.52	.00	5.1	.00	.00
3	.00	1.4	30	.16	.08	3.8	7.8	.48	.00	17	.00	.00
4	.00	1.0	20	.14	.06	3.2	5.1	.40	.00	6.9	.00	.00
5	.00	.88	8.0	.14	.06	65	3.4	.37	.00	4.2	.00	.00
6	.35	.80	3.5	.16	.06	275	3.1	.38	.00	2.9	.00	.00
7	.26	.83	2.0	.16	.06	25	2.1	.29	.00	2.4	.00	.00
8	.39	.69	.60	.18	.06	25	1.9	.29	.00	1.4	.00	.00
9	25	.57	.40	.20	.06	6.8	1.9	.23	.00	.99	.00	.00
10	42	.75	.26	.20	.06	9.0	1.6	.21	.00	.61	.00	.00
11	16	.82	.16	.22	.06	7.0	1.4	.18	.00	.28	.00	.00
12	8.1	.70	.16	.24	5.0	52	1.7	.65	.00	.07	.00	.00
13	5.1	.64	.12	.26	50	165	1.5	1.1	.00	.03	.00	.00
14	3.6	.48	.12	.28	100	85	1.5	2.4	.00	.00	.00	.00
15	2.0	.47	.10	.28	60	36	1.1	2.1	.00	.00	.00	.00
16	1.3	.42	.10	.28	40	30	2.1	1.6	.00	.00	.00	.00
17	.62	.41	.12	.30	25	24	2.3	1.2	.00	.00	.00	.00
18	.82	.44	.12	.34	20	22	1.8	.84	.00	.11	.00	.00
19	.82	.47	.12	.26	12	12	1.4	.57	.00	.06	.00	.00
20	.46	.47	.10	.16	9.0	7.4	1.6	.50	.00	.00	.00	.00
21	.49	.35	.10	.16	7.0	4.6	1.6	.43	.00	.00	.00	.00
22	.47	.35	.10	.16	5.2	3.2	3.4	.30	23	.00	.00	.00
23	.51	.25	.10	.18	4.6	3.0	3.4	.23	11	.00	.00	.00
24	.52	.20	.12	.18	4.6	3.6	2.7	.20	4.1	.00	.00	.00
25	.48	.15	.14	.10	2.6	10	1.3	.13	2.6	.00	.00	.00
26	.42	.15	.16	.12	2.0	22	.90	.10	.89	.00	.00	.00
27	.51	.20	.14	.12	2.0	18	.69	.08	.21	.00	.00	.00
28	2.0	.20	.14	.14	2.8	18	.68	.05	.07	.00	.00	.00
29	5.8	.20	.12	.14	---	56	.57	.01	.11	.00	.00	.00
30	6.2	.20	.12	.14	---	60	.52	.01	.10	.00	.00	.00
31	3.5	---	.16	.12	---	52	---	.01	---	.00	.00	---
TOTAL	127.72	18.29	82.53	5.82	352.58	1108.4	84.76	16.38	42.09	42.12	.00	.00
MEAN	4.12	.61	2.66	.19	12.6	35.8	2.83	.53	1.40	1.36	.000	.000
MAX	42	2.1	30	.34	100	275	16	2.4	23	17	.00	.00
MIN	.00	.15	.10	.10	.06	2.2	.52	.01	.00	.00	.00	.00
AC-FT	253	36	164	12	699	2200	168	32	83	84	.00	.00

CAL YR 1982 TOTAL 3829.93 MEAN 10.5 MAX 550 MIN .00 AC-FT 7600
WTR YR 1983 TOTAL 1880.69 MEAN 5.15 MAX 275 MIN .00 AC-FT 3730

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
OCT										
19...	1130	.81	1120	7.6	6.0	7.0	13.6	112	241	.00
DEC										
07...	1210	1.6	830	7.4	- .9	1.0	10.8	75	372	126
JAN										
18...	0940	.35	1070	7.2	- .9	.0	9.0	62	262	.00
MAR										
04...	0945	3.8	835	--	5.0	.0	12.3	86	186	.00
15...	1208	27	205	7.8	4.0	.5	12.4	86	--	--
APR										
07...	0910	2.3	750	8.0	9.0	5.0	11.5	90	203	.00
MAY										
17...	1155	1.1	2060	8.4	15.5	12.0	15.2	142	511	31
JUL										
07...	1045	1.8	1015	7.8	31.0	29.0	4.0	53	229	.00

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)
OCT											
19...	47	30	150	4.3	287	14	300	750	1.0	1.6	1800
DEC											
07...	83	40	45	1.0	246	19	220	609	.83	2.7	840
JAN											
18...	54	31	130	3.6	277	34	270	717	.98	.68	830
MAR											
04...	40	21	88	2.9	193	--	190	491	.67	5.0	420
APR											
07...	45	22	81	2.5	221	4.0	160	466	.63	2.9	1200
MAY											
17...	94	67	290	5.7	503	3.7	660	1430	1.9	4.2	230
JUL											
07...	47	27	150	4.4	312	8.6	250	704	.96	3.4	1600

06340528 WEST BRANCH ANTELOPE CREEK NO. 4 NEAR ZAP, ND

LOCATION.--Lat 47°21'21", long 101°51'16", in the NW¼NW¼NE¼ sec.26, T.145 N., R.88 W., Mercer County, Hydrologic Unit 10130201, on left bank upstream from culvert, and 6.0 mi northeast of Zap.

DRAINAGE AREA.--8.46 mi^2, revised.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1976 to current year. Prior to Oct. 1978, published as Antelope Creek Tributary No. 4 near Zap.

GAGE.--Water-stage recorder.

REMARKS.--Records fair. Some regulation by stock dams above station.

AVERAGE DISCHARGE.--7 years, 0.66 ft^3/s, 478 acre-ft.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 650 ft^3/s Apr. 17, 1979, gage height, 9.66 ft; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 10 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 6	--	70	Ice jam	Mar. 29	--	19.0	Ice jam
Mar. 12	1245	*80	*[b]5.35				

No flow for several months.

b - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.40	.02	.00	.00	.75	1.9	.18	.00	.07	.00	.00
2	.00	.30	.02	.00	.00	.74	1.3	.18	.00	5.4	.00	.00
3	.00	.22	.03	.00	.00	1.1	.96	.16	.00	3.1	.00	.00
4	.00	.13	.02	.00	.00	.92	.68	.14	.00	.80	.00	.00
5	.00	.10	.02	.00	.00	10	.57	.14	.00	.64	.00	.00
6	.00	.12	.03	.00	.00	32	.39	.14	.00	.13	.00	.00
7	.00	.14	.05	.00	.00	6.0	.39	.14	.00	.07	.00	.00
8	.00	.13	.04	.03	.00	1.0	.39	.13	.00	.02	.00	.00
9	.57	.12	.03	.10	.00	.40	.35	.13	.00	.00	.00	.00
10	.76	.13	.02	.10	.00	.20	.35	.14	.00	.00	.00	.00
11	.28	.14	.01	.09	.00	.30	.40	.14	.00	.00	.00	.00
12	.03	.12	.00	.09	.00	20	.42	.54	.00	.00	.00	.00
13	.10	.05	.00	.08	.10	21	.40	.80	.00	.00	.00	.00
14	.08	.02	.00	.07	.40	9.0	.35	.96	.00	.00	.00	.00
15	.03	.03	.00	.06	1.5	4.5	.51	1.3	.00	.00	.00	.00
16	.01	.04	.00	.05	1.4	3.6	.80	1.2	.00	.00	.00	.00
17	.00	.05	.00	.04	1.2	1.7	1.2	.68	.00	.01	.00	.00
18	.00	.07	.00	.03	1.1	1.2	1.6	.51	.00	.05	.00	.00
19	.03	.10	.00	.02	1.0	.80	1.4	.35	.30	.02	.00	.00
20	.06	.08	.00	.01	.95	.50	1.0	.32	.38	.01	.00	.00
21	.04	.01	.00	.00	.90	.50	.64	.30	.55	.01	.00	.00
22	.02	.01	.00	.00	.90	.40	.42	.22	.64	.00	.00	.00
23	.01	.00	.00	.00	.90	.30	.38	.16	.32	.00	.00	.00
24	.00	.00	.00	.00	.85	.40	.32	.11	.10	.00	.00	.00
25	.00	.00	.00	.00	.85	.70	.30	.08	.05	.00	.00	.00
26	.00	.00	.00	.00	.85	1.1	.28	.05	.00	.00	.00	.00
27	.03	.00	.00	.00	.80	1.0	.24	.04	.00	.00	.00	.00
28	1.6	.00	.00	.00	.80	4.0	.24	.01	.00	.00	.00	.00
29	1.8	.00	.00	.00	---	13	.24	.00	.02	.00	.00	.00
30	1.2	.01	.00	.00	---	12	.20	.00	.06	.00	.00	.00
31	.60	---	.00	.00	---	8.0	---	.00	---	.00	.00	---
TOTAL	7.25	2.52	.29	.77	14.50	157.11	18.62	9.25	2.42	10.33	.00	.00
MEAN	.23	.084	.009	.025	.52	5.07	.62	.30	.081	.33	.000	.000
MAX	1.8	.40	.05	.10	1.5	32	1.9	1.3	.64	5.4	.00	.00
MIN	.00	.00	.00	.00	.00	.20	.20	.00	.00	.00	.00	.00
AC-FT	14	5.0	.6	1.5	29	312	37	18	4.8	20	.00	.00

CAL YR 1982 TOTAL 584.80 MEAN 1.60 MAX 90 MIN .00 AC-FT 1160
WTR YR 1983 TOTAL 223.06 MEAN .61 MAX 32 MIN .00 AC-FT 442

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	
OCT											
22...	1200	.02	1040	7.5	17.0	5.0	10.9	86	522	196	
DEC											
07...	0930	.05	940	7.1	- .9	1.5	10.6	75	180	18	
MAR											
02...	1045	.74	710	7.6	3.0	1.0	12.6	91	268	66	
09...	0835	.36	390	--	--	.0	--	--	--		--
15...	1215	4.5	190	--	2.0	.0	--	--	--		--
APR											
06...	1240	.39	710	7.9	9.0	4.0	12.4	--	283	66	
MAY											
18...	1420	.46	1270	8.2	17.0	15.0	14.3	145	542	193	
JUL											
07...	0800	.08	870	7.5	26.0	21.0	4.8	55	353	113	

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)
OCT											
22...	120	54	87	1.7	327	20	450	1020	1.4	.06	260
DEC											
07...	36	22	95	3.2	163	25	190	457	.62	.06	1600
MAR											
02...	58	30	31	.8	203	9.9	160	451	.61	.90	400
APR											
06...	64	30	32	.9	218	5.2	170	566	.77	.60	550
MAY											
18...	110	65	60	1.2	371	4.2	300	773	1.1	.96	330
JUL											
07...	77	39	47	1.1	262	15	210	569	.77	.12	570

06340540 WEST BRANCH ANTELOPE CREEK NEAR HAZEN, ND

LOCATION.--Lat 47°19'00", long 101°41'27", in NE¼SE¼SW¼ sec.3, T.144 N., R.87 W., Mercer County, Hydrologic Unit 10130201, on right bank 50 ft upstream from bridge on county road, 600 ft upstream from mouth, and 3.2 mi northwest of Hazen.

DRAINAGE AREA.--37.7 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to Sept. 30, 1983. Seasonal records only since 1982 (discontinued). Prior to October 1979, published as Antelope Creek Tributary near Hazen.

GAGE.--Water-stage recorder. Altitude of gage is 1,780 ft, from topographic map.

REMARKS.--Records poor.

AVERAGE DISCHARGE.--5 years (water year 1977-82), 3.44 ft^3/s, 2,490 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 600 ft^3/s Mar. 29, 1982, gage height, 12.62 ft; no flow much of the time each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 190 ft^3/s, Mar. 13, gage height, 10.25 ft, backwater from ice; maximum observed gage height, 10.72 ft, Mar. 6, no flow much of the time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					.00	5.0	4.4	1.4	.69	.90	.00	.00
2					.00	5.0	2.6	1.3	.69	1.5	.00	.00
3					.00	6.0	1.7	1.3	.69	1.0	.00	.00
4					.00	4.0	1.2	1.3	.69	.80	.00	.00
5					.00	15	.91	1.3	.69	.70	.00	.00
6					.00	80	1.1	1.2	.73	.60	.00	.00
7					.00	20	1.1	1.2	.69	.52	.00	.00
8					.00	10	.91	1.1	.69	.42	.00	.00
9					.00	5.0	1.0	1.1	.67	.41	.00	.00
10					.00	1.8	1.3	1.0	.61	.31	.00	.00
11					.00	10	.97	.91	.66	.19	.00	.00
12					.00	100	.97	1.5	.64	.00	.00	.00
13					1.0	150	1.3	1.9	.63	.00	.00	.00
14					2.0	60	1.6	1.8	.61	.00	.00	.00
15					1.5	28	3.9	1.7	.60	.00	.00	.00
16					2.0	18	2.2	1.6	.57	.00	.00	.00
17					2.5	15	1.6	3.7	.54	.00	.00	.00
18					3.0	12	1.3	2.8	.51	.00	.00	.00
19					3.5	10	1.6	2.1	.58	.00	.00	.00
20					4.0	8.0	1.4	1.5	.57	.00	.00	.00
21					4.0	3.0	1.4	1.3	.93	.03	.00	.00
22					4.5	1.5	1.2	1.2	9.4	.14	.00	.00
23					5.0	1.0	1.2	.97	7.3	.00	.00	.00
24					6.0	1.5	1.5	.85	.57	.00	.00	.00
25					5.0	5.0	1.5	.79	.46	.00	.00	.00
26					7.0	7.0	1.4	.77	.11	.00	.00	.00
27					6.0	4.0	1.4	.75	.38	.00	.00	.00
28					5.0	2.0	1.4	.72	.36	.00	.00	.00
29					---	14	1.5	.70	.80	.00	.00	.00
30					---	28	1.4	.69	1.0	.00	.00	.00
31					---	22	---	.69	---	.00	.00	---
TOTAL					62.00	651.8	46.96	41.14	34.06	7.52	.00	.00
MEAN					2.21	21.0	1.57	1.33	1.14	.24	.000	.000
MAX					7.0	150	4.4	3.7	9.4	1.5	.00	.00
MIN					.00	1.0	.91	.69	.11	.00	.00	.00
AC-FT					123	1290	93	82	68	15	.00	.00

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
OCT										
19...	1505	1.5	1000	--	4.0	6.6	12.0	98	--	--
MAR										
02...	1415	5.6	760	7.8	6.0	.5	13.4	95	180	--
15...	1545	28	205	7.7	8.0	.5	12.4	87	62	--
APR										
07...	1147	1.4	740	7.2	11.0	5.5	11.4	90	--	--
MAY										
17...	1625	7.1	1750	8.3	17.5	18.0	9.1	97	350	0
JUL										
07...	1330	.52	--	7.6	29.0	26.0	6.7	83	--	--

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
MAR												
02...	39	20	89	50	3.0	9.5	--	--	170	3.5	.10	12
15...	15	5.9	9.7	23	.6	8.5	--	--	27	1.5	<.10	11
MAY												
17...	66	45	330	67	7.9	7.0	536	5.2	540	4.3	.30	6.9

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN DIS-SOLVED (MG/L AS N) (00602)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)
MAR												
02...	473	--	.64	7.2	.17	.430	1.4	1.80	.40	1.4	1.6	.250
15...	127	--	.17	9.5	.47	.250	1.8	2.00	.50	1.5	2.0	.260
MAY												
17...	1290	1320	1.8	24.7	<.10	.070	1.8	1.90	.40	1.5	--	.260

DATE	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
MAR											
02...	.77	.180	2	100	<1	<10	1	820	190	1	120
15...	.80	.190	1	30	<1	<10	4	3300	380	<1	20
MAY											
17...	.80	.190	4	180	<1	<10	4	730	40	4	59

DATE	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)
MAR											
02...	.2	5	4	9	<1	20	6	14	17	.4	<.01
15...	.2	1	17	18	<1	30	9	21	17	.5	<.01
MAY											
17...	.3	17	27	44	<1	250	240	7	17	.1	<.01

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
MAR 15...	1545	28	98	7.3
MAY 17...	1625	7.1	60	1.2

06340700 MISSOURI RIVER NEAR STANTON, ND

LOCATION.--Lat 47°17'14", long 101°20'25", in SW¼ sec.16, T.144 N., R.84 W., McLean 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 mi^2, approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,650.00 ft National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Sept. 30, 1964, at datum 50.00 ft lower.

REMARKS.--Stage regulated by Lake Sakakawea (station 06338000).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 24.56 ft Feb. 22, 1965; minimum daily recorded, 10.60 ft Nov. 9, 1981.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	13.69	14.29	12.49	14.15	14.83	13.61	12.11		---	13.25	14.30
2	---	14.08	13.60	12.38	14.34	15.24	13.73	12.36		---	13.73	14.44
3	---	14.11	13.71	12.52	14.86	14.91	13.76	12.55		---	14.53	14.47
4	---	14.41	13.52	12.45	14.86	14.98	13.72	12.15		---	14.52	14.47
5	12.27	14.96	13.01	12.61	15.13	15.14	13.71	12.60		---	13.88	14.49
6	12.13	14.58	13.14	12.35	15.45	15.03	13.51	12.35		---	14.44	14.46
7	11.96	14.77	13.66	12.43	15.39	15.39	14.17	12.26		---	13.96	13.90
8	12.11	15.07	14.70	12.63	15.39	15.15	13.76	11.89		11.82	13.94	13.80
9	12.01	15.13	14.14	13.01	15.31	15.16	13.33	12.54		11.55	14.17	13.49
10	12.27	15.28	13.47	12.90	15.22	15.01	13.35	12.26		11.81	14.06	13.01
11	12.46	15.01	13.22	13.01	15.22	15.19	13.86	12.48		10.90	13.94	13.17
12	12.47	15.20	13.44	13.21	15.18	15.09	13.57	12.52		11.49	13.89	13.02
13	12.45	15.18	13.31	12.26	15.10	15.12	13.61	12.35		11.62	14.31	13.26
14	12.37	15.27	13.09	12.62	15.27	15.88	13.10	11.91		11.32	13.95	13.10
15	12.62	15.22	13.22	12.78	14.89	15.87	13.62	12.08		12.00	14.26	12.91
16	12.69	15.11	13.17	12.57	15.15	15.17	13.25	12.43		12.15	13.81	13.10
17	12.98	15.13	13.12	12.53	15.11	15.08	13.34	11.89		12.05	14.17	13.17
18	12.97	15.21	13.22	13.54	15.12	14.95	13.64	11.95		12.33	14.13	13.05
19	13.07	14.92	13.26	13.45	15.09	14.80	13.40	12.00		12.21	14.20	13.06
20	12.79	15.41	13.13	13.36	15.00	14.53	13.39	11.80		12.50	14.18	13.23
21	13.02	15.10	13.26	13.01	15.05	14.32	13.06	11.70		12.35	14.10	12.99
22	12.96	15.18	13.40	13.42	14.83	14.37	12.84	11.23		12.18	14.36	13.10
23	13.00	15.37	14.12	13.06	14.49	14.57	12.99	12.01		12.11	14.18	13.12
24	13.21	15.08	14.20	13.08	14.99	14.48	12.78	11.60		12.21	14.08	13.12
25	12.88	14.89	14.29	13.15	15.11	14.09	12.93	11.70		12.54	14.42	13.02
26	13.16	15.41	13.83	13.75	15.13	14.34	12.79	11.93		13.00	14.16	13.23
27	13.22	15.17	13.04	13.72	14.83	13.54	12.47	11.51		12.77	14.16	13.26
28	13.01	15.02	13.89	13.90	15.25	13.67	12.73	11.42		12.81	14.31	13.06
29	12.95	14.69	13.90	13.75	---	13.85	12.35	---		12.56	14.49	13.29
30	13.74	14.90	12.39	14.19	---	13.76	12.42	---		12.83	14.19	12.73
31	13.39	---	12.47	13.99	---	13.94	---	---		12.65	14.43	---
TOTAL	---	448.55	418.21	404.12	420.91	457.45	398.79	---		---	438.20	402.82
MEAN	---	14.95	13.49	13.04	15.03	14.76	13.29	---		---	14.14	13.43
MAX	---	15.41	14.70	14.19	15.45	15.88	14.17	---		---	14.53	14.49
MIN	---	13.69	12.39	12.26	14.15	13.54	12.35	---		---	13.25	12.73

06340780 ALDERIN CREEK NEAR FORT CLARK, ND

LOCATION.--Lat 47°16'09", long 101°18'34", in NW¼NW¼NE¼ sec.27, T.144 N., R.84 W., Mercer County, Hydrologic Unit 10130101, on left bank 80 ft upstream from box culvert on North Dakota Highway 200-A, 3.5 mi northwest of Ft. Clark, and 2.3 mi upstream from mouth.

DRAINAGE AREA.--21.9 mi^2, of which 1.1 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to September 1983 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 1,690 ft, from topographic map.

REMARKS.--Records poor. Flow occasionally affected by pumpage from mine dewatering upstream from the station.

AVERAGE DISCHARGE.--5 years, 2.45 ft^3/s, 1,775 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,540 ft^3/s Apr. 17, 1979, gage height, 9.95 ft, from rating curve extended above 200 ft^3/s on basis of contracted-opening measurement; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 75 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 9	0915	75	3.58	Mar. 13	0130	*440	[a]6.96
Mar. 6	--	260	Ice jam				

No flow for many days.

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	4.3	.10	.00	.00	1.2	12	.70	1.8	.40	.50	.00
2	.33	3.8	.10	.00	.00	5.5	9.3	.70	1.7	.40	.50	.00
3	.06	3.6	.10	.00	.00	5.3	4.0	.70	2.0	.30	.70	.00
4	.03	3.3	.10	.00	.00	5.1	3.2	1.9	1.6	.30	.50	.00
5	.02	2.9	.10	.00	.00	43	3.2	1.6	1.6	.30	.30	.00
6	15	9.2	.10	.00	.00	130	3.2	2.6	1.6	.20	.20	.00
7	10	9.5	.10	.00	.00	20	2.9	2.4	1.3	.08	.10	.00
8	2.0	6.3	.10	.00	.00	8.7	2.5	1.7	1.1	.36	.00	.00
9	55	5.7	.08	.00	.00	4.3	2.6	1.7	.80	.58	.00	.00
10	39	7.6	.06	.00	.00	1.5	2.6	1.1	.60	.39	.10	.00
11	21	7.0	.04	.00	.00	19	2.6	.90	.50	.17	.10	.00
12	13	6.0	.02	.00	.00	90	2.6	1.7	.40	.08	.05	.00
13	6.8	5.0	.00	.00	.00	180	2.6	2.3	.40	.06	.00	.00
14	3.8	4.0	.00	.00	.00	30	2.6	1.8	.40	.57	.00	.00
15	2.6	3.0	.00	.00	.00	7.1	2.6	1.5	.20	.52	.00	.00
16	2.2	2.1	.00	.00	.00	7.0	2.6	2.2	.20	.24	1.0	.00
17	1.6	4.0	.00	.00	.00	5.6	2.5	1.6	.30	.22	.71	.00
18	.09	2.5	.00	.00	.05	5.6	2.8	2.3	.40	.97	.59	.00
19	.09	1.9	.00	.00	.10	3.6	2.5	2.6	.70	.38	.50	.00
20	1.6	1.5	.00	.00	.15	2.6	2.8	2.1	.60	.38	.41	.00
21	1.9	1.2	.00	.00	.20	1.9	2.7	1.9	.50	.32	.43	.00
22	1.6	.50	.00	.00	.25	1.8	1.9	1.9	1.6	.24	.33	.00
23	1.6	.30	.00	.00	.30	1.6	1.4	1.7	.60	.40	.38	.00
24	1.8	.20	.00	.00	.35	1.9	1.3	1.6	.60	.30	.39	.00
25	1.9	.10	.00	.00	.40	2.9	1.3	1.5	.80	.20	.26	.00
26	1.9	.10	.00	.00	.50	6.8	1.2	1.9	.80	1.0	.47	.00
27	2.5	.10	.00	.00	.60	6.6	1.8	2.3	.80	1.5	.35	.00
28	18	.10	.00	.00	.70	6.1	1.2	2.0	.80	1.5	.20	.01
29	11	.10	.00	.00	---	11	1.1	2.0	.70	1.3	.09	.02
30	5.0	.10	.00	.00	---	19	1.0	2.0	.50	1.0	.04	.02
31	4.4	---	.00	.00	---	21	---	1.8	---	.80	.00	---
TOTAL	227.42	96.00	1.00	.00	3.60	655.7	86.6	54.70	25.90	15.46	9.20	.05
MEAN	7.34	3.20	.032	.000	.13	21.2	2.89	1.76	.86	.50	.30	.002
MAX	55	9.5	.10	.00	.70	180	12	2.6	2.0	1.5	1.0	.02
MIN	.02	.10	.00	.00	.00	1.2	1.0	.70	.20	.06	.00	.00
AC-FT	451	190	2.0	.00	7.1	1300	172	108	51	31	18	.10

CAL YR 1982 TOTAL 1648.14 MEAN 4.52 MAX 91 MIN .00 AC-FT 3270
WTR YR 1983 TOTAL 1175.63 MEAN 3.22 MAX 180 MIN .00 AC-FT 2330

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)
OCT											
20...	0945	1.1	1470	--	10.0	4.5	14.5	112	220	0	43
DEC											
08...	0825	.11	1850	8.5	-17.0	1.0	12.1	83	300	0	59
MAR											
01...	1455	.56	1150	8.0	6.0	.0	14.6	101	180	37	37
15...	1915	7.4	335	8.2	3.0	.5	13.6	94	--	--	--
APR											
04...	1240	2.6	705	8.2	9.0	1.0	13.3	93	120	0	26
MAY											
16...	1630	2.2	1950	8.7	19.0	11.5	12.2	113	270	0	50
JUL											
07...	1550	.10	1430	7.9	33.0	21.5	7.0	80	150	0	32
AUG											
16...	1250	1.0	1650	8.5	25.0	20.5	7.8	99	--	--	--

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)
OCT										
20...	27	240	7	378	--	380	--	--	--	4200
DEC										
08...	37	270	7	485	2.9	470	1170	1.6	.35	2600
MAR										
01...	21	180	6	142	2.7	110	867	1.2	1.3	2300
APR										
04...	14	94	4	204	2.3	150	429	.58	3.0	5800
MAY										
16...	36	320	9	454	1.9	440	1100	1.5	6.5	2700
JUL										
07...	18	240	9	260	7.0	300	840	1.1	.23	2700

06340900 MISSOURI RIVER NEAR HENSLER, ND

LOCATION.--Lat 47°16'45", long 101°11'03", in SW¼ 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 mi^2, approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,640.00 ft National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Sept. 30, 1964, at datum 40 ft lower.

REMARKS.--Stage regulated by Lake Sakakawea (station 06338000).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 27.77 ft Mar. 20, 1965; minimum daily recorded, 14.93 ft July 11, 1983.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.31	22.51	24.05	27.49	26.37	24.82	23.34	21.73	21.32	22.00	22.30	23.88
2	21.34	22.79	23.60	27.54	26.51	24.72	23.23	21.57	21.15	22.50	22.62	23.91
3	21.12	23.25	23.13	27.08	26.24	24.83	23.29	21.75	21.32	22.51	23.19	23.92
4	21.05	23.29	23.00	27.08	26.25	24.69	23.24	21.86	21.18	22.30	23.82	24.00
5	21.39	23.59	22.85	27.20	26.57	24.76	23.19	21.67	21.09	21.66	24.05	24.01
6	21.12	24.04	22.49	27.22	26.80	25.45	23.16	21.94	21.12	21.55	23.63	23.98
7	21.25	23.92	22.47	26.99	27.01	25.65	23.06	21.71	21.23	21.07	23.82	23.81
8	21.12	24.02	---	26.72	27.22	25.59	23.41	21.71	21.42	21.47	23.59	23.63
9	21.25	24.29	24.06	26.94	27.25	25.59	23.27	21.72	21.71	21.48	23.60	23.39
10	21.32	24.37	24.33	27.05	27.25	25.53	22.86	21.81	21.64	21.36	23.76	23.15
11	21.42	24.52	24.17	26.11	27.32	25.12	22.84	21.73	21.61	21.45	23.49	22.85
12	21.51	24.31	24.39	24.91	27.35	24.99	23.20	21.95	21.57	21.85	23.64	22.77
13	21.70	24.40	24.93	26.03	27.37	25.27	23.05	22.01	21.93	21.17	23.45	22.49
14	21.68	24.39	23.97	26.02	27.50	25.78	22.92	21.86	21.18	21.30	23.83	22.85
15	21.54	24.44	23.37	25.06	27.58	26.13	22.64	21.65	21.51	21.09	23.75	22.73
16	21.60	24.39	23.42	25.11	27.36	26.06	22.86	21.64	21.72	21.45	23.85	22.60
17	21.80	24.30	23.27	25.36	27.45	25.45	22.75	21.80	21.58	21.65	23.49	22.42
18	22.00	24.30	22.99	24.53	27.53	25.10	22.77	21.61	21.57	21.83	23.69	22.67
19	22.07	24.36	22.79	24.41	27.74	24.89	22.88	21.54	22.09	21.93	23.68	22.64
20	22.04	24.22	22.58	25.16	27.66	24.71	22.80	21.55	22.08	21.87	23.83	22.62
21	21.94	24.47	22.48	25.93	27.52	24.44	22.79	21.50	21.76	22.06	23.74	22.71
22	22.05	24.34	22.50	26.21	27.73	24.10	22.53	21.29	22.33	21.97	23.70	22.56
23	22.06	24.32	22.63	26.47	26.80	24.05	22.30	21.09	22.57	21.87	23.88	22.60
24	22.06	24.46	23.17	26.28	25.36	24.10	22.34	21.49	22.60	21.83	23.39	22.63
25	22.24	24.35	23.56	25.66	25.30	24.05	22.32	21.28	22.61	21.86	23.51	22.64
26	22.04	24.12	23.96	25.01	25.32	23.84	22.31	21.43	22.03	22.07	23.62	22.51
27	22.21	24.39	24.26	25.22	25.08	23.81	22.21	21.54	21.65	22.48	23.78	22.71
28	22.42	24.32	23.93	25.43	24.73	23.25	22.97	21.15	21.68	22.36	23.73	22.71
29	22.08	24.19	26.40	26.16	---	23.21	22.17	21.17	21.87	22.36	23.79	22.69
30	22.14	23.99	28.05	26.46	---	23.29	21.88	21.16	21.98	22.24	23.96	22.74
31	22.69	---	27.59	26.46	---	23.26	---	20.97	---	22.40	23.61	---
TOTAL	673.56	722.65	---	809.30	750.17	766.53	684.58	668.88	651.10	676.99	731.79	690.82
MEAN	21.73	24.09	---	26.11	26.79	24.73	22.82	21.58	21.70	21.84	23.61	23.03
MAX	22.69	24.52	---	27.54	27.74	26.13	23.41	22.01	22.61	22.51	24.05	24.01
MIN	21.05	22.51	---	24.41	24.73	23.21	21.88	20.97	21.09	21.07	22.30	22.42

06340905 COAL LAKE COULEE NEAR HENSLER, ND

LOCATION.--Lat 47°18'09", long 101°07'52", in SW¼SE¼SE¼ sec.12, T.144 N., R.83 W., McLean County, Hydrologic Unit 10130101, on right bank 100 ft upstream from bridge, on county road 4.5 mi west of Washburn, 3.6 mi northwest of Hensler, and 0.3 mi upstream from mouth.

DRAINAGE AREA.--70.5 mi^2 of which 53.3 mi^2 is probably noncontributing, revised.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 1,690 ft, from topographic map.

REMARKS.--Records poor.

AVERAGE DISCHARGE.--6 years, 2.83 ft^3/s, 2,050 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 926 ft^3/s Aug. 20, 1980, gage height, 8.61 ft, from rating extended above 600 ft^3/s on basis of a culvert computation of peak flow; no flow for many months each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 112 ft^3/s Mar. 12, gage height, 2.80 ft, ice jam, only peak above base of 40 ft^3/s, maximum observed gage height, 2.98 ft Mar. 1, ice jam; no flow for many months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.05	.35	.00	.00	.00	5.0	30	10	.30	.00	.00	.00
2	.04	.30	.00	.00	.00	6.0	30	8.4	.30	8.1	.00	.00
3	.03	.25	.00	.00	.00	6.0	30	5.9	.00	1.5	.00	.00
4	.02	.20	.00	.00	.00	5.0	30	5.0	.00	.50	.00	.00
5	.02	.15	.00	.00	.00	10	30	6.4	.00	.23	.00	.00
6	.10	.10	.00	.00	.00	8.0	30	7.7	.00	.16	.00	.00
7	.09	.07	.00	.00	.00	12	29	3.9	.00	.21	.00	.00
8	.08	.07	.00	.00	.00	13	29	2.7	.00	.05	.00	.00
9	.77	.07	.00	.00	.00	20	27	3.4	.00	.00	.00	.00
10	.84	.10	.00	.00	.00	40	27	1.5	.00	.00	.00	.00
11	.47	.06	.00	.00	.00	60	27	1.5	.00	.00	.00	.00
12	.20	.04	.00	.00	.01	100	29	6.4	.00	.00	.00	.00
13	.20	.04	.00	.00	.05	80	27	1.5	.00	.00	.00	.00
14	.15	.04	.00	.00	.10	70	28	2.0	.00	.00	.00	.00
15	.15	.05	.00	.00	.15	70	29	3.9	.00	.00	.00	.00
16	.10	.06	.00	.00	.30	60	27	3.6	.00	.00	.00	.00
17	.10	.07	.00	.00	.50	55	27	2.5	.00	.00	.00	.00
18	.10	.07	.00	.00	.70	50	25	1.7	.00	.00	.00	.00
19	.09	.07	.00	.00	1.0	45	24	2.5	.50	.00	.00	.00
20	.09	.05	.00	.00	.90	40	21	2.5	.40	.00	.00	.00
21	.09	.02	.00	.00	1.0	35	19	2.0	.30	.00	.00	.00
22	.08	.00	.00	.00	1.1	30	18	2.0	.25	.00	.00	.00
23	.08	.00	.00	.00	1.3	35	16	2.0	.15	.00	.00	.00
24	.07	.00	.00	.00	1.4	40	15	1.5	.07	.00	.00	.00
25	.07	.00	.00	.00	1.4	40	14	1.5	.02	.00	.00	.00
26	.07	.00	.00	.00	1.5	35	8.1	1.4	.01	.00	.00	.00
27	.09	.00	.00	.00	1.5	40	8.8	1.2	.00	.00	.00	.00
28	.47	.00	.00	.00	1.5	40	12	1.2	.00	.00	.00	.00
29	.50	.00	.00	.00	---	35	12	1.0	.00	.00	.00	.00
30	.47	.00	.00	.00	---	30	11	.80	.00	.00	.00	.00
31	.44	---	.00	.00	---	33	---	.70	---	.00	.00	---
TOTAL	6.12	2.23	.00	.00	14.41	1148.0	689.9	98.30	2.30	10.75	.00	.00
MEAN	.20	.074	.000	.000	.51	37.0	23.0	3.17	.077	.35	.000	.000
MAX	.84	.35	.00	.00	1.5	100	30	10	.50	8.1	.00	.00
MIN	.02	.00	.00	.00	.00	5.0	8.1	.70	.00	.00	.00	.00
AC-FT	12	4.4	.00	.00	29	2280	1370	195	4.6	21	.00	.00

CAL YR 1982 TOTAL 1737.31 MEAN 4.76 MAX 154 MIN .00 AC-FT 3450
WTR YR 1983 TOTAL 1972.01 MEAN 5.40 MAX 100 MIN .00 AC-FT 3910

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
OCT 20...	1415	.09	1780	--	6.0	5.0	13.7	108	319	.00
FEB 28...	1500	1.4	750	7.6	3.0	.5	15.8	110	163	.00
MAR 14...	1320	68	1070	8.4	1.0	.0	16.0	111	320	52
MAY 06...	1033	8.0	1240	8.1	10.0	10.0	--	--	399	65
JUN 23...	1236	.15	1880	8.3	27.5	21.0	8.4	94	160	.00

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)
OCT 20...	60	41	270	6.7	460	--	460	1110	1.5	.27	960
FEB 28...	34	19	88	3.1	199	9.7	170	479	.65	1.8	440
MAR 14...	54	45	100	2.5	268	2.0	260	675	.92	124	820
MAY 06...	61	60	140	3.1	335	5.1	340	867	1.2	18.7	690
JUN 23...	31	20	240	8.5	486	4.4	550	1220	1.7	.49	4900

06340930 BUFFALO CREEK NEAR WASHBURN, ND

LOCATION.--Lat 47°18'12", long 101°05'20", in SE¼SE¼SE¼ sec.8, T.144 N., R.82 W., McLean County, Hydrologic Unit 10130101, on right bank 70 ft upstream from culvert, on county road 1.2 mi above mouth, and 2.7 mi west of Washburn.

DRAINAGE AREA.--57.3 mi^2, of which 30.0 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1978 to September 1983 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 1,660 ft, from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--5 years, 2.77 ft^3/s, 2,010 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,800 ft^3/s Apr. 19, 1979, caused by the release of water that was impounded behind two road embankments upstream when the embankments washed out, by computation of peak flow through culvert and over road, gage height, 17.0 ft from floodmark; no flow for several months each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 20 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 6	1600	*140	[a]*9.20	Mar. 31	--	75	Ice jam

No flow for many days.

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.31	.05	2.5	.00	.00	2.5	31	.01	.00	.27	.05	.14
2	.16	.07	4.0	.00	.00	2.5	23	.01	.00	2.8	.06	.13
3	.14	.07	5.0	.00	.00	1.8	8.4	.01	.00	1.2	.05	.11
4	.65	.11	4.0	.05	.00	1.4	7.9	.00	.00	1.5	.05	.08
5	.31	.14	2.0	.10	.00	1.4	4.3	.00	.00	3.0	.05	.09
6	.14	.22	1.0	.10	.00	80	2.3	.00	.01	2.6	.05	.10
7	.11	.10	.10	.00	.00	35	1.5	.00	.01	1.9	.05	.09
8	.10	.07	.00	.05	.00	30	1.0	.00	.01	1.5	.05	.10
9	.11	.05	.00	.05	.00	25	.32	.00	.01	1.2	.11	.10
10	.10	.08	.00	.00	.00	30	.28	.00	.01	.91	.09	.09
11	.11	.07	.00	.00	.00	32	.21	.00	.02	.59	.07	.10
12	.11	.19	.00	.10	.00	65	.45	.08	.02	.33	.07	.09
13	.11	.24	.00	.30	.05	70	.57	.04	.02	.18	.07	.06
14	.10	.39	.00	.20	.50	34	.38	.02	.02	.11	.08	.08
15	.08	.70	.00	.00	1.0	29	.08	.02	.02	.06	.10	.19
16	.08	.75	.00	.00	2.0	26	.05	.00	.02	.05	.14	.10
17	.08	.22	.05	.00	2.5	30	.04	.00	.02	.05	.11	.08
18	.08	.11	.08	.00	3.0	33	.03	.01	.02	.13	.10	.07
19	.08	.08	.10	.00	3.5	34	.04	.00	.50	.09	.07	.09
20	.08	.07	.00	.00	1.5	33	.05	.00	.11	.07	.06	.09
21	.07	.04	.00	.00	2.5	31	.05	.00	.08	.06	.05	.10
22	.08	.04	.00	.00	2.4	27	.05	.00	.23	.02	.07	.10
23	.08	.02	.00	.00	2.3	24	.05	.00	.07	.02	.28	.10
24	.08	.05	.00	.00	2.2	25	.05	.00	.06	.02	.20	.10
25	.07	.02	.00	.00	2.0	26	.05	.00	.05	.03	.12	.10
26	.07	.02	.00	.00	2.5	25	.04	.00	.05	.03	.13	.12
27	.11	.08	.00	.00	2.4	25	.02	.00	.05	.05	.15	.12
28	.24	.80	.00	.00	2.0	29	.01	.00	.05	.05	.14	.13
29	.11	1.5	.00	.00	---	31	.01	.00	.18	.05	.12	.17
30	.05	2.5	.00	.00	---	39	.02	.00	.20	.06	.14	.16
31	.04	---	.00	.00	---	48	---	.00	---	.05	.14	---
TOTAL	4.04	8.85	18.83	.95	32.35	925.6	82.25	.20	1.84	18.98	3.02	3.18
MEAN	.13	.30	.61	.031	1.16	29.9	2.74	.006	.061	.61	.097	.11
MAX	.65	2.5	5.0	.30	3.5	80	31	.08	.50	3.0	.28	.19
MIN	.04	.02	.00	.00	.00	1.4	.01	.00	.00	.02	.05	.06
AC-FT	8.0	18	37	1.9	64	1840	163	.4	3.6	38	6.0	6.3

CAL YR 1982 TOTAL 1069.29 MEAN 2.93 MAX 198 MIN .00 AC-FT 2120
WTR YR 1983 TOTAL 1100.09 MEAN 3.01 MAX 80 MIN .00 AC-FT 2180

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
MAR										
01...	1140	2.6	630	7.5	.0	.0	15.2	105	150	--
14...	1645	37	--	--	4.0	.0	15.8	109	81	--
JUL										
21...	1037	.06	2100	8.0	27.5	23.5	7.6	90	170	0
SEP										
09...	1005	.10	2600	8.2	17.0	15.5	5.6	57	180	0

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
MAR											
01...	36	15	62	42	2.3	30	--	--	100	4.9	.10
14...	18	8.7	40	45	2.0	19	--	--	84	2.8	<.10
JUL											
21...	29	24	450	84	15	12	759	15	370	5.4	.40
SEP											
09...	28	27	610	87	20	9.7	941	11	510	13	.50

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)
MAR											
01...	17	416	--	.57	2.9	<.10	.240	2.8	3.00	.80	2.2
14...	15	265	--	.36	26.5	.29	.100	2.0	2.10	.50	1.6
JUL											
21...	12	1330	1360	1.8	.22	<.10	.180	1.5	1.70	.00	1.7
SEP											
09...	9.5	1770	1770	2.4	.48	<.10	.110	1.1	1.20	.10	1.1

DATE	NITRO-GEN DIS-SOLVED (MG/L AS N) (00602)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)
MAR										
01...	--	.560	1.7	.510	2	90	<1	<10	2	430
14...	1.9	.340	1.0	.260	2	60	<1	<10	2	3000
JUL										
21...	--	.340	1.0	.340	--	640	--	--	--	720
SEP										
09...	--	.100	.31	.040	3	760	<1	<10	2	220

BUFFALO CREEK BASIN

06340930 BUFFALO CREEK NEAR WASHBURN ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)
MAR										
01...	290	1	140	.3	7	1	8	1	40	30
14...	300	<1	34	.1	7	10	17	<1	60	40
JUL										
21...	360	--	40	--	--	--	--	--	--	--
SEP										
09...	140	5	30	<.1	4	1	5	<1	20	10

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90) (80060)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)
MAR										
01...	13	--	--	--	--	--	--	28	.6	<.01
14...	20	--	--	--	--	--	--	19	.8	<.01
JUL										
21...	--	--	--	--	--	--	--	21	--	--
SEP										
09...	10	48	<.4	<23	<.4	<22	<.4	17	.2	<.01

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)
MAR				
14...	1645	37	122	12
JUL				
21...	1037	.06	166	.03
SEP				
09...	1005	.10	455	.12

06341000 MISSOURI RIVER AT WASHBURN, ND

LOCATION.--Lat 47°17'20", long 101°02'15", in SE¼SW¼ sec.14, T.144 N., R.82 W.,McLean County, Hydrologic Unit 10130101, on left bank near municipal water plant in Washburn, and at mile 1,355.

DRAINAGE AREA.--184,000 mi^2, approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,640.00 ft National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1964, at datum 40 ft lower.

REMARKS.--Stage regulated by Lake Sakakawea (station 06338000).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 22.76 ft Jan. 11, 1964; minimum daily recorded, 9.73 ft May 7, 1978.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.89	12.97	13.73	12.10	15.01	14.17	13.16	11.74	11.11	12.34	12.49	13.77
2	11.71	13.40	13.29	11.99	14.96	14.55	13.31	11.91	11.42	12.30	13.17	13.73
3	11.56	13.22	13.20	12.08	17.09	14.14	13.24	12.11	11.21	12.26	13.69	13.82
4	11.90	13.56	13.19	11.97	17.76	14.30	13.17	11.79	11.18	11.64	13.96	13.81
5	11.60	14.09	12.68	12.13	18.00	14.48	13.17	12.14	11.22	11.41	13.49	13.80
6	11.75	13.86	12.72	11.97	18.20	14.54	13.08	11.91	11.34	10.92	13.76	13.85
7	11.69	13.99	12.85	11.94	18.34	14.62	13.38	11.80	11.45	11.43	13.47	13.46
8	11.55	14.25	13.88	---	18.27	14.79	13.38	11.66	11.86	11.44	13.49	13.25
9	11.67	14.24	13.83	12.45	18.25	14.59	12.84	11.96	11.79	11.31	13.58	13.11
10	11.85	14.47	13.15	12.25	17.97	14.35	12.87	11.89	11.72	11.64	13.56	12.82
11	11.85	14.24	12.75	12.43	17.71	14.48	13.23	12.01	11.71	10.77	13.44	12.69
12	12.04	14.37	13.09	12.40	17.26	14.42	13.14	12.14	12.30	11.12	13.56	12.69
13	12.02	14.41	12.77	12.12	16.38	14.53	13.02	11.88	11.11	11.39	13.67	12.88
14	11.93	14.48	12.75	11.91	15.37	14.83	12.66	11.76	11.70	11.00	13.56	---
15	11.99	14.46	12.73	12.67	14.52	15.24	12.96	11.77	11.90	11.51	13.68	---
16	12.24	14.39	12.61	12.21	14.42	14.65	12.79	11.72	11.72	11.64	13.18	---
17	12.42	14.38	12.68	12.09	14.35	14.40	12.91	11.66	11.73	11.87	13.56	---
18	12.45	14.48	12.82	13.76	14.32	14.33	12.97	11.59	12.20	11.86	13.47	---
19	12.36	14.25	12.66	15.08	14.29	14.24	12.89	11.57	12.18	11.80	13.68	---
20	12.27	14.62	12.64	14.90	14.31	14.19	12.96	11.53	11.72	12.22	13.52	---
21	12.45	14.39	12.73	14.06	14.21	13.68	12.69	11.34	12.32	12.02	13.51	---
22	12.46	14.41	12.81	13.75	14.26	13.77	12.45	11.07	12.61	11.95	13.70	---
23	12.43	14.57	13.40	13.08	13.75	13.83	12.39	11.62	12.75	11.96	13.60	---
24	12.64	14.55	13.55	12.48	14.18	13.89	12.44	11.22	12.69	11.92	13.51	---
25	12.39	14.14	13.65	12.99	14.29	13.63	12.51	11.43	12.08	11.98	13.62	---
26	12.58	14.60	13.45	14.56	14.48	13.90	12.44	11.67	11.69	12.59	13.61	---
27	12.85	14.42	12.41	16.08	14.15	13.07	11.98	11.18	11.64	12.37	13.58	---
28	12.32	14.34	13.35	16.80	14.47	13.08	12.36	11.28	11.85	12.42	13.58	---
29	12.45	14.08	13.79	15.73	---	13.32	12.17	11.24	11.90	12.28	13.82	---
30	13.11	14.30	12.74	15.39	---	13.22	11.78	10.99	12.16	12.54	13.61	---
31	12.70	---	12.13	15.19	---	13.27	---	11.41	---	12.35	13.70	---
TOTAL	377.12	425.93	404.03	---	440.57	438.50	384.34	360.99	354.26	366.25	419.82	---
MEAN	12.17	14.20	13.03	---	15.73	14.15	12.81	11.64	11.81	11.81	13.54	---
MAX	13.11	14.62	13.88	---	18.34	15.24	13.38	12.14	12.75	12.59	13.96	---
MIN	11.55	12.97	12.13	---	13.75	13.07	11.78	10.99	11.11	10.77	12.49	---

06341800 PAINTED WOODS CREEK NEAR WILTON, ND

LOCATION.--Lat 47°16'30", long 100°47'30", in SW¼SW¼ 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 mi^2, approximately, of which about 310 mi^2 is probably noncontributing.

PERIOD OF RECORD.--October 1957 to September 1981, August 1982 to September 1983.

GAGE.--Water-stage recorder. Altitude of gage is 1,760 ft, from topographic map.

REMARKS.--Records good. Since the fall of 1982 Missouri River Basin water has been diverted into the stream at a point several miles upstream.

AVERAGE DISCHARGE.--24 years (water years 1958-81), 8.07 ft^3/s, 5,850 acre-ft/yr; median of yearly mean discharges, 6.7 ft^3/s, 4,850 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,050 ft^3/s Apr. 19, 1979, gage height, 9.64 ft; no flow for many days most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 500 ft^3/s Mar. 13, gage height, 6.97 ft, backwater from ice; minimum daily discharge 0.12 ft^3/s Aug. 29, Sept. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	17	28	10	12	15	79	11	5.0	7.0	.43	.14
2	6.5	16	35	10	12	17	64	10	4.6	8.0	.38	.13
3	6.5	15	32	10	11	22	67	9.5	4.4	11	.32	.12
4	6.5	13	32	10	11	26	49	8.8	4.1	12	.24	.12
5	6.0	12	30	11	10	53	49	8.3	4.1	11	.22	.13
6	8.0	10	28	12	10	391	47	7.6	3.5	9.7	.28	.13
7	8.5	14	26	18	11	174	45	7.3	3.6	8.6	.26	.15
8	9.4	23	25	17	12	155	42	7.0	3.4	7.0	.24	.17
9	31	28	25	19	13	155	39	6.2	3.1	5.9	.29	.22
10	50	29	25	16	14	136	36	5.9	2.8	4.5	.29	.23
11	44	29	25	15	14	121	34	6.7	2.6	3.5	.26	.26
12	40	21	25	17	15	176	36	19	2.4	2.8	.21	.34
13	33	21	25	18	16	364	34	42	2.2	2.4	.19	1.4
14	26	21	24	19	23	410	28	38	2.0	2.1	.16	6.9
15	20	22	24	18	21	303	30	30	1.6	1.8	.18	8.0
16	17	25	24	17	20	237	27	22	1.8	1.5	.21	12
17	15	26	23	15	19	179	25	16	1.7	1.3	.20	14
18	14	26	22	16	26	119	24	13	1.9	1.4	.21	15
19	13	27	21	16	22	94	24	12	2.5	1.6	.17	16
20	13	26	21	13	13	86	23	13	3.3	1.4	.17	16
21	12	25	20	12	10	78	23	12	4.0	1.1	.17	17
22	12	25	20	11	9.5	70	22	11	9.7	.99	.14	19
23	11	25	19	11	14	66	21	9.8	26	.84	.21	20
24	11	26	18	11	14	62	18	9.4	50	.65	.20	20
25	10	25	17	10	14	57	17	8.9	46	.55	.21	20
26	10	25	16	11	13	53	15	8.0	25	.62	.21	20
27	10	25	16	11	16	52	15	7.4	14	.66	.18	19
28	12	26	15	11	19	50	13	6.7	9.8	.65	.15	19
29	19	27	12	11	---	53	13	6.1	8.1	.54	.12	20
30	18	28	11	12	---	51	12	5.7	7.4	.55	.13	20
31	16	---	10	13	---	78	---	5.4	---	.47	.14	---
TOTAL	514.4	678	694	421	414.5	3903	971	383.7	260.6	112.12	6.77	285.44
MEAN	16.6	22.6	22.4	13.6	14.8	126	32.4	12.4	8.69	3.62	.22	9.51
MAX	50	29	35	19	26	410	79	42	50	12	.43	20
MIN	6.0	10	10	10	9.5	15	12	5.4	1.6	.47	.12	.12
AC-FT	1020	1340	1380	835	822	7740	1930	761	517	222	13	566

WTR YR 1983 TOTAL 8644.53 MEAN 23.7 MAX 410 MIN .12 AC-FT 17150

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1959-64, 1970 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
NOV 08...	1555	21	2400	8.5	--	2.0	6.3	629	104
DEC 09...	1320	25	4600	8.0	2.0	.0	2.0	1395	1020
MAR 04...	1104	23	950	7.6	--	.5	1.6	260	63
APR 01...	1059	85	690	8.0	--	.5	9.5	169	1.9
AUG 30...	1102	.13	1900	8.4	23.0	25.0	5.1	352	.00
SEP 28...	1201	19	3350	8.4	14.0	14.0	3.0	1247	917

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
NOV 08...	87	100	310	51	5.5	15	526	3.2	760	16	.20
DEC 09...	130	260	540	45	6.4	54	381	7.3	2000	82	.10
MAR 04...	43	37	96	43	2.6	16	197	9.6	280	9.2	<.10
APR 01...	28	24	80	49	2.7	9.1	167	3.2	180	4.7	<.10
AUG 30...	29	68	350	67	8.2	13	574	4.4	500	34	.30
SEP 28...	120	230	490	45	6.1	49	331	2.5	2000	53	.10

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
NOV 08...	17	1590	1621	2.2	90.2	<.10	.030	.09	420	110
DEC 09...	6.4	3410	3302	4.6	230	<.10	<.010	--	1000	40
MAR 04...	17	665	617	.90	41.8	.12	.070	.21	150	250
APR 01...	12	426	439	.58	98.2	.13	.150	.46	90	180
AUG 30...	2.4	1330	1342	1.8	.47	<.10	.040	.12	640	25
SEP 28...	9.6	3190	3151	4.3	164	<.10	.010	.03	920	40

06342020 MISSOURI RIVER AT PRICE, ND

LOCATION.--Lat 47°04'47", long 100°55'55", in NW¼ 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 mi^2, approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,620.00 ft National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Sept. 30, 1964, at datum 20 ft lower.

REMARKS.--Stage regulated by Lake Sakakawea (station 06338000).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 30.12 ft Jan. 22, 1967; minimum daily recorded, 17.76 ft Mar. 31, 1968.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.64	20.78	21.61	20.24	25.61	22.23	21.28	19.79	19.13	20.27	20.44	21.86
2	19.62	21.15	21.13	20.04	25.43	22.42	21.31	19.75	19.19	20.47	21.12	21.75
3	19.38	21.12	---	20.35	24.98	22.23	21.24	19.93	19.12	20.39	21.61	21.86
4	19.57	21.34	---	20.15	25.53	22.25	21.18	19.80	19.21	19.75	22.15	21.87
5	19.54	21.80	---	20.08	25.69	22.42	21.17	19.90	19.09	19.32	21.85	21.72
6	19.50	21.86	---	20.03	25.83	22.70	21.11	19.85	19.16	19.20	21.72	21.86
7	19.52	21.84	20.78	19.89	25.98	22.62	21.23	19.72	19.25	19.35	21.74	21.67
8	19.33	22.03	21.38	19.93	25.99	22.72	21.49	19.63	19.68	19.32	21.56	21.35
9	19.54	22.11	21.88	20.24	25.93	22.86	20.99	19.72	19.73	19.27	21.57	21.20
10	19.64	22.30	21.12	20.19	25.94	22.49	20.90	19.81	19.64	19.36	21.62	21.98
11	19.65	22.21	20.74	20.31	25.97	22.51	21.09	19.87	19.62	19.16	21.52	---
12	19.86	22.15	21.08	21.00	25.89	22.52	21.18	20.00	19.97	19.06	21.59	---
13	19.87	22.27	20.57	20.74	25.91	22.71	20.99	19.80	19.51	19.22	21.59	---
14	19.79	22.28	20.56	20.18	25.96	22.87	20.81	19.81	19.55	19.14	21.66	---
15	19.72	22.31	20.49	21.27	25.44	23.38	20.81	19.60	19.78	19.32	21.65	---
16	20.03	22.24	20.41	21.94	24.73	22.93	20.87	19.50	19.72	19.54	21.36	---
17	20.14	22.17	20.49	21.98	23.83	22.48	20.87	19.73	19.65	19.82	21.58	---
18	20.30	22.24	20.59	24.12	23.16	22.41	20.83	19.49	19.89	19.77	21.58	---
19	20.23	22.14	20.47	25.89	22.59	22.26	20.91	19.46	20.24	19.84	21.75	---
20	20.24	22.27	20.46	26.53	22.48	22.28	20.93	19.45	19.77	20.08	21.62	---
21	20.22	22.25	20.51	26.53	22.33	21.77	20.74	19.30	20.09	20.06	21.62	---
22	20.31	22.18	20.56	26.67	22.35	21.78	20.47	19.23	20.68	20.03	21.70	---
23	20.24	22.29	21.04	26.38	21.84	21.82	20.36	19.33	20.72	19.94	21.72	---
24	20.37	22.39	21.39	25.46	22.04	21.95	20.47	19.23	20.90	19.97	21.63	---
25	20.33	22.01	21.58	24.39	22.28	21.78	20.43	19.25	20.17	19.91	21.63	---
26	20.32	22.13	21.82	24.64	22.47	21.82	20.41	19.41	19.83	20.51	21.74	---
27	20.59	22.25	20.53	24.86	22.24	21.39	20.01	19.21	19.57	20.53	21.64	---
28	20.27	22.15	21.05	25.40	22.31	21.14	20.25	19.10	19.82	20.46	21.66	---
29	20.30	21.96	21.46	25.84	---	21.28	20.16	19.11	19.85	20.40	21.81	---
30	20.65	21.81	21.10	25.69	---	21.28	19.75	19.05	20.12	20.49	21.78	---
31	20.69	---	20.42	25.55	---	21.29	---	19.14	---	20.48	21.72	---
TOTAL	619.40	660.03	---	706.51	680.73	688.59	624.24	605.97	592.65	614.43	669.93	---
MEAN	19.98	22.00	---	22.79	24.31	22.21	20.81	19.55	19.76	19.82	21.61	---
MAX	20.69	22.39	---	26.67	25.99	23.38	21.49	20.00	20.90	20.53	22.15	---
MIN	19.33	20.78	---	19.89	21.84	21.14	19.75	19.05	19.09	19.06	20.44	---

06342260 SQUARE BUTTE CREEK BELOW CENTER, ND

LOCATION.--Lat 47°03'25", long 101°11'35", in SE¼ 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 mi^2.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 1,865 ft, from topographic map.

REMARKS.--Records fair. 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 August 1975.

AVERAGE DISCHARGE.--17 years, 12.1 ft^3/s, 8,770 acre-ft/yr; median of yearly mean discharges, 13 ft^3/s, 9,420 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,700 ft^3/s June 24, 1966, gage height, 14.35 ft; no flow Feb. 14-26, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,760 ft^3/s Mar. 13, gage height, 9.22 ft; minimum daily 0.40 ft^3/s Jan. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	3.4	3.2	.60	1.7	34	30	2.5	1.0	1.7	1.2	.87
2	2.5	3.4	3.5	.48	1.5	35	50	2.2	1.1	1.7	1.7	.66
3	2.4	2.9	3.0	.40	1.5	37	50	2.3	.88	1.6	.98	.73
4	2.6	2.6	2.5	.44	1.5	19	50	2.3	.70	2.0	.81	.68
5	1.2	2.6	2.0	.46	1.5	62	41	2.1	.72	2.0	.74	1.2
6	2.0	3.0	2.0	.70	1.4	900	33	2.2	.64	1.9	1.0	.94
7	1.3	3.2	1.4	.80	1.5	200	33	2.1	.91	1.7	.84	1.0
8	1.1	2.9	1.3	.90	1.5	67	34	1.6	.92	1.5	.55	1.2
9	4.1	2.9	1.5	2.0	1.5	67	17	1.8	.80	1.8	.89	1.3
10	3.9	3.3	1.5	2.0	1.5	75	9.4	1.7	.93	1.6	.66	1.5
11	2.0	3.6	1.4	2.5	1.5	69	9.3	1.7	.71	1.4	.59	1.6
12	1.5	3.4	1.6	3.0	1.5	249	9.3	2.4	.80	1.2	.51	1.6
13	1.5	3.4	1.9	3.3	2.0	969	11	2.4	.75	.92	.57	1.7
14	1.6	3.4	1.8	3.6	2.5	171	10	2.0	.78	1.4	.49	1.5
15	1.6	3.3	1.5	3.2	3.0	62	10	1.4	.75	1.2	.59	1.6
16	1.3	3.1	1.4	3.0	3.5	36	10	1.2	.75	1.2	1.3	1.6
17	1.6	3.0	1.5	2.7	4.0	44	9.6	.95	.97	1.2	1.8	1.3
18	1.9	3.0	1.7	2.6	9.0	36	8.6	.82	.74	2.1	1.9	1.2
19	1.7	3.0	1.3	2.7	17	35	8.6	.95	2.1	1.2	1.1	1.2
20	1.7	3.0	1.1	2.6	30	50	8.6	1.0	1.4	2.0	1.3	1.2
21	1.7	3.0	1.1	2.6	29	41	8.5	1.3	1.4	1.0	1.3	1.2
22	1.9	3.0	1.1	2.6	30	37	8.3	1.3	2.0	1.3	1.2	1.4
23	2.3	2.7	1.1	2.6	30	37	7.9	1.1	1.1	1.0	1.5	1.5
24	2.5	2.5	.83	2.3	30	26	4.9	1.4	1.0	1.1	1.4	1.7
25	2.3	2.5	.80	2.5	31	9.8	3.7	1.4	1.4	1.1	1.5	1.6
26	2.4	2.5	.78	2.3	31	9.6	4.0	1.3	1.1	.93	1.2	1.6
27	2.8	2.5	.74	2.1	32	9.5	3.6	1.1	1.3	1.1	.81	1.5
28	3.7	2.7	.56	2.3	33	9.6	3.4	1.2	1.7	1.5	1.1	1.1
29	3.8	3.0	.64	2.5	---	9.4	3.6	1.4	2.0	.67	.76	1.5
30	3.0	3.0	.54	1.9	---	9.7	2.9	1.5	1.9	1.5	1.0	1.8
31	3.1	---	.59	1.7	---	20	---	1.5	---	1.6	.92	---
TOTAL	69.2	89.8	45.88	63.38	335.1	3435.6	493.2	50.12	33.25	44.12	32.21	39.48
MEAN	2.23	2.99	1.48	2.04	12.0	111	16.4	1.62	1.11	1.42	1.04	1.32
MAX	4.1	3.6	3.5	3.6	33	969	50	2.5	2.1	2.1	1.9	1.8
MIN	1.1	2.5	.54	.40	1.4	9.4	2.9	.82	.64	.67	.49	.66
AC-FT	137	178	91	126	665	6810	978	99	66	88	64	78

CAL YR 1982	TOTAL	9428.75	MEAN 25.8	MAX 1340	MIN .25	AC-FT	18700	
WTR YR 1983	TOTAL	4731.34	MEAN 13.0	MAX 969	MIN .40	AC-FT	9380	

SQUARE BUTTE CREEK BASIN

06342260 SQUARE BUTTE CREEK BELOW CENTER, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
05...	1010	.86	1400	--	8.5	10.0	--	--	--	--	--
DEC											
07...	1315	1.4	1500	--	.0	3.5	--	--	--	--	--
JAN											
19...	0902	2.7	1350	--	6.0	4.0	--	--	--	--	--
MAR											
03...	1338	36	1360	E8.4	--	10.5	297	56	51	41	190
10...	1315	75	1150	--	- .9	6.5	--	--	--	--	--
16...	1325	37	950	--	.0	7.5	--	--	--	--	--
APR											
07...	1530	69	890	7.5	15.0	11.5	--	--	--	--	--
MAY											
16...	1247	1.5	1650	8.3	11.0	9.5	--	--	--	--	--
JUL											
08...	1140	1.4	--	7.9	29.0	24.5	--	--	--	--	--
AUG											
17...	1500	1.8	1440	8.1	33.0	25.0	381	15	86	40	190

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
MAR										
03...	56	4.9	18	275	9	240	--	460	5.4	.40
AUG										
17...	51	4.4	8.7	446	0	370	5.6	420	8.1	.30

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BORON, DIS-SOLVED (UG/L AS B) (01020)
MAR										
03...	1.2	962	925	1.3	93.0	.40	.020	2	180	1500
AUG										
17...	17	980	991	1.3	4.8	--	--	0	--	670

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
MAR									
03...	4	50	0	31	30	.3	2	390	7
AUG									
17...	--	20	0	38	30	.3	0	1100	--

E - Estimated pH indicates laboratory determination.

06342450 BURNT CREEK NEAR BISMARCK, ND

LOCATION.--Lat 46°54'54", long 100°48'48", in SW¼NW¼SW¼ sec.29, T.140 N., R.80 W., Burleigh County, Hydrologic Unit 10130101, on left bank on upstream side of county highway bridge, and 7 mi northwest of Bismarck.

DRAINAGE AREA.--108 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1967 to current year (seasonal records only since 1982).

GAGE.--Water-stage recorder. Altitude of gage is 1,690 ft, from topographic map.

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

AVERAGE DISCHARGE.--15 years (water years 1968-82), 8.03 ft^3/s, 5,820 acre-ft/yr; median of yearly mean discharges, 4.7 ft^3/s, 3,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,000 ft^3/s Apr. 18, 1979, gage height, 16.93 ft, from rating curve extended above 2,200 ft^3/s on basis of culvert and flow-over-road measurement of peak flow; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,000 ft^3/s Mar. 6, gage height, 14.11 ft, backwater from ice; no flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00				.00	10	7.7	3.7	.60	.07	.00	.00
2	.00				.00	10	5.9	3.5	.52	.08	.00	.00
3	.00				.00	15	7.5	3.4	.40	.06	.00	.00
4	.00				.00	20	7.5	3.4	.32	.07	.00	.00
5	.00				.00	175	7.3	3.3	.29	.06	.00	.00
6	.00				.00	800	7.3	3.2	.27	.04	.00	.00
7	.00				.00	110	6.5	2.8	.26	.01	.00	.00
8	.00				.00	30	5.9	2.8	.22	.01	.00	.00
9	.00				.00	25	5.6	2.6	.20	.00	.00	.00
10	.00				.00	20	5.2	2.6	.17	.00	.00	.00
11	3.0				.00	20	4.9	2.5	.15	.00	.00	.00
12	6.2				.00	125	5.4	4.1	.13	.00	.00	.00
13	3.9				1.0	360	6.0	12	.15	.00	.00	.00
14	2.3				1.1	50	5.3	10	.13	.00	.00	.00
15	1.6				1.2	20	5.0	6.9	.10	.00	.00	.00
16	1.2				1.4	15	4.7	5.0	.08	.00	.00	.00
17	.75				3.0	10	4.7	4.4	.07	.00	.00	.00
18	.46				45	10	4.6	3.8	.07	.00	.00	.00
19	.49				35	10	4.3	3.4	.14	.00	.00	.00
20	.32				30	10	4.4	3.0	.18	.00	.00	.00
21	.29				30	10	4.6	2.9	.15	.00	.00	.00
22	.32				30	10	4.7	2.8	.12	.00	.00	.00
23	.29				30	10	4.5	2.6	.09	.00	.00	.00
24	.29				30	9.1	4.4	2.2	.10	.00	.00	.00
25	.29				30	9.5	4.3	1.9	.11	.00	.00	.00
26	.34				20	10	4.3	1.7	.08	.00	.00	.00
27	.43				15	10	4.1	1.4	.05	.00	.00	.00
28	.80				10	10	3.8	1.1	.06	.00	.00	.00
29	1.7				---	11	4.2	.96	.05	.00	.00	.00
30	3.1				---	12	3.8	.80	.07	.00	.00	.00
31	3.9				---	10	---	.76	---	.00	.00	---
TOTAL	31.97				312.70	1956.6	158.4	105.52	5.33	.40	.00	.00
MEAN	1.03				11.2	63.1	5.28	3.40	.18	.013	.000	.000
MAX	6.2				45	800	7.7	12	.60	.08	.00	.00
MIN	.00				.00	9.1	3.8	.76	.05	.00	.00	.00
AC-FT	63				620	3880	314	209	11	.8	.00	.00

06342450 BURNT CREEK NEAR BISMARCK, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
19...	1015	.44	1200	--	2.0	6.0	--	--	--	--	--
FEB											
18...	1025	50	280	--	3.0	.0	--	--	--	--	--
25...	1500	31	290	7.6	3.0	.0	100	0	22	12	11
MAR											
08...	1230	24	220	--	--	.0	--	--	--	--	--
17...	1006	11	280	--	- .9	.0	--	--	--	--	--
APR											
05...	1155	7.2	600	--	6.0	3.0	--	--	--	--	--
MAY											
20...	0950	2.9	1250	--	11.5	11.0	--	--	--	--	--
JUL											
01...	1000	.08	1560	7.9	23.0	19.0	470	58	75	69	190

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
FEB												
25...	16	.5	15	140	0	110	5.6	29	2.4	.10	12	210
JUL												
01...	46	4	11	505	0	410	10	470	11	.30	2.2	1080

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
FEB												
25...	170	.29	18	2	110	240	1	7	10	.3	0	130
JUL												
01...	1100	1.5	.23	3	150	30	0	90	110	.4	0	890

06342500 MISSOURI RIVER AT BISMARCK, ND

LOCATION.--Lat 46°48'51", long 100°49'12", in SE¼NW¼SE¼ 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 mi^2, approximately.

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, revised, National Geodetic Vertical Datum of 1929. See WSP 1729 or 1917 for history of changes prior to Sept. 30, 1937.

REMARKS.--Records good. Many diversions from tributaries. Flow regulated by Lake Sakakawea (station 06338000) 75.4 mi upstream since November 1953. Several observations of water temperature and specific conductance were made during the year and are available in files of Bismarck District office.

AVERAGE DISCHARGE.--55 years (1928-83), 22,740 ft^3/s, 16,480,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 500,000 ft^3/s Apr. 6, 1952, gage height, 27.90 ft. Since completion of Garrison Dam in 1953, maximum discharge, 68,900 ft^3/s July 13, 1975, gage height, 14.24 ft; maximum gage height, 14.58 ft Dec. 18, 1979, backwater from ice. Minimum discharge, about 1,800 ft^3/s Jan. 3, 1940; minimum gage height, 1.35 ft Sept. 4, 1934, present site and datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known, 31.6 ft Mar. 31, 1881, present site and datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 41,100 ft^3/s Mar. 15, gage height, 10.77 ft; maximum gage height, 14.80 ft Jan. 13, backwater from ice; minimum daily, 15,700 ft^3/s July 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19100	23800	31200	17900	26500	33400	26200	19700	17600	21700	21800	28800
2	19300	25000	28400	19300	27300	32000	25800	19000	16800	22800	23600	28800
3	18300	26600	26100	19000	28100	33800	26000	19900	17600	22800	24300	29000
4	18100	26700	25700	18800	29500	32800	25800	20200	17300	21700	28700	29400
5	19400	28100	24900	19200	29900	33500	25600	19400	16800	18800	29400	29400
6	18300	30500	23400	19500	30600	37700	25500	20300	17100	18300	27300	29400
7	18900	29800	23500	19200	31000	37900	25200	19500	17600	16500	28500	29300
8	18300	30500	25000	18900	31500	37700	26800	19400	18700	18200	27200	27100
9	18700	32000	29600	18900	32100	38200	25900	19200	19600	18200	27100	26100
10	19100	32500	29700	20500	32200	36700	24200	20100	19300	17800	28000	25100
11	19600	33400	27300	21700	32300	34000	24300	19600	19100	18400	27300	23700
12	19900	32300	28100	21500	32600	34200	25800	20500	19300	15700	27000	23600
13	20500	32900	29200	21600	32800	35800	25100	20700	20600	17000	27200	23400
14	20400	33100	26200	20500	32800	37700	24700	20000	17600	17500	28100	24100
15	19900	33500	24900	19500	33900	40200	23400	19000	19200	16500	27600	23600
16	20200	33300	25000	19800	33100	39700	24500	19000	19900	18500	28300	23000
17	21100	32700	24700	19900	32900	35600	23900	19700	19200	19200	26600	23300
18	21900	32800	24300	19800	33300	34000	24000	18700	19200	19800	27600	23600
19	22200	33200	24100	20200	33200	33000	24500	18500	21500	20100	27600	23400
20	22100	32400	23700	21400	32900	32300	24200	18600	21100	20400	28200	23500
21	21600	34000	23500	22000	32800	30600	24000	18200	20000	21000	27800	23800
22	22100	33000	23700	22800	32500	29000	22800	17500	22800	20600	27600	23100
23	22100	33200	24500	23100	33200	28900	22000	16600	23400	20000	28600	23300
24	22000	34000	26900	22900	30200	29400	22200	18300	24500	19900	28100	23400
25	22800	33200	27900	22000	30400	29100	22000	17300	23100	19900	27700	23400
26	22000	31800	29000	22500	32600	28200	22200	17900	20900	20900	28400	22900
27	22700	33600	29000	23800	33000	28000	21500	18400	19300	22800	28100	23800
28	23600	33200	26400	24500	32700	25500	20700	16900	19600	22200	27900	23900
29	22100	32200	24700	25300	---	25600	21400	17100	20200	22200	28400	23600
30	22400	31000	25800	25600	---	26000	20100	16900	20800	21700	29200	24000
31	24700	---	23200	26000	---	25900	---	16300	---	22400	28300	---
TOTAL	643400	944300	809600	657600	885900	1016400	720300	582400	589700	613500	851500	752800
MEAN	20750	31480	26120	21210	31640	32790	24010	18790	19660	19790	27470	25090
MAX	24700	34000	31200	26000	33900	40200	26800	20700	24500	22800	29400	29400
MIN	18100	23800	23200	17900	26500	25500	20100	16300	16800	15700	21800	22900
AC-FT	1276000	1873000	1606000	1304000	1757000	2016000	1429000	1155000	1170000	1217000	1689000	1493000

CAL YR 1982 TOTAL 9703800 MEAN 26590 MAX 37700 MIN 17300 AC-FT 19250000
WTR YR 1983 TOTAL 9067400 MEAN 24840 MAX 40200 MIN 15700 AC-FT 17990000

06342900 SOUTH BRANCH HEART RIVER NEAR SOUTH HEART, ND

LOCATION.--Lat 46°50'24", long 103°01'12", in NE¼NE¼SE¼ sec.22, T.139 N., R.98 W., Stark County, Hydrologic Unit 10130202, on left bank 20 ft upstream from bridge on county road, 4.1 mi upstream from mouth and 2.1 mi southwest of South Heart.

DRAINAGE AREA.--132 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1978 to September 1983. Seasonal records only since 1982 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 2,480 ft, from topographic map. Prior to October 1979 at datum 10.0 ft higher.

REMARKS.--Records fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,310 ft^3/s Mar. 29, 1982, gage height, 21.72 ft; no flow for long periods each year.

EXTREMES FOR CURRENT YEAR.--Maximum recorded discharge, 423 ft^3/s Mar. 13, gage height, 17.64 ft, ice jam; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.40				.00	15	3.1	.74	.47	1.6	.55	.00
2	.29				.00	15	2.6	.69	.42	.62	.25	.00
3	.32				.00	15	2.6	.77	.27	.21	.21	.00
4	.23				.00	15	2.5	.68	.14	.14	.15	.00
5	.26				.00	10	2.5	.52	.11	.14	.09	.00
6	2.0				.00	20	2.5	.51	.09	.09	.05	.00
7	24				.00	20	2.5	.85	.09	.11	.03	.00
8	9.9				.00	25	2.0	.97	.09	.07	.01	.00
9	139				.00	15	2.0	.78	.08	.04	.01	.00
10	178				.00	10	2.0	1.3	.08	.01	.02	.00
11	142				.50	15	2.0	.81	.07	.00	.01	.00
12	62				2.0	150	2.5	1.1	.07	.00	.00	.00
13	24				10	370	2.5	2.2	.06	.00	.00	.00
14	12				40	175	3.0	16	.05	.00	.00	.00
15	7.4				80	60	3.0	81	.03	.00	.00	.00
16	4.3				100	30	3.0	124	.02	.00	.00	.00
17	2.2				100	20	3.0	49	.02	.00	5.8	.00
18	1.4				95	15	3.1	25	.02	.00	.92	.00
19	1.2				90	10	3.1	30	30	.00	.23	.00
20	.93				85	9.0	3.2	20	27	97	.10	.00
21	.73				65	8.0	3.1	11	12	32	.06	.00
22	.54				60	7.0	2.9	7.7	44	7.6	.02	.00
23	.45				35	5.0	2.5	5.3	10	2.3	.01	.00
24	.40				25	3.0	2.2	3.8	5.0	.98	.01	.00
25	.26				20	3.0	2.1	2.9	2.5	.43	.00	.00
26	.17				25	3.0	2.3	2.3	1.5	.18	.00	.00
27	.17				20	2.8	1.5	1.8	.62	21	.00	.00
28	.10				20	2.5	1.3	1.3	.41	21	.00	.00
29	.10				---	2.8	1.1	1.1	.81	9.7	.00	.00
30	.10				---	2.9	.95	.82	7.1	2.4	.00	.12
31	.10				---	3.0	---	.66	---	1.1	.00	---
TOTAL	614.95				872.50	1057.0	72.65	395.60	143.12	198.72	8.53	.12
MEAN	19.8				31.2	34.1	2.42	12.8	4.77	6.41	.28	.004
MAX	178				100	370	3.2	124	44	97	5.8	.12
MIN	.10				.00	2.5	.95	.51	.02	.00	.00	.00
AC-FT	1220				1730	2100	144	785	284	394	17	.2

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
OCT 27...	1120	.16	1150	--	8.5	8.5	--	--	--	--
FEB 16...	1415	100	710	--	8.0	1.5	--	--	--	--
APR 19...	1515	3.1	1890	E8.4	13.0	12.0	11.5	119	315	46
JUN 14...	1550	.06	2500	--	21.0	16.0	--	--	--	--
AUG 01...	1440	.50	1300	8.3	29.0	23.0	8.1	104	180	4.1

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
APR 19...	62	39	330	69	8.3	5.8	270	750	8.5	.20

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)
APR 19...	2.4	1360	1360	1.8	11.4	<.10	.090	1.1	1.20	.00

DATE	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)
APR 19...	1.2	.100	.31	.070	270	500	16	29	16	.5

E - Estimated pH indicates laboratory determination.

06343000 HEART RIVER NEAR SOUTH HEART, ND

LOCATION.--Lat 46°51'56", long 102°56'53", in NE¼SE¼SW¼ 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.

DRAINAGE AREA.--311 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1947 to September 1970, October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,429.45 ft National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

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

AVERAGE DISCHARGE.--30 years, 29.7 ft^3/s, 21,520 acre-ft/yr; median of yearly mean discharges, 29 ft^3/s, 21,010 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,080 ft^3/s May 9, 1970, gage height, 27.77 ft, no flow at times in some years.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 10	--	750	--	Mar. 13	--	*1,300	a*12.02
Oct. 29	1800	1,100	10.96	June 20	1030	557	8.28
Feb. 14	--	550	ice jam	July 21	0130	219	5.73

Minimum daily, 0.65 ft^3/s Sept. 2.

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	72	3.0	2.0	3.5	25	10	3.2	1.8	8.0	4.0	.68
2	1.4	40	3.5	2.0	3.5	25	9.6	3.2	1.8	4.7	4.0	.65
3	1.3	26	3.5	2.0	3.0	30	8.6	3.0	1.7	3.7	3.1	.68
4	1.1	17	3.5	2.0	3.0	25	8.3	2.5	1.6	3.0	2.5	.88
5	1.2	14	3.5	2.0	3.0	25	8.0	2.6	1.5	2.5	2.1	1.0
6	1.8	10	3.0	2.5	2.5	25	7.3	2.6	1.4	2.1	2.1	.94
7	10	9.1	2.5	3.0	2.5	20	6.8	2.4	1.3	2.0	2.1	1.1
8	18	8.3	2.5	5.5	2.5	20	6.6	2.4	1.1	1.9	2.3	1.2
9	53	7.6	2.5	15	2.5	15	6.6	3.0	1.2	1.7	2.0	1.2
10	500	7.1	2.5	30	2.5	15	6.2	2.6	1.1	1.4	1.7	1.0
11	250	6.6	2.0	100	2.5	25	6.2	2.8	1.1	1.3	1.7	1.0
12	150	5.8	2.0	130	5.0	370	6.4	3.9	.94	1.3	1.6	1.2
13	41	5.4	2.0	60	75	1060	6.4	4.2	1.0	1.2	1.6	1.2
14	20	4.7	2.0	35	350	360	6.6	10	.94	1.2	1.6	1.2
15	12	4.2	2.5	30	340	150	6.8	66	.82	1.2	1.6	1.2
16	7.8	4.1	2.5	30	245	85	8.8	151	.76	1.2	2.0	1.2
17	5.8	3.9	2.5	30	225	45	7.8	115	.74	1.1	2.3	1.2
18	4.7	4.0	2.5	25	190	30	8.0	56	.88	1.3	4.9	1.2
19	4.0	4.0	2.5	25	150	25	7.6	38	8.8	1.3	2.3	1.4
20	3.7	4.0	2.5	20	80	20	7.3	36	370	23	1.5	1.4
21	3.4	3.8	2.5	15	80	15	7.1	23	115	99	1.2	1.4
22	3.2	3.5	2.5	10	75	11	6.0	14	124	18	1.0	1.4
23	2.9	3.2	2.5	7.5	40	9.6	6.4	11	169	7.5	.94	1.5
24	2.8	3.0	2.5	5.0	30	10	6.8	7.8	71	4.1	.94	1.4
25	2.8	3.0	2.5	5.0	25	9.6	5.4	6.4	33	3.0	.88	1.4
26	2.7	3.0	2.5	4.0	25	9.6	4.9	5.4	17	2.3	.82	1.3
27	3.0	3.0	2.5	4.0	30	9.1	4.9	4.1	10	15	.82	1.3
28	178	3.0	2.0	4.0	25	8.6	4.5	3.5	6.4	38	.82	1.5
29	986	3.0	2.0	4.0	---	8.8	3.8	2.7	6.7	30	.70	1.3
30	628	3.0	2.0	3.5	---	9.1	3.3	2.4	9.1	14	.68	1.3
31	142	---	2.0	3.5	---	9.9	---	2.3	---	7.1	.68	---
TOTAL	3043.9	289.3	78.5	616.5	2021.0	2505.3	203.0	593.0	961.68	303.1	56.48	35.33
MEAN	98.2	9.64	2.53	19.9	72.2	80.8	6.77	19.1	32.1	9.78	1.82	1.18
MAX	986	72	3.5	130	350	1060	10	151	370	99	4.9	1.5
MIN	1.1	3.0	2.0	2.0	2.5	8.6	3.3	2.3	.74	1.1	.68	.65
AC-FT	6040	574	156	1220	4010	4970	403	1180	1910	601	112	70

CAL YR 1982	TOTAL	32493.12	MEAN 89.0	MAX 2120	MIN .30	AC-FT	64450	
WTR YR 1983	TOTAL	10707.09	MEAN 29.3	MAX 1060	MIN .65	AC-FT	21240	

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
OCT 27...	1230	2.8	2020	--	8.5	8.5	--	--	--	--
FEB 16...	1100	220	655	--	7.0	1.5	--	--	--	--
APR 18...	1400	8.1	2040	E8.1	18.0	10.5	10.4	103	393	68
JUN 14...	1245	.86	3290	--	22.0	19.0	--	--	--	--
AUG 03...	1425	2.7	2010	8.3	36.5	28.5	7.9	113	253	.00

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
APR 18...	70	53	360	66	8.1	6.1	325	--	830	15	.30
AUG 03...	50	31	370	75	10	8.8	259	2.5	720	10	.40

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)
APR 18...	1.5	1570	1531	2.1	34.3	<.10	.120	1.3	1.40	.00
AUG 03...	18	1410	1364	1.9	10.3	<.10	.060	1.6	1.70	.40

DATE	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)
APR 18...	1.5	.140	.43	.080	--	450	--	--	--	1100
AUG 03...	1.3	.150	.46	.080	7	560	<1	<10	15	1300

DATE	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)
APR 18...	60	--	60	--	--	--	--	--	--	--
AUG 03...	30	<1	10	.1	1	15	16	2	30	10

E - Estimated pH indicates laboratory determination.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90) (80060)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)
APR										
18...	--	--	--	--	--	--	--	16	1.0	--
AUG										
03...	20	<35	2.5	<18	2.0	<17	1.9	17	2.0	<.01

278 06343500 EDWARD ARTHUR PATTERSON LAKE NEAR DICKINSON, ND

LOCATION.--Lat 46°52'11", long 102°49'37", in NE¼NW¼SW¼ 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 mi^2, approximately.

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 2,400.00 ft National Geodetic Vertical Datum of 1929 (levels by Water and Power Resources Service); gage readings have been reduced to elevations NGVD. Prior to Jan. 4, 1961, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill 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 elevation 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 Jan. 1, 1965. The reservoir is for flood control, irrigation and municipal supply.

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, 2,950 acre-ft Mar. 16, 1962, elevation, 2,410.41 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents recorded, 11,480 acre-ft Oct. 29, elevation, 2,421.05 ft; minimum, 6,650 acre-ft Sept. 29, elevation 2,416.47 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	2,418.50	8,520	--
Oct. 31	2,420.17	10,380	+1,860
Nov. 30	2,419.79	9,930	-450
Dec. 31	2,419.11	9,110	-820
CAL YR 1982	--	--	+3,450
Jan. 31	2,420.10	10,290	+1,180
Feb. 28	2,420.20	10,420	+130
Mar. 31	2,420.13	10,330	-90
Apr. 30	2,419.97	10,140	-190
May 31	2,419.77	9,910	-230
June 30	2,420.17	10,380	+470
July 31	2,419.58	9,690	-690
Aug. 31	2,417.69	7,720	-1,970
Sept. 30	2,416.52	6,690	-1,030
WTR YR 1983	--	--	-1,830

06343500 E. A. PATTERSON LAKE NEAR DICKINSON, N. DAK.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971, 1975, 1980 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPERATURE, AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	COLOR (PLATINUM-COBALT UNITS) (00080)
NOV									
01...	0955	--	--	846	7.8	5.9	--	--	50
JAN									
04...	1340	4.5	700	1060	7.7	.5	8.8	67	25
APR									
21...	1110	14.0	695	1050	8.3	8.0	11.6	108	50
JUN									
28...	1205	22.0	698	1400	8.5	21.0	8.2	101	35

DATE	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS NONCARBONATE (MG/L AS CACO3) (95902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CACO3) (90410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)
NOV									
01...	160	0	36	18	120	4.2	7.7	184	250
JAN									
04...	200	15	44	22	150	4.7	8.8	186	340
APR									
21...	220	53	42	27	160	4.9	6.9	163	360
JUN									
28...	270	58	51	35	210	5.7	8.2	214	510

DATE	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	BORON, DISSOLVED (UG/L AS B) (01020)
NOV								
01...	7.7	.30	7.8	562	558	.29	.050	160
JAN								
04...	9.6	.30	9.3	718	696	.50	.090	200
APR								
21...	10	.20	6.7	723	711	<.10	.080	200
JUN								
28...	10	.20	3.4	947	956	<.10	.050	260

06343500 E. A. PATTERSON LAKE NEAR DICKINSON, N. DAK.--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	TEMPERATURE (DEG C) (00010)	PH (STANDARD UNITS) (00400)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)
JAN							
04...	1336	.00	1060	.5	7.7	9.2	70
04...	1338	1.60	1140	2.0	7.5	--	--
04...	1340	3.30	1060	.5	7.7	8.8	67
04...	1342	6.60	1110	2.5	7.4	8.1	--
04...	1344	13.1	1120	4.0	7.3	5.1	--
04...	1346	19.7	1240	4.0	7.2	3.5	--
04...	1348	25.3	1400	4.5	7.2	1.0	--
APR							
21...	1106	.00	1050	8.0	8.3	11.6	108
21...	1108	1.60	1050	7.7	8.3	11.8	107
21...	1110	3.30	1050	7.5	8.3	11.9	109
21...	1112	6.60	1050	7.5	8.2	11.8	107
21...	1114	9.90	1050	7.5	8.2	11.8	107
21...	1116	13.1	1050	7.0	8.2	11.4	103
21...	1118	16.4	1070	6.5	8.2	11.0	98
21...	1120	19.7	1070	6.0	8.2	10.7	94
21...	1122	23.0	1080	5.0	8.1	3.6	31
21...	1124	26.3	1090	5.0	8.1	3.0	26
21...	1126	29.6	2240	5.0	7.6	2.8	24
JUN							
28...	1201	.00	1400	21.0	8.5	8.2	101
28...	1203	1.60	1400	21.0	8.6	8.1	--
28...	1205	3.30	1400	21.0	8.5	8.2	101
28...	1207	6.60	1400	21.0	8.6	8.0	--
28...	1209	13.2	1400	21.0	8.6	7.5	--
28...	1211	19.8	1400	20.5	8.5	6.1	--
28...	1213	26.4	1360	17.5	8.3	.3	--

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 mi^2, approximately.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder.

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

AVERAGE DISCHARGE.--19 years, 18.3 ft^3/s, 13,260 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,120 ft^3/s May 9, 1970, gage height, 16.88 ft; maximum gage height, 17.60 ft Mar. 22, 1978, backwater from ice; no flow for several days in some years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 29	0145	*1,000	13.22	June 22	1915	623	10.15
Feb. 14	--	390	--	July 18	2245	506	9.34
Mar. 13	--	850	--	Aug. 16	1615	180	6.85
June 19	1845	768	11.15	Aug. 23	0615	224	7.27

Minimum daily, 0.56 ft^3/s July 15-16.

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.8	28	2.9	1.9	1.8	31	23	3.8	2.9	2.9	1.3	1.3
2	6.8	24	3.0	1.8	1.7	27	25	3.7	2.7	2.0	1.3	1.1
3	7.0	21	3.1	1.8	1.6	29	25	3.7	2.4	1.5	1.3	.98
4	7.4	18	3.1	2.0	1.5	29	23	3.6	2.2	1.4	1.3	.97
5	8.2	15	3.1	2.0	1.4	29	20	3.4	2.0	1.3	1.5	.93
6	9.7	14	2.9	2.2	1.2	28	18	3.2	1.8	1.2	2.0	.91
7	13	13	2.7	2.4	1.1	25	16	3.2	2.1	1.1	1.7	.80
8	15	12	2.4	2.8	1.0	23	14	3.2	1.9	.98	1.2	.80
9	47	10	2.2	4.5	1.0	21	12	3.5	1.7	.88	1.1	.85
10	65	9.8	2.2	5.0	1.0	20	10	7.1	1.8	1.0	1.1	.88
11	33	9.4	2.0	4.8	1.2	28	11	7.0	1.7	.98	1.0	.93
12	20	8.7	2.0	6.7	3.5	240	12	13	1.8	.93	.96	.93
13	14	8.0	2.1	7.4	35	450	11	13	1.6	.83	.93	.93
14	10	7.0	2.2	8.7	260	250	10	21	1.5	.68	.90	.93
15	7.0	6.4	2.2	7.4	290	120	9.5	51	1.3	.56	.88	.93
16	5.0	6.1	2.3	6.0	230	90	9.0	54	1.3	.56	64	.96
17	3.7	5.9	2.4	5.0	210	70	8.5	33	1.4	.60	57	.98
18	3.2	5.7	2.6	4.3	295	50	8.0	27	1.6	155	30	1.0
19	2.9	5.6	2.7	3.7	140	40	7.6	23	596	244	18	1.1
20	2.6	5.2	2.7	3.4	62	35	7.4	20	219	205	7.2	1.1
21	2.2	4.7	2.6	3.0	58	30	6.9	18	43	72	3.7	1.2
22	2.2	4.3	2.6	2.9	47	27	6.4	17	297	30	2.5	1.2
23	2.2	3.9	2.6	2.8	44	25	6.1	13	192	21	84	1.2
24	2.6	3.6	2.5	2.7	48	23	5.4	9.2	43	12	25	1.2
25	2.7	3.2	2.4	2.5	46	21	5.1	7.7	22	5.6	17	1.2
26	2.7	2.9	2.4	2.3	37	20	4.9	5.5	13	3.6	8.6	1.3
27	2.9	2.9	2.3	2.0	34	19	4.9	5.1	5.2	3.7	4.4	1.2
28	383	2.8	2.2	2.0	33	18	4.5	5.0	2.3	7.6	2.7	1.2
29	662	2.8	2.1	1.9	---	16	3.8	3.8	2.2	3.6	2.0	1.3
30	92	2.8	2.0	1.9	---	16	3.7	3.5	2.8	2.0	1.6	1.4
31	37	---	2.0	1.8	---	20	---	3.2	---	1.5	1.4	---
TOTAL	1478.8	266.7	76.5	109.6	1887.0	1870	331.7	391.4	1471.2	786.00	347.57	31.71
MEAN	47.7	8.89	2.47	3.54	67.4	60.3	11.1	12.6	49.0	25.4	11.2	1.06
MAX	662	28	3.1	8.7	295	450	25	54	596	244	84	1.4
MIN	2.2	2.8	2.0	1.8	1.0	16	3.7	3.2	1.3	.56	.88	.80
AC-FT	2930	529	152	217	3740	3710	658	776	2920	1560	689	63

CAL YR 1982 TOTAL 14082.97 MEAN 38.6 MAX 970 MIN .20 AC-FT 27930
WTR YR 1983 TOTAL 9048.18 MEAN 24.8 MAX 662 MIN .56 AC-FT 17950

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 26...	1525	2.6	950	--	20.0	9.5	--	--	--	--	--
DEC 01...	1110	2.9	1510	--	2.5	.0	--	--	--	--	--
JAN 13...	1040	6.8	2000	--	3.0	1.5	--	--	--	--	--
FEB 18...	1115	340	242	--	8.0	1.5	--	--	--	--	--
APR 20...	1330	7.2	1270	--	18.0	14.5	--	--	--	--	--
JUN 14...	0925	1.4	1300	--	14.5	16.0	--	--	--	--	--
AUG 03...	1030	1.3	1070	8.1	36.0	26.0	234	46	49	27	150
SEP 07...	1050	.85	1120	--	24.0	14.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
AUG 03...	57	4.4	9.0	342	0	280	4.3	280	7.0	.30	11	712

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
AUG 03...	702	.97	2.5	0	280	230	1	18	60	.3	0	390

06345500 HEART RIVER NEAR RICHARDTON, ND

LOCATION.--Lat 46°44'46", long 102°18'27", in NE¼ sec.29, T.138 N., R.92 W., Stark County, Hydrologic Unit 10130202, on right bank 5 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 mi^2, 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 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 those for the winter period, which are fair. Flow regulated by Edward Arthur Patterson Lake (station 06343500) 84 mi upstream.

AVERAGE DISCHARGE.--59 years, 108 ft^3/s, 78,250 acre-ft/yr; median of yearly mean discharges, 99 ft^3/s, 71,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,400 ft^3/s Apr. 16, 1950, gage height, 28.05 ft, from high-water mark in gage well; no flow at times in some years.

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 ft^3/s; flood of Mar. 25, 1943, reached a stage of 24.2 ft from floodmarks, discharge, 11,700 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,890 ft^3/s Mar. 14, gage height, 13.71 ft; minimum daily, 19 ft^3/s Sept. 25-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	848	65	35	31	175	83	38	40	102	69	44
2	41	500	76	35	30	200	80	37	39	83	70	42
3	42	233	85	36	28	260	79	36	38	74	76	40
4	35	136	90	38	26	175	75	34	37	68	68	39
5	30	115	80	39	25	140	71	33	37	65	58	38
6	32	108	75	40	25	190	70	32	35	59	56	38
7	43	100	68	50	26	130	68	31	34	54	53	37
8	54	89	62	60	28	150	66	32	33	59	50	38
9	80	83	58	175	30	190	65	32	37	47	48	36
10	253	80	55	100	30	160	64	33	433	45	48	33
11	448	78	50	90	32	170	62	36	89	43	46	32
12	339	70	45	95	40	530	66	45	59	42	45	29
13	253	65	45	100	50	1350	65	57	50	41	45	27
14	152	60	42	90	80	2550	63	71	43	43	45	27
15	97	60	40	80	300	2210	62	125	41	40	70	30
16	82	58	40	75	750	820	66	113	39	39	100	31
17	70	56	40	62	1450	442	68	87	39	38	167	27
18	63	58	42	57	1300	242	69	246	39	37	70	23
19	57	60	45	52	1200	164	72	217	60	37	56	23
20	53	58	48	48	1050	132	70	109	106	49	52	21
21	48	55	50	45	950	110	64	82	690	151	70	20
22	45	52	50	42	600	107	62	69	672	187	62	20
23	42	50	48	40	500	123	58	63	458	190	54	21
24	41	49	46	40	350	105	53	59	598	125	52	20
25	40	48	44	38	300	94	51	54	502	93	74	19
26	39	46	44	35	300	85	47	67	276	79	125	19
27	39	48	42	35	250	82	45	91	174	70	94	19
28	57	52	40	35	225	80	46	61	126	67	69	19
29	900	55	38	34	---	79	47	47	112	67	58	19
30	2040	58	37	33	---	84	41	43	100	68	53	19
31	1900	---	36	32	---	84	---	41	---	68	48	---
TOTAL	7451	3428	1626	1766	10006	11413	1898	2121	5036	2230	2051	850
MEAN	240	114	52.5	57.0	357	368	63.3	68.4	168	71.9	66.2	28.3
MAX	2040	848	90	175	1450	2550	83	246	690	190	167	44
MIN	30	46	36	32	25	79	41	31	33	37	45	19
AC-FT	14780	6800	3230	3500	19850	22640	3760	4210	9990	4420	4070	1690

CAL YR 1982 TOTAL 126823.3 MEAN 347 MAX 7350 MIN 2.0 AC-FT 251600
WTR YR 1983 TOTAL 49876.0 MEAN 137 MAX 2550 MIN 19 AC-FT 98930

HEART RIVER BASIN

06345500 HEART RIVER NEAR RICHARDTON, ND

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950, 1972 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 25...	1720	40	1290	--	17.0	9.0	--	--	--	--	--
DEC 06...	1430	74	1730	--	- .9	.0	--	--	--	--	--
JAN 17...	1455	62	1440	--	- .9	.0	--	--	--	--	--
MAR 15...	1235	2170	676	8.4	2.0	.0	144	5.1	28	18	87
APR 04...	1235	73	1400	--	5.0	3.5	--	--	--	--	--
MAY 09...	1425	32	2090	--	20.0	15.5	--	--	--	--	--
JUN 24...	1125	593	1100	--	32.0	24.0	--	--	--	--	--
AUG 02...	1605	65	1130	8.1	33.0	28.5	272	33	56	32	150

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 15...	55	3.2	7.6	170	0	140	1.1	210	6.1	.20	6.5	451
AUG 02...	53	4.1	10	292	0	240	3.7	370	8.8	.40	4.8	789

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 15...	449	.61	2640	0	0	50	0	8	70	.1	0	390
AUG 02...	777	1.1	138	0	260	10	0	20	10	.2	0	670

06346000 LAKE TSCHIDA NEAR GLEN ULLIN, ND

LOCATION.--Lat 46°35'48", long 101°48'34", in SW¼NE¼ 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 mi^2, approximately.

PERIOD OF RECORD.--August 1949 to current year. Prior to October 1957, published as Heart Butte Reservoir near Glen Ullin.

GAGE.--Nonrecording gage. Datum of gage is at National Geodetic Vertical Datum of 1929, levels by Water and Power Resources Service.

REMARKS.--Reservoir is formed by earthfill 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 elevation 2,030.0 ft and 2,064.5 ft, crest of spillway. Figures given herein represent total contents. 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 flood control, irrigation, and incidental water supply.

COOPERATION.--Record of elevations and contents furnished by Bureau of Reclamation. Monthend elevations interpolated from once-daily readings. 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, 40,840 acre-ft Mar. 6, 1962, elevation, 2,052.5 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 87,400 acre-ft Mar. 16, elevation, 2,067.80 ft; minimum, 66,800 acre-ft Sept. 9, elevation, 2,061.78 ft.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	2,062.57	69,400	--
Oct. 31	2,066.11	81,300	+11,900
Nov. 30	2,064.94	77,300	-4,000
Dec. 31	2,064.50	75,800	-1,500
CAL YR 1982	--	--	+9,200
Jan. 31	2,064.68	76,400	+600
Feb. 28	2,065.77	80,200	+3,800
Mar. 31	2,065.51	79,300	-900
Apr. 30	2,065.18	78,100	-1,200
May 31	2,065.24	78,300	+200
June 30	2,065.66	79,800	+1,500
July 31	2,063.35	71,900	-7,900
Aug. 31	2,062.14	68,000	-3,900
Sept. 30	2,061.82	66,900	-11,000
WTR YR 1983	--	--	-2,500

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971, 1980 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	TEMPERATURE, AIR (DEG C) (00020)	BAROMETRIC PRESSURE (MM OF HG) (00025)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	COLOR (PLATINUM-COBALT UNITS) (00080)
NOV 04...	1229	--	--	799	8.7	6.4	--	--	20
FEB 10...	1139	0.2	748	1055	8.8	2.4	14.4	106	15
MAY 25...	1034	19.0	755	1100	8.2	--	9.3	--	25
AUG 04...	1049	28.0	754	1240	7.5	25.4	8.5	105	10

DATE	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS NONCARBONATE (MG/L AS CACO3) (95902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CACO3) (90410)	SULFATE DISSOLVED (MG/L AS SO4) (00945)
NOV 04...	260	68	54	30	120	3.3	8.0	191	290
FEB 10...	280	67	56	33	130	3.5	8.8	209	340
MAY 25...	280	85	56	34	130	3.5	8.7	195	340
AUG 04...	370	135	73	45	160	3.7	9.8	233	470

DATE	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	BORON, DISSOLVED (UG/L AS B) (01020)
NOV 04...	6.3	.30	.7	622	624	.27	.010	180
FEB 10...	7.5	.30	1.4	703	703	.28	.030	200
MAY 25...	8.0	.30	4.8	705	699	.38	.040	190
AUG 04...	9.6	.30	3.9	886	912	.31	.040	230

463547101484000 LAKE TSCHIDA NR GLEN ULLIN, ND DEEP--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	TEMPERATURE (DEG C) (00010)	PH (STANDARD UNITS) (00400)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)
NOV							
04...	1205	.00	799	6.4	8.7	12.4	101
04...	1207	1.60	804	6.4	--	12.3	100
04...	1209	3.30	799	6.4	8.7	12.1	98
04...	1211	6.60	802	6.4	8.7	11.9	96
04...	1213	13.2	801	6.4	8.7	11.8	95
04...	1215	19.8	799	6.4	8.7	11.6	94
04...	1217	26.4	796	6.4	8.7	11.6	94
04...	1219	33.0	794	6.4	8.6	11.7	95
04...	1221	39.6	794	6.4	8.6	11.7	95
04...	1223	46.2	772	6.4	--	11.7	95
FEB							
10...	1135	.00	835	.5	7.2	13.0	92
10...	1137	1.60	979	.6	7.4	13.7	96
10...	1139	2.60	1055	2.4	8.8	14.4	106
10...	1141	6.60	1017	2.9	7.9	14.5	109
10...	1143	13.2	1013	3.1	7.9	14.9	115
10...	1145	19.8	1023	2.6	7.7	11.2	85
10...	1147	26.4	1057	2.4	7.6	8.7	65
10...	1149	33.0	1298	2.6	7.4	7.1	54
10...	1151	39.6	1524	2.6	7.4	6.3	48
10...	1153	46.2	1620	3.1	7.3	2.4	18
MAY							
25...	1130	.00	1080	12.5	8.2	9.3	88
25...	1132	1.60	1080	12.5	8.2	9.3	--
25...	1134	3.30	1090	12.5	8.2	9.2	--
25...	1136	6.60	1090	12.5	8.1	9.2	--
25...	1138	13.2	1110	12.5	8.2	9.2	--
25...	1140	19.8	1110	12.5	8.3	9.3	--
25...	1142	26.4	1110	11.6	8.2	9.1	--
25...	1144	33.0	1110	11.1	8.3	9.0	--
25...	1146	39.6	1110	10.9	8.0	8.9	--
25...	1148	46.2	1110	10.7	8.0	8.8	--
AUG							
04...	1055	.00	1227	25.5	8.6	8.5	105
04...	1057	1.60	1220	25.4	8.6	8.5	--
04...	1059	3.30	1220	25.4	8.6	8.5	--
04...	1101	6.60	1215	25.4	8.6	8.5	--
04...	1103	13.2	1207	24.8	8.6	8.5	--
04...	1105	19.8	1190	23.9	8.6	8.5	--
04...	1107	26.4	1195	23.6	8.5	--	--
04...	1109	33.0	1235	22.8	8.3	--	--
04...	1111	39.6	1229	22.1	8.2	--	--
04...	1113	46.2	1230	22.7	8.1	--	--

06348000 HEART RIVER NEAR LARK, ND

LOCATION.--Lat 46°36'37", long 101°22'54", in NW¼NW¼SW¼ sec.9, T.136 N., R.85 W., Grant County, Hydrologic Unit 10130203, on right bank 20 ft downstream from county highway bridge, 0.6 mi downstream from Big Muddy Creek, and 10 mi north of Lark.

DRAINAGE AREA.--2,750 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1946 to current year. Seasonal records since Oct. 1982.

GAGE.--Water-stage recorder. Datum of gage is 1,802.83 ft National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Nov. 16, 1948, nonrecording gage at same site and datum.

REMARKS.--Records good. Flow regulated by Lake Tschida (06346000) 45 mi upstream since 1949.

AVERAGE DISCHARGE.--36 years, (1947-82) 225 ft^3/s, 163,000 acre-ft/yr; median of yearly mean discharges, 172 ft^3/s, 124,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,200 ft^3/s Apr. 17, 1950, gage height, 20.70 ft, from rating curve extended above 11,000 ft^3/s on basis of contracted-opening measurement of peak flow; no flow Jan. 16 to Mar. 4, 1950, Jan. 17-26, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum recorded discharge, 3,610 ft^3/s Mar. 14, gage height, 10.55 ft; minimum daily recorded, 14 ft^3/s Sept. 28-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						1000	378	142	128	533	133	72
2						1000	365	136	118	537	143	72
3						880	360	130	110	383	138	72
4						850	318	126	103	405	126	71
5						390	288	118	97	417	132	74
6						900	267	114	88	437	125	77
7						1400	244	111	83	271	124	77
8						2150	229	105	74	118	127	75
9						1400	217	99	68	102	116	62
10						1100	207	95	65	89	114	49
11						520	199	98	88	77	116	29
12						550	205	141	95	77	118	21
13						900	217	206	119	93	120	21
14						3300	219	278	124	82	120	19
15						2780	209	338	113	113	204	19
16						2210	212	282	102	58	179	19
17						1870	216	262	88	51	155	19
18						1500	236	261	80	61	151	18
19						1230	263	249	78	117	149	18
20						988	278	254	104	147	153	16
21						799	270	275	131	156	156	16
22						667	264	272	256	143	152	16
23						570	247	256	311	139	153	17
24						506	229	234	298	136	135	16
25						451	210	215	295	134	109	16
26						416	196	195	323	130	100	15
27						389	208	180	338	138	91	15
28						359	174	168	326	140	88	14
29						356	129	156	329	137	87	14
30						345	151	149	414	135	82	14
31						373	---	138	---	132	75	---
TOTAL						32149	7205	5783	4946	5688	3971	1053
MEAN						1037	240	187	165	183	128	35.1
MAX						3300	378	338	414	537	204	77
MIN						345	129	95	65	51	75	14
AC-FT						63770	14290	11470	9810	11280	7880	2090

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE,. AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 15...	1105	203	1000	--	13.0	10.0	--	--	--	--	--
MAR 14...	1610	3610	535	8.3	.5	.5	120	10	25	15	46
APR 06...	1125	270	950	--	4.5	4.5	--	--	--	--	--
MAY 25...	1125	215	1250	--	22.0	16.5	--	--	--	--	--
JUN 29...	1125	338	1180	--	--	20.5	--	--	--	--	--
AUG 12...	1100	113	1320	--	26.5	24.0	--	--	--	--	--
SEP 21...	1355	15	1490	8.3	16.0	11.0	380	72	70	49	200

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 14...	42	1.8	9.7	140	0	120	1.1	120	3.7	.10	7.1	305
SEP 21...	53	4.6	12	373	0	300	3.0	450	8.8	.40	5.2	1030

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 14...	301	.41	2970	2	0	340	9	10	60	7.0	0	50
SEP 21...	980	1.4	42.5	2	310	50	3	40	90	.1	0	900

06349000 HEART RIVER NEAR MANDAN, ND

LOCATION.--Lat 46°50'02", long 100°58'27", in NW¼NE¼ 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 mi^2, 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 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 poor. Flow regulated by Lake Tschida (station 06346000) 105 mi upstream since 1949. Some diversions above station.

AVERAGE DISCHARGE.--50 years (1928-32, 1937-83), 268 ft^3/s, 194,200 acre-ft/yr; median of yearly mean discharges, 200 ft^3/s, 145,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 30,500 ft^3/s Apr. 19, 1950, gage height, 23.64 ft; maximum gage height, 25.75 ft Apr. 4, 1952, ice jam; no flow for many days in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, about 5,000 ft^3/s Mar. 14, gage height, 18.71 ft, backwater from ice; minimum daily discharge, 30 ft^3/s Sept. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	148	50	130	120	1400	462	204	166	373	108	94
2	53	531	100	130	120	1300	449	186	152	562	113	85
3	52	1040	170	130	120	1100	404	181	135	625	120	83
4	49	1130	190	130	120	1000	440	171	131	577	122	76
5	48	1120	200	130	110	800	392	173	129	541	113	74
6	55	950	210	120	100	600	358	154	116	509	106	74
7	56	795	210	120	95	800	332	158	101	475	108	74
8	55	895	210	120	90	1400	315	152	86	423	89	77
9	82	990	220	130	90	2500	299	146	79	225	101	82
10	137	870	220	140	90	2000	286	131	71	150	101	85
11	164	780	200	150	90	1500	264	131	63	116	93	74
12	883	450	190	155	95	1200	270	144	53	101	83	70
13	1080	400	180	160	95	3000	270	146	53	86	80	60
14	901	350	170	160	95	5000	278	192	62	71	85	54
15	576	300	160	160	95	4500	272	247	93	73	94	53
16	385	54	150	160	95	3500	270	364	96	67	138	50
17	273	56	140	160	95	3000	264	330	88	88	197	47
18	217	56	140	170	95	2300	259	299	80	215	160	43
19	195	56	140	170	100	1900	259	286	85	356	136	42
20	178	56	140	170	110	1700	288	291	93	144	133	43
21	169	52	130	170	170	1400	304	286	133	179	140	40
22	155	50	130	170	270	1080	300	286	124	160	144	40
23	148	48	130	160	500	1000	296	283	162	160	152	39
24	138	46	130	160	700	687	294	288	272	148	158	39
25	130	45	140	150	900	584	278	262	296	138	162	34
26	124	45	140	140	1200	509	257	249	280	138	135	32
27	124	45	130	130	1400	482	234	230	294	129	114	32
28	128	45	120	120	1500	468	237	208	315	136	106	30
29	128	45	110	130	---	432	234	188	332	144	96	32
30	132	45	120	130	---	416	213	171	335	133	96	34
31	150	---	120	130	---	401	---	173	---	120	96	---
TOTAL	7016	11493	4790	4485	8660	47959	9078	6710	4475	7362	3679	1692
MEAN	226	383	155	145	309	1547	303	216	149	237	119	56.4
MAX	1080	1130	220	170	1500	5000	462	364	335	625	197	94
MIN	48	45	50	120	90	401	213	131	53	67	80	30
AC-FT	13920	22800	9500	8900	17180	95130	18010	13310	8880	14600	7300	3360

CAL YR 1982 TOTAL 349079.5 MEAN 956 MA 16400 MIN 2.0 AC-FT 692400
WTR YR 1983 TOTAL 117399.0 MEAN 322 MAX 5000 MIN 30 AC-FT 232900

06349000 HEART RIVER NEAR MANDAN, ND
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946-50, 1971-76, 1978 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT											
21...	1200	174	1060	8.3	6.0	4.5	--	11.9	91	K100	200
DEC											
03...	1120	170	--	--	--	.0	--	--	--	--	--
JAN											
12...	1255	155	1160	7.9	9.0	.0	6.7	11.5	79	162	6700
MAR											
14...	1310	4820	490	--	2.5	.0	--	--	--	--	--
APR											
04...	1500	444	860	8.2	6.0	5.5	53	--	--	--	70
MAY											
03...	1350	285	1360	8.4	23.0	18.5	--	9.1	98	--	K35
23...	1350	285	1360	--	23.0	18.5	--	--	--	--	--
JUN											
30...	1340	337	1080	8.5	28.0	22.0	17	9.0	104	143	65
30...	1627	337	1180	8.4	29.0	24.0	--	10.4	125	--	--
AUG											
08...	1100	99	1350	8.6	28.0	24.5	7.5	7.3	87	7	29
SEP											
23...	1305	38	1540	8.5	15.5	10.0	3.8	11.7	104	--	--
23...	1420	18	1540	8.5	19.0	12.5	--	11.6	110	--	--

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
DEC												
03...	300	0	59	36	180	56	4.7	8.5	337	5.2	340	9.1
JAN												
12...	280	11	58	34	150	52	4.0	8.9	274	6.7	330	7.9
APR												
04...	220	11	45	25	100	49	3.0	8.4	205	2.5	210	7.2
JUN												
30...	320	81	60	41	150	50	3.7	9.0	239	1.4	410	8.7
AUG												
08...	340	60	60	45	180	53	4.4	9.5	275	1.3	460	11
SEP												
23...	350	0	64	46	230	58	5.5	7.9	366	2.2	450	18

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)
DEC											
03...	.30	3.8	860	840	1.2	--	.20	.08	1.70	.050	.15
JAN											
12...	.30	6.3	772	760	1.0	323	.39	.14	1.30	.060	.18
APR											
04...	.20	7.3	541	527	.74	649	.33	.17	.90	.130	.40
JUN											
30...	.30	5.3	829	828	1.1	754	.17	--	1.70	.110	.34
AUG											
08...	.30	6.0	932	937	1.3	249	<.10	.12	.90	.060	.18
SEP											
23...	.40	6.7	1050	1040	1.4	108	<.10	.14	.70	.020	.06

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
DEC											
03...	.020	<.010	--	<10	1	80	<1	<1	<3	2	23
JAN											
12...	.050	<.010	--	--	--	--	--	--	--	--	--
APR											
04...	.040	.030	.09	90	1	58	<1	<1	<3	3	120
JUN											
30...	.040	.010	.03	<10	1	79	<1	<1	<3	2	7
AUG											
08...	.030	.030	.09	--	--	--	--	--	--	--	--
SEP											
23...	.020	<.010	--	<10	2	81	<1	<1	<3	1	<3

DATE	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
DEC											
03...	<1	53	7	<.1	<10	<1	<1	1	650	<6.0	5
JAN											
12...	--	--	--	--	--	--	--	--	--	--	--
APR											
04...	1	28	7	.1	<10	7	1	<1	440	<6.0	13
JUN											
30...	1	41	2	.2	<10	4	1	<1	710	<6.0	4
AUG											
08...	--	--	--	--	--	--	--	--	--	--	--
SEP											
23...	1	68	13	<.1	10	2	<1	<1	770	<6.0	<3

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
DEC					
03...	1120	170	39	18	86
APR					
04...	1445	444	120	144	65
JUN					
30...	1340	337	126	115	79
SEP					
23...	1305	38	40	4.1	94

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLE LOCATION, CROSS SECTION (FT FM L BANK) (00009)	DEPTH TO TOP OF SAMPLE INTERVAL (FT) (72015)	TEMPERATURE (DEG C) (00010)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	OXYGEN, DISSOLVED (MG/L) (00300)
JUN							
30...	1610	80.0	.0	24.0	1185	8.5	10.1
30...	1611	76.0	.0	24.0	1183	--	10.2
30...	1612	72.0	.0	24.0	1183	8.5	10.2
30...	1613	68.0	.0	24.0	1182	--	10.3
30...	1614	64.0	.0	24.0	1184	8.5	10.3
30...	1615	60.0	.0	24.0	1183	--	10.3
30...	1616	56.0	.0	24.0	1184	8.5	10.3
30...	1617	52.0	.0	24.0	1182	--	10.3
30...	1618	48.0	.0	24.0	1181	8.4	10.3
30...	1619	44.0	.0	24.0	1182	--	10.3
30...	1620	40.0	.0	24.0	1182	8.4	10.4
30...	1621	36.0	.0	24.0	1182	--	10.4
30...	1622	32.0	.0	24.0	1178	8.4	10.4
30...	1623	28.0	.0	24.0	1181	8.4	10.4
30...	1624	28.0	1.6	24.0	1182	8.4	10.4
30...	1625	24.0	.0	24.0	1181	--	10.4
30...	1626	24.0	1.6	24.0	1181	--	10.4
30...	1627	20.0	.0	24.0	1180	8.4	10.4
30...	1628	20.0	1.6	24.0	1181	8.4	10.4
30...	1629	16.0	.0	24.0	1180	--	10.4
30...	1630	16.0	1.6	24.0	1181	--	10.4
30...	1631	12.0	.0	24.0	1181	--	10.4
30...	1632	12.0	1.6	24.0	1181	--	10.3
30...	1633	8.00	.0	24.0	1180	8.4	10.4
30...	1634	8.00	1.5	24.0	1180	--	10.4
30...	1635	8.00	3.3	24.0	1180	--	10.4
30...	1636	4.00	.0	24.1	1179	--	10.3
30...	1637	4.00	1.5	24.1	1179	--	10.3
30...	1638	4.00	3.3	24.0	1179	--	10.3
30...	1639	.00	.0	24.1	1179	8.4	10.2
30...	1640	.00	1.6	24.1	1179	8.4	10.2
SEP							
23...	1420	.00	.0	12.5	1540	8.5	11.6
23...	1422	5.00	.0	12.5	1540	8.5	11.6
23...	1424	10.0	.0	12.5	1540	8.5	11.6
23...	1426	15.0	.0	12.5	1540	8.5	11.6
23...	1428	20.0	.0	12.5	1540	8.5	11.6
23...	1430	25.0	.0	12.5	1540	8.5	11.6
23...	1432	30.0	.0	12.5	1540	8.5	11.6
23...	1434	35.0	.0	12.5	1540	8.5	11.6
23...	1436	40.0	.0	12.5	1540	8.5	11.6
23...	1438	45.0	.0	12.5	1540	8.5	11.5
23...	1440	50.0	.0	12.5	1540	8.5	11.5

06349070 MISSOURI RIVER BELOW MANDAN, ND

LOCATION.--Lat 46°44'32", long 100°49'54", at midsection of west half sec.30, T.138 N., R.80 W., Morton County, Hydrologic Unit 10130102, on right bank 1 mi south of Fort Lincoln State Park, 6 mi southeast of Mandan, and at mile 1,309.

DRAINAGE AREA.--189,800 mi^2, approximately.

PERIOD OF RECORD.--September 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,600.00 ft National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

REMARKS.--Stage regulated by Lake Sakakawea (station 06338000).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily gage height recorded, 29.71 ft Mar. 17, 1972; minimum daily recorded, 17.40 ft Apr. 1, 1968.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.31	22.51	24.05	27.49	26.37	24.82	23.34	21.73	21.32	22.00	22.30	23.88
2	21.34	22.79	23.60	27.54	26.51	24.72	23.23	21.57	21.15	22.50	22.62	23.91
3	21.12	23.25	23.13	27.08	26.24	24.83	23.29	21.75	21.32	22.51	23.19	23.92
4	21.05	23.29	23.00	27.08	26.25	24.69	23.24	21.86	21.18	22.30	23.82	24.00
5	21.39	23.59	22.85	27.20	26.57	24.76	23.19	21.67	21.09	21.66	24.05	24.01
6	21.12	24.04	22.49	27.22	26.80	25.45	23.16	21.94	21.12	21.55	23.63	23.98
7	21.25	23.92	22.47	26.99	27.01	25.65	23.06	21.71	21.23	21.07	23.82	23.81
8	21.12	24.02	---	26.72	27.22	25.59	23.41	21.71	21.42	21.47	23.59	23.63
9	21.25	24.29	24.06	26.94	27.25	25.59	23.27	21.72	21.71	21.48	23.60	23.39
10	21.32	24.37	24.33	27.05	27.25	25.53	22.86	21.81	21.64	21.36	23.76	23.15
11	21.42	24.52	24.17	26.11	27.32	25.12	22.84	21.73	21.61	21.45	23.49	22.85
12	21.51	24.31	24.39	24.91	27.35	24.99	23.20	21.95	21.57	21.85	23.64	22.77
13	21.70	24.40	24.93	26.03	27.37	25.27	23.05	22.01	21.93	21.17	23.45	22.49
14	21.68	24.39	23.97	26.02	27.50	25.78	22.92	21.86	21.18	21.30	23.83	22.85
15	21.54	24.44	23.37	25.06	27.58	26.13	22.64	21.65	21.51	21.09	23.75	22.73
16	21.60	24.39	23.42	25.11	27.36	26.06	22.86	21.64	21.72	21.45	23.85	22.60
17	21.80	24.30	23.27	25.36	27.45	25.45	22.75	21.80	21.58	21.65	23.49	22.42
18	22.00	24.30	22.99	24.53	27.53	25.10	22.77	21.61	21.57	21.83	23.69	22.67
19	22.07	24.36	22.79	24.41	27.74	24.89	22.88	21.54	22.09	21.93	23.68	22.64
20	22.04	24.22	22.58	25.16	27.66	24.71	22.80	21.55	22.08	21.87	23.83	22.62
21	21.94	24.47	22.48	25.93	27.52	24.44	22.79	21.50	21.76	22.06	23.74	22.71
22	22.05	24.34	22.50	26.21	27.73	24.10	22.53	21.29	22.33	21.97	23.70	22.56
23	22.06	24.32	22.63	26.47	26.80	24.05	22.30	21.09	22.57	21.87	23.88	22.60
24	22.06	24.46	23.17	26.28	25.36	24.10	22.34	21.49	22.60	21.83	23.39	22.63
25	22.24	24.35	23.56	25.66	25.30	24.05	22.32	21.28	22.61	21.86	23.51	22.64
26	22.04	24.12	23.96	25.01	25.32	23.84	22.31	21.43	22.03	22.07	23.62	22.51
27	22.21	24.39	24.26	25.22	25.08	23.81	22.21	21.54	21.65	22.48	23.78	22.71
28	22.42	24.32	23.93	25.43	24.73	23.25	22.97	21.15	21.68	22.36	23.73	22.71
29	22.08	24.19	26.40	26.16	---	23.21	22.17	21.17	21.87	22.36	23.79	22.69
30	22.14	23.99	28.05	26.46	---	23.29	21.88	21.16	21.98	22.24	23.96	22.74
31	22.69	---	27.59	26.46	---	23.26	---	20.97	---	22.40	23.61	---
TOTAL	673.56	722.65	---	809.30	750.17	766.53	684.58	668.88	651.10	676.99	731.79	690.82
MEAN	21.73	24.09	---	26.11	26.79	24.73	22.82	21.58	21.70	21.84	23.61	23.03
MAX	22.69	24.52	---	27.54	27.74	26.13	23.41	22.01	22.61	22.51	24.05	24.01
MIN	21.05	22.51	---	24.41	24.73	23.21	21.88	20.97	21.09	21.07	22.30	22.42

06349500 APPLE CREEK NEAR MENOKEN, ND

LOCATION.--Lat 46°47'40", long 100°39'25", in NW¼NE¼ 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 mi^2, approximately, of which about 500 mi^2 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 National Geodetic Vertical Datum of 1929. See WSP 1729 or 1917 for history of changes prior to Sept. 30, 1953.

REMARKS.--Records good except those for March, August and September which are poor.

AVERAGE DISCHARGE.--38 years, 33.8 ft^3/s, 24,490 acre-ft/yr; median of yearly mean discharges, 20 ft^3/s, 14,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,750 ft^3/s Apr. 18, 1950, gage height, 17.07 ft; maximum gage height, 17.46 ft Apr. 19, 1979; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 950 ft^3/s Mar. 8, gage height, 14.75 ft, backwater from ice, only peak above base of 200 ft^3/s; minimum daily discharge 0.01 ft^3/s Sept. 4, 27-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.31	5.4	2.9	2.8	2.4	66	98	39	20	2.9	1.0	.06
2	.43	5.0	3.6	2.8	2.2	56	96	37	18	2.8	.90	.05
3	.52	4.9	5.2	2.8	2.1	54	98	36	17	2.9	.90	.02
4	.58	4.6	6.1	2.7	2.0	65	96	34	12	3.4	.71	.01
5	.67	4.6	6.3	2.7	1.9	85	92	33	14	3.7	.61	.05
6	1.0	4.7	7.1	2.8	1.8	530	90	32	14	4.1	.45	.08
7	1.1	5.2	9.5	2.9	1.7	900	84	29	13	4.1	.45	.05
8	.82	5.6	19	2.8	1.5	890	80	29	12	4.3	.42	.05
9	8.3	5.7	22	3.3	1.5	760	77	28	11	4.5	.45	.03
10	10	6.1	14	3.4	1.5	470	74	29	9.6	4.5	.51	.03
11	6.0	6.1	11	3.1	1.4	320	70	29	9.0	3.2	.28	.02
12	7.4	5.8	9.5	3.1	1.4	310	72	40	8.0	1.8	.18	.03
13	12	5.3	7.3	3.1	1.8	550	67	44	7.5	1.5	.20	.03
14	8.2	4.8	6.1	3.0	2.2	560	57	43	7.0	1.0	.18	.08
15	7.7	4.5	5.2	3.0	4.3	540	49	48	6.5	1.0	.06	.14
16	14	4.2	4.5	3.1	24	440	53	64	6.0	1.0	.18	.14
17	18	4.1	4.3	3.4	57	330	56	54	5.0	1.0	.28	.12
18	17	4.1	4.2	5.6	66	285	56	45	4.5	1.2	.20	.12
19	16	4.1	4.0	7.0	79	270	56	46	4.0	1.1	.10	.12
20	14	4.2	3.7	5.5	63	240	55	43	4.5	1.4	.06	.12
21	14	4.2	3.5	4.8	54	210	54	39	4.8	1.6	.10	.12
22	12	4.1	3.4	4.3	49	180	51	35	4.0	1.5	.14	.08
23	10	3.9	3.3	3.7	52	160	48	33	3.8	1.6	.14	.06
24	9.0	3.7	3.3	3.3	46	120	46	31	3.6	1.5	.16	.05
25	8.1	3.4	3.2	3.1	45	115	45	29	3.4	1.2	.12	.03
26	4.9	3.3	3.1	3.0	67	110	43	28	3.2	.89	.10	.02
27	4.0	3.1	3.0	2.8	81	105	42	32	3.0	1.0	.08	.01
28	6.0	3.0	2.9	2.8	68	100	40	25	3.0	1.2	.18	.01
29	6.5	2.9	2.9	2.8	---	100	40	23	3.6	1.2	.14	.01
30	6.0	3.0	2.8	2.6	---	100	40	22	3.3	1.1	.18	.01
31	5.5	---	2.8	2.4	---	100	---	20	---	1.2	.14	---
TOTAL	230.03	133.6	189.7	104.5	780.7	9121	1925	1099	238.3	65.39	9.60	1.75
MEAN	7.42	4.45	6.12	3.37	27.9	294	64.2	35.5	7.94	2.11	.31	.058
MAX	18	6.1	22	7.0	81	900	98	64	20	4.5	1.0	.14
MIN	.31	2.9	2.8	2.4	1.4	54	40	20	3.0	.89	.06	.01
AC-FT	456	265	376	207	1550	18090	3820	2180	473	130	19	3.5

CAL YR 1982 TOTAL 22408.40 MEAN 61.4 MAX 1460 MIN .13 AC-FT 44450
WTR YR 1983 TOTAL 13898.57 MEAN 38.1 MAX 900 MIN .01 AC-FT 27570

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
19...	1250	16	1220	--	4.0	8.0	--	--	--	--	--
DEC											
08...	1115	19	1460	--	-10.0	.0	--	--	--	--	--
JAN											
19...	1520	6.9	1620	--	-1.0	.0	--	--	--	--	--
FEB											
18...	1430	62	705	--	9.0	2.0	--	--	--	--	--
28...	1015	67	360	7.4	1.0	.0	100	0	22	11	28
28...	1016	67	360	7.4	1.0	.0	100	0	23	11	29
MAR											
08...	1440	883	195	7.4	-5.0	.0	62	0	14	6.5	8.5
17...	1311	331	175	--	4.0	.5	--	--	--	--	--
APR											
05...	1005	95	475	--	2.0	.5	--	--	--	--	--
MAY											
20...	1145	44	1000	--	18.0	12.5	--	--	--	--	--
JUL											
01...	1440	3.2	1180	--	31.0	24.5	--	--	--	--	--
AUG											
18...	1345	.19	1550	--	33.5	25.0	--	--	--	--	--
SEP											
22...	1344	.08	1600	--	16.0	9.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)
FEB											
28...	34	1	15	120	8.9	54	2.9	.10	9.9	228	210
28...	34	1	14	117	9.0	61	4.8	<.10	10	250	220
MAR											
08...	19	.5	14	72	5.5	19	2.1	.00	13	137	120

DATE	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	
FEB											
28...	.31	41	.380	--	--	--	2	--	170	--	
28...	.34	45	--	.200	.200	.61	1	43	100	<1	
MAR											
08...	.19	327	.500	--	--	--	1	--	120	--	

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
FEB										
28...	--	280	0	13	30	.3	1	0	120	--
28...	2	210	1	20	32	.1	--	1	160	6
MAR										
08...	--	310	1	8	60	.1	0	0	140	--

06349700 MISSOURI RIVER NEAR SCHMIDT, ND

LOCATION.--Lat 46°39'22", long 100°44'18", in SW¼NE¼ 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 mi^2, approximately.

PERIOD OF RECORD.--September 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,600.00 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Stage regulated by Lake Sakakawea (station 06338000).

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 ABOVE DATUM), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.07	15.36	16.86	20.67	19.42	17.93	16.51	16.13	17.13	17.45	17.53	17.36
2	14.09	15.50	16.48	20.72	19.41	17.65	16.51	16.06	17.24	17.83	17.58	17.42
3	13.92	16.05	15.95	20.47	19.44	17.78	16.57	16.20	17.02	17.61	17.72	17.28
4	13.73	15.84	15.79	20.24	19.14	17.65	16.52	16.43	16.61	17.61	18.07	17.34
5	14.04	15.36	15.66	20.42	19.35	17.68	16.48	16.31	16.69	17.52	18.17	17.41
6	13.86	16.93	15.28	20.44	19.66	18.37	16.47	16.51	16.69	17.56	17.89	17.29
7	13.95	16.94	15.24	20.32	19.93	18.68	16.42	16.25	16.76	17.35	18.02	17.46
8	13.86	16.98	14.38	20.05	20.17	18.51	16.72	16.86	16.67	17.35	17.75	17.15
9	13.87	17.23	16.76	20.03	20.39	18.83	16.73	17.35	17.00	17.55	17.95	16.83
10	13.99	17.35	18.20	20.37	20.48	19.60	16.32	16.64	16.91	17.48	17.75	16.54
11	14.13	17.48	18.86	19.83	20.52	19.37	16.34	16.32	17.00	17.24	17.73	16.41
12	14.18	16.77	19.86	18.42	20.62	18.63	16.59	16.70	16.76	17.23	17.90	16.33
13	14.41	17.26	21.37	18.85	20.70	18.28	16.34	16.92	16.69	17.42	17.61	16.23
14	14.42	16.49	21.09	19.32	20.74	18.82	16.30	16.82	16.41	17.39	17.78	16.58
15	14.28	17.32	20.15	18.33	20.87	19.09	16.21	16.78	16.44	17.44	17.80	16.41
16	14.28	17.27	19.96	18.00	20.82	19.14	16.39	16.87	16.70	17.17	17.71	16.23
17	14.51	17.17	19.97	18.18	20.73	18.65	16.46	16.96	16.72	17.37	17.55	16.37
18	14.70	17.11	19.20	17.46	20.80	18.23	16.50	17.06	16.87	17.57	17.64	16.17
19	14.85	17.17	18.10	16.83	20.95	17.98	16.62	16.86	17.10	17.54	17.48	16.13
20	14.83	17.00	16.88	17.41	20.94	17.78	16.56	17.04	17.04	17.46	17.65	16.06
21	14.77	17.22	16.20	18.30	20.76	17.59	16.55	17.08	16.79	17.36	17.51	16.17
22	14.83	17.16	15.94	18.78	20.87	17.21	16.38	16.76	17.08	17.41	17.51	16.06
23	14.87	17.08	15.75	19.08	20.96	17.15	16.22	16.93	17.39	17.26	17.62	16.19
24	14.82	17.21	16.05	19.16	20.64	17.21	16.38	16.98	17.65	17.23	17.59	16.14
25	14.98	17.16	16.48	18.79	20.46	17.22	16.57	17.16	17.57	17.47	17.50	16.12
26	14.87	16.89	17.55	18.01	20.57	16.99	16.22	17.34	16.99	17.68	17.43	16.00
27	14.96	17.13	18.42	17.75	19.66	17.01	16.35	17.14	16.80	17.64	17.44	16.25
28	15.25	17.11	18.77	18.05	18.36	16.54	16.12	16.78	16.89	17.55	17.35	16.07
29	14.91	17.02	20.60	18.49	---	16.41	16.37	16.65	17.18	17.51	17.34	16.07
30	14.90	16.81	21.10	19.19	---	16.54	16.34	16.82	17.21	17.46	17.40	16.11
31	15.38	---	20.95	19.38	---	16.50	---	16.74	---	17.44	17.37	---
TOTAL	448.51	505.37	553.85	591.34	567.36	555.02	493.06	519.45	508.00	541.15	547.34	496.18
MEAN	14.47	16.85	17.87	19.08	20.26	17.90	16.44	16.76	16.93	17.46	17.66	16.54
MAX	15.38	17.48	21.37	20.72	20.96	19.60	16.73	17.35	17.65	17.83	18.17	17.46
MIN	13.73	15.36	14.38	16.83	18.36	16.41	16.12	16.06	16.41	17.17	17.34	16.00

WTR YR 1983 TOTAL 6326.63 MEAN 17.33 MAX 21.37 MIN 13.73

06349930 COAL BANK CREEK NEAR HAVELOCK, ND

LOCATION.--Lat 46°27'50", long 102°44'20", in NW¼SW¼ sec.34, T.135 N., R.96 W., Hettinger County, Hydrologic Unit 10130204, on right bank 30 ft downstream from bridge on county highway, and 1 mile south of Havelock.

DRAINAGE AREA.--70.0 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to September 1983 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 2,505 ft, from topographic map.

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

AVERAGE DISCHARGE.--9 years, 7.03 ft^3/s, 5,090 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,800 ft^3/s Apr. 12, 1982, from rating extended above 900 ft^3/s, gage height, 12.02 ft, from floodmark; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 10	0545	152	7.08	Mar. 12	2100	139	6.98
Oct. 28	1645	*520	*9.10				

No flow Aug. 29 to Sept. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	10	1.3	.22	.64	5.0	2.5	3.6	3.4	3.5	.09	.00
2	.02	7.2	1.6	.22	.60	4.8	2.4	3.3	3.2	3.3	.13	.00
3	.03	6.0	1.7	.22	.50	5.3	2.2	2.9	3.5	3.0	.38	.00
4	.03	4.8	1.7	.22	.35	5.6	2.1	2.6	3.7	2.8	.59	.00
5	.08	3.6	1.7	.22	.26	10	2.0	3.1	3.8	2.4	.56	.00
6	.22	3.0	1.6	2.2	.25	25	1.8	5.0	4.1	2.1	.15	.00
7	.22	2.7	1.4	3.5	.20	20	1.8	11	4.6	1.8	.13	.00
8	.50	2.6	.88	4.5	.18	13	1.8	12	6.9	1.5	.09	.07
9	28	2.6	.64	19	.15	7.2	1.8	7.8	8.5	1.3	.01	.26
10	127	2.6	.50	12	.13	5.7	1.7	6.9	29	.57	.02	.24
11	52	2.5	.32	9.6	.11	9.4	1.7	6.4	18	.18	.05	.57
12	30	2.2	.26	5.9	.74	66	2.5	7.2	8.8	.17	.02	1.2
13	15	2.1	.34	6.0	3.0	88	2.9	7.9	6.1	.16	.06	1.7
14	9.8	1.7	.45	7.6	6.8	33	2.8	23	5.3	.16	.35	1.5
15	7.0	1.5	.34	6.6	20	15	3.3	83	4.8	.09	1.6	1.2
16	5.8	1.4	.34	7.1	32	9.6	4.0	37	4.4	.12	2.3	.92
17	4.8	1.3	.34	5.7	27	6.8	4.0	17	4.5	.14	1.7	.73
18	4.0	1.3	.34	3.3	23	5.3	4.5	11	4.8	.87	1.5	.28
19	3.5	1.5	.34	2.3	18	4.4	4.5	8.5	10	14	1.1	.92
20	2.8	1.5	.34	1.7	12	3.7	4.2	6.8	13	6.2	1.0	.83
21	2.7	1.5	.34	1.4	11	3.3	4.4	5.8	12	8.4	.94	.45
22	2.1	1.4	.50	1.3	8.3	2.8	4.2	4.9	19	5.8	.92	.22
23	1.8	1.3	.50	1.1	8.0	2.6	3.8	4.2	18	4.0	.99	.24
24	1.7	1.2	.38	.83	6.6	2.3	3.5	3.9	9.5	3.1	1.1	.22
25	1.6	1.1	.34	.80	5.9	2.3	3.3	3.4	7.0	2.2	.97	.17
26	1.4	1.0	.34	.64	6.3	2.3	2.7	2.9	5.6	1.3	.69	.33
27	2.1	.94	.34	.76	5.7	2.3	2.8	3.4	4.7	.43	.20	.46
28	208	1.1	.18	.93	5.1	2.3	3.2	3.1	4.1	.20	.02	.57
29	269	1.2	.18	.99	---	2.3	3.7	3.1	4.1	.11	.00	.34
30	46	1.3	.18	.66	---	2.3	3.9	3.3	3.7	.16	.00	.28
31	16	---	.22	.64	---	2.4	---	3.5	---	.08	.00	---
TOTAL	843.21	74.14	19.93	108.15	202.81	370.0	90.0	307.5	238.1	70.14	17.66	13.70
MEAN	27.2	2.47	.64	3.49	7.24	11.9	3.00	9.92	7.94	2.26	.57	.46
MAX	269	10	1.7	19	32	88	4.5	83	29	14	2.3	1.7
MIN	.01	.94	.18	.22	.11	2.3	1.7	2.6	3.2	.08	.00	.00
AC-FT	1670	147	40	215	402	734	179	610	472	139	35	27

CAL YR 1982	TOTAL	8950.42	MEAN	24.5	MAX	1000	MIN	.01	AC-FT	17750
WTR YR 1983	TOTAL	2355.34	MEAN	6.45	MAX	269	MIN	.00	AC-FT	4670

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
OCT 10...	1135	1.5	1650	7.8	19.0	9.5	13.6	132	--	--
JAN 21...	1625	1.4	3250	7.4	- .9	.0	9.2	70	--	--
MAR 01...	1655	5.0	2300	7.8	6.0	.5	12.6	98	828	632
APR 05...	1425	2.1	2270	8.5	4.0	5.5	15.4	134	--	--
MAY 10...	1555	6.6	4190	8.4	11.0	14.0	12.9	140	1546	1170
JUN 22...	1340	22	2810	8.1	22.0	22.0	9.0	114	1092	846
AUG 11...	1520	.03	4650	8.4	32.0	26.5	9.2	128	1629	1280

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
MAR 01...	150	110	280	42	4.3	8.5	196	6.0	1100	12	.30
MAY 10...	240	230	590	45	6.7	14	379	2.9	2400	30	.30
JUN 22...	190	150	360	41	4.8	11	247	3.8	1500	28	.30
AUG 11...	240	250	660	47	7.3	15	347	2.6	2600	23	.40

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)
MAR 01...	7.0	1950	1787	2.7	26.3	7.0	.200	2.4	2.60	.40	2.2
MAY 10...	<1.2	3760	--	5.1	67.0	3.0	.060	2.6	2.70	.40	2.3
JUN 22...	2.9	2370	2391	3.2	141	3.5	.060	2.1	2.20	.20	2.0
AUG 11...	3.4	4290	4004	5.8	.35	<.10	.060	2.5	2.60	.50	2.1

DATE	NITRO-GEN DIS-SOLVED (MG/L AS N) (00602)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)
MAR 01...	9.2	.080	.25	.050	1	890	<1	<10	3	490
MAY 10...	5.3	.070	.21	.010	--	1300	--	--	--	340
JUN 22...	5.5	.060	.18	.020	1	950	<1	<10	3	750
AUG 11...	--	.100	.31	.040	3	3100	<1	<10	2	1000

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)
MAR										
01...	60	<1	440	<.1	11	6	17	11	20	10
MAY										
10...	40	--	80	--	--	--	--	--	--	--
JUN										
22...	30	1	100	<.1	10	4	14	6	30	10
AUG										
11...	30	<1	790	<.1	8	9	17	3	130	110

DATE	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS-SOLVED (PCI/L AS SR/YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90) (80060)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)
MAR										
01...	10	--	--	--	--	--	--	27	.3	<.01
MAY										
10...	--	--	--	--	--	--	--	28	1.0	--
JUN										
22...	20	--	--	--	--	--	--	21	2.8	<.01
AUG										
11...	20	<130	1.2	<48	2.5	<40	2.4	33	2.9	<.01

06350000 CANNONBALL RIVER AT REGENT, ND

LOCATION.--Lat 46°25'36", long 102°33'05", in NE¼NE¼ 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 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,422.90 ft National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--33 years, 48.7 ft^3/s, 35,280 acre-ft/yr; median of yearly mean discharges, 31 ft^3/s, 22,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,000 ft^3/s Mar. 27, 1978, gage height, 20.55 ft; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since 1914, 26.1 ft Apr. 16, 1950, from floodmarks, discharge, 20,300 ft^3/s, on basis of slope-area measurement at site 4 mi downstream.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 30	1430	*1,060	*7.85	Mar. 14	--	726	Ice jam
Feb. 17	--	500	[a]Ice jam				

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	294	18	15	25	60	36	23	22	23	14	4.4
2	10	183	20	22	25	54	36	23	20	19	19	4.3
3	9.4	128	22	24	25	59	36	23	18	19	15	3.9
4	8.8	97	22	25	25	58	34	21	17	18	16	3.5
5	8.6	78	22	26	30	60	32	20	16	16	12	3.7
6	10	68	21	30	45	110	31	23	15	14	8.1	3.9
7	11	59	20	32	55	90	30	31	14	13	8.1	3.9
8	12	51	18	50	45	80	30	39	13	12	8.8	3.9
9	21	47	15	100	40	75	30	47	13	11	10	4.1
10	82	44	14	150	35	70	28	41	95	9.8	12	4.3
11	214	41	12	100	35	60	28	51	79	8.1	8.4	4.0
12	212	30	11	90	30	128	32	62	46	7.7	7.9	4.0
13	250	35	10	75	30	570	32	61	30	7.3	6.8	4.0
14	157	33	10	80	30	647	31	74	22	7.3	6.0	4.2
15	106	30	10	70	100	437	32	232	17	6.7	7.3	4.6
16	78	28	11	60	225	241	34	267	14	6.3	8.8	4.6
17	57	27	12	50	430	141	40	290	13	6.5	8.8	4.5
18	44	26	12	45	360	100	46	231	13	8.2	7.9	4.4
19	37	26	14	45	285	90	51	150	12	9.7	8.4	4.8
20	32	27	16	50	180	78	53	116	15	12	9.8	5.6
21	27	25	18	45	180	59	53	93	18	117	7.6	5.8
22	24	24	20	45	150	51	48	76	22	108	6.3	5.8
23	22	23	20	40	125	40	43	63	30	80	6.0	5.8
24	21	21	18	40	90	50	40	54	101	58	6.0	5.8
25	19	19	16	40	85	47	37	46	84	40	5.8	5.5
26	19	18	16	35	85	42	33	40	53	31	5.5	5.4
27	18	18	15	35	75	40	30	35	41	26	5.7	5.0
28	33	16	14	30	70	38	28	32	32	24	5.5	5.0
29	660	16	13	30	---	37	26	26	29	20	5.4	4.8
30	1010	17	13	30	---	36	24	23	26	19	4.9	5.0
31	625	---	13	25	---	36	---	24	---	15	4.7	---
TOTAL	3847.8	1549	486	1534	2915	3684	1064	2337	940	772.6	266.5	138.5
MEAN	124	51.6	15.7	49.5	104	119	35.5	75.4	31.3	24.9	8.60	4.62
MAX	1010	294	22	150	430	647	53	290	101	117	19	5.8
MIN	8.6	16	10	15	25	36	24	20	12	6.3	4.7	3.5
AC-FT	7630	3070	964	3040	5780	7310	2110	4640	1860	1530	529	275

CAL YR 1982 TOTAL 66816.30 MEAN 183 MAX 7070 MIN .47 AC-FT 132500
WTR YR 1983 TOTAL 19534.40 MEAN 53.5 MAX 1010 MIN 3.5 AC-FT 38750

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-66, 1971 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 26...	1440	18	1740	--	21.0	10.0	--	--	--	--	--
DEC 07...	1145	20	2460	--	- .9	.0	--	--	--	--	--
JAN 18...	1400	43	3200	--	1.0	.0	--	--	--	--	--
MAR 01...	1225	62	1410	8.1	3.5	.0	418	246	68	60	170
APR 04...	1750	32	1760	--	.5	4.0	--	--	--	--	--
MAY 10...	1215	39	3120	--	13.0	12.5	--	--	--	--	--
JUN 23...	1135	25	2560	--	26.0	22.5	--	--	--	--	--
AUG 16...	1255	8.4	2000	8.3	26.5	24.5	482	137	87	64	290

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 01...	46	3.7	8.6	210	0	170	2.7	620	6.5	.20	7.0	1060
AUG 16...	56	5.9	12	421	0	350	3.4	780	9.2	.50	6.7	1480

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 01...	1050	1.4	177	0	210	70	0	30	250	.2	0	740
AUG 16...	1458	2.0	33.6	0	420	10	0	48	30	.1	0	1400

06351680 WHITE BUTTE FORK CEDAR CREEK NEAR SCRANTON, ND

LOCATION.--Lat 46°19'20", long 102°59'45", in NW¼ sec.21, T.133 N., R.98 W., Slope County, Hydrologic Unit 10130205, on left bank 1,200 ft downstream from county highway bridge, and 13 mi northeast of Scranton.

DRAINAGE AREA.--42.9 mi^2.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Altitude of gage is 2,825 ft, from topographic map.

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

AVERAGE DISCHARGE.--18 years, 4.45 ft^3/s, 3,220 acre-ft/yr, median of yearly mean discharges, 4.54 ft^3/s, 3,290 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 645 ft^3/s May 8, 1970, gage height, 7.20 ft; maximum gage height, 7.76 ft May 8, 1967; no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 29	1430	*421	*6.71	Mar. 13	--	188	Ice jam
Feb. 15	--	65	Ice jam	May 16	0400	70	4.38

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	25	.75	.27	.61	4.1	2.7	.55	.00	2.1	.41	.00
2	.00	11	.80	.27	.58	6.0	2.7	.55	.00	2.4	.29	.00
3	.00	5.6	.80	.31	.55	5.0	2.6	.47	.00	2.5	.19	.00
4	.00	3.7	.80	.39	.52	4.9	2.3	.31	.00	2.5	.14	.00
5	.01	2.8	.80	.37	.45	5.6	1.8	.31	.00	2.7	.08	.00
6	.01	2.3	.80	.54	.43	6.9	1.9	2.5	.00	3.0	.03	.00
7	.03	2.0	.80	.64	.43	7.0	1.7	3.9	.00	3.0	.00	.00
8	.07	1.7	1.0	.56	.43	5.5	1.6	3.4	.00	2.8	.00	.00
9	5.4	1.5	.98	1.1	.43	4.1	1.5	7.0	.00	2.6	.00	.00
10	1.6	1.5	1.0	1.8	.43	2.8	1.3	3.0	.00	2.3	.00	.00
11	.35	1.4	.90	1.9	.45	5.3	1.3	1.7	.00	1.6	.00	.00
12	12	1.3	.79	1.9	2.2	13	1.6	2.0	.00	.94	.00	.00
13	11	1.2	.54	6.7	15	133	1.9	3.4	.00	.55	.00	.00
14	7.1	1.1	.43	21	25	61	1.6	11	.00	.31	.00	.00
15	2.0	1.1	.37	20	35	25	2.9	36	.00	.20	.00	.00
16	1.2	1.0	.33	14	40	11	2.8	48	.00	.10	.00	.00
17	.75	.98	.35	13	40	6.8	3.1	14	.04	.05	.00	.00
18	.47	.95	.36	2.2	35	5.2	4.2	4.4	.22	2.2	.00	.00
19	.39	.92	.35	1.1	20	3.9	4.4	1.9	.37	3.7	.00	.00
20	.27	.90	.41	.90	15	3.1	3.7	.98	1.2	1.3	.00	.00
21	.18	.90	.40	.73	10	2.7	2.8	.60	2.3	.78	.00	.00
22	.12	.85	.39	.62	10	2.3	2.1	.35	1.3	.54	.00	.00
23	.12	.85	.39	.62	8.1	2.0	1.7	.15	1.4	.42	.00	.00
24	.09	.80	.37	.57	7.7	1.9	1.4	.04	1.5	.33	.00	.00
25	.09	.80	.32	.56	5.5	1.8	1.2	.02	1.3	.27	.00	.00
26	.12	.75	.31	.56	6.7	1.8	1.0	.01	1.2	.18	.00	.00
27	.21	.70	.33	.62	6.7	1.8	.80	.01	1.1	.17	.00	.00
28	69	.70	.26	.69	6.6	2.0	.60	.00	1.2	.39	.00	.00
29	275	.70	.28	.62	---	2.1	.65	.00	1.6	.42	.00	.00
30	178	.70	.27	.64	---	2.4	.60	.00	1.8	.44	.00	.01
31	65	---	.27	.58	---	2.3	---	.00	---	.48	.00	---
TOTAL	630.58	75.70	16.95	95.76	293.81	342.3	60.45	146.55	16.53	41.27	1.14	.01
MEAN	20.3	2.52	.55	3.09	10.5	11.0	2.02	4.73	.55	1.33	.037	.000
MAX	275	25	1.0	21	40	133	4.4	48	2.3	3.7	.41	.01
MIN	.00	.70	.26	.27	.43	1.8	.60	.00	.00	.05	.00	.00
AC-FT	1250	150	34	190	583	679	120	291	33	82	2.3	.02

CAL YR 1982 TOTAL 3767.48 MEAN 10.3 MAX 470 MIN .00 AC-FT 7470
WTR YR 1983 TOTAL 1721.05 MEAN 4.72 MAX 275 MIN .00 AC-FT 3410

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 13...	1850	15	2420	--	8.0	8.0	--	--	--	--	--
DEC 09...	1550	1.0	3740	--	- .9	.0	--	--	--	--	--
JAN 21...	1420	.75	3290	--	- .4	.0	--	--	--	--	--
MAR 04...	1630	5.1	2200	8.1	1.0	.5	730	501	130	98	260
APR 06...	1625	1.9	2700	--	5.0	7.5	--	--	--	--	--
MAY 16...	1355	45	4210	--	13.0	9.0	--	--	--	--	--
JUN 21...	1755	1.4	3580	--	25.0	24.5	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR 04...	43	4	9.1	280	0	230	3.5	1000	11	.20	8.9	1780

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR 04...	1700	2.4	25	0	630	60	1	60	800	.1	0	2000

06352000 CEDAR CREEK NEAR HAYNES, ND

LOCATION.--Lat 46°09'15", long 102°28'25", in W½ 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 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,472.90 ft 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.

AVERAGE DISCHARGE.--33 years, 37.6 ft^3/s, 27,240 acre-ft/yr; median of yearly mean discharges, 30 ft^3/s, 21,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,870 ft^3/s Apr. 7, 1952, gage height, 21.25 ft; maximum gage height, 22.05 ft Mar. 28, 1978, backwater from ice and snow: no flow at times in some years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 17, 1950 reached a stage of about 23 ft, discharge, 26,900 ft^3/s, by slope-area measurement at site 9 mi upstream.

EXTREMES FOR CURRENT YEAR.-Maximum discharge, 560 ft^3/s June 22, gage height, 10.23 ft, only peak above base of 400 ft^3/s; minimum daily, 2.5 ft^3/s several days in Sept.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.2	172	29	14	5.5	73	27	21	20	11	4.5	2.9
2	8.2	210	30	13	5.0	65	27	20	15	10	4.3	2.8
3	8.3	196	31	12	5.0	60	28	19	17	9.8	4.3	2.5
4	8.5	136	29	11	5.5	60	28	18	16	9.3	4.3	2.5
5	8.7	95	28	10	6.0	65	27	17	15	8.3	4.1	2.8
6	9.1	72	29	15	6.0	75	27	21	14	7.6	5.6	2.8
7	8.8	58	28	20	6.0	80	27	32	13	7.4	5.0	2.7
8	9.9	44	25	30	7.0	85	26	65	13	7.0	4.0	2.6
9	18	41	22	40	6.5	105	26	86	12	6.2	3.8	2.8
10	79	37	21	70	6.5	90	25	74	12	5.8	3.7	2.8
11	121	35	19	60	6.5	70	25	71	11	5.4	3.4	2.6
12	108	33	18	70	7.0	80	27	82	11	5.0	3.1	2.5
13	106	33	17	70	22	145	28	79	10	4.8	3.1	2.5
14	80	32	16	60	75	225	28	91	9.6	4.5	2.9	2.8
15	56	30	15	50	100	280	29	192	9.3	4.1	3.2	3.0
16	43	29	15	40	120	300	32	297	9.1	4.0	3.7	3.2
17	37	28	16	30	160	210	37	317	9.6	4.1	3.4	3.1
18	34	27	16	19	200	140	46	304	11	7.6	3.2	3.0
19	32	27	17	12	190	100	52	227	11	9.1	3.4	2.9
20	30	27	18	8.0	170	75	55	150	26	28	3.3	3.2
21	28	27	19	7.0	250	55	56	110	36	16	3.0	3.6
22	27	26	21	7.0	220	40	54	89	357	9.3	3.0	3.5
23	26	26	20	6.0	175	30	48	71	156	8.0	3.4	3.4
24	25	25	19	5.0	140	35	43	56	42	7.0	3.4	3.4
25	24	25	18	5.0	120	33	38	46	22	6.2	3.2	3.4
26	24	26	17	4.5	110	31	33	39	16	5.6	3.1	3.4
27	24	28	17	5.0	85	28	29	34	13	5.4	2.9	3.3
28	27	29	16	6.0	79	27	27	31	12	5.4	2.8	3.2
29	35	29	15	7.0	---	27	25	27	13	4.8	2.9	3.2
30	88	29	15	6.0	---	27	23	24	12	4.8	2.9	3.5
31	199	---	15	5.0	---	27	---	22	---	4.7	2.9	---
TOTAL	1339.7	1632	631	717.5	2288.5	2743	1003	2732	943.6	236.2	109.8	89.9
MEAN	43.2	54.4	20.4	23.1	81.7	88.5	33.4	88.1	31.5	7.62	3.54	3.00
MAX	199	210	31	70	250	300	56	317	357	28	5.6	3.6
MIN	7.2	25	15	4.5	5.0	27	23	17	9.1	4.0	2.8	2.5
AC-FT	2660	3240	1250	1420	4540	5440	1990	5420	1870	469	218	178

CAL YR 1982 TOTAL 46725.0 MEAN 128 MAX 4140 MIN 1.8 AC-FT 92680
WTR YR 1983 TOTAL 14466.2 MEAN 39.6 MAX 357 MIN 2.5 AC-FT 28690

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1971 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
26...	1640	23	1880	--	17.0	10.5	--	--	--	--	--
DEC											
07...	1510	27	2370	--	- .4	.0	--	--	--	--	--
JAN											
18...	1110	20	2230	--	- .9	.0	--	--	--	--	--
FEB											
28...	1705	84	1460	8.3	.0	.0	455	291	73	66	160
28...	1706	84	1460	8.3	--	.0	466	302	74	68	160
APR											
05...	1040	27	2340	--	5.0	3.0	--	--	--	--	--
MAY											
09...	1735	86	3110	--	19.0	15.5	--	--	--	--	--
JUN											
23...	1550	117	2190	--	29.0	23.5	--	--	--	--	--
AUG											
16...	1600	3.6	2800	8.4	29.0	26.0	853	505	110	140	380
16...	1601	3.6	2800	8.4	29.0	26.0	828	470	100	140	380

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
FEB										
28...	43	3.3	10	200	0	160	1.6	630	7.8	.20
28...	42	3.3	8.9	--	--	164	1.6	620	8.0	.20
AUG										
16...	49	5.8	14	425	0	350	2.7	1300	17	.50
16...	50	5.8	10	--	--	359	2.7	1300	8.4	.40

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BORON, DIS-SOLVED (UG/L AS B) (01020)
FEB										
28...	7.2	1070	1059	1.5	243	--	--	0	--	260
28...	7.6	1090	1047	1.5	248	1.2	.030	2	42	390
AUG										
16...	1.7	2150	2175	2.9	20.8	--	--	0	--	640
16...	1.4	2170	2158	3.0	21.1	<.10	.010	2	<100	970

DATE	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
FEB									
28...	--	30	1	30	220	.1	0	1000	--
28...	2	47	<1	41	230	<.1	2	950	10
AUG									
16...	--	20	0	97	130	.2	0	2000	--
16...	2	40	<1	90	130	<.1	1	1700	40

06353000 CEDAR CREEK NEAR RALEIGH, ND

LOCATION.--Lat 46°05'30", long 101°20'00", in NE¼SE¼ 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 mi^2, 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 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 those for the winter period, which are fair.

AVERAGE DISCHARGE.--21 years (water years 1963-83), 104 ft^3/s, 75,300 acre-ft/yr; median of yearly mean discharges, 79 ft^3/s, 57,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft^3/s Mar. 28, 1978, gage height, 13.70 ft; no flow at times in most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since 1950, about 18 ft Apr. 18, 1950, discharge 45,000 ft^3/s, on basis of slope-area measurement 5 mi upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 700 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 13	0145	*1400	[a]6.81	May 12	1530	1120	5.28

Minimum daily, 2.6 ft^3/s Sept. 12, 13.

a - Backwater from ice

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	24	30	25	12	115	83	80	81	137	45	5.8
2	10	24	40	25	9.5	95	84	74	74	111	39	4.7
3	11	26	50	25	6.5	90	81	66	67	105	28	4.1
4	11	43	40	25	6.5	85	78	63	61	95	31	3.7
5	11	156	40	25	5.0	90	74	59	55	79	50	3.9
6	12	121	42	25	5.0	200	71	86	51	68	55	3.3
7	11	129	40	27	4.5	205	70	270	47	64	122	3.1
8	13	116	32	29	4.5	250	68	144	42	65	59	3.1
9	69	90	30	40	5.0	245	66	122	40	59	30	3.3
10	200	75	30	38	6.0	185	64	171	36	50	20	3.4
11	121	64	28	36	5.0	205	62	192	34	43	17	3.3
12	60	50	30	36	4.5	440	75	704	31	38	14	2.6
13	53	46	30	36	7.5	660	80	411	28	33	12	2.6
14	61	40	30	36	35	340	75	371	26	29	11	7.4
15	72	35	30	36	45	430	81	440	25	24	12	9.5
16	106	32	28	36	32	400	88	399	26	21	15	6.4
17	94	30	28	35	18	280	87	363	28	20	14	4.8
18	84	28	30	35	18	225	87	319	27	19	11	3.7
19	74	28	30	33	30	225	112	361	24	19	8.7	3.5
20	62	26	30	31	55	300	127	384	27	30	14	3.0
21	53	26	32	28	65	320	145	360	24	74	14	2.7
22	44	26	32	26	115	275	154	320	93	43	12	2.7
23	39	26	32	24	120	215	153	271	181	33	11	2.9
24	36	28	32	22	140	200	145	231	104	49	10	2.9
25	32	28	30	20	125	163	134	201	183	44	9.2	3.4
26	30	28	28	18	125	152	120	174	420	75	8.5	3.4
27	29	28	26	14	155	132	113	152	393	65	7.8	3.4
28	30	30	22	14	145	113	106	132	300	48	11	3.4
29	28	30	22	15	---	103	96	114	232	45	11	3.1
30	26	30	22	15	---	99	87	101	176	48	8.7	3.4
31	26	---	25	10	---	90	---	90	---	41	7.1	---
TOTAL	1518	1463	971	840	1304.5	6927	2866	7225	2936	1674	718.0	116.5
MEAN	49.0	48.8	31.3	27.1	46.6	223	95.5	233	97.9	54.0	23.2	3.88
MAX	200	156	50	40	155	660	154	704	420	137	122	9.5
MIN	10	24	22	10	4.5	85	62	59	24	19	7.1	2.6
AC-FT	3010	2900	1930	1670	2590	13740	5680	14330	5820	3320	1420	231

CAL YR 1982 TOTAL 115707.2 MEAN 317 MAX 4600 MIN 1.3 AC-FT 229500
WTR YR 1983 TOTAL 28559.0 MEAN 78.2 MAX 704 MIN 2.6 AC-FT 56650

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
DEC											
06...	1430	44	2000	--	- .9	.0	--	--	--	--	--
JAN											
18...	1020	35	--	--	- .9	.0	--	--	--	--	--
MAR											
09...	1345	194	1230	--	--	.0	--	--	--	--	--
15...	1230	393	1500	8.1	2.5	.5	410	221	65	59	170
APR											
06...	1320	70	1850	--	--	6.5	--	--	--	--	--
MAY											
25...	1400	193	2950	--	20.0	17.5	--	--	--	--	--
JUN											
29...	1340	237	1520	--	18.0	22.0	--	--	--	--	--
SEP											
22...	1130	2.9	1800	8.6	15.0	9.0	430	163	69	62	250

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
15...	47	4	11	225	0	180	2.8	560	5.2	.20	7.3	1060
SEP												
22...	55	5	14	324	0	270	1.3	720	13	.40	5.3	1350

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
15...	990	1.4	1120	1	200	100	1	34	40	.4	0	330
SEP												
22...	1300	1.8	11	2	460	20	4	50	30	.1	2	1000

06354000 CANNONBALL RIVER AT BREIEN, ND

LOCATION.--Lat 46°22'33", long 100°56'03", 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, 1,500 ft downstream from Louise Creek, and 0.6 mi southeast of Breien. Prior to June 12, 1973, at site 600 ft upstream on right bank.

DRAINAGE AREA.--4,100 mi^2, 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 National Geodetic Vertical Datum of 1929. Prior to June 12, 1973, at site 600 ft upstream at datum 3.00 ft higher. June 13, 1973, to April 8, 1980, at datum 2.00 ft higher.

REMARKS.--Records fair. Some storage in several small lakes above station.

AVERAGE DISCHARGE.--49 years, 256 ft^3/s, 185,500 acre-ft/yr; median of yearly mean discharges, 190 ft^3/s, 140,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 94,800 ft^3/s Apr. 19, 1950, gage height, 22.30 ft, from floodmarks, from rating curve extended above 16,000 ft^3/s on basis of slope area and contracted-opening measurements of peak flow, site and datum then in use; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 6	1815	*2200	[a]*10.91	May 13	0600	1690	6.66
Mar. 17	1345	2140	7.26				

Minimum daily discharge, 14 ft^3/s Sept. 29.

a - Ice jam

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	132	85	40	70	500	248	201	183	277	109	34
2	45	256	100	40	60	450	255	191	168	230	98	27
3	48	882	120	40	60	400	241	179	155	215	93	25
4	48	646	140	50	55	350	233	169	143	232	75	22
5	48	487	110	50	50	800	220	162	134	192	60	23
6	68	449	95	50	40	1900	213	185	125	154	100	22
7	115	424	95	40	40	400	200	266	119	139	102	21
8	93	385	90	50	35	600	195	447	111	124	104	18
9	245	354	85	60	35	500	189	269	105	119	97	18
10	628	306	85	60	30	600	186	248	96	107	56	17
11	593	268	80	60	30	550	179	272	86	92	49	16
12	341	250	75	65	30	550	195	713	77	80	39	15
13	285	220	75	75	35	1100	227	1290	71	73	33	15
14	310	185	70	85	40	1000	223	665	69	65	27	22
15	285	165	70	95	50	1380	212	737	66	56	38	30
16	338	155	65	95	80	1190	214	805	65	50	34	60
17	402	145	65	95	100	1570	218	694	84	60	51	37
18	399	135	60	95	100	1450	225	646	102	58	45	23
19	341	130	60	85	90	1120	246	724	91	69	28	21
20	291	125	60	95	80	926	290	774	156	140	27	20
21	251	120	60	120	70	773	335	771	112	92	29	18
22	213	110	55	130	90	672	369	705	156	113	35	17
23	208	110	55	120	140	573	384	606	287	95	72	17
24	188	105	50	115	240	471	360	509	377	76	72	16
25	164	105	50	110	260	460	329	437	248	66	57	16
26	154	100	45	105	280	429	305	375	315	82	53	16
27	143	100	45	100	290	391	277	331	558	96	52	16
28	169	95	45	95	300	335	245	285	486	145	53	15
29	174	95	45	90	---	284	217	235	385	143	44	14
30	147	90	40	85	---	257	205	220	326	126	37	15
31	134	---	45	80	---	255	---	200	---	124	36	---
TOTAL	6908	7129	2220	2475	2780	22236	7435	14311	5456	3690	1805	646
MEAN	223	238	71.6	79.8	99.3	717	248	462	182	119	58.2	21.5
MAX	628	882	140	130	300	1900	384	1290	558	277	109	60
MIN	40	90	40	40	30	255	179	162	65	50	27	14
AC-FT	13700	14140	4400	4910	5510	44110	14750	28390	10820	7320	3580	1280

CAL YR 1982	TOTAL	312032.47	MEAN 855	MAX 12900	MIN .80	AC-FT 618900		
WTR YR 1983	TOTAL	77091.00	MEAN 211	MAX 1900	MIN 14	AC-FT 152900		

06354000 CANNONBALL RIVER AT BREIEN, ND
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1946-50 (partial-record station), 1970-72, 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT											
25...	1205	164	1750	8.4	18.0	10.0	--	10.6	94	K10	K85
NOV											
29...	1520	95	2320	8.3	6.0	.0	1.5	--	83	K5	110
DEC											
28...	1415	46	--	--	- .9	.0	--	--	--	--	--
JAN											
13...	1155	76	2680	8.1	5.0	.0	--	11.3	78	K35	693
31...	1220	84	2680	--	- .9	.0	--	--	--	--	--
MAR											
15...	1047	1370	740	--	2.0	.0	--	--	--	--	--
29...	1235	270	1440	8.2	6.0	3.0	85	12.2	91	--	101
APR											
28...	1500	240	2260	--	9.0	12.0	--	--	--	--	--
MAY											
26...	1255	386	2930	8.5	25.0	18.0	--	9.3	100	--	6
JUN											
27...	1405	549	2330	8.5	26.0	24.5	80	8.4	101	K630	243
27...	1640	549	2460	8.6	26.0	25.3	--	9.5	116	--	--
AUG											
09...	1010	99	2120	8.4	25.5	22.5	--	7.9	92	2500	2250
SEP											
22...	1230	18	1480	8.5	10.0	7.0	60	--	--	--	--
22...	1440	18	1470	8.8	10.5	9.6	--	11.7	102	--	--

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
NOV												
29...	730	399	130	99	300	47	4.9	12	335	3.2	990	13
FEB												
24...	480	202	87	64	210	48	4.3	8.2	280	3.4	620	9.8
MAR												
29...	410	208	67	58	170	47	3.7	8.4	199	2.4	550	7.5
JUN												
27...	650	392	98	99	290	49	5.0	12	262	1.6	940	11
SEP												
22...	310	45	59	39	220	60	5.6	8.4	264	1.6	500	13

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)
NOV											
29...	.30	7.0	1740	1750	2.4	446	.79	.10	2.30	.050	.15
FEB											
24...	.30	5.9	1210	1170	1.6	.00	.78	.21	8.20	.090	.28
MAR											
29...	.20	6.9	1030	989	1.4	751	.80	.39	2.10	.100	.31
JUN											
27...	.40	4.7	1750	1610	2.4	2590	.55	.09	2.40	.090	.28
SEP											
22...	.40	9.1	1030	1010	1.4	50.1	.40	.12	1.30	.050	.15

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

06354000 CANNONBALL RIVER AT BREIEN, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
NOV											
29...	.010	<.010	--	10	1	100	<1	<1	<1	2	20
FEB											
24...	.040	<.010	--	60	1	51	<1	<1	<3	2	52
MAR											
29...	.040	.040	.12	30	1	51	<1	<1	<3	2	25
JUN											
27...	.020	<.010	--	<10	1	<100	<1	<1	1	2	10
SEP											
22...	.020	.020	.06	40	2	89	<1	<1	<3	4	17

DATE	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
NOV											
29...	<1	70	20	<.1	4	5	2	<1	1400	1.7	10
FEB											
24...	<1	67	18	.1	<10	5	2	<1	1000	<6.0	69
MAR											
29...	3	47	18	<.1	<10	10	2	<1	770	<6.0	8
JUN											
27...	1	60	10	.1	3	3	5	<1	1300	2.9	10
SEP											
22...	2	62	19	.4	<10	7	2	<1	790	<6.0	21

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV					
29...	1520	--	89	--	90
29...	1520	95	84	22	--
FEB					
24...	1235	.00	70	.00	96
24...	1245	.00	70	.00	96
MAR					
29...	1235	270	125	91	--
JUN					
27...	1405	549	298	442	92
SEP					
22...	1230	18	154	7.5	100

CANNONBALL RIVER BASIN

06354000 CANNONBALL RIVER AT BREIEN, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLE LOCATION, CROSS SECTION (FT FM L BANK) (00009)	DEPTH TO TOP OF SAMPLE INTERVAL (FT) (72015)	TEMPERATURE (DEG C) (00010)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	OXYGEN, DISSOLVED (MG/L) (00300)
JUN							
27...	1640	110	.0	25.3	2460	8.6	9.5
27...	1641	105	.0	25.3	2470	--	9.6
27...	1642	100	.0	25.3	2470	8.6	9.6
27...	1643	95.0	.0	25.3	2470	--	9.7
27...	1644	90.0	.0	25.3	2470	8.6	9.7
27...	1645	85.0	.0	25.3	2460	--	9.9
27...	1646	80.0	.0	25.3	2450	8.6	10.0
27...	1647	75.0	.0	25.3	2450	--	10.0
27...	1648	70.0	.0	25.3	2440	8.5	10.0
27...	1649	70.0	1.6	25.4	2430	8.5	10.0
27...	1650	65.0	.0	25.4	2430	--	10.1
27...	1651	65.0	1.6	25.4	2420	--	10.1
27...	1652	60.0	.0	25.4	2410	8.5	10.1
27...	1653	60.0	1.6	25.4	2400	--	10.1
27...	1654	55.0	.0	25.4	2400	--	10.1
27...	1655	55.0	1.6	25.4	2400	--	10.1
27...	1656	50.0	.0	25.4	2390	8.5	10.1
27...	1657	50.0	1.6	25.4	2380	--	10.1
27...	1658	45.0	.0	25.4	2380	--	10.1
27...	1659	45.0	1.6	25.4	2380	--	10.1
27...	1700	40.0	.0	25.4	2380	8.5	10.1
27...	1701	40.0	1.6	25.4	2370	8.5	10.1
27...	1702	35.0	.0	25.4	2370	--	10.2
27...	1703	35.0	1.6	25.4	2370	--	10.2
27...	1704	30.0	.0	25.4	2370	--	10.1
27...	1705	30.0	1.6	25.4	2360	--	10.1
27...	1706	25.0	.0	25.4	2360	--	10.2
27...	1707	25.0	1.6	25.4	2350	--	10.2
27...	1708	20.0	.0	25.4	2350	8.5	10.2
27...	1709	20.0	1.6	25.5	2350	8.5	10.2
27...	1710	15.0	.0	25.4	2350	--	10.2
27...	1711	10.0	.0	25.4	2350	--	10.2
27...	1712	5.00	.0	25.5	2340	8.5	10.2
27...	1713	.00	.0	25.5	2350	--	10.2
SEP							
22...	1440	6.00	--	9.6	1470	8.8	11.7
22...	1443	10.0	--	9.5	1442	8.9	11.8
22...	1445	14.0	--	9.5	1446	8.9	11.8
22...	1446	18.0	--	9.6	1449	8.9	11.8
22...	1447	22.0	--	9.6	1455	8.8	11.8
22...	1448	26.0	--	9.6	1452	8.8	11.8
22...	1450	30.0	--	9.6	1453	8.8	11.8
22...	1452	34.0	--	9.7	1452	8.7	11.7
22...	1454	38.0	--	9.7	1454	8.7	11.8
22...	1455	42.0	--	9.7	1452	8.7	11.7
22...	1457	46.0	--	9.8	1453	8.7	11.7
22...	1458	50.0	--	10.0	1454	8.7	11.7
22...	1500	54.0	--	10.2	1454	8.6	11.7

06354500 BEAVER CREEK AT LINTON, ND

LOCATION.--Lat 46°15'27", long 100°13'58", on line between secs.17 and 18, T.132 N., R.76 W., Emmons County, Hydrologic Unit 10130104, on left bank 60 ft downstream from bridge on U.S. Highway 83, 0.7 mi south of railway station in Linton, and 1 mi upstream from Spring Creek.

DRAINAGE AREA.--717 mi^2, of which about 100 mi^2 is probably noncontributing.

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

REVISED RECORDS.--WSP 1209: Drainage area. WSP 1239: 1950(M).

GAGE.--Water-stage recorder. Datum of gage is 1,690.55 ft National Geodetic Vertical Datum of 1929. Prior to June 18, 1958, nonrecording gage at site 60 ft upstream at same datum.

REMARKS.--Records poor.

AVERAGE DISCHARGE.--34 years, 40.9 ft^3/s, 29,630 acre-ft/yr; median of yearly mean discharges, 27 ft^3/s, 19,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,800 ft^3/s Apr. 8, 1952, gage height, 17.50 ft; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 190 ft^3/s Mar. 8, gage height, 9.49 ft, backwater from ice, no peaks above base of 200 ft^3/s; no flow Sept. 3-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.17	6.6	6.2	4.3	2.6	6.5	83	18	11	2.9	3.5	.03
2	.21	6.4	6.2	4.3	2.6	6.5	60	17	9.5	3.3	3.0	.04
3	.24	5.6	6.1	4.3	2.6	6.5	80	16	8.4	3.6	2.7	.01
4	.28	5.2	6.0	4.3	2.6	6.5	77	16	9.9	3.5	2.6	.00
5	.33	5.0	5.9	4.3	2.6	6.5	44	16	8.2	3.2	2.3	.00
6	.57	5.2	5.9	4.3	2.4	7.0	43	15	7.0	3.3	2.0	.00
7	.58	5.5	5.7	4.3	2.0	7.0	33	14	6.5	3.1	2.4	.00
8	.80	5.5	5.6	4.2	1.8	70	26	12	5.6	3.1	2.3	.00
9	8.0	5.4	5.4	4.2	1.7	150	27	11	5.2	2.7	1.8	.00
10	22	5.6	5.2	4.2	1.6	120	27	11	4.7	2.4	1.4	.00
11	42	6.1	5.0	4.2	1.6	134	27	11	4.3	1.9	1.1	.00
12	65	5.7	4.8	4.1	1.6	119	34	19	4.3	1.5	.86	.00
13	54	5.4	4.7	4.1	1.6	129	38	50	4.2	1.3	.67	.00
14	37	5.4	4.7	4.1	1.6	134	39	88	4.2	1.1	.47	.00
15	27	5.5	4.6	4.0	1.6	131	39	90	3.6	.97	.48	.00
16	22	5.4	4.6	4.0	1.6	109	35	65	3.4	.85	.48	.00
17	16	5.4	4.6	3.8	1.6	86	42	128	3.7	1.0	.41	.00
18	12	5.5	4.6	3.7	1.6	86	47	119	3.4	74	.32	.00
19	9.3	5.6	4.5	3.6	4.0	72	52	92	3.3	50	.27	.00
20	7.7	5.8	4.5	3.6	5.0	61	53	66	3.4	61	.24	.00
21	6.9	6.0	4.5	3.5	5.0	51	48	53	3.8	115	.18	.00
22	6.4	6.0	4.5	3.5	5.0	49	41	43	4.0	76	.15	.00
23	6.7	5.9	4.5	3.5	5.5	44	37	33	4.1	50	.14	.00
24	6.6	5.6	4.5	3.4	5.5	47	32	27	4.5	36	.13	.00
25	6.2	5.6	4.5	3.2	6.0	41	29	22	3.7	27	.12	.00
26	6.6	5.6	4.4	3.1	6.0	37	24	18	3.1	18	.12	.00
27	6.9	5.5	4.4	2.9	6.0	35	22	16	2.6	12	.10	.00
28	7.3	5.5	4.4	2.8	6.0	39	19	16	2.4	9.1	.09	.00
29	7.2	5.7	4.4	2.6	---	74	18	15	2.6	6.9	.08	.00
30	6.7	6.0	4.4	2.6	---	56	18	13	2.9	5.9	.06	.00
31	6.9	---	4.4	2.6	---	79	---	12	---	4.5	.05	---
TOTAL	399.58	169.2	153.7	115.6	89.3	1999.5	1194	1142	147.5	585.12	30.52	.08
MEAN	12.9	5.64	4.96	3.73	3.19	64.5	39.8	36.8	4.92	18.9	.98	.003
MAX	65	6.6	6.2	4.3	6.0	150	83	128	11	115	3.5	.04
MIN	.17	5.0	4.4	2.6	1.6	6.5	18	11	2.4	.85	.05	.00
AC-FT	793	336	305	229	177	3970	2370	2270	293	1160	61	.2

CAL YR 1982	TOTAL	29367.89	MEAN 80.5	MAX 2150	MIN .12	AC-FT	58250	
WTR YR 1983	TOTAL	6026.10	MEAN 16.5	MAX 150	MIN .00	AC-FT	11950	

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)
OCT 26...	0930	6.6	1100	--	9.0	--	--	--	--	--	--	--
JAN 28...	1145	2.8	1650	--	.5	--	--	--	--	--	--	--
MAR 16...	1216	107	490	8.1	.5	140	0	28	16	41	36	2
APR 27...	0940	23	820	--	12.0	--	--	--	--	--	--	--
MAY 31...	1230	11	1180	--	15.5	--	--	--	--	--	--	--
JUL 19...	1000	38	630	--	23.0	--	--	--	--	--	--	--

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	
MAR 16...	16	160		2.5	68	6.0	.10	12	293	290	.40	85

DATE	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	
MAR 16...	.380	2	130	320	2	60	30	1.0	0	0	310	

06354988 BOWMAN-HALEY LAKE NEAR HALEY, ND

LOCATION.--Lat 45°59'06", long 103°14'43", in NE¼ sec.24, T.129 N., R.101 W., Bowman County, Hydrologic Unit 10130301, at dam on North Fork Grand River, and 6 mi west of Haley.

DRAINAGE AREA.--446 mi^2, approximately.

PERIOD OF RECORD.--August 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is at National Geodetic Vertical Datum of 1929.

REMARKS.--Reservoir is formed by a rolled earth-fill dam; storage began Aug. 22, 1966; dam completed April 1967. Total capacity is 93,000 acre-ft at maximum pool, elevation, 2,777.0 ft. Dead storage is 4,280 acre-ft below lowest point of outlet, elevation, 2,740.0 ft. Normal operating storage is 20,100 acre-ft at elevation 2,755.0 ft, crest of spillway. Figures given herein represent total contents. Controlled releases are through a 30-inch or 8-inch gate valve. The spillway is uncontrolled "glory hole" type and discharges through a conduit 9 ft in diameter. The reservoir is for flood control, water supply, and recreation.

COOPERATION.--Records of elevations and contents furnished by Corps of Engineers from capacity table dated August 1966. Elevations affected by wind.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 37,540 acre-ft Mar. 28, 1978, elevation, 2,762.66 ft; minimum since first reaching spillway level, 12,660 acre-ft Sept. 16-20, 1982, elevation, 2,749.93 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 21,320 acre-ft Mar. 15-16, elevation, 2,755.65 ft; minimum, 18,250 acre-ft Sept. 19-30, elevation, 2,753.90 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	2,754.64	19,510	--
Oct. 31	2,755.84	21,660	+2,150
Nov. 30	2,755.23	20,540	-1,120
Dec. 31	2,755.14	20,380	-160
CAL YR 1982	--	--	+7,690
Jan. 31	2,755.20	20,490	+110
Feb. 28	2,755.59	21,210	+720
Mar. 31	2,755.31	20,690	-520
Apr. 30	2,755.09	20,290	-400
May 31	2,755.20	20,490	+200
June 30	2,755.16	20,420	-70
July 31	2,754.90	19,950	-470
Aug. 31	2,754.41	19,110	-840
Sept. 30	2,753.90	18,250	-860
WTR YR 1983	--	--	-1,260

06355000 NORTH FORK GRAND RIVER AT HALEY, ND

LOCATION.--Lat 45°57'39", long 103°07'09", at southwest corner of sec.30, T.129 N., R.99 W., Bowman County, Hydrologic Unit 10130301, on left bank 10 ft downstream from county highway bridge, 300 ft south of post office at Haley, and 1 mi north of South Dakota state line.

DRAINAGE AREA.--509 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1908 to September 1917, October 1945 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS (WATER YEARS).--WSP 1239: 1908-10, 1913-15(M), 1917(M).

GAGE.--Water-stage recorder. Datum of gage is 2,658.60 ft National Geodetic Vertical Datum of 1929. Oct. 23, 1945, to June 18, 1951, nonrecording gage on downstream side of bridge near left abutment at present datum. See WSP 1729 or 1917 for history of changes prior to Oct. 23, 1945.

REMARKS.--Records good, except those for winter period which are fair. Flow regulated since August 1966 by Bowman-Haley Lake (station 06354988) 8 mi upstream.

AVERAGE DISCHARGE.--47 years, 28.2 ft^3/s, 20,400 acre-ft/yr; median of yearly mean discharges, 22 ft^3/s, 15,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,100 ft^3/s Apr. 7, 1952, gage height, 17.03 ft, from rating curve extended above 4,500 ft^3/s on basis of discharge measurement at gage height, 15.09 ft, half of which was indirect measurement of flow over roadway outside of main channel; maximum gage height, 17.10 ft Apr. 15, 1950; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 190 ft^3/s Feb. 17, gage height, 7.38 ft; backwater from ice. Minimum daily discharge, 0.58 ft^3/s Aug. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	88	15	10	15	62	30	9.4	13	7.8	2.6	.95
2	19	85	15	10	14	59	26	9.1	12	7.0	2.1	.89
3	17	73	15	10	13	55	24	8.6	11	7.1	1.4	.71
4	18	62	15	10	12	53	24	9.1	10	8.1	1.5	.63
5	18	53	14	10	12	53	23	9.1	9.2	6.8	1.4	.63
6	18	49	13	11	11	59	23	9.1	8.4	4.3	1.4	.65
7	17	43	13	11	10	60	22	9.4	7.6	3.5	1.3	.71
8	18	39	13	11	10	67	21	9.4	7.2	3.4	1.2	.71
9	21	36	13	12	10	55	21	9.7	6.9	3.3	1.0	.79
10	21	34	13	13	10	50	20	11	6.4	2.8	1.1	1.6
11	22	32	13	14	10	42	20	14	6.1	5.2	.97	1.8
12	21	31	12	17	12	45	20	12	9.6	4.5	.91	1.5
13	24	28	12	30	24	44	20	19	9.5	2.6	.78	1.5
14	23	26	12	41	30	53	19	17	8.8	1.6	.84	1.6
15	24	24	12	62	74	63	19	14	8.7	1.6	.79	1.5
16	23	22	12	53	155	66	18	16	5.7	2.2	.79	1.5
17	23	22	12	52	172	65	18	22	5.5	2.9	.72	1.4
18	23	21	12	48	166	63	17	28	5.6	2.1	.98	1.3
19	23	20	12	41	155	58	17	31	5.7	2.0	1.0	1.5
20	20	22	12	36	129	52	16	31	8.0	2.2	.95	1.6
21	19	22	12	34	110	49	15	31	11	1.9	.95	1.6
22	18	20	12	30	105	45	15	29	16	1.7	1.1	1.5
23	17	18	12	28	100	40	15	26	13	1.6	1.4	1.5
24	17	18	12	26	92	36	14	25	13	1.7	1.4	1.5
25	16	17	11	22	84	34	14	23	14	1.5	2.4	1.6
26	16	17	11	20	77	34	15	22	13	1.5	1.6	1.5
27	16	16	11	18	71	33	16	21	11	1.4	.70	1.5
28	30	16	10	17	65	32	11	19	9.4	1.6	.58	1.6
29	26	16	10	16	---	29	10	18	8.6	2.5	.63	1.6
30	46	16	10	16	---	29	9.7	16	8.3	2.2	.86	1.4
31	79	---	10	15	---	30	---	14	---	2.1	.95	---
TOTAL	713	986	381	744	1748	1515	552.7	541.9	282.2	100.7	36.30	38.77
MEAN	23.0	32.9	12.3	24.0	62.4	48.9	18.4	17.5	9.41	3.25	1.17	1.29
MAX	79	88	15	62	172	67	30	31	16	8.1	2.6	1.8
MIN	16	16	10	10	10	29	9.7	8.6	5.5	1.4	.58	.63
AC-FT	1410	1960	756	1480	3470	3010	1100	1070	560	200	72	77

CAL YR 1982 TOTAL 23983.30 MEAN 65.7 MAX 890 MIN .20 AC-FT 47570
WTR YR 1983 TOTAL 7639.57 MEAN 20.9 MAX 172 MIN .58 AC-FT 15150

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1951, 1972 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT 18...	1605	22	1530	8.4	2.0	9.0	--	--	--	--	--
DEC 08...	1610	13	1880	--	- .9	.0	--	--	--	--	--
JAN 21...	1120	33	1710	--	.0	- .4	--	--	--	--	--
MAR 03...	1715	54	1280	--	4.0	6.0	--	--	--	--	--
APR 07...	1455	22	1700	--	8.0	9.0	--	--	--	--	--
MAY 02...	1530	9.1	1900	8.4	12.5	12.0	320	0	55	44	320
JUN 08...	1525	7.2	2150	8.6	23.0	22.0	--	--	--	--	--
JUL 14...	1105	1.6	2220	8.6	35.0	25.0	310	0	44	49	410
AUG 08...	1505	1.2	2550	8.5	30.0	25.0	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAY 02...	68	8.0	12	395	0	320	2.5	730	5.8	.30	2.6	1380
JUL 14...	73	10	13	391	0	320	1.6	910	9.2	.40	.5	1580

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAY 02...	1370	1.9	33.8	0	390	30	0	33	310	.2	0	740
JUL 14...	1630	2.1	6.6	5	700	10	2	40	0	.5	1	1500

06355310 BUFFALO CREEK TRIBUTARY NEAR GASCOYNE, ND

LOCATION.--Lat 46°06'40", long 103°02'20", in SE¼NE¼ sec.3, T.130 N., R.99 W., Bowman County, Hydrologic Unit 10130301, on left bank 46 ft downstream from Chicago, Milwaukee, St. Paul, Pacific Railway bridge, and 1.8 mi east of Gascoyne.

DRAINAGE AREA.--15.7 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

REVISED RECORDS.--WDR ND-76-1: 1975.

GAGE.--Water-stage recorder. Altitude of gage is 2,725 ft, from topographic map.

REMARKS.--Records fair except those for winter periods, which are poor. Some regulation by strip mine above station.

AVERAGE DISCHARGE.--9 years, 1.31 ft^3/s, 949 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 100 ft^3/s May 9, 1975, gage height, 8.41 ft; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 55 ft^3/s June 21, gage height, 7.44 ft; no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.36	1.3	.27	.13	.35	2.0	.49	.22	.46	.82	.00	.00
2	.39	1.2	.35	.17	.35	2.0	.41	.29	.45	.65	.00	.00
3	.38	.97	.50	.13	.30	2.0	.34	.28	.41	.52	.00	.00
4	.36	.59	.40	.15	.30	1.4	.33	.22	.38	.41	.00	.00
5	.56	.59	.29	.21	.25	1.3	.29	.19	.35	.33	.00	.00
6	1.0	.65	.23	.23	.20	1.4	.32	1.8	.34	.35	.00	.00
7	.79	.81	.24	.25	.20	2.5	.32	3.0	.33	.38	.00	.00
8	1.2	.93	.17	.27	.20	.78	.41	1.5	.27	.34	.00	.00
9	6.9	.91	.10	.25	.15	.48	.44	.92	.21	.34	.00	.00
10	6.5	.96	.08	.65	.15	.50	.36	.70	.17	.26	.00	.00
11	3.6	.90	.07	.36	.15	1.9	.35	.60	.15	.14	.00	.00
12	2.7	.48	.09	.31	1.0	4.6	.61	1.3	.18	.09	.00	.00
13	2.1	.32	.07	.35	3.5	5.2	.52	3.4	.34	.06	.00	.00
14	1.9	.24	.06	.47	8.5	2.0	1.1	5.3	.41	.04	.00	.00
15	1.4	.23	.08	.39	6.5	1.2	1.7	5.6	.39	.02	.00	.00
16	1.4	.32	.10	.34	5.0	1.0	1.7	3.0	.33	.02	.00	.00
17	1.2	.52	.11	.36	5.5	.89	1.7	1.8	.62	.02	.00	.00
18	1.0	.46	.10	.35	6.0	.91	1.8	.90	1.3	.01	.00	.00
19	1.1	.49	.11	.30	4.5	.93	1.1	.54	2.9	.00	.00	.00
20	.90	.49	.15	.30	2.5	.94	.78	.50	8.1	.00	.00	.00
21	.89	.35	.21	.30	3.5	.97	.58	.51	31	.00	.00	.00
22	.79	.28	.25	.30	3.5	.78	.48	.61	13	.00	.00	.00
23	.64	.23	.21	.25	1.5	.92	.36	.71	5.3	.00	.00	.00
24	.55	.18	.24	.30	1.5	.80	.25	.60	2.5	.00	.00	.00
25	.64	.18	.28	.35	1.5	.92	.25	.53	1.1	.00	.00	.00
26	.63	.19	.26	.35	1.5	.84	.20	.66	.52	.00	.00	.00
27	.71	.24	.21	.30	2.5	.73	.18	.65	.50	.00	.00	.00
28	6.6	.21	.18	.30	2.0	.59	.17	.64	.76	.00	.00	.00
29	5.4	.19	.15	.35	---	.58	.16	.48	.70	.00	.00	.00
30	2.4	.21	.18	.30	---	.60	.17	.43	.60	.00	.00	.00
31	1.9	---	.15	.30	---	.58	---	.42	---	.00	.00	---
TOTAL	56.89	15.62	5.89	9.37	63.10	42.24	17.87	38.30	74.07	4.80	.00	.00
MEAN	1.84	.52	.19	.30	2.25	1.36	.60	1.24	2.47	.15	.000	.000
MAX	6.9	1.3	.50	.65	8.5	5.2	1.8	5.6	31	.82	.00	.00
MIN	.36	.18	.06	.13	.15	.48	.16	.19	.15	.00	.00	.00
AC-FT	113	31	12	19	125	84	35	76	147	9.5	.00	.00

CAL YR 1982 TOTAL 646.64 MEAN 1.77 MAX 30 MIN .00 AC-FT 1280
WTR YR 1983 TOTAL 328.15 MEAN .90 MAX 31 MIN .00 AC-FT 651

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
OCT 19...	1400	1.3	3640	8.3	1.5	4.5	11.5	98	--	--
DEC 09...	1155	.09	6050	8.0	.0	.0	--	--	1488	--
JAN 19...	1655	.30	4600	7.7	- .9	.0	6.8	53	--	--
MAR 03...	1145	2.0	4000	8.4	5.0	.5	10.5	83	1116	760
APR 17...	1700	.33	6150	8.6	8.0	9.0	12.6	123	--	--
MAY 17...	1405	1.8	4290	8.4	19.0	15.5	8.8	99	1413	1030
JUN 21...	1255	42	1790	8.0	27.0	19.0	6.5	78	443	316

DATE	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)
DEC 09...	200	240	1200	63	14	14	--	--	3300	83	1.1	6.4
MAR 03...	150	180	730	59	9.7	8.6	357	2.7	2200	10	.50	5.9
MAY 17...	170	240	640	49	7.5	16	385	2.9	2400	12	.70	2.5
JUN 21...	72	64	220	51	4.6	9.5	128	2.5	820	3.6	.30	6.5

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN,NH4 + ORG. SUSP. TOTAL (MG/L AS N) (00624)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN DIS-SOLVED (MG/L AS N) (00602)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)
DEC 09...	5320	--	7.2	1.3	.25	.220	3.2	3.40	.50	2.9	3.2	.060
MAR 03...	3490	3502	4.7	18.8	.12	.170	1.7	1.90	.00	2.4	2.5	.080
MAY 17...	3890	3714	5.3	18.9	<.10	<.060	--	2.00	.30	1.7	--	.050
JUN 21...	1220	1274	1.7	138	.40	<.060	--	1.40	.30	1.1	1.5	.150

DATE	PHOS-PHORUS TOTAL (MG/L AS PO4) (71886)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
DEC 09...	.18	.050	--	3200	--	--	--	550	80	--	440
MAR 03...	.25	.080	2	1900	<1	10	<1	320	120	1	420
MAY 17...	.15	.010	--	1900	--	--	--	440	70	--	70
JUN 21...	.46	.080	2	1100	<1	<10	3	4400	41	2	92

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	NICKEL, SUS-PENDED RECOV-ERABLE (UG/L AS NI) (01066)	NICKEL, TOTAL RECOV-ERABLE (UG/L AS NI) (01067)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN) (01091)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	CYANIDE TOTAL (MG/L AS CN) (00720)
DEC											
09...	--	--	--	--	--	--	--	--	18	.6	--
MAR											
03...	<.1	3	3	6	<1	20	0	20	33	1.0	<.01
MAY											
17...	--	--	--	--	--	--	--	--	26	.3	--
JUN											
21...	<.1	8	2	10	1	130	70	59	15	.9	<.01

06439980 LAKE OAHE NEAR PIERRE, SD

LOCATION.--Lat 44°27'30", long 100°23'29", in NE¼ 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 mi^2, 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. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Jan. 14, 1959, 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.

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 ft^3/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.--Elevation and contents furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 22,681,000 acre-ft Aug. 22, 1975, affected by wind; minimum since initial filling, 14,815,000 acre-ft Sept. 25, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 22,002,000 acre-ft July 7; minimum contents, 18,498,000 acre-ft Feb. 1.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,607.86	19,166,000	--
Oct. 31	1,607.82	19,152,000	-14,000
Nov. 30	1,608.54	19,398,000	+246,000
Dec. 31	1,607.72	19,135,000	-263,000
CAL YR 1982	--	--	+4,559,000
Jan. 31	1,605.75	18,499,000	-636,000
Feb. 28	1,607.40	19,005,000	+506,000
Mar. 31	1,611.37	20,297,000	+1,292,000
Apr. 30	1,614.36	21,269,000	+972,000
May 31	1,616.03	21,914,000	+645,000
June 30	1,615.87	21,820,000	-94,000
July 31	1,615.79	21,795,000	-25,000
Aug. 31	1,613.75	21,075,000	-720,000
Sept. 30	1,612.59	20,649,000	-426,000
WTR YR 1983	--	--	+1,483,000

06467600 JAMES RIVER NEAR MANFRED, ND

LOCATION.--Lat 47°38'40", long 99°49'40", near midpoint of north line sec.15, T.148 N., R.72 W., Wells County, Hydrologic Unit 10160001, on right upstream wingwall of bridge on county highway, and 5 mi southwest of Manfred.

DRAINAGE AREA.--253 mi^2, of which about 197 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1954 to August 1957 (annual maximum only), September 1957 to current year. Seasonal records only since 1982.

GAGE.--Water-stage recorder. Datum of gage is 1,605.73 ft National Geodetic Vertical Datum of 1929. Prior to Sept. 16, 1957, crest-stage gage only on downstream side of bridge at same datum.

REMARKS.--Records fair except those for February and March which are poor.

AVERAGE DISCHARGE.--25 years (1957-82), 3.52 ft^3/s, 2,550 acre-ft/yr; median of yearly mean discharges, 3.3 ft^3/s, 2,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 2,000 ft^3/s Apr. 18 or 19, 1979, gage height, 9.2 ft, from highwater mark, backwater from snow; no flow for long periods each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 509 ft^3/s, June 22, gage height 5.85 ft; maximum gage height, 7.80 ft, Mar. 6, backwater from ice. No flow for several days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					.00	15	47	6.0	4.0	37	2.2	.14
2					.00	30	50	6.0	3.9	45	1.7	.09
3					.00	30	44	5.2	3.8	116	1.5	.06
4					.00	60	41	4.8	3.7	127	1.1	.03
5					.00	80	39	4.6	3.3	102	1.0	.04
6					.00	350	32	4.3	2.8	84	.82	.03
7					.00	200	26	3.9	2.6	70	.62	.03
8					.00	160	40	3.7	2.3	57	.42	.05
9					.00	140	33	3.5	2.0	43	.42	.05
10					.00	120	29	3.5	1.9	31	.35	.05
11					.00	85	25	4.8	1.5	21	.24	.05
12					.00	80	24	8.5	1.7	14	.18	.07
13					.01	190	18	9.2	1.5	11	.12	.07
14					1.0	200	24	10	1.3	7.8	.10	.12
15					.00	150	22	10	1.2	5.6	.10	.38
16					15	115	18	9.2	1.1	4.3	.10	.54
17					10	110	13	8.0	1.0	4.2	.09	.70
18					8.0	86	12	8.5	.90	4.7	.09	.46
19					5.0	62	11	11	1.4	4.4	.07	.35
20					5.0	36	10	11	2.1	4.4	.07	.26
21					4.0	30	10	12	2.6	4.6	.07	.26
22					4.0	26	10	12	227	4.6	.07	.26
23					3.0	26	8.5	11	246	5.1	.08	.26
24					3.0	22	7.8	9.6	136	4.1	.09	.26
25					3.0	21	7.0	8.3	112	3.2	.16	.24
26					3.0	17	7.1	7.1	97	2.5	.70	.22
27					3.0	17	6.3	6.2	83	2.5	.98	.18
28					10	17	6.5	5.5	65	3.3	.74	.14
29					---	17	6.5	4.8	52	3.2	.46	.14
30					---	20	5.9	4.4	41	3.0	.32	.18
31					---	42	---	4.1	---	2.5	.20	---
TOTAL					77.01	2554	633.6	220.7	1105.60	832.0	15.16	5.71
MEAN					2.75	82.4	21.1	7.12	36.9	26.8	.49	.19
MAX					15	350	50	12	246	127	2.2	.70
MIN					.00	15	5.9	3.5	.90	2.5	.07	.03
AC-FT					153	5070	1260	438	2190	1650	30	1'

PERIOD OF RECORD.--Water years 1959-60, 1962-64, 1972 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
19...	1100	14	1020	--	1.0	6.5	--	--	--	--	--
NOV											
15...	1545	2.2	1360	--	3.0	.5	--	--	--	--	--
FEB											
14...	1650	1.0	410	--	2.5	.5	--	--	--	--	--
MAR											
09...	1650	156	330	8.6	--	.0	120	7	24	14	15
11...	1147	85	370	--	4.0	.5	--	--	--	--	--
14...	1330	193	--	--	.0	.5	--	--	--	--	--
30...	1340	20	450	--	12.0	1.5	--	--	--	--	--
MAY											
03...	1432	5.3	950	--	14.0	13.5	--	--	--	--	--
JUN											
21...	1022	2.6	1100	--	22.0	19.5	--	--	--	--	--
JUL											
19...	1207	4.7	985	--	25.0	24.0	--	--	--	--	--
SEP											
07...	1050	.03	1310	8.3	23.0	15.0	350	0	70	43	170

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
09...	18	.6	22	135	0	110	.5	62	1.6	.10	11	278
SEP												
07...	50	4.0	19	408	23	370	3.2	340	20	.30	14	933

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
09...	218	.38	117	3	90	520	1	7	60	.2	1	79
SEP												
07...	925	1.3	.08	4	500	10	3	60	50	.1	0	390

06468170 JAMES RIVER NEAR GRACE CITY, ND

LOCATION.--Lat 47°33'29", long 98°51'45", in NW¼NW¼NW¼ sec.17, T.147 N., R.64 W., Foster County, Hydrologic Unit 10160001, on left bank on downstream side of county highway bridge, and 2.5 mi northwest of Grace City.

DRAINAGE AREA.--1,060 mi^2, approximately, of which about 650 mi^2 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, National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--15 years, 33.0 ft^3/s, 23,900 acre-ft/yr; median of yearly mean discharges, 19 ft^3/s, 13,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,100 ft^3/s Apr. 13, 1969, gage height, 12.00 ft; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,100 ft^3/s Mar. 15, gage height 11.56 ft, backwater from ice; maximum gage height, 11.88 ft Mar. 12, backwater from ice; only peak above base of 200 ft^3/s; minimum daily, 0.45 ft^3/s Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.4	28	5.0	2.0	1.0	9.0	294	88	32	12	15	5.0
2	6.4	29	20	2.5	1.0	8.0	268	84	31	12	13	4.0
3	6.3	28	23	2.5	1.0	9.0	276	76	28	11	13	3.0
4	5.3	30	19	2.9	1.0	14	302	74	28	11	12	2.0
5	4.7	29	12	3.0	1.0	40	304	74	27	11	9.4	1.5
6	8.7	33	7.0	3.0	1.0	220	286	71	23	12	9.0	1.1
7	11	29	7.0	2.5	1.0	280	294	63	22	14	7.1	1.1
8	9.2	26	5.0	2.5	1.0	225	296	59	20	25	9.4	.98
9	11	24	5.0	3.0	1.0	330	276	59	20	38	13	1.1
10	14	24	5.0	3.0	1.0	595	262	53	18	43	13	1.8
11	12	24	4.5	2.5	1.0	654	239	50	17	47	15	1.2
12	10	26	5.0	2.5	1.0	750	221	50	15	50	17	1.2
13	9.1	21	6.0	3.0	4.0	878	191	49	14	48	16	1.5
14	8.1	20	5.5	3.0	7.0	1000	181	53	14	43	17	2.0
15	7.3	20	5.0	2.5	7.6	1020	146	54	13	40	16	3.2
16	7.2	19	4.0	2.0	10	990	138	53	13	35	16	3.1
17	10	16	3.5	2.0	11	949	151	51	12	35	15	3.7
18	17	14	3.0	1.5	7.0	763	145	52	12	34	14	1.9
19	20	14	3.0	1.5	8.0	687	131	50	12	34	15	.99
20	20	12	2.5	1.5	6.0	667	121	54	13	37	14	.80
21	20	12	2.5	1.5	5.5	638	110	52	14	40	13	.74
22	19	11	2.5	2.0	5.0	589	104	51	14	40	12	.71
23	19	8.0	2.5	2.0	5.5	536	98	50	14	38	11	.71
24	20	8.0	2.5	2.0	4.0	491	97	48	14	34	12	.74
25	20	8.0	2.0	1.5	4.0	431	95	46	12	31	14	.81
26	19	7.5	2.2	1.0	5.0	374	91	45	11	26	15	1.2
27	19	7.0	2.2	1.0	9.0	325	93	41	11	23	13	.94
28	20	7.0	1.9	1.5	10	302	98	39	11	23	11	.79
29	23	6.5	1.7	1.5	---	292	93	37	11	21	9.0	.54
30	25	5.5	1.6	1.0	---	256	90	34	12	18	7.0	.45
31	27	---	1.9	1.0	---	268	---	32	---	16	6.0	---
TOTAL	434.7	546.5	173.5	64.9	120.6	14590.0	5491	1692	508	902	391.9	48.80
MEAN	14.0	18.2	5.60	2.09	4.31	471	183	54.6	16.9	29.1	12.6	1.63
MAX	27	33	23	3.0	11	1020	304	88	32	50	17	5.0
MIN	4.7	5.5	1.6	1.0	1.0	8.0	90	32	11	11	6.0	.45
AC-FT	862	1080	344	129	239	28940	10890	3360	1010	1790	777	97

CAL YR 1982	TOTAL	25586.20	MEAN	70.1	MAX	1100	MIN	.00	AC-FT 50750
WTR YR 1983	TOTAL	24963.90	MEAN	68.4	MAX	1020	MIN	.45	AC-FT 49520

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS, NONCAR-BONATE (MG/L CACO3) (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
OCT										
20...	0940	20	1120	--	.0	5.0	--	--	--	--
NOV										
16...	1020	18	1300	--	-1.0	.5	--	--	--	--
JAN										
04...	1028	2.9	1660	--	3.0	.5	--	--	--	--
FEB										
15...	1006	7.6	495	--	.0	.5	--	--	--	--
MAR										
09...	1552	332	410	7.8	-4.0	.0	140	0	28	16
15...	1050	983	--	--	-.5	.5	--	--	--	--
29...	1255	293	390	--	1.5	.5	--	--	--	--
MAY										
03...	1045	78	590	--	18.5	13.0	--	--	--	--
JUN										
20...	1415	14	810	--	24.5	22.5	--	--	--	--
JUL										
18...	1434	34	980	--	31.5	25.0	--	--	--	--
SEP										
06...	1404	1.2	765	8.3	15.5	16.0	200	0	43	23

DATE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)
MAR										
09...	21	.8	24	150	54	1.5	.10	13	275	250
SEP										
06...	91	3	15	270	98	25	.20	18	497	470

DATE	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)
MAR									
09...	.37	247	70	270	2	0	190	.3	0
SEP									
06...	.68	1.6	160	50	5	3	60	.5	0

06468500 JAMES RIVER NEAR PINGREE, N. DAK.

WATER-QUALITY RECORDS

LOCATION.--Lat 47°08'30", long 98°47'00", in SW¼SW¼ 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 mi^2, approximately, of which about 990 mi^2 is probably noncontributing.

PERIOD OF RECORD.--Water years 1965, 1979 to current year.

REMARKS.--Current sampling site is located at bridge 2 mi upstream from former stream gaging station.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE, AIR (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	COLOR (PLATINUM-COBALT UNITS) (00080)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS NONCARBONATE (MG/L AS CACO3) (95902)
OCT										
20...	1245	670	8.6	3.5	5.5	40	11.8	92	205	.00
NOV										
16...	1200	890	8.7	3.5	2.5	25	16.8	123	119	.00
JAN										
04...	1350	840	8.0	.0	4.0	20	3.1	--	270	.00
FEB										
15...	1415	900	8.1	5.0	2.0	30	6.1	44	299	.00
MAR										
10...	0930	810	8.4	- .4	.0	--	7.9	53	252	.00
MAY										
02...	1420	435	8.3	19.0	11.0	50	4.9	44	157	.00
JUN										
02...	1500	530	7.8	20.5	16.5	40	8.0	82	169	.00
AUG										
25...	1500	570	9.1	32.0	25.0	40	12.2	146	176	.00

DATE	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2) (00405)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)
OCT										
20...	31	31	62	38	1.9	14	236	1.1	110	10
NOV										
16...	18	18	41	41	1.7	6.9	228	.9	95	15
JAN										
04...	44	39	82	38	2.2	16	322	6.2	120	15
FEB										
15...	49	43	90	38	2.3	17	340	5.2	130	20
MAR										
10...	40	37	78	39	2.2	13	284	2.2	120	15
MAY										
02...	33	18	26	24	.9	18	165	1.6	51	6.1
JUN										
02...	33	21	34	28	1.2	14	195	6.0	63	7.2
AUG										
25...	29	25	48	35	1.6	17	203	.3	79	9.4

DATE	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	ALUMINUM, DISSOLVED (UG/L AS AL) (01106)	ARSENIC DISSOLVED (UG/L AS AS) (01000)
OCT									
20...	.20	4.9	400	405	.54	<.10	.030	--	--
NOV									
16...	.20	.5	552	331	.75	<.10	.030	--	--
JAN									
04...	.20	10	533	519	.72	.21	.080	--	--
FEB									
15...	.20	11	584	564	.79	<.10	.210	--	--
MAR									
10...	.20	9.9	492	484	.67	--	--	30	1
MAY									
02...	<.10	9.2	263	260	.36	<.10	.130	--	--
JUN									
02...	.10	.6	311	290	.42	<.10	.040	--	--
AUG									
25...	.20	.3	341	330	.46	<.10	.050	<10	2

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)
OCT 20...	--	130	--	--	--	--	--	--	--
NOV 16...	--	160	--	--	--	--	--	--	--
JAN 04...	--	150	--	--	--	--	--	--	--
FEB 15...	--	150	--	--	--	--	--	--	--
MAR 10...	--	--	<1	<10	--	<1	34	3	--
MAY 02...	--	70	--	--	--	--	--	--	--
JUN 02...	--	70	--	--	--	--	--	--	--
AUG 25...	58	140	1	<10	<1	<1	7	<1	36

DATE	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	CYANIDE TOTAL (MG/L AS CN) (00720)
OCT 20...	--	--	--	--	--	--	--	--	--
NOV 16...	--	--	--	--	--	--	--	--	--
JAN 04...	--	--	--	--	--	--	--	--	--
FEB 15...	--	--	--	--	--	--	--	--	--
MAR 10...	190	.1	2	--	<1	--	--	4	<.01
MAY 02...	--	--	--	--	--	--	--	--	--
JUN 02...	--	--	--	--	--	--	--	--	--
AUG 25...	40	4.1	<1	<1	<1	180	1.1	6	<.01

06469000 JAMESTOWN RESERVOIR NEAR JAMESTOWN, ND

LOCATION.--Lat 46°55'50", long 98°42'23", in SE¼NW¼ 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 mi^2, approximately, of which about 1,010 mi^2 is probably noncontributing.

PERIOD OF RECORD.--November 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft National Geodetic Vertical Datum of 1929; gage readings have been reduced to elevations NGVD. June 22, 1959, to June 3, 1971 at site 0.2 mi upstream at same datum. Prior to June 22, 1959, nonrecording gages at different locations.

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.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 103,100 acre-ft May 1, 1969, elevation, 1,443.60 ft; minimum since initial filling of reservoir, 18,220 acre-ft Mar. 4, 5, 1965, elevation, 1,423.66 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 79,610 acre-ft Apr. 13, elevation, 1,441.00 ft; minimum observed, 28,540 acre-ft Nov. 16, 17, elevation, 1,429.61 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	1,431.70	30,850	--
Oct. 31	1,430.18	29,710	-1,140
Nov. 30	1,429.93	29,180	-530
Dec. 31	1,430.63	30,700	+1,520
CAL YR 1982	--	--	2,020
Jan. 31	1,430.89	31,270	+570
Feb. 28	1,431.24	32,070	+800
Mar. 31	1,440.68	76,950	+44,800
Apr. 30	1,439.50	67,420	-9,530
May 31	1,438.19	57,720	-9,700
June 30	1,436.80	48,530	-9,190
July 31	1,434.40	40,280	-8,250
Aug. 31	1,432.08	34,060	-6,220
Sept. 30	1,430.93	31,360	-2,700
WTR YR 1983	--	--	+510

06469000 JAMESTOWN RESERVOIR NEAR JAMESTOWN, ND

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	BARO-METRIC PRES-SURE (MM OF HG) (00025)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLOR (PLAT-INUM-COBALT UNITS) (00080)
NOV 03...	1329	--	650	7.5	6.2	10.2	110	30
FEB 09...	1224	--	730	7.5	2.3	9.1	77	10
MAY 24...	1359	770	530	8.1	12.3	9.3	86	40
AUG 01...	1144	773	505	8.1	25.6	9.1	110	25

DATE	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)
NOV 03...	210	0	40	26	52	1.6	13	221	100
FEB 09...	--	--	--	--	--	--	--	254	110
MAY 24...	160	0	32	20	36	1.3	15	183	72
AUG 01...	170	0	36	20	34	1.2	18	190	67

DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	BORON, DIS-SOLVED (UG/L AS B) (01020)
NOV 03...	10	.20	14	384	388	.17	.110	110
FEB 09...	14	.20	--	430	--	.27	--	120
MAY 24...	8.6	.10	11	318	305	.11	.130	80
AUG 01...	8.3	.10	11	314	308	.62	.120	70

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SAMPLING DEPTH (FEET) (00003)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	TEMPERATURE (DEG C) (00010)	PH (STANDARD UNITS) (00400)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)
NOV							
03...	1325	.00	565	6.2	8.6	14.5	114
03...	1327	1.60	546	6.2	8.6	14.0	110
03...	1329	3.30	650	6.2	7.5	10.2	110
03...	1331	6.60	543	6.2	8.6	14.0	110
03...	1333	13.2	541	6.3	8.6	14.0	110
03...	1335	19.8	549	6.2	8.5	14.0	110
03...	1337	26.4	547	6.2	8.5	14.0	110
FEB							
09...	1220	.00	620	.4	7.2	10.0	69
09...	1222	1.60	685	.3	7.2	10.2	70
09...	1224	3.30	730	2.3	7.5	9.1	77
09...	1226	6.60	720	3.0	7.5	10.3	75
09...	1228	13.2	710	3.3	7.6	10.3	77
09...	1230	19.8	715	3.9	7.5	6.2	47
09...	1232	24.4	725	4.0	7.5	6.7	51
09...	1234	33.0	770	4.6	7.4	2.1	16
MAY							
24...	1355	.00	506	12.3	8.3	8.8	81
24...	1357	1.60	506	12.3	8.3	8.8	--
24...	1359	3.30	530	12.3	8.1	9.3	86
24...	1401	6.60	501	12.3	8.3	8.7	--
24...	1403	13.2	500	12.2	8.3	8.7	--
24...	1405	19.8	500	12.2	8.3	8.8	--
24...	1407	26.4	500	12.2	8.3	8.7	--
24...	1409	33.0	501	12.2	8.3	8.7	--
24...	1411	39.6	512	11.3	8.2	8.3	--
24...	1413	46.2	512	10.5	8.2	7.9	--
AUG							
01...	1140	.00	503	25.7	8.2	7.2	87
01...	1142	1.60	504	25.7	8.1	7.2	--
01...	1144	3.30	505	25.6	8.1	9.1	110
01...	1146	6.60	502	25.4	8.1	6.9	--
01...	1148	13.2	502	25.3	8.2	6.9	--
01...	1150	19.8	502	25.2	8.2	6.8	--
01...	1152	26.4	505	25.1	8.2	6.8	--
01...	1154	33.0	478	23.9	7.8	2.4	--

06469400 PIPESTEM CREEK NEAR PINGREE, ND

LOCATION.--Lat 47°10'03", long 98°58'07", in NE¼NE¼NW¼ 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 mi^2, of which about 440 mi^2 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Records poor.

AVERAGE DISCHARGE.--10 years, 27.9 ft^3/s, 20,210 acre-ft/yr; median of yearly mean discharges, 19 ft^3/s, 13,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,520 ft^3/s Apr. 20, 1979, gage height, 11.60 ft, backwater from ice; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 10	--	*1400	ab11.28	June 27	0845	278	7.09
Apr. 2	0700	224	7.00				

No flow for several weeks.

a - Backwater from ice
b - Observed

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	7.6	2.2	.50	.10	150	81	28	4.4	174	6.0	9.7
2	.00	7.6	7.3	.50	.10	200	98	26	3.7	170	5.4	9.4
3	.00	7.6	11	.50	.05	300	94	26	4.4	164	5.2	8.6
4	.00	9.4	11	.50	.05	500	108	24	3.3	149	4.2	8.6
5	.00	6.0	9.7	.50	.05	700	126	24	2.2	126	3.3	7.9
6	.00	6.3	8.5	.45	.05	850	132	22	2.4	109	2.9	7.6
7	.00	5.6	6.0	.45	.00	900	130	19	1.5	91	2.0	9.4
8	.00	5.1	4.6	.45	.00	1000	125	16	1.3	77	1.9	15
9	.21	4.6	3.9	.40	.00	1200	122	14	.56	64	1.2	21
10	2.0	4.7	3.2	.40	.00	1100	120	18	.21	56	1.4	22
11	6.0	4.3	1.7	.40	.00	1000	118	15	.02	45	1.2	18
12	8.0	3.9	1.5	.40	.50	900	120	15	.01	40	1.0	18
13	7.0	4.0	1.5	.35	2.0	800	125	16	.45	36	.90	18
14	7.0	3.4	1.5	.35	5.0	750	120	15	.06	31	.80	16
15	7.0	3.3	1.5	.35	5.5	700	115	15	.02	25	.70	18
16	6.0	3.2	1.5	.30	6.0	600	110	14	.02	24	.60	7.9
17	6.0	2.9	1.5	.30	6.5	550	105	13	.02	16	.50	5.2
18	5.5	2.7	1.5	.30	6.0	450	100	11	.02	12	.40	4.6
19	5.5	2.5	1.5	.30	5.0	400	95	13	5.0	16	.30	3.5
20	5.2	2.2	1.0	.25	4.0	350	90	15	50	18	.20	3.3
21	5.4	4.5	1.0	.25	5.0	250	80	16	100	16	.15	2.3
22	5.1	3.4	1.0	.25	10	200	75	16	180	14	.10	2.0
23	5.4	2.9	1.0	.25	30	150	70	14	146	12	.05	1.8
24	5.9	2.7	1.0	.20	100	120	60	13	113	9.7	.01	1.6
25	6.3	2.4	1.0	.20	150	100	55	10	85	9.7	.00	1.4
26	6.3	2.3	1.0	.20	100	90	50	7.9	63	9.0	.00	1.2
27	6.6	4.9	1.0	.20	80	80	45	9.4	173	11	.00	1.0
28	6.9	3.8	.50	.15	60	75	40	7.9	252	11	.00	.90
29	7.3	2.3	.50	.15	---	68	35	6.0	219	9.7	.00	.80
30	7.3	2.2	.50	.15	---	71	30	5.4	192	8.3	2.8	.70
31	7.6	---	.50	.10	---	75	---	4.6	---	7.3	6.3	---
TOTAL	135.51	128.3	91.10	10.05	575.90	14679	2774	469.2	1602.59	1560.7	49.51	245.40
MEAN	4.37	4.28	2.94	.32	20.6	474	92.5	15.1	53.4	50.3	1.60	8.18
MAX	8.0	9.4	11	.50	150	1200	132	28	252	174	6.3	22
MIN	.00	2.2	.50	.10	.00	68	30	4.6	.01	7.3	.00	.70
AC-FT	269	254	181	20	1140	29120	5500	931	3180	3100	98	487

CAL YR 1982 TOTAL 16783.21 MEAN 46.0 MAX 830 MIN .00 AC-FT 33290
WTR YR 1983 TOTAL 22321.26 MEAN 61.2 MAX 1200 MIN .00 AC-FT 44270

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
20...	1125	5.2	1150	--	2.0	5.5	--	--	--	--	--
NOV											
16...	1428	3.1	1350	--	3.5	2.0	--	--	--	--	--
JAN											
04...	1653	.52	1620	--	1.0	.5	--	--	--	--	--
FEB											
15...	1625	5.4	1340	--	3.0	.5	--	--	--	--	--
MAR											
15...	1255	697	390	--	.0	.5	--	--	--	--	--
28...	1442	75	405	7.8	--	1.5	146	4.9	32	16	19
MAY											
02...	1305	26	760	--	17.0	12.0	--	--	--	--	--
JUN											
02...	1430	3.3	1180	--	20.0	17.5	--	--	--	--	--
JUL											
19...	1340	19	890	--	31.0	25.0	--	--	--	--	--

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
MAR												
28...	20	.7	19	184	0	150	4.6	44	4.2	.10	14	266

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
MAR												
28...	241	.36	53.6	1	60	510	1	19	310	.4	0	89

06470000 JAMES RIVER AT JAMESTOWN, ND

LOCATION.--Lat 46°53'22", long 98°40'58", in NW¼NE¼ 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 mi^2, approximately, of which about 1,650 mi^2 is probably noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1928 to September 1934, March to May 1935, August 1937 to September 1939, March 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 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. 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.

AVERAGE DISCHARGE.--48 years (water years 1929-34, 1938-39, 1944-82), 62.2 ft^3/s, 45,060 acre-ft/yr; median of yearly mean discharges, 30 ft^3/s, 21,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,390 ft^3/s May 13, 1950, gage height, 15.82 ft, site and datum then in use; no flow at times in 1933.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 996 ft^3/s June 22, gage height, 8.76 ft; minimum daily, 3.2 ft^3/s Feb. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	95	16	5.0	5.3	40	454	489	264	286	270	179
2	90	94	30	4.9	4.6	60	448	480	268	321	270	169
3	113	96	29	4.6	4.5	70	452	342	269	309	270	176
4	119	96	32	4.6	4.8	90	448	269	265	299	270	171
5	122	96	32	4.6	4.5	340	447	268	264	279	270	178
6	143	95	36	4.5	4.6	500	445	269	263	274	270	172
7	133	95	34	4.5	5.0	190	445	268	261	268	270	172
8	130	95	30	4.3	4.6	250	447	267	263	260	270	171
9	255	96	29	5.5	4.3	210	447	265	260	255	270	170
10	185	99	28	5.0	4.3	150	448	265	255	260	270	173
11	165	96	25	4.9	3.9	130	452	272	256	267	270	173
12	162	90	25	5.1	3.7	120	469	283	257	249	270	171
13	159	108	23	5.2	4.6	140	463	274	263	256	270	176
14	159	99	21	5.3	4.3	130	445	271	255	275	270	176
15	130	93	19	5.5	3.5	110	476	271	256	278	270	178
16	44	83	17	6.0	3.4	100	478	272	255	270	270	170
17	11	55	16	6.0	3.3	120	480	271	252	270	270	167
18	5.3	54	15	6.6	3.3	212	480	271	252	270	220	165
19	4.5	50	12	7.3	3.2	307	476	274	272	270	170	165
20	25	48	9.5	7.1	3.4	305	470	275	378	280	170	160
21	26	47	8.8	6.7	3.3	335	484	286	491	280	175	172
22	9.2	41	8.0	6.7	4.2	456	486	271	771	275	180	170
23	6.5	39	7.0	6.8	6.5	459	487	261	418	275	185	157
24	7.6	33	6.0	6.3	5.7	459	489	224	315	270	190	161
25	7.0	31	5.5	6.2	6.7	459	487	280	302	270	186	158
26	7.3	28	5.4	6.2	13	458	489	269	290	275	184	155
27	6.7	26	5.3	6.5	32	456	484	268	280	275	186	162
28	7.0	24	5.2	6.2	32	454	484	267	287	280	183	161
29	6.5	22	5.1	5.7	---	458	484	264	289	280	184	162
30	51	19	5.0	6.0	---	458	484	265	289	275	180	163
31	91	---	5.0	5.5	---	458	---	265	---	275	183	---
TOTAL	2388.2	2043	544.8	175.3	186.5	8484	14028	8836	9060	8526	7166	5053
MEAN	77.0	68.1	17.6	5.65	6.66	274	468	285	302	275	231	168
MAX	255	108	36	7.3	32	500	489	489	771	321	270	179
MIN	4.5	19	5.0	4.3	3.2	40	445	224	252	249	170	155
AC-FT	4740	4050	1080	348	370	16830	27820	17530	17970	16910	14210	10020

CAL YR 1982 TOTAL 46884.2 MEAN 128 MAX 468 MIN 2.4 AC-FT 92990
WTR YR 1983 TOTAL 66490.8 MEAN 182 MAX 771 MIN 3.2 AC-FT 131900

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1950-51, 1958-65, 1972 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)
OCT											
21...	0920	30	770	--	- .9	4.5	--	--	--	--	--
27...	0900	6.7	880	7.6	5.0	9.5	300	13	66	33	75
JAN											
24...	1345	6.3	1320	--	- .9	1.0	--	--	--	--	--
FEB											
07...	1330	5.0	1200	7.7	- .9	.5	410	32	100	39	100
MAR											
15...	1530	106	420	7.7	2.0	2.0	130	3	29	15	20
APR											
29...	1115	483	520	--	8.0	7.0	--	--	--	--	--
JUN											
02...	1142	238	510	--	--	14.0	--	--	--	--	--
AUG											
25...	1300	190	560	E7.8	--	23.0	200	0	42	22	35

DATE	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE, FET-LAB (MG/L AS HCO3) (95440)	CAR-BONATE, FET-LAB (MG/L AS CO3) (95445)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
OCT												
27...	34	2	15	351	0	290	14	150	25	.20	13	592
FEB												
07...	34	2	12	462	0	--	15	210	37	.20	21	771
MAR												
15...	22	.8	16	160	0	130	5.1	56	7.8	.10	12	262
AUG												
25...	26	1	18	239	0	200	--	76	11	.20	9.4	307

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
OCT												
27...	550	.81	11	--	190	40	--	--	810	--	--	--
FEB												
07...	750	1.0	10	--	240	50	--	--	1400	--	--	--
MAR												
15...	240	.36	75	0	0	260	0	20	370	.5	0	220
AUG												
25...	330	.42	157	3	100	10	0	30	170	5.0	0	180

E - Indicates laboratory determination.

06470500 JAMES RIVER AT LA MOURE, ND

LOCATION.--Lat 46°21'20", long 98°18'15", in NE¼NE¼ 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 mi^2, approximately, of which about 2,600 mi^2 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 National Geodetic Vertical Datum of 1929. See WSP 1729 or 1917 for history of changes prior to Apr. 19, 1950.

REMARKS.--Records fair. 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.

AVERAGE DISCHARGE.--33 years (water years 1951-83), 98.0 ft^3/s, 71,000 acre-ft/yr; median of yearly mean discharges, 71 ft^3/s, 51,440 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,800 ft^3/s Apr. 14, 1969, gage height, 16.17 ft; no flow at times.

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.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,100 ft^3/s July 5, gage height, 9.24 ft, maximum gage height 11.96 ft, Mar. 9, backwater from ice; minimum daily, 9.8 ft^3/s Jan. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	19	24	14	12	22	652	512	294	352	263	157
2	15	31	27	15	12	24	627	509	294	345	260	157
3	14	67	28	15	12	33	618	517	294	338	258	156
4	16	78	30	15	11	57	599	503	294	477	254	156
5	49	74	36	14	11	98	570	471	290	999	254	155
6	119	79	39	15	11	320	564	389	290	1030	249	155
7	136	97	35	14	11	500	557	339	290	752	249	155
8	136	103	32	13	11	700	549	315	290	568	245	155
9	150	102	28	13	11	1000	545	310	280	474	243	155
10	180	102	24	14	11	970	534	353	280	425	241	154
11	190	127	21	13	11	900	521	334	280	393	238	154
12	200	105	19	13	11	850	531	333	270	351	234	154
13	220	73	20	13	12	800	537	329	270	333	232	153
14	250	73	18	13	12	720	511	327	265	322	227	153
15	350	86	18	12	13	660	509	327	265	295	227	153
16	250	96	18	12	14	620	495	321	265	317	221	152
17	150	96	17	11	14	570	508	321	260	297	220	152
18	100	94	17	11	15	540	522	320	260	306	215	152
19	60	89	17	10	16	500	523	316	290	301	213	152
20	40	75	18	9.8	16	477	525	316	320	297	210	151
21	32	60	18	9.9	16	459	521	316	350	294	206	151
22	29	50	18	11	17	488	515	310	400	291	200	151
23	26	42	17	11	17	510	515	310	418	288	191	151
24	35	39	17	11	17	526	513	310	572	285	184	150
25	31	37	17	11	16	563	515	306	718	282	178	150
26	21	32	17	11	17	569	527	304	614	280	172	150
27	24	27	17	11	21	566	509	299	500	277	167	150
28	24	25	17	12	21	568	517	299	434	274	162	150
29	20	24	16	12	---	583	508	297	398	271	159	150
30	17	24	15	12	---	608	510	294	374	268	158	150
31	19	---	14	12	---	647	---	294	---	265	158	---
TOTAL	2918	2026	669	383.7	389	16448	16147	10801	10419	12047	6688	4584
MEAN	94.1	67.5	21.6	12.4	13.9	531	538	348	347	389	216	153
MAX	350	127	39	15	21	1000	652	517	718	1030	263	157
MIN	14	19	14	9.8	11	22	495	294	260	265	158	150
AC-FT	5790	4020	1330	761	772	32620	32030	21420	20670	23900	13270	9090

CAL YR 1982 TOTAL 59988.4 MEAN 164 MAX 1900 MIN 9.2 AC-FT 119000
WTR YR 1983 TOTAL 83519.7 MEAN 229 MAX 1030 MIN 9.8 AC-FT 165700

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1957 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: June 1953 to September 1975, October 1976 to current year.
SPECIFIC CONDUCTANCE: October 1976 to current year.

INSTRUMENTATION.--Temperature recorder from June 1953 to September 1975, November 1976 to September 1978.
Water quality monitor since October 1982.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 33.0°C July 12, 13, 1957; July 23, 1977; minimum, 0.0°C on many days during winter months.
SPECIFIC CONDUCTANCE: Maximum daily, 1,880 micromhos Jan. 31, 1979; minimum daily, 200 micromhos Mar. 24, 25, and 26, 1978.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 30.0°C Aug. 5, 6; minimum, 0.0°C on many days during the winter.
SPECIFIC CONDUCTANCE: Maximum daily, 1,480 micromhos Feb. 11; minimum daily, 280 micromhos Mar. 11.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	COLOR (PLAT-INUM-COBALT UNITS) (00080)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)
OCT											
21...	1330	32	730	8.6	7.0	5.5	40	14.6	114	240	1
NOV											
17...	1307	96	830	--	4.0	.5	--	--	--	--	--
DEC											
15...	0930	18	1080	8.2	-10.0	.5	30	--	--	380	34
JAN											
06...	1251	15	1120	--	1.0	.5	--	--	--	--	--
25...	1100	12	1240	8.5	-12.0	1.0	<1	21.0	145	430	115
FEB											
08...	1800	11	1450	7.8	10.0	.0	--	--	--	480	32
17...	1315	14	1200	--	--	.0	--	--	--	--	--
MAR											
11...	1030	900	290	7.4	-1.0	.5	100	--	--	94	3
APR											
21...	1400	537	590	8.3	15.0	9.0	10	12.2	105	200	0
MAY											
25...	0900	302	610	--	--	14.5	--	--	--	--	--
31...	42	22	39	28	1	16	200	4.9	85	11	.10
JUL											
14...	46	22	37	26	1	16	205	5.0	83	13	.20
23...	42	22	40	29	1	16	210	2.0	82	10	.20
26...	46	23	43	29	1	17	225	1.7	88	13	.10

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
OCT											
21...	6.1	454	440	.62	39	--	<.100	.060	130	--	--
DEC											
15...	3.7	648	660	.88	31	--	.140	.080	220	--	--
JAN											
25...	2.7	779	720	1.1	25	--	<.100	.010	290	--	--
FEB											
08...	3.3	890	870	1.2	25	.230	--	--	250	10	560
MAR											
11...	17	191	170	.26	464	--	1.80	.350	40	--	--
APR											
21...	11	382	370	.52	554	--	<.100	.110	90	--	--
MAY											
31...	12	362	350	.49	285	--	--	--	100	--	--
JUL											
14...	17	363	360	.49	320	--	.640	.150	120	--	--
AUG											
23...	14	363	350	.49	188	--	.350	.330	100	--	--
SEP											
26...	13	402	380	.55	163	--	.430	.110	110	--	--

WATER-QUALITY RECORD

DATE	TIME	FLOW, INSTANTANEOUS (CFS) (00061)	CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE, AIR (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	(PLATINUM-COBALT UNITS) (00080)	OXYGEN, DISSOLVED (MG/L) (00300)	(PERCENT SATURATION) (00301)
OCT									
21...	1330	32	730	8.6	7.0	5.5	40	14.6	114
NOV									
17...	1307	96	830	--	4.0	.5	--	--	--
DEC									
15...	0930	18	1080	8.2	-10.0	.5	30	--	--
15...	0930	18	1080	8.2	-10.0	.5	--	--	--
JAN									
06...	1251	15	1120	--	1.0	.5	--	--	--
25...	1100	12	1240	8.5	-12.0	1.0	<1	21.0	145
FEB									
08...	1800	11	1450	7.8	10.0	.0	--	--	--
17...	1315	14	1200	--	--	.0	--	--	--
MAR									
11...	1030	900	290	7.4	-1.0	.5	100	--	--
APR									
21...	1400	537	590	8.3	15.0	9.0	10	12.2	105
MAY									
25...	0900	302	610	--	--	14.5	--	--	--
31...	1600	292	600	7.9	19.0	15.5	35	8.4	84
JUN									
22...	1400	378	600	--	29.5	24.0	--	--	--
JUL									
14...	1330	326	570	7.9	31.0	26.5	40	5.0	62
AUG									
02...	1311	260	600	7.4	29.0	26.0	--	7.0	85
23...	1400	192	600	8.3	25.0	22.0	30	7.2	81
SEP									
14...	1535	153	640	7.6	--	16.0	--	8.2	82
26...	1500	150	620	8.4	26.0	16.0	10	9.7	--

DATE	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS NONCARBONATE (MG/L AS CACO3) (95902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2) (00405)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)
OCT												
21...	240	1	52	27	62	34	2	13	240	1.1	120	16
DEC												
15...	380	34	85	40	85	32	2	14	343	4.2	190	34
JAN												
25...	430	115	100	44	100	33	2	12	316	1.9	220	47
FEB												
08...	480	32	110	49	120	35	2	13	--	14	240	65
MAR												
11...	94	3	22	9.5	11	18	.5	10	91	7.0	39	6.7
APR												
21...	200	0	41	24	48	32	2	14	211	2.0	95	13
MAY												
31...	200	0	42	22	39	28	1	16	200	4.9	85	11
JUL												
14...	210	0	46	22	37	26	1	16	205	5.0	83	13
AUG												
23...	200	0	42	22	40	29	1	16	210	2.0	82	10
SEP												
26...	210	0	46	23	43	29	1	17	225	1.7	88	13

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	SOLIDS, DISSOLVED (TONS PER AC-FT) (70303)	SOLIDS, DISSOLVED (TONS PER DAY) (70302)	NITROGEN, NITRATE DISSOLVED (MG/L AS N) (00618)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	PHOSPHORUS, DISSOLVED (MG/L AS P) (00666)	BORON, DISSOLVED (UG/L AS B) (01020)	IRON, DISSOLVED (UG/L AS FE) (01046)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)
OCT 21...	.20	6.1	454	440	.62	39	--	<.100	.060	130	--	--
DEC 15...	.20	3.7	648	660	.88	31	--	.140	.080	220	--	--
JAN 25...	.30	2.7	779	720	1.1	25	--	<.100	.010	290	--	--
FEB 08...	.30	3.3	890	870	1.2	25	.230	--	--	250	10	560
MAR 11...	<.10	17	191	170	.26	464	--	1.80	.350	40	--	--
APR 21...	.10	11	382	370	.52	554	--	<.100	.110	90	--	--
MAY 31...	.10	12	362	350	.49	285	--	--	--	100	--	--
JUL 14...	.20	17	363	360	.49	320	--	.640	.150	120	--	--
AUG 23...	.20	14	363	350	.49	188	--	.350	.330	100	--	--
SEP 26...	.10	13	402	380	.55	163	--	.430	.110	110	--	--

DATE	TIME	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)
OCT 21...	1330	32	18	1.6
APR 21...	1400	537	82	119
MAY 31...	1600	292	88	69
AUG 23...	1400	192	96	50
SEP 26...	1500	150	68	28

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

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

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1.0	1.0	1.0	---	---	---	.5	.5	.5	11.0	10.0	10.5
2	1.0	.5	1.0	---	---	---	.5	.5	.5	12.0	9.5	10.5
3	1.0	.5	.5	---	---	---	.5	.5	.5	13.0	11.0	12.0
4	.5	.5	.5	---	---	---	3.0	.5	1.5	13.0	11.0	12.0
5	.5	.5	.5	---	---	---	4.5	2.5	3.5	14.0	11.0	12.5
6	.5	.5	.5	---	---	---	5.5	3.5	4.5	13.5	12.0	12.5
7	.5	.5	.5	---	---	---	7.0	4.5	5.5	13.0	10.0	11.5
8	.5	.5	.5	.5	.0	.5	7.0	5.5	6.0	14.0	11.5	12.5
9	1.0	.5	.5	.5	.5	.5	7.5	5.5	6.5	14.5	11.5	13.0
10	1.0	.5	.5	.5	.5	.5	8.5	6.0	7.0	14.0	13.5	13.5
11	.5	.5	.5	.5	.5	.5	8.0	7.0	7.5	13.0	10.0	11.5
12	.5	.5	.5	.5	.5	.5	7.5	5.5	7.0	10.5	9.0	10.0
13	1.0	.5	.5	.5	.5	.5	5.0	3.0	4.0	9.5	8.5	9.0
14	1.0	.5	.5	.5	.5	.5	4.0	1.5	2.5	11.0	7.5	9.5
15	1.0	.5	.5	.5	.5	.5	5.0	3.0	4.0	10.5	8.5	9.5
16	1.0	.5	1.0	.5	.5	.5	5.0	3.0	4.0	11.0	7.5	9.0
17	1.0	.5	1.0	.5	.5	.5	4.5	4.0	4.5	13.5	10.0	11.5
18	---	---	---	.5	.5	.5	5.0	4.0	4.5	13.5	11.5	12.5
19	---	---	---	.5	.5	.5	7.5	4.5	5.5	14.0	12.5	13.5
20	---	---	---	.5	.5	.5	8.5	6.0	7.0	15.5	12.5	14.0
21	---	---	---	.5	.5	.5	9.5	7.5	8.5	16.5	14.0	15.0
22	---	---	---	.5	.5	.5	11.0	8.0	9.5	16.0	14.0	15.0
23	---	---	---	.5	.5	.5	12.0	9.5	10.5	18.0	14.5	16.0
24	---	---	---	.5	.5	.5	13.0	10.5	11.5	18.0	16.0	17.0
25	---	---	---	.5	.5	.5	13.0	11.0	12.0	17.5	15.0	16.5
26	---	---	---	.5	.5	.5	13.5	12.0	13.0	18.5	16.0	17.0
27	---	---	---	.5	.5	.5	13.0	11.0	12.0	21.0	17.5	19.0
28	---	---	---	.5	.5	.5	12.0	10.5	11.5	20.0	18.0	19.5
29	---	---	---	.5	.5	.5	11.0	9.5	10.5	17.5	15.0	15.5
30	---	---	---	.5	.5	.5	11.0	9.5	10.5	15.5	14.0	14.5
31	---	---	---	.5	.5	.5	---	---	---	16.0	14.0	15.0
MONTH	1.0	.5	.5	.5	.0	.5	13.5	.5	6.5	21.0	7.5	13.0

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	17.5	15.0	16.0	25.0	22.5	23.5	27.0	25.5	26.0	26.5	24.5	25.5
2	17.0	15.5	16.5	25.0	23.5	24.0	27.0	25.5	26.0	26.5	25.0	25.5
3	19.0	16.0	17.0	24.0	21.0	23.0	29.0	26.0	27.5	26.0	24.5	25.0
4	18.0	15.5	16.5	21.5	19.5	20.5	29.5	27.5	28.0	24.0	22.0	23.0
5	16.5	14.5	15.5	21.0	20.0	20.5	30.0	28.0	28.5	22.0	20.5	21.0
6	18.0	15.5	16.5	22.0	19.0	20.5	30.0	28.0	29.0	20.0	17.5	18.5
7	19.5	16.5	18.0	23.5	20.5	22.0	29.0	28.0	28.5	19.0	16.5	17.5
8	20.0	18.0	19.0	25.5	23.0	24.0	28.0	26.0	27.0	21.5	18.5	19.5
9	20.0	18.5	19.0	27.5	24.5	26.0	27.0	25.5	26.0	22.0	20.0	20.5
10	21.5	18.5	19.5	27.5	25.0	26.5	26.0	24.0	25.0	21.5	19.5	20.5
11	22.0	20.0	21.0	26.5	24.0	25.0	25.5	23.5	24.5	19.5	16.5	18.0
12	21.5	20.5	21.0	25.5	23.5	24.5	25.5	23.5	24.5	17.0	15.5	16.5
13	21.0	20.0	20.5	26.0	23.5	25.0	25.5	24.0	25.0	18.0	16.0	16.5
14	21.5	19.5	20.5	27.0	24.5	26.0	25.0	23.5	24.5	16.5	15.5	16.0
15	21.0	18.0	19.0	26.5	25.0	26.0	26.0	24.0	25.0	15.5	15.0	15.5
16	20.0	17.0	18.5	26.5	24.5	25.5	25.5	24.5	25.0	15.5	15.0	15.0
17	20.5	18.5	19.5	26.0	25.0	25.5	26.0	23.5	24.5	16.5	14.5	15.5
18	20.0	19.0	19.5	27.0	25.0	25.5	26.5	25.0	25.5	16.0	14.5	15.5
19	21.0	19.0	20.0	27.0	25.5	26.5	26.0	24.0	25.0	15.5	13.0	14.0
20	23.0	20.5	21.5	27.5	26.0	26.5	24.0	22.5	23.0	12.5	10.0	11.5
21	24.5	22.5	23.5	28.5	26.5	27.5	24.5	22.5	23.5	10.5	9.5	10.0
22	25.0	23.5	24.0	27.5	26.0	26.5	23.5	22.5	23.0	11.5	9.0	10.0
23	25.0	23.0	24.0	27.0	25.5	26.5	23.0	21.5	22.0	12.0	9.5	11.0
24	26.0	23.5	24.5	26.5	25.0	26.0	24.5	22.0	23.0	14.0	11.0	12.5
25	26.5	24.0	25.0	27.0	25.0	26.0	26.0	23.0	24.5	16.0	13.0	14.5
26	26.0	25.0	25.5	27.0	25.0	26.0	26.0	24.5	25.0	17.0	14.5	15.5
27	25.0	23.5	24.0	28.0	25.5	26.5	26.0	24.5	25.0	18.0	15.5	17.0
28	24.0	23.0	23.5	27.5	26.0	26.5	27.0	24.5	25.5	18.5	17.5	18.0
29	22.5	21.5	22.0	27.5	26.0	27.0	26.5	25.0	25.5	17.5	16.0	16.5
30	24.0	20.5	22.0	27.5	26.0	26.5	25.5	23.5	24.5	15.5	14.5	15.0
31	---	---	---	27.0	25.5	26.5	26.5	24.5	25.5	---	---	---
MONTH	26.5	14.5	20.5	28.5	19.0	25.0	30.0	21.5	25.5	26.5	9.0	17.0
YEAR	30.0	.0	10.5									

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	710	700	708	840	820	830	920	900	912	1080	1020	1050
2	720	710	713	840	830	834	940	920	934	1090	1030	1050
3	740	720	726	850	830	843	940	930	937	1080	990	1020
4	730	720	728	880	850	863	940	920	930	1160	1000	1050
5	760	740	755	950	880	920	930	910	926	1160	1080	1120
6	780	750	762	980	950	969	930	910	924	1200	1080	1140
7	820	790	810	950	860	901	950	930	940	1190	1120	1160
8	820	770	780	1000	900	944	960	950	958	1170	1030	1100
9	820	770	804	1110	810	913	970	960	963	1190	1030	1110
10	830	690	762	820	760	779	980	960	969	1230	1080	1170
11	700	670	683	760	730	745	1000	970	992	1260	1110	1210
12	680	650	667	760	730	746	1020	1000	1010	1310	1160	1260
13	660	640	651	770	750	765	1020	1010	1010	1260	1150	1210
14	700	650	679	800	770	786	1030	1010	1020	1180	1100	1150
15	650	620	637	810	790	798	1050	1020	1030	1210	1100	1150
16	700	630	660	820	810	812	1090	1040	1060	1200	1110	1150
17	750	690	708	830	810	824	1070	1000	1040	1200	1090	1130
18	750	710	730	840	820	828	1000	980	987	1190	1120	1150
19	740	730	733	820	800	810	1000	970	984	1260	1140	1200
20	740	730	737	800	790	796	1080	1010	1040	1200	1120	1170
21	750	730	742	800	770	788	1090	1050	1070	1190	1030	1120
22	750	740	742	790	770	780	1080	990	1040	1210	1090	1160
23	750	740	749	790	780	788	1090	980	1030	1230	1090	1190
24	760	740	753	810	790	800	1080	1000	1050	1240	1170	1200
25	770	750	759	830	800	814	1090	1010	1050	1290	1190	1230
26	780	760	770	850	820	834	1120	1040	1080	1320	1230	1290
27	790	770	781	860	840	849	1090	1050	1070	1320	1230	1270
28	800	790	796	870	850	859	1080	1050	1060	1280	1170	1220
29	820	800	812	880	870	873	1110	1070	1090	1260	1200	1230
30	830	810	819	900	880	891	1120	1100	1120	1300	1210	1240
31	830	820	824	---	---	---	1160	1040	1110	1350	1100	1260
MONTH	830	620	741	1110	730	833	1160	900	1010	1350	990	1170

06470500 JAMES RIVER AT LAMOURE, ND--CONTINUED

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1250	1160	1220	---	---	---	530	510	518	610	590	600
2	1370	1270	1320	---	---	---	540	530	531	610	600	602
3	1370	1290	1330	---	---	---	540	520	530	610	600	605
4	1380	1210	1320	---	---	---	550	530	539	620	600	611
5	1330	1240	1280	---	---	---	550	530	540	620	600	612
6	1360	1210	1290	---	---	---	570	540	545	620	610	612
7	1420	1260	1300	---	---	---	550	540	545	640	610	625
8	1450	1400	1420	450	390	404	560	550	551	650	630	643
9	1440	1310	1400	400	340	378	560	550	559	650	640	645
10	1480	1400	1440	390	300	351	570	560	563	650	640	643
11	1480	1290	1420	310	280	297	580	560	567	640	630	636
12	1470	1310	1390	320	300	305	590	580	583	630	620	624
13	1430	1270	1360	350	320	336	590	580	590	630	610	621
14	1430	1300	1360	380	350	365	600	590	593	620	610	618
15	1410	1280	1340	400	380	389	600	580	591	630	610	620
16	1400	1300	1360	390	380	384	600	580	591	620	610	616
17	1360	1240	1330	380	360	366	600	590	593	630	610	616
18	---	---	---	370	360	360	600	580	590	630	610	616
19	---	---	---	380	370	372	590	580	585	630	610	617
20	---	---	---	400	370	383	590	570	583	630	610	618
21	---	---	---	410	390	401	590	580	587	620	610	622
22	---	---	---	440	410	423	600	590	593	620	610	619
23	---	---	---	490	430	454	600	590	596	620	610	619
24	---	---	---	510	480	500	650	600	628	620	610	621
25	---	---	---	520	510	513	640	600	612	630	610	622
26	---	---	---	550	520	538	610	600	603	630	620	625
27	---	---	---	560	550	553	610	600	605	640	620	630
28	---	---	---	570	550	561	610	600	604	650	620	639
29	---	---	---	570	560	565	610	600	605	640	610	625
30	---	---	---	570	540	555	610	600	605	610	590	600
31	---	---	---	550	510	530	---	---	---	610	600	605
MONTH	1480	1160	1350	570	280	428	650	510	578	650	590	620

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	620	610	614	610	600	605	620	610	615	580	500	551
2	630	610	614	610	600	606	630	620	625	580	530	560
3	620	600	610	610	600	608	650	620	634	600	540	574
4	620	600	609	600	590	595	650	640	644	600	540	574
5	620	600	603	590	450	534	660	630	647	600	550	571
6	620	600	606	440	410	424	660	640	650	590	530	568
7	610	600	611	470	420	442	660	640	651	590	560	575
8	620	610	614	530	470	499	660	640	650	600	530	573
9	620	610	618	560	530	545	660	650	656	600	540	569
10	620	610	616	590	560	574	670	660	664	590	530	571
11	630	610	620	600	580	591	680	670	673	590	530	568
12	630	620	620	610	600	604	680	670	673	600	540	562
13	620	610	614	620	610	615	680	670	672	600	520	569
14	620	610	610	630	620	623	680	660	673	650	550	607
15	620	600	609	630	620	628	680	670	673	630	550	585
16	600	590	600	630	620	625	680	660	673	600	530	569
17	600	590	600	630	620	622	670	660	666	600	540	568
18	600	580	592	630	610	617	670	660	667	610	540	574
19	590	570	583	620	600	611	670	660	661	630	540	584
20	600	580	592	610	590	601	660	650	657	700	570	633
21	610	590	603	620	610	612	660	650	655	680	560	626
22	610	600	605	620	610	614	670	610	639	620	560	603
23	600	580	593	620	610	617	630	570	611	640	600	625
24	580	540	564	620	610	613	610	570	589	660	590	621
25	580	510	538	620	610	613	610	570	596	650	560	609
26	580	540	556	620	600	611	610	580	593	630	560	603
27	540	520	531	620	610	615	600	540	583	620	580	600
28	570	530	545	620	610	620	600	540	577	620	550	588
29	600	570	592	620	610	618	600	530	572	620	560	605
30	600	590	599	630	610	615	590	530	563	620	570	599
31	---	---	---	620	600	611	590	530	567	---	---	---
MONTH	630	510	596	630	410	591	680	530	634	700	500	586

06470800 BEAR CREEK NEAR OAKES, ND

LOCATION.--Lat 46°13'31", long 98°04'17", in NE¼NE¼ 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.--About 437 mi^2, contributing.

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,291.30 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Record fair.

AVERAGE DISCHARGE.--7 years, 8.54 ft^3/s, 6,190 acre-ft/yr; median of yearly mean discharges, 3.3 ft^3/s, 2,390 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,170 ft^3/s Apr. 15, 1979, gage height, 11.47 ft; no flow for long periods each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1, 1975, reached a stage of 15.00 ft present datum, from flood-mark, discharge, 4,590 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 35 ft^3/s Mar. 20, gage height, 6.41 ft, backwater from ice; no peak above base of 50 ft^3/s. No flow for several months.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	4.0	1.2	.10	.30	.00	.00
2	.00	.00	.00	.00	.00	.00	3.9	1.1	.10	.25	.00	.00
3	.00	.00	.00	.00	.00	.00	3.8	1.0	.10	.20	.00	.00
4	.00	.00	.00	.00	.00	.00	3.7	.90	.10	.15	.00	.00
5	.00	.00	.00	.00	.00	.00	3.6	.80	.10	.10	.00	.00
6	.00	.00	.00	.00	.00	.00	3.6	.70	.10	.08	.00	.00
7	.00	.00	.00	.00	.00	.00	3.5	.60	.08	.04	.00	.00
8	.00	.00	.00	.00	.00	.00	3.5	.50	.06	.02	.00	.00
9	.00	.00	.00	.00	.00	.00	3.5	.45	.06	.01	.00	.00
10	.00	.00	.00	.00	.00	.00	3.4	.40	.06	.01	.00	.00
11	.00	.00	.00	.00	.00	.00	3.3	.40	.06	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	3.3	.45	.08	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	3.3	.40	.10	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	3.3	.40	.05	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	3.3	.35	.02	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	3.2	.35	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	3.1	.35	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	3.0	.30	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	1.0	3.0	.30	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	28	2.8	.25	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	20	2.6	.25	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	12	2.5	.25	.10	.00	.00	.00
23	.00	.00	.00	.00	.00	12	2.4	.20	.10	.00	.00	.00
24	.00	.00	.00	.00	.00	11	2.2	.20	.10	.00	.00	.00
25	.00	.00	.00	.00	.00	9.6	2.0	.20	.10	.00	.00	.00
26	.00	.00	.00	.00	.00	9.0	1.8	.15	.10	.00	.00	.00
27	.00	.00	.00	.00	.00	9.0	1.5	.15	.10	.00	.00	.00
28	.00	.00	.00	.00	.00	8.2	1.4	.10	.10	.00	.00	.00
29	.00	.00	.00	.00	---	5.8	1.4	.10	.10	.00	.00	.00
30	.00	.00	.00	.00	---	5.0	1.3	.10	.20	.00	.00	.00
31	.00	---	.00	.00	---	4.0	---	.10	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	134.60	87.2	13.00	2.17	1.16	.00	.00
MEAN	.000	.000	.000	.000	.000	4.34	2.91	.42	.072	.037	.000	.000
MAX	.00	.00	.00	.00	.00	28	4.0	1.2	.20	.30	.00	.00
MIN	.00	.00	.00	.00	.00	.00	1.3	.10	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	267	173	26	4.3	2.3	.00	.00

CAL YR 1982 TOTAL 2786.20 MEAN 7.63 MAX 150 MIN .00 AC-FT 5530
WTR YR 1983 TOTAL 238.13 MEAN .65 MAX 28 MIN .00 AC-FT 472

06470830 JAMES RIVER AT OAKES, ND

LOCATION.--Lat 46°08'14", long 98°08'09", in NW¼NE¼NE¼ sec.30, T.131 N., R. 59 W., Dickey County, Hydrologic Unit 10160003, on left bank 300 ft downstream from bridge 1.0 mi west of Oakes.

DRAINAGE AREA.--5,480 mi^2, of which about 3,300 mi^2 is probably noncontributing.

WATER QUALITY RECORDS

PERIOD OF RECORD.--October 1982 to September 1983.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: March 1982 to current year.
WATER TEMPERATURES: March 1982 to current year.

INSTRUMENTATION.--Water quality monitor since October 1982.

REMARKS.--Water quality monitor records supplemented by periodic observer readings of water temperature and specific conductance. Unpublished records of dissolved oxygen are avaible in files of district office.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum 1,450 micromhos Feb. 13; minimum 400 micromhos Mar. 11.
WATER TEMPERATURES: Maximum daily 26.0°C July 19; minimum 0.0°C on many days during winter months.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE, AIR (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS NONCARBONATE (MG/L AS CACO3) (95902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)
OCT 27...	1230	780	8.3	10.0	9.0	--	--	--	--	--	--
DEC 14...	1400	1100	8.2	3.0	.5	--	--	380	32	81	44
JAN 27...	1030	1360	8.3	-13.0	.0	24.4	167	480	63	110	50
MAR 11...	0830	340	7.5	-5.0	.5	--	--	--	--	--	--
APR 22...	0830	600	8.3	7.0	9.0	11.6	99	200	0	42	24
JUN 01...	1400	620	8.3	20.0	17.0	11.4	117	220	3	47	24
JUL 13...	1400	--	--	28.0	25.0	6.5	78	200	3	45	21
AUG 24...	1400	580	8.4	29.0	23.5	8.0	93	200	0	42	22
SEP 29...	1500	630	8.7	12.0	14.0	10.6	--	220	0	49	24

DATE	SODIUM, DISSOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	ALKALINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DISSOLVED (MG/L AS CO2) (00405)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)
DEC 14...	92	33	2	17	352	4.3	200	36	.20	1.5	680
JAN 27...	110	32	2	14	418	4.0	250	53	.20	430	1300
APR 22...	49	32	2	15	213	2.0	96	14	.10	11	380
JUN 01...	43	28	1	15	213	2.0	96	11	.10	14	380
JUL 13...	33	25	1	15	196	--	78	12	.20	20	340
AUG 24...	40	29	1	16	208	1.6	85	11	.20	14	360
SEP 29...	44	28	1	16	232	.9	94	13	.10	12	390

06470830 JAMES RIVER AT OAKES, ND--CONTINUED

WATER-QUALITY RECORDS

DATE	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
DEC 14...	.93	--	<.100	.13	.040	<.010	--	210	9	110
JAN 27...	1.7	--	<.100	.12	.010	.010	.03	300	12	21
APR 22...	.52	--	<.100	.12	.080	.060	.18	90	33	62
JUN 01...	.51	--	1.90	.08	.030	.020	.06	100	32	21
JUL 13...	.47	.390	.430	.14	.160	.140	.43	100	23	130
AUG 24...	.48	.140	.160	.10	.120	.080	.25	110	29	89
SEP 29...	.53	--	<.100	.21	.040	.040	.12	110	8	51

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.0	6.0				---	4.0	---	17.0	23.0	23.5	24.0
2	---	---				---	---	10.0	16.0	24.0	24.0	24.5
3	---	---				---	---	10.5	17.0	22.5	25.0	---
4	12.0	---				---	3.5	10.5	15.5	20.0	25.0	---
5	10.5	---				---	4.0	11.0	15.0	20.5	26.0	---
6	7.5	---				---	6.0	13.0	16.0	22.0	---	16.5
7	5.0	---				---	6.0	---	17.5	22.5	---	14.5
8	8.0	1.0				---	7.0	---	19.0	24.0	23.0	18.5
9	---	---				---	---	10.5	19.5	25.5	24.0	19.0
10	---	---				---	---	13.0	20.5	26.0	23.0	---
11	---	---				---	8.5	11.5	21.0	24.0	22.5	---
12	7.5	---				---	8.5	9.0	20.5	23.0	24.0	13.5
13	---	---				---	4.0	8.0	19.5	24.0	---	18.0
14	---	---				---	1.5	---	19.5	25.0	---	15.0
15	---	---				1.5	3.0	---	18.0	25.0	23.0	14.0
16	---	---				1.0	---	7.0	18.0	24.5	24.0	13.5
17	---	---				2.0	---	10.0	19.0	24.5	23.5	---
18	10.5	---				1.0	6.0	11.5	19.5	25.0	25.0	---
19	---	---				---	6.0	12.5	20.0	26.0	24.5	12.0
20	---	---				---	8.0	12.5	22.0	26.5	---	9.0
21	---	---				1.5	9.0	---	24.0	27.0	---	6.5
22	---	---				1.0	10.5	---	24.0	26.0	21.5	6.0
23	---	---				1.0	---	13.0	24.5	25.5	22.0	8.5
24	---	---				2.0	---	14.0	25.0	25.5	23.0	---
25	8.5	---				1.5	11.5	13.5	25.5	25.5	23.0	---
26	---	---				---	13.0	14.5	25.5	24.5	24.5	14.0
27	---	---				---	10.5	14.5	24.0	25.5	---	14.5
28	---	---				2.0	11.0	16.0	22.5	25.5	---	16.0
29	---	---				2.0	9.0	16.0	20.5	---	24.5	12.5
30	---	---				3.0	---	16.5	21.0	---	22.5	12.5
31	---	---				5.0	---	16.5	---	---	24.0	---
MEAN	9.0	3.5				2.0	7.0	12.5	20.0	24.5	23.5	14.5

WTR YR 1983 MEAN 16.0 MAX 27.0 MIN 1.0

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	700	780	---	1160	1330	870	580	598	605	575	650	640
2	---	---	---	1160	1330	873	579	597	592	600	646	625
3	---	---	---	1170	1340	847	565	596	603	631	649	---
4	700	---	---	1170	1340	818	563	593	615	662	660	---
5	675	---	---	1190	1350	723	564	590	617	708	671	---
6	680	---	---	1200	1370	685	562	592	618	762	683	650
7	640	---	---	1200	1380	623	567	594	626	787	671	630
8	660	840	---	1200	1400	634	562	592	635	827	657	625
9	---	---	---	1200	1400	590	572	594	638	865	645	625
10	---	---	---	1180	1420	507	575	601	650	880	636	---
11	---	---	---	1190	1430	453	576	610	648	865	626	---
12	700	---	---	1190	1430	438	578	612	642	845	620	640
13	---	---	---	1200	1420	422	585	600	629	825	615	640
14	---	---	---	1200	1370	423	579	610	631	802	614	625
15	---	---	1090	1190	1280	414	597	613	630	777	614	625
16	---	---	1120	1210	1200	433	601	611	627	673	594	625
17	---	---	1130	1220	1240	443	601	611	635	663	592	---
18	610	---	1130	1240	1250	459	598	609	638	666	593	---
19	---	---	1120	1260	1250	456	601	613	649	647	589	650
20	---	---	1100	1280	1210	469	605	612	665	627	579	625
21	---	---	1100	1290	1170	480	603	605	679	617	578	600
22	---	---	1090	1300	1120	480	604	605	669	608	575	625
23	---	---	1080	1310	1060	480	601	608	669	602	573	625
24	---	---	1080	1320	1010	483	602	618	665	609	571	---
25	690	---	1090	1330	977	493	605	606	648	617	590	---
26	---	---	1100	1350	940	509	606	610	627	621	600	650
27	---	---	1100	1350	892	533	619	620	578	633	---	650
28	---	---	1100	1360	864	545	613	609	571	645	---	650
29	---	---	1090	1350	---	565	603	609	575	666	610	650
30	---	---	1120	1340	---	577	596	603	563	677	610	650
31	---	---	1140	1340	---	580	---	601	---	665	600	---
MEAN	673	810	1100	1250	1240	558	589	605	628	698	618	635

WTR YR 1983 MEAN 777 MAX 1430 MIN 414

06470875 JAMES RIVER AT DAKOTA LAKE DAM NR LUDDEN, ND

LOCATION.--Lat 45°56'52", long 98°10'29", in SE¼NE¼NE¼ sec.34, T.129 N., R.60 W., Dickey County, Hydrologic Unit 10160003, on left bank, 10 ft upstream from dam, 4.5 mi south west of Ludden and .8 mi upstream from North Dakota-South Dakota State line.

DRAINAGE AREA.--5,480 mi^2, of which about 3,300 mi^2 are noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1981 to current year.

GAGE.--Water-stage recorder and concrete dam control. Datum of gage is 1,280.00 ft National Geodetic Vertical Datum of 1929.

EXTREMES FOR CURRENT PERIOD.--
Water year 1982: Maximum discharge, 1270 ft^3/s, April 10, gage height 12.44 ft, no flow part of several days during fall months when flow is effectd by upstream winds.
Water year 1983: Maximum discharge, 1170 ft^3/s, Mar. 12, gage height, 12.00 ft no flow part of several days during fall months when flow is effectd by upstream winds.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	4.4	8.0	4.0	3.1	10	538	302	238	174	182	89
2	22	26	8.0	4.0	3.0	10	636	251	219	150	147	126
3	38	12	8.0	4.0	3.0	10	796	227	185	220	192	92
4	40	16	8.0	4.0	3.0	12	829	290	112	175	185	76
5	34	68	8.0	4.0	3.0	12	892	391	133	197	185	146
6	32	23	7.0	3.5	3.0	12	1010	350	184	234	166	63
7	26	49	7.0	3.5	3.0	14	1150	344	273	221	207	27
8	.00	89	7.0	3.5	3.0	14	1290	333	275	154	227	3.3
9	24	2.8	7.0	3.5	3.0	14	1350	340	274	229	197	42
10	31	24	7.0	3.5	3.0	20	1360	330	230	251	181	81
11	9.9	5.4	6.0	3.4	2.8	30	1320	329	228	255	145	156
12	4.0	.00	6.0	3.4	2.5	40	1230	314	241	243	137	158
13	85	6.3	6.0	3.3	2.0	45	1230	311	207	231	140	136
14	95	37	6.0	3.3	1.5	50	1210	339	262	220	145	195
15	70	60	6.0	3.3	1.0	52	1190	312	260	210	150	135
16	30	42	5.5	3.3	.50	53	1190	303	221	212	150	54
17	144	68	5.5	3.3	.20	55	1070	316	263	211	145	111
18	143	128	5.5	3.3	.20	59	976	323	259	209	145	95
19	16	87	5.5	3.3	.30	64	881	306	254	207	140	156
20	51	10	5.5	3.2	.40	69	748	281	290	207	140	123
21	28	10	5.0	3.2	.50	60	568	252	291	208	135	88
22	49	10	5.0	3.2	1.0	54	438	238	281	210	130	58
23	4.4	10	5.0	3.2	2.0	48	327	179	253	214	130	144
24	23	10	5.0	3.2	4.0	45	341	258	311	216	125	151
25	10	10	5.0	3.2	5.0	42	428	260	265	217	120	38
26	.00	9.0	4.5	3.2	6.0	40	393	255	235	218	119	36
27	17	9.0	4.5	3.1	8.0	40	325	241	252	222	66	44
28	.65	9.0	4.5	3.1	9.0	42	276	219	282	230	30	6.6
29	.00	9.0	4.5	3.1	---	81	190	246	255	241	71	40
30	7.0	9.0	4.5	3.1	---	222	284	250	211	181	91	55
31	15	---	4.5	3.1	---	394	---	262	---	160	88	---
TOTAL	1074.95	852.90	184.5	105.3	77.00	1713	24466	8952	7244	6527	4411	2724.9
MEAN	34.7	28.4	5.95	3.40	2.75	55.3	816	289	241	211	142	90.8
MAX	144	128	8.0	4.0	9.0	394	1360	391	311	255	227	195
MIN	.00	.00	4.5	3.1	.20	10	190	179	112	150	30	3.3
AC-FT	2130	1690	366	209	153	3400	48530	17760	14370	12950	8750	5400

WTR YR 1982 TOTAL 58332.55 MEAN 160 MAX 1360 MIN .00 AC-FT 115700

06470875 JAMES R. AT DAKOTA LAKE DAM NR LUDDEN, ND --CONTINUED

WATER-DISCHARGE RECORDS

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	78	52	32	18	34	784	444	230	212	201	132
2	27	134	51	32	18	34	771	440	220	170	217	80
3	13	124	50	29	18	32	703	422	273	199	262	159
4	19	64	50	28	18	36	674	398	306	203	234	154
5	102	37	51	27	18	55	643	395	294	158	230	134
6	91	42	50	27	15	95	614	433	274	164	225	175
7	31	56	50	28	15	156	588	419	248	256	164	109
8	72	74	50	27	15	193	564	236	288	453	256	135
9	223	99	46	22	15	286	571	56	236	492	171	192
10	246	120	45	26	15	490	555	277	209	456	250	184
11	159	136	45	26	15	616	514	433	165	433	221	181
12	179	203	43	25	11	756	525	343	158	351	128	137
13	189	96	42	26	7.6	820	631	273	303	270	241	140
14	218	85	41	26	8.5	894	516	374	271	229	217	99
15	262	88	40	24	8.5	946	392	345	253	168	229	142
16	218	96	39	28	9.5	984	411	309	201	280	247	153
17	216	99	35	28	10	1030	400	259	155	310	250	145
18	286	103	35	25	10	1070	395	239	116	327	222	142
19	309	103	35	21	11	1090	404	295	72	289	257	184
20	197	112	35	21	12	1130	444	295	98	211	212	160
21	164	111	35	21	12	1150	457	224	118	162	248	147
22	128	111	35	21	19	1100	480	332	121	119	231	125
23	122	107	35	21	19	1040	472	262	93	115	205	26
24	104	93	37	21	19	990	422	334	69	101	165	94
25	104	87	37	21	19	944	354	266	84	85	166	128
26	37	77	35	18	19	866	459	208	206	40	188	140
27	49	67	33	18	25	849	440	297	273	91	145	19
28	62	59	35	18	26	820	456	337	276	121	147	80
29	91	56	35	18	---	790	438	318	263	158	144	90
30	72	52	35	18	---	767	417	278	236	170	185	90
31	85	---	34	18	---	754	---	258	---	215	156	---
TOTAL	4136	2769	1271	741	426.1	20817	15494	9799	6109	7008	6414	3876
MEAN	133	92.3	41.0	23.9	15.2	672	516	316	204	226	207	129
MAX	309	203	52	32	26	1150	784	444	306	492	262	192
MIN	13	37	33	18	7.6	32	354	56	69	40	128	19
AC-FT	8200	5490	2520	1470	845	41290	30730	19440	12120	13900	12720	7690

CAL YR 1982 TOTAL 64396.20 MEAN 176 MAX 1360 MIN .20 AC-FT 127700
OTR YR 1983 TOTAL 78860.10 MEAN 216 MAX 1150 MIN 7.6 AC-FT 156400

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1982 to current year.

PERIOD OF DAILY RECORDS.--
WATER TEMPERATURES: October 1982 to September 1983.
SPECIFIC CONDUCTANCE: October 1982 to September 1983.
DISSOLVED OXYGEN: October 1982 to September 1983.
PH: June 1983 to September 1983.

INSTRUMENTATION: Water quality monitor since October 1982.

EXTREMES FOR CURRENT YEAR:
WATER TEMPERATURES: Maximum, 28.4°C July 21; minimum 0.0°C several days during winter months.
SPECIFIC CONDUCTANCE: Maximum, 1410 micromhos Feb. 11; minimum 217 micromhos July 13.
DISOLVED OXYGEN: Maximum observed 27.0 mg/L Feb. 17; minimum 2.5 mg/L May 28.
PH: Maximum 9.9 units September 15; minimum 6.2 units June 25.

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
OCT												
28...	1100	62	720	8.2	2.0	9.0	9.9	86	240	13	52	27
DEC												
14...	1000	41	980	8.3	-5.0	2.5	--	--	330	17	68	38
JAN												
26...	1130	18	1270	8.1	-22.0	3.5	26.0	192	440	47	91	52
FEB												
09...	1100	8.9	1420	8.2	-13.0	3.0	--	--	490	59	100	58
MAR												
10...	1030	420	650	8.2	-10.0	.5	--	--	210	31	47	23
APR												
20...	1500	461	590	8.6	18.0	8.5	13.8	117	210	0	43	24
JUN												
01...	1000	117	630	8.1	18.0	14.0	8.3	80	210	0	45	24
JUL												
13...	1000	300	--	--	23.0	23.0	6.0	69	140	0	33	15
AUG												
24...	1100	158	580	8.2	24.0	23.0	6.4	74	200	0	43	22
SEP												
28...	1200	246	620	8.9	13.0	16.0	8.5	--	220	0	47	25

DATE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	CARBON DIOXIDE DIS-SOLVED (MG/L AS CO2) (00405)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)
OCT												
28...	56	32	2	13	228	2.8	120	17	.20	9.0	--	430
DEC												
14...	87	35	2	16	310	3.0	170	32	.30	6.2	--	600
JAN												
26...	110	34	2	16	395	6.0	250	47	.20	--	--	580
FEB												
09...	130	36	3	20	--	5.3	280	57	.20	2.1	927	910
MAR												
10...	60	37	2	7.5	181	2.2	110	33	.20	.9	--	390
APR												
20...	49	32	2	14	215	1.0	97	14	.10	10	--	380
JUN												
01...	48	31	1	15	216	3.3	77	15	.20	9.2	--	360
JUL												
13...	23	24	.9	12	151	--	55	7.9	.20	17	--	260
AUG												
24...	44	30	1	16	205	2.5	93	13	.20	15	--	370
SEP												
28...	45	29	1	17	230	.5	96	14	.20	7.5	--	390

06470875 JAMES RIVER AT DAKOTA LAKE DAM NEAR LUDDEN, ND--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS N) (00618)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4) (71846)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHATE, ORTHO, DIS-SOLVED (MG/L AS PO4) (00660)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
OCT											
28...	.59	72	--	<.100	.13	.060	<.010	--	130	8	6
DEC											
14...	.82	67	--	<.100	.08	.110	.030	.09	200	20	37
JAN											
26...	.79	--	--	<.100	.12	.040	.010	.03	260	17	22
FEB											
09...	1.3	22	.230	--	--	--	--	--	210	10	30
MAR											
10...	.53	443	--	.100	.17	.030	.030	.09	170	9	18
APR											
20...	.52	473	--	<.100	.10	.050	.040	.12	90	24	14
JUN											
01...	.49	115	--	<.100	.09	.030	.010	.03	120	13	82
JUL											
13...	.35	207	.250	.370	.39	.150	.130	.40	80	27	5
AUG											
24...	.50	158	--	<.100	.43	.070	.040	.12	130	9	85
SEP											
28...	.53	259	--	<.100	.13	.010	.020	.06	120	13	17

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

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

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	3.0	3.0	3.0	5.0	4.0	4.5	1.0	.0	.5	11.5	10.0	10.5
2	3.0	3.0	3.0	5.0	4.0	4.5	1.5	.5	1.0	12.0	9.5	11.0
3	3.0	3.0	3.0	5.5	4.5	5.0	---	---	---	13.5	10.5	12.0
4	3.0	2.5	2.5	5.0	5.0	5.0	---	---	---	13.0	10.5	11.5
5	3.0	2.5	2.5	5.0	4.0	4.5	---	---	---	14.5	11.0	12.5
6	3.0	2.5	3.0	4.0	1.0	2.5	---	---	---	13.5	11.5	12.5
7	3.0	2.5	3.0	1.5	1.0	1.0	---	---	---	12.5	9.0	11.0
8	3.0	3.0	3.0	1.5	.5	1.0	---	---	---	13.5	10.5	12.0
9	3.0	2.5	2.5	1.0	.5	1.0	---	---	---	14.0	10.5	12.0
10	3.0	2.5	3.0	1.0	.5	.5	---	---	---	13.5	12.5	13.0
11	3.0	2.5	3.0	.5	.0	.5	---	---	---	12.5	9.5	11.0
12	3.0	2.5	2.5	.5	.0	.5	---	---	---	10.0	8.5	9.5
13	3.5	2.5	3.0	.0	.0	.0	---	---	---	9.0	7.5	8.5
14	3.0	3.0	3.0	.5	.0	.0	---	---	---	12.0	6.0	9.0
15	3.5	3.0	3.0	.0	.0	.0	---	---	---	9.0	8.0	8.5
16	3.5	3.0	3.5	.5	.0	.0	---	---	---	11.0	7.5	9.0
17	3.5	3.5	3.5	.0	.0	.0	---	---	---	13.5	9.5	10.5
18	3.5	3.5	3.5	.0	.0	.0	---	---	---	13.0	11.5	12.5
19	3.5	3.5	3.5	.5	.0	.0	---	---	---	14.5	12.0	13.0
20	4.0	3.5	3.5	.5	.0	.0	9.5	8.5	9.0	15.5	12.0	14.0
21	4.0	3.5	3.5	1.0	.0	.5	10.5	8.0	9.5	16.5	13.0	15.0
22	4.5	3.5	4.0	1.0	.0	.5	12.5	9.5	11.0	15.5	13.5	14.5
23	4.5	4.0	4.0	.5	.5	.5	13.0	10.0	11.5	17.0	13.5	14.5
24	4.5	4.0	4.0	.5	.0	.0	14.0	11.5	12.5	17.0	15.5	16.0
25	4.5	3.5	4.0	.5	.0	.0	14.0	11.0	12.5	17.5	14.0	15.5
26	4.5	4.0	4.5	.5	.0	.0	14.0	12.5	13.0	18.0	15.0	16.5
27	5.0	3.0	4.0	1.0	.0	.5	13.5	11.0	12.0	21.0	17.0	19.0
28	5.0	4.5	4.5	.5	.0	.5	12.5	10.5	11.5	20.0	16.5	19.0
29	---	---	---	.5	.0	.5	11.5	9.5	10.5	17.0	13.5	14.5
30	---	---	---	1.5	.0	.5	13.5	9.0	10.5	14.0	12.5	13.5
31	---	---	---	2.0	.5	1.0	---	---	---	15.0	12.0	13.5
MONTH	5.0	2.5	3.5	5.5	.0	1.0	14.0	.0	9.5	21.0	6.0	12.5

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	25.0	21.0	22.5	---	---	---	27.0	23.5	25.5
2	17.0	15.5	16.5	24.5	22.0	23.5	---	---	---	27.0	24.5	26.0
3	18.0	15.5	16.5	24.0	20.5	23.0	---	---	---	26.0	24.5	25.0
4	17.0	14.5	15.5	21.0	19.5	20.5	---	---	---	25.0	22.5	23.5
5	16.0	13.5	15.0	23.0	19.5	20.5	---	---	---	22.5	20.0	21.0
6	17.5	14.0	15.5	23.5	20.0	22.0	---	---	---	20.0	16.5	18.0
7	18.5	15.0	16.5	24.5	20.5	23.0	---	---	---	19.0	16.0	17.5
8	20.0	17.0	18.5	28.0	22.5	25.0	---	---	---	21.5	17.5	19.5
9	20.0	17.5	19.0	27.0	24.0	26.0	---	---	---	21.5	---	20.0
10	21.5	18.0	20.0	27.5	25.0	26.0	---	---	---	---	---	---
11	21.5	19.5	21.0	26.5	22.0	24.5	25.0	22.0	23.5	18.0	15.5	17.0
12	21.0	19.0	20.0	24.5	21.0	23.5	24.5	21.5	23.5	17.0	14.5	15.5
13	20.5	19.0	19.5	25.5	22.0	24.0	25.5	22.5	24.5	18.0	15.0	16.0
14	21.0	18.5	19.5	26.5	24.0	25.0	25.5	22.5	24.0	17.0	15.0	16.0
15	20.0	17.5	18.5	26.0	23.5	25.0	28.0	22.0	25.5	16.0	14.0	14.5
16	20.5	17.0	19.5	27.0	22.5	24.5	26.5	23.0	25.0	14.5	14.0	14.0
17	20.5	17.0	19.0	25.5	23.0	24.5	25.5	23.0	24.5	16.5	13.0	14.5
18	20.0	17.5	19.0	27.0	23.0	25.0	27.0	24.5	25.5	15.5	13.0	14.0
19	22.0	18.5	20.0	27.5	25.0	26.0	26.5	24.0	25.0	13.5	9.0	12.0
20	23.5	20.5	22.0	28.0	24.0	26.5	24.5	22.0	23.5	10.5	8.0	9.0
21	25.0	22.5	24.0	28.5	26.5	27.5	25.5	23.0	24.0	8.0	6.5	7.5
22	25.0	23.0	24.0	28.5	24.5	26.5	24.5	23.0	23.5	9.0	6.5	8.0
23	25.5	22.0	24.5	27.0	25.0	26.0	24.0	22.0	23.0	10.5	7.5	9.0
24	27.0	24.0	25.5	28.0	24.5	26.0	25.5	22.0	23.5	9.5	8.0	8.5
25	27.0	23.5	26.0	27.0	24.0	25.5	26.0	22.5	25.0	13.5	10.5	12.0
26	26.5	24.5	25.5	26.5	22.5	25.0	28.5	25.0	26.5	15.0	12.0	13.5
27	25.0	23.0	23.5	27.0	24.0	26.0	27.0	24.0	25.5	16.5	13.5	15.0
28	23.0	21.0	21.5	27.0	24.5	25.5	27.5	24.0	26.0	17.0	15.0	16.0
29	21.0	20.0	20.5	27.5	24.0	25.0	27.0	23.5	26.0	15.0	13.0	13.5
30	25.0	19.0	21.5	27.0	24.0	26.0	25.5	23.5	24.5	13.5	12.0	13.0
31	---	---	---	26.5	23.5	25.5	26.5	24.0	25.0	---	---	---
MONTH	27.0	13.5	20.5	28.5	19.5	24.5	28.5	21.5	24.5	27.0	6.5	15.5

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	700	690	675	710	700	706	970	870	949	1070	950	1050
2	690	690	---	710	700	703	960	920	942	1080	1060	1060
3	700	690	701	710	700	702	940	920	929	1090	1060	1080
4	700	690	715	730	700	718	950	920	938	1100	1070	1090
5	700	680	698	740	710	733	940	880	923	1110	1080	1100
6	680	670	713	740	730	735	940	920	930	1140	1110	1130
7	690	680	683	740	730	737	950	930	942	1150	1130	1140
8	690	660	679	740	720	729	970	940	954	1150	1140	1150
9	660	650	656	720	700	713	980	870	911	1160	1140	1150
10	670	650	658	720	700	706	970	870	898	1160	1150	1150
11	650	630	638	740	710	725	990	870	947	1180	1150	1170
12	640	630	633	760	670	705	990	870	897	1190	1170	1130
13	650	640	644	810	690	705	990	880	955	1200	1190	1190
14	650	630	643	850	710	776	980	870	940	1210	1180	1180
15	650	640	641	850	740	825	990	880	948	1220	1200	1200
16	670	650	663	840	730	776	1000	870	920	1220	1200	1210
17	680	670	674	860	780	829	1000	890	948	1230	1220	1220
18	720	670	695	940	840	894	1000	890	941	1250	1210	1230
19	750	710	733	970	940	953	1010	890	933	1240	1210	1230
20	730	710	723	980	930	952	1000	890	949	1260	1130	1230
21	740	720	733	990	960	971	990	890	923	1260	1240	1250
22	740	710	725	1020	980	997	990	880	925	1270	1260	1270
23	740	710	728	1050	1010	1030	990	870	939	1270	1250	1270
24	730	700	716	1060	1040	1050	990	870	942	1270	1250	1260
25	720	690	706	1060	950	1040	990	870	941	1280	1250	1270
26	740	700	718	1060	950	1000	1000	890	952	1280	1260	1270
27	740	710	722	1050	950	1010	1010	890	966	1290	1260	1280
28	720	710	717	1020	990	1010	1010	880	972	1290	1270	1280
29	720	700	711	1000	880	965	1030	1010	1020	1280	1270	1280
30	710	700	708	980	870	919	1040	1030	1030	1290	1270	1280
31	710	700	707	---	---	---	1050	1030	1050	1300	1270	1290
MONTH	750	630	692	1060	670	844	1050	870	947	1300	950	1200

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	1300	1280	1290	1350	1260	1330	520	480	490	640	630	635
2	1310	1290	1300	1360	1280	1330	540	520	534	640	610	624
3	1330	1290	1310	1350	1330	1340	---	---	---	630	610	622
4	1330	1310	1320	1330	1290	1310	---	---	---	620	610	619
5	1350	1320	1340	1300	1210	1270	---	---	---	620	610	618
6	1360	1330	1350	1200	610	957	---	---	---	620	610	617
7	1370	1350	1360	800	620	735	---	---	---	640	610	623
8	1380	1350	1370	730	590	662	---	---	---	640	550	619
9	1390	1370	1380	670	580	620	---	---	---	640	620	626
10	1400	1370	1380	660	630	646	---	---	---	630	620	623
11	1410	1300	1380	640	630	637	---	---	---	630	620	625
12	1410	1300	1380	640	420	513	---	---	---	630	620	623
13	1400	1300	1380	420	350	381	---	---	---	630	620	625
14	1390	1300	1370	350	340	343	---	---	---	630	610	623
15	1380	1350	1370	340	330	336	---	---	---	640	620	630
16	1380	1340	1370	350	340	343	---	---	---	660	640	651
17	1370	1330	1350	360	340	350	---	---	---	660	640	648
18	1350	1320	1340	390	350	372	---	---	---	650	640	647
19	1340	1290	1320	420	390	401	---	---	---	650	640	644
20	1330	1300	1320	440	390	414	590	580	588	650	640	647
21	1340	1310	1330	440	410	427	590	580	589	660	640	648
22	1340	1320	1330	450	410	429	610	590	595	660	640	647
23	1330	1300	1320	450	400	435	610	600	604	636	640	609
24	1330	1300	1320	470	420	443	610	600	604	612	601	608
25	1310	1290	1310	460	420	443	620	600	608	614	587	608
26	1310	1280	1300	440	400	420	620	610	614	621	594	613
27	1340	1170	1250	430	420	424	620	610	613	623	575	618
28	1350	1320	1340	440	420	430	620	610	617	631	599	623
29	---	---	---	470	430	449	630	610	621	629	602	625
30	---	---	---	490	460	477	640	620	627	631	594	624
31	---	---	---	490	480	484	---	---	---	628	596	624
MONTH	1410	1170	1340	1360	330	618	640	480	593	660	550	627

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	508	486	497	581	549	573	638	585	624
2	630	614	624	511	485	499	---	---	---	647	595	629
3	629	607	622	501	469	489	---	---	---	630	620	624
4	629	598	621	485	469	476	---	---	---	629	619	624
5	622	590	617	479	468	472	---	---	---	634	608	624
6	622	596	616	510	468	490	---	---	---	627	584	622
7	621	600	613	542	484	523	---	---	---	636	604	623
8	615	584	606	584	525	554	---	---	---	644	591	635
9	610	572	602	589	547	573	---	---	---	---	---	---
10	620	576	605	557	446	515	---	---	---	640	618	631
11	609	577	606	450	398	426	543	512	534	628	601	624
12	594	570	582	408	360	398	545	482	533	641	620	632
13	592	565	582	408	217	398	542	494	533	644	624	634
14	585	564	577	429	408	414	538	518	536	653	600	642
15	575	559	569	451	409	437	546	498	538	656	598	630
16	574	558	570	457	414	440	544	500	534	632	616	626
17	574	531	568	516	447	458	544	528	537	636	609	626
18	573	535	569	548	458	476	552	536	544	628	618	624
19	583	557	575	485	459	477	559	538	547	626	600	622
20	588	577	582	517	459	497	556	530	547	624	608	620
21	604	566	585	544	512	532	568	536	555	623	586	618
22	746	545	585	566	518	554	565	554	558	622	606	616
23	655	533	582	577	556	567	572	552	564	627	595	617
24	649	543	606	583	556	575	580	548	575	626	583	618
25	648	538	601	584	557	579	583	536	576	619	587	611
26	654	548	566	589	541	582	586	565	580	612	591	604
27	563	553	559	664	547	585	600	552	588	610	567	610
28	558	553	555	595	553	585	610	550	598	657	561	614
29	552	530	543	588	543	566	610	586	610	620	556	612
30	535	503	517	586	543	578	620	594	603	620	604	609
31	---	---	---	581	539	573	630	582	616	---	---	---
MONTH	746	503	586	664	217	509	630	482	563	657	556	622

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	9.3	8.6	9.0	11.7	10.5	11.1	15.4	11.5	12.7	21.3	21.0	21.2
2	10.4	8.3	9.4	11.7	10.7	11.2	15.4	11.4	14.1	21.3	21.0	21.1
3	11.3	8.8	9.9	13.2	11.5	12.4	16.7	11.6	14.4	21.2	20.5	20.8
4	10.2	7.1	9.0	13.4	12.4	13.0	16.9	11.7	12.9	21.3	20.6	20.9
5	10.0	8.6	9.4	13.3	12.9	13.1	17.0	11.4	13.5	20.6	18.3	20.2
6	10.8	9.8	10.3	14.1	12.7	13.4	16.8	11.8	13.9	20.8	17.5	20.1
7	12.5	9.0	11.8	14.8	14.1	14.5	17.4	12.0	13.8	21.0	20.6	20.8
8	11.5	10.7	11.1	15.0	14.3	14.7	18.0	12.1	15.3	20.5	17.8	20.1
9	10.7	10.3	10.5	14.6	13.1	14.0	17.9	12.8	16.3	21.0	20.3	20.8
10	11.4	10.2	10.8	13.5	11.0	12.1	18.1	11.5	14.6	21.0	20.3	20.8
11	12.3	10.3	11.3	12.9	10.6	11.4	19.0	18.0	18.4	21.2	17.4	19.0
12	12.2	10.4	11.3	13.9	12.1	13.1	19.1	18.5	18.8	---	---	---
13	13.2	10.7	12.0	14.3	13.4	13.8	19.1	18.6	18.9	---	---	---
14	13.4	11.6	12.4	14.9	13.3	14.1	18.9	17.9	18.3	---	---	---
15	12.6	10.8	11.7	15.5	14.6	14.9	19.3	17.9	18.8	---	---	---
16	12.2	11.0	11.5	15.5	11.2	14.5	19.2	18.4	18.8	---	---	---
17	13.0	10.4	11.6	15.6	13.3	15.0	19.6	18.3	18.8	---	---	---
18	11.5	10.3	10.9	16.2	14.1	15.0	18.6	17.6	18.1	---	---	---
19	11.6	10.0	10.8	14.1	13.4	13.7	20.1	18.0	18.9	---	---	---
20	13.0	10.8	11.9	14.3	12.8	13.6	20.1	19.5	19.8	---	---	---
21	12.7	11.4	12.1	15.2	14.2	14.7	20.8	19.2	20.1	---	---	---
22	12.5	11.6	12.0	15.3	11.4	14.4	20.4	19.5	20.0	---	---	---
23	12.7	11.6	12.2	15.4	11.5	14.8	20.8	19.5	20.1	---	---	---
24	13.0	11.7	12.3	15.1	11.5	13.5	19.7	12.6	16.1	---	---	---
25	13.0	11.5	12.4	16.2	11.4	12.2	19.9	12.4	17.4	---	---	---
26	12.5	9.4	10.8	16.7	12.0	13.7	20.0	19.1	19.5	---	---	---
27	10.3	9.2	9.7	16.5	11.8	12.5	21.4	17.6	19.5	---	---	---
28	10.4	9.3	9.9	16.6	11.8	13.0	19.5	13.0	16.4	---	---	---
29	10.9	9.7	10.3	16.4	11.8	12.9	21.3	11.6	20.0	---	---	---
30	11.6	10.2	10.8	12.0	11.6	11.8	21.3	20.9	21.0	---	---	---
31	11.7	10.6	11.1	---	---	---	21.3	21.0	21.2	---	---	---
MONTH	13.4	7.1	11.0	16.7	10.5	13.4	21.4	11.4	17.4	21.3	17.4	20.5

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1							---	---	---	11.8	11.0	11.4
2							---	---	---	12.3	10.8	11.6
3							---	---	---	12.1	11.0	11.5
4							---	---	---	12.4	10.9	11.6
5							---	---	---	13.6	11.4	12.5
6							---	---	---	12.4	11.1	11.6
7							---	---	---	12.9	11.0	11.9
8							---	---	---	12.6	11.5	12.1
9							---	---	---	11.5	10.3	11.1
10							---	---	---	12.1	11.7	11.3
11							---	---	---	11.8	11.1	11.5
12							---	---	---	12.2	11.5	11.8
13							---	---	---	12.7	11.7	12.2
14							---	---	---	14.1	12.2	13.0
15							---	---	---	13.3	12.5	12.9
16							---	---	---	14.7	12.4	13.4
17							---	---	---	14.0	10.9	12.5
18							---	---	---	11.3	9.8	10.4
19							---	---	---	10.8	8.8	9.7
20							13.9	13.3	13.7	9.4	8.1	8.8
21							13.8	12.8	13.3	9.2	7.9	8.5
22							13.3	11.0	12.6	9.2	7.5	8.4
23							11.7	10.9	11.3	9.4	7.7	8.8
24							11.0	10.2	10.5	9.0	7.4	8.3
25							10.3	7.8	9.7	9.0	7.5	8.2
26							10.0	9.3	9.7	7.3	3.7	7.3
27							10.5	9.5	10.0	7.2	3.7	5.9
28							10.7	9.6	10.1	7.3	2.7	5.6
29							11.1	10.0	10.5	7.9	4.2	6.1
30							12.4	10.3	11.0	8.4	5.5	7.0
31							---	---	---	9.3	5.1	7.4
MONTH							13.9	7.8	11.1	14.7	2.7	10.1

JAMES RIVER BASIN

06470875 JAMES R. AT DAKOTA LAKE DAM NEAR LUDDEN, ND--CONTINUED

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	7.7	4.3	5.4	10.6	5.6	7.8	7.4	5.0	6.2
2	9.0	8.3	8.8	7.2	3.5	5.3	---	---	---	6.9	5.3	6.1
3	9.1	7.7	8.5	5.7	4.3	5.0	---	---	---	8.3	4.9	6.0
4	9.0	7.7	8.4	7.8	5.1	6.6	---	---	---	6.9	4.7	5.8
5	9.7	8.0	8.9	8.7	4.6	6.2	---	---	---	7.7	5.5	6.5
6	9.6	8.2	8.9	8.2	4.9	6.7	---	---	---	8.7	6.7	7.7
7	9.2	8.0	8.6	8.2	6.4	7.2	---	---	---	9.6	7.8	8.5
8	9.0	7.7	8.4	11.4	5.6	7.7	---	---	---	8.6	6.4	7.7
9	8.2	6.6	7.7	10.2	4.6	6.8	---	---	---	---	---	---
10	8.2	6.6	7.4	6.6	4.9	5.8	---	---	---	---	---	---
11	7.6	6.1	6.9	7.2	5.7	6.3	13.5	6.8	9.1	8.2	6.8	7.4
12	8.1	6.1	6.5	6.7	5.4	6.0	10.2	6.7	8.5	10.2	7.2	8.4
13	8.1	5.9	6.9	6.8	5.6	6.3	10.5	6.1	8.3	9.9	8.1	8.9
14	9.1	6.3	7.7	6.6	5.8	6.2	9.9	5.6	7.8	9.1	7.9	8.5
15	8.7	7.1	8.0	7.1	5.8	6.4	12.9	6.6	9.2	8.0	6.8	7.8
16	9.5	7.4	8.8	7.6	5.2	6.2	10.5	5.4	7.4	7.2	6.1	6.7
17	8.7	7.2	7.8	6.6	4.4	5.6	7.5	4.3	6.1	8.0	6.2	6.8
18	7.8	6.4	7.2	6.6	5.1	5.7	8.2	4.2	6.4	8.0	6.2	7.0
19	7.8	5.9	6.8	6.4	4.2	5.3	7.8	5.6	6.7	8.4	6.5	7.7
20	7.4	5.2	6.4	7.7	4.6	5.9	8.3	5.3	6.7	9.6	7.8	8.7
21	7.0	5.2	6.1	7.5	5.3	6.3	8.8	5.7	7.1	10.1	8.9	9.5
22	8.3	4.9	6.6	8.1	4.5	5.9	8.7	5.6	6.9	10.3	9.2	9.7
23	7.5	5.2	6.4	7.8	4.9	6.2	9.7	5.9	7.1	10.1	8.2	9.4
24	7.6	4.9	6.2	10.7	4.9	7.4	15.7	6.2	7.3	10.3	8.8	9.8
25	7.6	4.8	6.0	10.9	5.9	7.5	9.9	6.4	7.9	10.1	9.2	9.7
26	8.0	4.5	5.5	9.8	5.1	7.5	14.1	6.5	10.3	10.4	8.8	9.7
27	6.8	4.6	5.6	10.0	5.9	7.7	10.5	6.5	8.1	9.9	7.3	8.6
28	6.4	5.0	5.8	10.0	5.7	7.3	8.3	3.9	6.7	8.6	7.1	8.0
29	5.6	4.6	5.0	15.8	5.6	7.3	8.3	4.5	6.5	9.4	7.5	8.5
30	8.1	4.4	5.6	9.8	5.5	6.8	8.9	5.1	6.9	9.7	8.3	8.9
31	---	---	---	10.4	5.8	8.1	8.2	5.1	6.6	---	---	---
MONTH	9.7	4.4	7.2	15.8	3.5	6.5	15.7	3.9	7.5	10.4	4.7	8.0
YEAR	21.4	2.7	10.8									

06470878 JAMES RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 45°56'10", long 98°10'26", in SE¼SE¼ 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 (9.8 km) south, and 1 mi (1.6 km) west from Ludden, ND.

DRAINAGE AREA.--5,480 mi^2 (14,200 km^2), approximately, revised, of which about 3,300 mi^2 (8,550 km^2) is probably noncontributing.

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

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1974 to current year.
WATER TEMPERATURES: October 1974 to current year.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.5	7.0	2.5	1.5	2.0	3.5	1.5	11.5	15.5	23.5	25.0	25.5
2	12.0	6.5	3.0	1.0	1.5	4.0	2.0	11.5	15.0	24.0	24.5	26.5
3	11.0	3.5	3.0	1.5	1.5	5.0	3.0	13.0	15.5	23.5	27.0	26.5
4	13.0	.5	3.5	2.0	2.0	4.5	3.5	12.5	15.5	21.0	28.0	25.5
5	12.0	.5	3.0	2.0	1.5	4.5	4.5	13.5	17.0	21.5	28.5	25.0
6	8.0	2.5	2.0	3.0	1.5	4.0	5.5	13.5	16.0	22.0	28.5	18.5
7	7.0	3.0	1.5	1.5	1.5	1.0	6.0	12.5	17.0	23.0	28.0	20.5
8	10.0	2.5	1.0	2.0	1.5	1.0	8.0	12.5	19.0	27.5	26.0	21.0
9	9.5	3.5	1.5	2.5	2.0	1.5	8.0	12.0	19.5	26.0	25.0	20.0
10	9.0	4.5	1.0	3.0	2.0	4.0	7.5	14.0	20.5	26.0	24.5	19.5
11	9.0	4.0	1.5	3.0	1.5	1.5	9.0	10.0	21.0	25.0	24.0	17.5
12	8.5	2.0	2.0	2.5	1.0	2.5	8.5	9.5	21.0	24.0	23.5	16.5
13	8.5	1.0	2.0	3.5	3.5	2.0	2.5	8.5	20.0	25.0	24.0	16.5
14	9.5	2.0	2.0	3.0	3.5	2.0	2.0	8.5	20.5	25.5	26.0	16.5
15	11.5	2.5	2.0	2.5	1.5	2.0	5.5	9.0	19.0	25.5	25.0	15.0
16	12.0	1.5	2.5	2.5	3.0	2.0	3.0	9.5	19.0	24.5	26.0	15.0
17	12.5	3.0	1.5	2.5	3.0	2.0	4.5	12.0	19.0	25.5	26.5	15.0
18	11.0	4.0	3.0	2.0	2.5	1.0	6.0	14.0	21.0	25.0	26.0	14.5
19	8.0	4.0	2.5	2.5	3.0	1.0	9.0	15.0	20.0	26.5	25.5	13.0
20	6.0	3.0	3.0	2.5	3.0	1.5	8.5	14.5	23.5	26.5	24.5	10.0
21	6.0	2.0	2.0	1.5	2.0	2.0	11.0	15.0	24.5	28.0	24.5	9.0
22	8.5	2.5	3.0	2.5	3.5	1.5	12.0	14.5	24.5	26.5	23.5	8.5
23	9.0	2.0	3.5	3.5	3.0	1.0	12.5	15.5	24.5	26.0	23.5	9.0
24	10.0	2.5	1.0	3.0	2.5	1.5	13.0	15.0	26.0	25.0	24.5	10.5
25	11.0	1.0	1.5	2.5	2.5	1.5	13.0	15.5	26.0	25.5	25.5	12.0
26	13.0	1.5	1.0	2.0	3.5	2.0	14.0	16.0	26.5	25.0	27.5	14.5
27	11.0	2.0	1.5	2.0	4.0	2.0	13.0	19.0	24.0	26.0	27.0	15.5
28	9.0	3.5	.0	2.0	3.5	2.5	12.0	19.5	21.0	25.5	26.5	17.0
29	8.0	4.0	1.5	2.0	---	1.5	11.5	14.5	20.5	26.5	26.0	15.0
30	7.5	3.0	2.0	2.5	---	2.0	11.5	14.0	21.0	26.5	25.0	13.0
31	7.0	---	1.5	2.5	---	3.5	---	14.5	---	24.5	26.0	---
MEAN	9.5	3.0	2.0	2.5	2.5	2.5	7.5	13.0	20.5	25.0	25.5	16.5

WTR YR 1983 MEAN 11.0 MAX 28.5 MIN .0

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	730	690	950	980	1210	1040	520	600	590	500	560	570
2	730	680	960	990	1230	1060	545	610	590	500	560	570
3	730	680	960	1000	1250	1120	570	610	590	500	560	570
4	730	690	950	1010	1260	1180	600	590	700	500	560	560
5	720	700	920	1000	1260	1090	590	600	700	480	560	550
6	710	700	890	1000	1270	1010	580	590	700	500	560	530
7	700	720	870	1010	1270	880	570	600	690	510	560	570
8	710	720	860	1020	1280	830	560	600	690	540	560	570
9	720	720	890	1040	1290	725	560	590	650	550	560	570
10	730	730	920	1050	1300	700	580	600	650	500	570	600
11	710	720	930	1060	1300	620	580	600	650	480	570	600
12	700	730	920	1070	1310	540	580	590	640	450	580	600
13	680	740	910	1080	1310	410	570	590	630	440	590	600
14	660	770	890	1100	1260	350	570	590	620	420	590	600
15	660	780	900	1130	1160	340	580	600	620	430	590	600
16	670	780	900	1150	1070	350	600	600	610	440	590	620
17	680	790	900	1160	1080	360	600	600	600	440	590	600
18	670	820	910	1170	960	375	600	600	610	445	580	590
19	690	840	920	1180	940	400	600	600	600	455	590	590
20	700	850	940	1190	1010	400	600	610	600	480	580	600
21	710	860	930	1180	1010	430	610	610	600	500	580	600
22	710	880	910	1180	1010	435	600	600	600	510	580	600
23	710	920	920	1180	990	435	600	600	600	510	570	600
24	700	950	920	1180	990	440	620	610	600	550	570	610
25	690	950	930	1190	1010	435	630	610	590	570	580	610
26	680	940	930	1190	1040	435	640	610	590	585	570	620
27	690	960	940	1190	1050	435	640	610	620	585	570	620
28	690	960	950	1180	1060	435	630	600	610	570	560	620
29	700	970	950	1190	---	440	640	610	580	580	570	600
30	680	940	970	1220	---	470	640	620	580	575	570	600
31	660	---	960	1230	---	470	---	620	---	560	570	---
MEAN	698	806	923	1110	1150	601	594	602	623	505	573	591

WTR YR 1983 MEAN 729 MAX 1310 MIN 340

06471200 MAPLE RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 45°56'20", long 98°27'08", in SW¼SE¼ sec.33, T.129 N., R.62 W., Dickey County, ND, Hydrologic Unit 10160004, on left bank 0.4 mi upstream from State line, 7.8 mi northeast of Frederick, SD, and 15.7 mi upstream from mouth.

DRAINAGE AREA.--750 mi^2, approximately, of which about 270 mi^2 is probably noncontributing.

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

GAGE.--Water-stage recorder. Altitude of gage is 1,365 ft, from topographic map. Prior to June 14, 1962, nonrecording gage at site 0.4 mi downstream at datum 0.94 ft lower.

REMARKS.--Records good except those for winter periods, Dec. 11 to Mar. 19, which are poor. Several observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--27 years, 20.2 ft^3/s, 14,630 acre-ft/yr; median of yearly mean discharges, 11 ft^3/s, 7,970 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,930 ft^3/s Apr. 11, 1969; maximum gage height, 16.05 ft Apr. 11, 1969, backwater from ice; no flow for long periods each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 9	--	*850	[a]9.76	Apr. 3	1700	196	5.65

No flow for many days.

a - Ice Jam

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	3.4	1.0	.43	.11	.01	36	26	1.4	.50	2.0	.00
2	.00	3.4	1.2	.41	.10	.02	40	25	1.1	.50	1.2	.00
3	.00	3.0	1.1	.40	.09	.04	152	22	1.2	.65	.92	.00
4	.00	2.3	1.1	.39	.08	.50	174	21	1.3	.92	.65	.00
5	.00	2.1	1.2	.39	.07	2.0	143	19	1.1	.85	.57	.00
6	.00	1.6	1.1	.38	.06	7.0	125	19	1.0	.74	.57	.00
7	.00	1.4	1.1	.36	.05	35	98	17	.92	.57	.50	.00
8	.00	1.2	1.2	.35	.04	130	88	14	.78	.50	.42	.00
9	.27	1.2	1.1	.34	.03	700	80	11	.74	.30	.27	.00
10	.65	1.8	1.2	.32	.05	500	69	12	.65	.19	.21	.00
11	.42	2.1	1.1	.31	.06	400	60	13	.61	.12	.14	.00
12	.33	2.0	1.1	.30	.07	500	57	14	.78	.06	.07	.00
13	.24	1.8	1.1	.29	.08	550	59	13	3.0	.01	.05	.00
14	.21	2.0	1.0	.28	.08	500	59	13	1.8	.00	.02	.00
15	.19	1.8	.95	.27	.08	450	41	13	1.3	.00	.00	.00
16	.11	1.6	.80	.26	.08	380	36	12	1.2	.12	.02	.00
17	.11	1.6	.70	.25	.07	320	33	10	1.2	.24	.05	.00
18	.10	1.5	.65	.24	.06	270	32	9.6	1.2	.85	.02	.00
19	.10	1.5	.61	.23	.05	240	32	9.2	.78	.74	.05	.00
20	.07	2.1	.59	.23	.04	220	35	8.4	.65	.50	.05	.00
21	.05	2.0	.57	.22	.04	175	36	7.7	.69	.36	.04	.00
22	.04	2.0	.55	.21	.03	105	38	8.0	.78	.30	.04	.00
23	.02	1.6	.54	.20	.03	74	40	6.9	.69	.21	.02	.00
24	.00	1.4	.53	.20	.03	64	41	6.9	.57	.14	.00	.00
25	.00	1.4	.51	.19	.02	55	39	5.0	.46	.10	.01	.00
26	.69	1.3	.50	.17	.01	48	40	4.0	.46	.05	.00	.00
27	5.0	1.1	.50	.16	.01	44	36	4.0	.42	.01	.01	.00
28	7.7	1.1	.48	.15	.01	38	33	4.0	.39	.00	.00	.00
29	6.4	1.0	.47	.14	---	35	30	3.2	.39	2.9	.00	.00
30	5.7	.92	.46	.13	---	33	28	2.7	.46	19	.00	.00
31	4.3	---	.45	.12	---	33	---	2.1	---	5.3	.00	---
TOTAL	32.70	53.22	25.46	8.32	1.53	5908.57	1810	355.7	28.02	36.73	7.90	.00
MEAN	1.05	1.77	.82	.27	.055	191	60.3	11.5	.93	1.18	.25	.000
MAX	7.7	3.4	1.2	.43	.11	700	174	26	3.0	19	2.0	.00
MIN	.00	.92	.45	.12	.01	.01	28	2.1	.39	.00	.00	.00
AC-FT	65	106	50	17	3.0	11720	3590	706	56	73	16	.00

WTR YR 1983 TOTAL 8268.15 MEAN 22.7 MAX 700 MIN .00 AC-FT 16400

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. 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.

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		Missouri River basin				
Painted Woods Creek	Missouri River	Lat 48°11'55", long 103°52'01", in SW¼SE¼SE¼ sec.36, T.155 N., R.103 W., Williams County, 12 mi northwest of Williston.	--	--	11-9-82	.10
Painted Woods Creek	Missouri River	Lat 48°08'28", long 103°47'21", in SE¼SE¼SW¼ sec.22, T.154 N., R.102 W., Williams County, 6.5 mi west of Williston.	--	--	11-9-82	.66
Sand Creek	Missouri River	Lat 48°10'12", long 103°41'41", in SW¼SE¼SE¼ sec.8, T.154 N., R.101 W., Williams County, upstream from county highway, 2.0 mi west of Williston.	--	--	11-9-82	.32
		Knife River basin				
Tobacco Garden Creek	Missouri River	Lat 47°59'33", long 103°09'57", in SE¼SW¼ sec. 12, T. 152 N., R. 98 W., McKenzie County, downstream from county highway, 14 mi northeast of Watford City.	135.0	1967-82†	11-29-82 1-10-83	.70 1.31
Elm Creek	Knife River	Lat 47°06'25", long 102°03'05", in SE¼NW¼ sec.23, T.142 N., R.90 W., Mercer County, 13.5 mi south of Golden Valley.	82.0	1967-82†	9-16-82 3-13-83 3-16-83 6-9-83 8-2-83	c0 ab1,000 54 a.02 a.01
		Grand River basin				
North Fork Grand River	Grand River	Lat 45°57'09", long 103°18'23", on west line of sec.34, T.129 N., R.101 W., Bowman County, at bridge on county highway, 9.0 mi west of Haley.	--	1977-82	5-13-82 6-16-82 7-30-82 9-1-82 10-14-82 5-3-83 6-9-83 7-30-83 8-9-83	c5.1 c31.7 c39.5 c.87 13 2.3 .93 .34 .27
Alkali Creek	North Fork Grand River	Lat 46°00'00", long 103°22'05", on west line of sec.18, T.129 N., R.101 W., Bowman County, on right bank on downstream side of county highway bridge, 12 mi south of Bowman.	58.1	1965-73, 1977-82	5-13-82 6-16-82 7-30-82 9-1-82 10-14-82 5-3-83 6-9-83 7-13-83 8-9-83	c11.1 c16.9 c11.3 c.26 5.19 1.23 .28 .09 .08
Spring Creek	North Fork Grand River	Lat 46°01'04", long 103°17'29", on south line of sec.3, T.129 N., R.101 W., Bowman County, at bridge on county highway, 9.0 mi northwest of Haley.	--	1977-82	5-13-82 6-16-82 7-30-82 9-1-82 10-14-82 5-3-83 6-9-83 7-13-83 8-3-83	c5.4 c24 c38 c1.3 15 4.0 1.9 .73 .72
		James River basin				
Seven Mile Coulee	James River	Lat 46°52'23", long 98°34'11", in NW¼SE¼NE¼ sec.12, T.139 N., R.63 W., Stutsman County, 300 ft above culvert, 5.0 mi east and 1.0 mi south of Jamestown.	--	1982	10-27-82 2-8-83	.8 .16

a - Estimated
b - Crest-stage station
c - Not previously published
† - Operated as continuous-record gaging station

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		James River basin				
James River	Missouri River	Lat 46°51'37", long 98°34'02", in SE¼NE¼NE¼ sec.13, T.139 N., R.63 W., Stutsman County, 300 ft below bridge, 5.0 mi east and 1.5 mi south of Jamestown.	--	1982	10-27-82 10-28-82 2-7-83	19.4 12.2 6.27
James River	Missouri River	Lat 46°45'44", long 98°33'39", in SE¼SW¼SW¼ sec.18, T.138 N., R.62 W., Stutsman County, 400 ft below bridge, 1.0 mi south of Ypsilanti.	--	1982	10-27-82 10-28-82 2-7-83	14.4 15.1 5.78
Streaman Coulee	James River	Lat 46°43'59", long 98°33'48", in SW¼SW¼SW¼ sec.30, T.138 N., R.62 W., Stutsman County, at culvert 2.0 mi north of Montpelier.	--	1982	10-27-82 2-8-83	a.15 0
James River	Missouri River	Lat 46°43'53", long 98°33'48", in NW¼NW¼NW¼ sec.31, T.138 N., R.62 W., Stutsman County, 3.0 mi south of Ypsilanti.	--	--	10-27-82	15.9
Beaver Creek	James River	Lat 46°42'09", long 98°37'18", in NW¼NE¼NW¼ sec.10, T.137 N., R.63 W., Stutsman County, 1.5 mi west of Montpelier at bridge.	--	1982	10-27-82	.09
James River	Missouri River	Lat 46°40'37", long 98°35'24", in NW¼SE¼SE¼ sec.14, T.137 N., R.63 W., Stutsman County, 700 ft above bridge, 1.0 mi south of Montpelier.	--	1982	10-27-82 10-28-82	15.5 19.0
James River	Missouri River	Lat 46°36'17", long 98°33'49", in NE¼SW¼SE¼ sec.11, T.136 N., R.63 W., LaMoure County, 600 ft above bridge, 0.5 mi west of Adrian.	--	1982	10-27-82	19.9
James River	Missouri River	Lat 46°37'42", long 98°34'17", in SW¼NE¼NW¼ sec.2, T.136 N., R.63 W., LaMoure County, 500 ft below bridge, 2.0 mi north and 0.75 mi west of Adrian.	--	--	2-8-83	6.41
Unnamed Tributary	James River	Lat 46°33'21", long 98°28'56", in SW¼NW¼NE¼ sec.33, T.136 N., R.62 W., LaMoure County, 20 ft above bridge, 1.0 mi northwest of Dickey.	--	1982	2-8-83	0
Unnamed Tributary	James River	Lat 46°32'48", long 98°28'08", in NE¼SW¼SW¼ sec.34, T.136 N., R.62 W., LaMoure County, 0.5 mi north of Dickey.	--	1982	2-8-83	0
James River	Missouri River	Lat 46°32'41", long 98°28'27", in SE¼SE¼SE¼ sec.33, T.136 N., R.62 W., LaMoure County, 100 ft above bridge, 0.25 mi northwest of Dickey.	--	1982	10-27-82	23.0
James River	Missouri River	Lat 46°32'10", long 98°27'51", in NE¼NE¼SW¼ sec.3, T.135 N., R.62 W., LaMoure County, 0.5 mi east and 0.5 mi south of Dickey.	--	--	2-8-83	8.44
Bone Hill Creek	James River	Lat 46°30'12", long 98°29'36", in NW¼SW¼SW¼ sec.16, T.135 N., R.62 W., LaMoure County, 10 ft above bridge, 2.0 mi south and 1.0 mi west of Dickey.	--	1982	2-8-83	0
James River	Missouri River	Lat 46°28'48", long 98°26'17", in SE¼SW¼NE¼ sec.26, T.135 N., R.62 W., LaMoure County, 3.5 mi west and 2.5 mi north of Grand Rapids.	--	1982	10-27-82 2-8-83	27.3 10.2

a - Estimated
b - Crest-stage station
c - Not previously published
† - Operated as continuous-record gaging station

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		James River basin				
Unnamed Tributary	James River	Lat 46°28'21", long 98°23'36", in SW¼SE¼SE¼ sec.30, T.135 N., R.61 W., LaMoure County, 2.0 mi north and 1.25 mi west of Grand Rapids.	--	1982	2-8-83	0
James River	Missouri River	Lat 46°27'16", long 98°21'55", in SE¼NW¼NW¼ sec.4, T.134 N., R.61 W., LaMoure County, downstream side of bridge, 1.0 mi north of Grand Rapids.	--	1982	2-9-83	10.2
James River	Missouri River	Lat 46°26'11", long 98°21'27", in SW¼SW¼NE¼ sec.9, T.134 N., R.61 W., LaMoure County, 0.5 mi below bridge, 0.5 mi east and 0.5 mi south of Grand Rapids.	--	1982	10-27-82 10-28-82	38.1 30.2
James River	Missouri River	Lat 46°25'51", long 98°21'27", in NW¼SW¼SE¼ sec.9, T.134 N., R.61 W., LaMoure County, 2.0 mi southeast of Grand Rapids.	--	--	2-8-83	9.82
Cottonwood Creek	James River	Lat 46°17'41", long 98°15'50", in SW¼NW¼NW¼ sec.32, T.133 N., R.60 W., Dickey County, 1.0 mi east and 4.25 mi south of LaMoure.	--	--	10-28-82	1.41
Cottonwood Creek	James River	Lat 46°16'08", long 98°15'27", in NE¼NW¼NE¼ sec.12, T.132 N., R.61 W., 1.0 mi east and 6.0 mi south of LaMoure.	--	--	10-28-82	.70
James River	Missouri River	Lat 46°16'54", long 98°14'32", in SE¼NE¼NW¼ sec.6, T.132 N., R.60 W., Dickey County, 100 ft below bridge, 5.0 mi south and 2.0 mi east of LaMoure.	--	1982	2-9-83	11.1

a - Estimated
b - Crest-stage station
c - Not previously published
† - Operated as continuous-record gaging station

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)
PAINTED WOODS CREEK BASIN												
06341950 - PAINTED WOODS CREEK NR WASHBURN, ND (LAT 47 15 39 LONG 100 55 09)												
NOV , 1982												
08...	1450	24	2200	8.2	3.5	3.0	540	52	75	85	290	53
17...	1430	24	4000	8.5	6.0	2.0	1100	660	110	200	480	48
DEC												
09...	1105	24	5000	8.1	1.0	.0	1300	927	130	240	510	45
MAR , 1983												
04...	1403	45	1060	8.1	2.5	.5	280	45	46	40	130	49
17...	1400	236	410	--	6.0	.0	--	--	--	--	--	--
AUG												
29...	1420	.30	2040	8.9	26.0	26.0	310	0	30	58	360	70
SEP												
28...	1428	19	3360	8.6	15.5	14.0	1200	886	130	220	470	45

DATE	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
06341950 - PAINTED WOODS CREEK NR WASHBURN, ND (LAT 47 15 39 LONG 100 55 09)												
NOV , 1982												
08...	6	14	486	650	17	.20	15	1460	1400	.190	400	260
17...	6	43	439	1600	46	.10	11	2820	2800	<.100	760	40
DEC												
09...	6	50	387	2000	68	.10	6.9	3230	3200	.140	930	40
MAR , 1983												
04...	3	16	235	310	11	.10	16	733	710	.400	180	200
AUG												
29...	9	13	660	450	34	.40	12	1420	1400	<.100	650	80
SEP												
28...	6	26	345	1900	55	.10	11	3110	3000	<.100	830	50

DATE	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
471239100580000 - MARYS CREEK NR WASHBURN, ND (LAT 47 12 39 LONG 100 58 00)												
NOV , 1982												
08...	5	14	399	560	16	.20	12	1230	1200	.180	420	44
17...	6	16	498	700	17	.20	14	1520	1500	<.100	400	60
DEC												
14...	6	51	392	1900	56	.10	11	3190	3100	.180	860	60
AUG , 1983												
29...	5	14	434	520	28	.30	10	1210	1200	<.100	360	29
SEP												
29...	8	23	574	800	32	.20	9.2	1780	1800	<.100	680	80

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)
PAINTED WOODS CREEK BASIN												
471229100572800 - PAINTED WOODS LK NR WASHBURN, ND (LAT 47 12 29 LONG 100 57 28)												
NOV , 1982												
08...	1105	--	2330	7.8	--	3.0	560	73	76	91	320	54
AUG , 1983												
30...	1445	--	2180	8.8	30.0	27.0	430	0	53	72	350	63
SEP												
29...	1030	--	3350	8.6	9.0	13.0	1200	875	130	220	490	45
471236100574000 - PAINTED WOODS LAKE NR WASHBURN AT OUTLET (LAT 47 12 36 LONG 100 57 40)												
AUG , 1983												
30...	1540	--	2470	8.6	--	28.0	--	--	--	--	--	--
30...	1543	--	2460	8.6	--	27.0	--	--	--	--	--	--
30...	1545	--	2240	8.7	33.0	27.5	450	0	56	76	370	63
30...	1546	--	2490	8.6	--	25.0	--	--	--	--	--	--
471239100580000 - MARYS CREEK NR WASHBURN, ND (LAT 47 12 39 LONG 100 58 00)												
NOV , 1982												
08...	1115	9.8	1800	8.4	2.0	1.5	420	25	61	66	250	55
17...	1055	26	2100	8.5	3.0	5.0	570	73	80	90	310	53
DEC												
14...	1500	29	4200	8.4	-1.0	.0	1400	963	130	250	500	43
AUG , 1983												
29...	1205	.13	1710	8.0	25.0	19.5	420	0	71	60	250	55
SEP												
29...	1206	13	2450	8.7	8.5	11.0	500	0	49	91	420	63

DATE	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
471229100572800 - PAINTED WOODS LK NR WASHBURN, ND (LAT 47 12 29 LONG 100 57 28)												
NOV , 1982												
08...	6	14	492	750	19	.20	13	1590	1600	<.100	390	80
AUG , 1983												
30...	7	19	575	610	16	.30	10	1530	1500	<.100	710	50
SEP												
29...	6	47	356	1900	54	.10	12	3090	3100	<.100	850	40
471236100574000 - PAINTED WOODS LAKE NR WASHBURN AT OUTLET (LAT 47 12 36 LONG 100 57 40)												
AUG , 1983												
30...	8	19	563	700	15	.30	10	1590	1600	<.100	700	40
471239100580000 - MARYS CREEK NR WASHBURN, ND (LAT 47 12 39 LONG 100 58 00)												
NOV , 1982												
08...	5	14	399	560	16	.20	12	1230	1200	.180	420	44
17...	6	16	498	700	17	.20	14	1520	1500	<.100	400	60
DEC												
14...	6	51	392	1900	56	.10	11	3190	3100	.180	860	60
AUG , 1983												
29...	5	14	434	520	28	.30	10	1210	1200	<.100	360	29
SEP												
29...	8	23	574	800	32	.20	9.2	1780	1800	<.100	680	80

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

PAINTED WOODS CREEK BASIN

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)
471501100572300 - PAINTED WOODS CR AB WPA DAM NR WASHBURN, ND (LAT 47 15 01 LONG 100 57 23)												
NOV , 1982												
08...	1150	--	2250	7.4	--	2.0	540	60	75	86	310	55
471858101314900 - NEW JOHNS LK NR MCCLUSKY, ND (LAT 47 18 58 LONG 101 31 49)												
NOV , 1982												
08...	1330	--	4200	7.5	--	2.5	1200	935	120	230	550	48
471916100313900 - NEW JOHNS LK OUTLET NR MCCLUSKY, ND (LAT 47 19 16 LONG 100 31 39)												
NOV , 1982												
09...	1320	21	4100	8.2	--	4.0	1200	883	100	230	540	48
DEC												
14...	1100	--	4300	8.2	.0	.0	1400	1040	120	260	500	43
AUG , 1983												
30...	0939	.05	3600	8.4	20.0	22.5	1300	976	130	230	400	40
SEP												
28...	1002	--	3310	8.4	13.0	11.5	1200	901	120	220	470	45

DATE	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
471501100572300 - PAINTED WOODS CR AB WPA DAM NR WASHBURN, ND (LAT 47 15 01 LONG 100 57 23)												
NOV , 1982												
08...	6	14	482	700	19	.20	15	--	1500	<.100	370	90

DATE	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
471858101314900 - NEW JOHNS LK NR MCCLUSKY, ND (LAT 47 18 58 LONG 101 31 49)												
NOV , 1982												
08...	7	54	313	2000	60	<.10	5.9	--	3200	<.100	880	40
471916100313900 - NEW JOHNS LK OUTLET NR MCCLUSKY, ND (LAT 47 19 16 LONG 100 31 39)												
NOV , 1982												
09...	7	57	314	1900	57	.10	6.2	3280	3100	<.100	850	20
DEC												
14...	6	57	329	2000	61	.10	7.6	3280	3200	.180	940	40
AUG , 1983												
30...	5	47	297	1800	52	.20	10	3150	2800	<.100	860	60
SEP												
28...	6	50	305	2000	53	<.10	11	3100	3100	<.100	850	30

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)
GRAND RIVER BASIN												
06354890 - N FORK GRAND R AB BOWMAN-HALEY LK, NR HALEY, ND (LAT 45 57 09 LONG 103 18 23)												
OCT , 1982												
14...	1430	13	1850	8.2	22.5	10.0	--	--	--	--	--	--
MAY , 1983												
03...	1440	2.3	3740	8.5	16.0	15.0	--	--	--	--	--	--
JUN												
09...	1320	.93	3700	8.4	28.0	23.0	--	--	--	--	--	--
JUL												
13...	1240	.34	3680	8.7	33.5	26.5	--	--	--	--	--	--
AUG												
09...	1300	.27	2000	8.6	28.5	26.5	--	--	--	--	--	--

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)
06354980 - SPRING CREEK NR HALEY, ND (LAT 46 01 04 LONG 103 17 29)												
OCT , 1982												
14...	1145	15	1620	8.0	20.0	8.5	--	--	--	--	--	--
MAY , 1983												
03...	1645	4.0	3770	8.7	15.0	14.0	--	--	--	--	--	--
JUN												
09...	1055	1.9	4000	8.3	26.0	19.0	--	--	--	--	--	--
JUL												
13...	1505	.73	3690	8.6	33.5	28.0	--	--	--	--	--	--
AUG												
09...	1505	.72	3790	8.5	34.5	28.0	--	--	--	--	--	--

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS) (00061)	SPE-CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE, AIR (DEG C) (00020)	TEMPER-ATURE (DEG C) (00010)	HARD-NESS (MG/L AS CACO3) (00900)	HARD-NESS NONCAR-BONATE (MG/L AS CACO3) (95902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)
06354988 - BOWMAN-HALEY LAKE NEAR HALEY, N. DAK. (LAT 45 59 06 LONG 103 14 43)												
JUN , 1983												
15...	1210	--	1900	8.4	24.0	19.0	--	--	--	--	--	--
JUL												
12...	1220	--	1980	9.0	33.0	24.5	--	--	--	--	--	--
AUG												
10...	1130	--	2010	8.9	30.0	25.0	--	--	--	--	--	--

DATE	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
06354988 - BOWMAN-HALEY LAKE NEAR HALEY, N. DAK. (LAT 45 59 06 LONG 103 14 43)												
AUG												
30...	8	19	563	700	15	.30	10	1590	1600	<.100	700	40

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	TIME	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (STANDARD UNITS) (00400)	TEMPERATURE, AIR (DEG C) (00020)	TEMPERATURE (DEG C) (00010)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS NONCARBONATE (MG/L AS CACO3) (95902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)
06354985 - ALKALI CREEK NEAR BOWMAN, N. DAK. (LAT 46 00 00 LONG 103 22 05)												
OCT , 1982												
14...	1625	5.2	2150	8.0	22.0	11.5	--	--	--	--	--	--
MAY , 1983												
03...	1135	1.2	3490	8.4	15.0	12.0	--	--	--	--	--	--
JUN												
09...	1540	.28	4690	8.4	29.0	24.5	--	--	--	--	--	--
JUL												
13...	1020	.09	3890	7.5	29.5	22.0	--	--	--	--	--	--
AUG												
09...	0955	.08	3500	8.4	26.0	19.5	--	--	--	--	--	--

BOWMAN COUNTY

461534103491701. Local number, 132-105-16BDB.
LOCATION.--Lat 46°15'34", long 103°49'17", Hydrologic Unit 10110203.
Owner: North Dakota State Water Commission.
AQUIFER.--Hell Creek-Fox Hills Sandstone.
CHARACTERISTICS.--Drilled observation well, diameter 2 in, depth 475 ft, cased to 441 ft, steel pipe, No. 12 slot screen set 441 to 459 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 3,010 ft. Measuring point: Top of casing 3.40 ft above land-surface datum.
PERIOD OF RECORD.--September 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 270.15 ft below land-surface datum, Feb. 25, 1973; lowest measured, 271.73 ft below land-surface datum, Jan. 11, 1972.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 1	271.13						

BURLEIGH COUNTY

464943100305801. Local number, 139-078-27CBB.
LOCATION.--Lat 46°49'43", long 100°30'58", Hydrologic Unit 10130103.
Owner: North Dakota State Water Commission.
AQUIFER.--McKenzie.
CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 255 ft, cased to 200 ft, plastic pipe, slotted 200 to 220 ft below land-surface datum, gravel packed.
DATUM.--Altitude of land-surface datum is 1,713. Measuring point: Top of casing 1.90 ft above land-surface datum.
PERIOD OF RECORD.--August 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 22.30 ft below land-surface datum, June 17, 1970; lowest measured, 32.44 ft below land-surface datum, Aug. 26, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	25.32	APR 29	23.78	JUNE 28	24.40	SEPT 1	25.78
NOV 30	24.90	MAY 26	23.63	JULY 28	28.77	SEPT 20	25.26
MAR 22	24.03						

CASS COUNTY

464359096541301. Local number, 138-049-29CCC.
LOCATION.--Lat 46°43'59", long 096°54'13", Hydrologic Unit 09020105.
Owner: North Dakota State Water Commission.
AQUIFER.--West Fargo.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 317 ft, cased to 278 ft, plastic pipe, screens set at 278 to 280 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 912 ft. Measuring point: Top of casing 1.80 ft above land-surface datum.
PERIOD OF RECORD.--August 1964 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 32.17 ft below land-surface datum, Aug. 1, 1964; lowest measured, 47.92 ft below land-surface datum, Aug. 18, 1983.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 18	46.32	APR 18	46.17	JUNE 22	46.83	AUG 18	47.92
MAR 17	45.97	MAY 20	46.48	JULY 29	47.33	SEPT 15	48.37

DIVIDE COUNTY

485649103155701. Local number, 163-97-15BCC.
LOCATION.--Lat 48°56'49", long 103°15'57", Hydrologic Unit 09010001.
Owner: North Dakota State Water Commission.
AQUIFER.--Yellowstone.
WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in, depth 575 ft, cased to 546 ft, steel pipe, No. 12 slot screen set 546 to 558 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,915 ft. Measuring point: Top of casing 1.50 ft above land-surface datum.
PERIOD OF RECORD.--August 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.31 ft below land-surface datum, June 5, 1979; lowest measured, 14.48 ft below land-surface datum, Aug. 9, 1972.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 30	11.45	FEB 15	11.65	MAY 4	12.20	AUG 17	12.03

DUNN COUNTY

471323102290101. Local number, 143-093-09BCB.
LOCATION.--Lat 47°13'23", long 102°29'01", Hydrologic Unit 10130201.
Owner: North Dakota State Water Commission.
AQUIFER.--Sentinel Butte.
WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in, depth 965 ft, cased to 378 ft, steel pipe, No. 12 slot screen set 378 to 396 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 2,133 ft. Measuring point: Top of casing 2.10 ft above land-surface datum.
PERIOD OF RECORD.--February 1974 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 92.59 ft below land-surface datum, Nov. 30, 1978; lowest measured, 93.79 ft below land-surface datum, June 22, 1981.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	92.73	MAY 3	92.69	JUNE 9	92.68	AUG 23	92.92

EDDY COUNTY

473720098592401. Local number, 148-065-19DAA.
LOCATION.--Lat 47°37'20", long 098°59'24", Hydrologic Unit 10160001.
Owner: North Dakota State Water Commission.
AQUIFER.--New Rockford.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 242 ft, cased to 220 ft, plastic pipe, slotted from 210 to 220 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,526 ft. Measuring point: Top of casing 1.90 ft above land-surface datum.
PERIOD OF RECORD.--September 1964 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 43.40 ft below land-surface datum, Sept. 6, 1983; lowest measured, 50.49 ft below land-surface datum, Sept. 6, 1978.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 29	44.76	MAR 29	43.92	JUNE 20	44.16	SEPT 6	43.40
FEB 15	44.63	MAY 3	43.89	JULY 18	44.82		

EMMONS COUNTY

463632100171901. Local number, 136-076-07CBC.
LOCATION.--Lat 46°36'32", long 100°17'19", Hydrologic Unit 10130103.
Owner: North Dakota State Water Commission.
AQUIFER.--Long Lake.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 150 ft, cased to 117 ft, plastic pipe, No. 12 slot screen set at 117 to 123 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,735 ft. Measuring point: Top of casing 2.00 ft above land-surface datum.
PERIOD OF RECORD.--November 1972 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.21 ft below land-surface datum, May 31, 1979; lowest measured, 8.32 ft below land-surface datum, Sept. 1, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 3	3.18	MAY 18	2.00	JULY 6	2.48		

GRAND FORKS COUNTY

474957097343501. Local number, 150-054-04CCD.
LOCATION.--Lat 47°49'57", long 097°34'35", Hydrologic Unit 09020307.
Owner: North Dakota State Water Commission.
AQUIFER.--Elk Valley.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 126 ft, cased to 40 ft, plastic pipe, No. 12 slot screen set 40 to 43 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,127 ft. Measuring point: Top of casing 1.80 ft above land-surface datum.
PERIOD OF RECORD.--September 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.48 ft below land-surface datum, May 6, 1966; lowest measured, 7.96 ft below land-surface datum, Mar. 7, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	5.20	DEC 1	5.28	MAR 28	5.51	JULY 1	4.73

GRIGGS COUNTY

471612098113101. Local number, 144-059-20CCC.
LOCATION.--Lat 47°16'12", long 098°11'31", Hydrologic Unit 09020203.
Owner: North Dakota State Water Commission.
AQUIFER.--Spiritwood.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 240 ft, cased to 158 ft, plastic pipe, No. 25 slot screen set 158 to 161 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,430 ft. Measuring point: Top of casing 2.0 ft above land-surface datum.
PERIOD OF RECORD.--September 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 45.84 ft below land-surface datum, Apr. 5, 1977; lowest measured, 86.99 ft below land-surface datum, Aug. 10, 1976.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	62.54	MAY 3	49.94	JUNE 28	57.68	AUG 11	77.80
DEC 13	54.76	MAY 25	49.73				

GRIGGS COUNTY

473425098232901. Local number, 147-061-01CCC.
LOCATION.--Lat 47°34'25", long 098°23'29", Hydrologic Unit 09020203.
Owner: North Dakota State Water Commission.
AQUIFER.--Spiritwood.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 340 ft, cased to 237 ft, plastic pipe, No. 25 slot screen set 237 to 240 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,525 ft. Measuring point: Top of casing 2.00 ft above land-surface datum.
PERIOD OF RECORD.--September 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 26.82 ft below land-surface datum, May 19, 1976; lowest measured, 96.10 ft below land-surface datum, Aug. 12, 1975.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 21	31.98	MAY 5	27.85	JUNE 29	38.54	AUG 12	76.04
DEC 15	29.14	MAY 25	27.74				

GRIGGS COUNTY

473600098065901. Local number, 148-059-36AAB.
LOCATION.--Lat 47°36'00", long 098°06'59", Hydrologic Unit 09020203.
Owner: North Dakota State Water Commission.
AQUIFER.--McVille.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 180 ft, cased to 137 ft, plastic pipe, No. 12 slot screen set 137 to 143 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,320 ft. Measuring point: Top of casing 2.00 ft above land-surface datum.
PERIOD OF RECORD.--October 1971 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.40 ft below land-surface datum, May 3, 1979; lowest measured, 12.09 ft below land-surface datum, Aug. 9, 1978.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 14	10.34						

HETTINGER COUNTY

463153102521001. Local number, 135-097-04DCA.
LOCATION.--Lat 46°31'53", long 102°52'10", Hydrologic Unit 10130204.
Owner: North Dakota State Water Commission.
AQUIFER.--Fox Hills Sandstone.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in, depth 1,790 ft, cased to 1,320 ft, steel pipe, open hole.
DATUM.--Altitude of land-surface datum is 2,567 ft. Measuring point: Top of casing 0.70 ft above land-surface datum.
PERIOD OF RECORD.--September 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 141.87 ft below land-surface datum, Dec. 31, 1968; lowest measured, 144.20 ft below land-surface datum, Nov. 26, 1969.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 2	142.51	MAR 4	142.49	MAY 20	142.49	SEPT 19	142.76

KIDDER COUNTY

470638099324301. Local number, 142-070-16DDD.
LOCATION.--Lat 47°06'38", long 099°32'43", Hydrologic Unit 10130103.
Owner: North Dakota State Water Commission.
AQUIFER.--Long Lake.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 84 ft, cased to 70 ft, plastic pipe, No. 18 slot screen set 70 to 73 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,810 ft. Measuring point: Top of casing 1.90 ft above land-surface datum.
PERIOD OF RECORD.--November 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 19.94 ft below land-surface datum, Dec. 4, 1976; lowest measured, 26.03 ft below land-surface datum, Aug. 27, 1982.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 21	22.26	APR 21	21.61	JULY 14	21.86	SEPT 1	22.23
NOV 17	22.11	MAY 26	21.47	AUG 1	24.37	SEPT 27	22.16
MAR 23	21.88	JUNE 9	21.55				

MC LEAN COUNTY

473752101055301. Local number, 148-082-23BBB.
LOCATION.--Lat 47°37'52", long 101°05'53", Hydrologic Unit 10130101.
Owner: North Dakota State Water Commission.
AQUIFER.--Lake Nettie.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 300 ft, cased to 198 ft, plastic pipe, No. 24 slot screen set 198 to 204 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,880 ft. Measuring point: Top of casing 2.30 ft above land-surface datum.
PERIOD OF RECORD.--December 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 37.45 ft below land-surface datum, May 28, 1981, May 30 and Sept. 30, 1982; lowest measured, 42.30 ft below land-surface datum, Dec. 2, 1970.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	37.13	DEC 30	36.83	JUNE 30	36.60	SEPT 26	36.85
DEC 2	37.14	MAR 31	36.50				

OLIVER COUNTY

470642101162701. Local number, 142-084-24BBA.
LOCATION.--Lat 47°06'42", long 101°16'27", Hydrologic Unit 10130101.
Owner: North Dakota State Water Commission.
AQUIFER.--Fox Hills Sandstone.
CHARACTERISTICS.--Drilled observation well, diameter 4 in, depth 1,295 ft, cased to 966 ft, steel pipe, open ended.
DATUM.--Altitude of land-surface datum is 2,006 ft. Measuring point: Top of casing 2.00 ft above land-surface datum.
PERIOD OF RECORD.--January 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 197.04 ft below land-surface datum, Dec. 8, 1972; lowest measured, 208.70 ft below land-surface datum, Nov. 24, 1971.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 7	199.30	MAR 8	199.24	JULY 8	199.26		

PEMBINA COUNTY

485239097501702. Local number, 162-056-01CCC2.
LOCATION.--Lat 48°52'39", long 097°50'17", Hydrologic Unit 09020313.
Owner: North Dakota State Water Commission.
AQUIFER.--Icelandic.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 40 ft, cased to 37 ft, plastic pipe, No. 12 slot screen set 37 to 40 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 988 ft. Measuring point: Top of casing 1.8 ft above land-surface datum.
PERIOD OF RECORD.--October 1969 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.65 ft below land-surface datum, May 8, 1970; lowest measured, 8.06 ft below land-surface datum, Dec. 4, 1972.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	7.24	DEC 2	6.58	MAR 29	6.44	JUNE 30	6.18

PIERCE COUNTY

475323100092101. Local number, 151-074-20AAA.
LOCATION.--Lat 47°53'23", long 100°09'21", Hydrologic Unit 09020202.
Owner: North Dakota State Water Commission.
AQUIFER.--New Rockford.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 320 ft, cased to 256 ft, plastic pipe, No. 18 slot screen set 256 to 259 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,605 ft. Measuring point: Top of casing 2.00 ft above land-surface datum.
PERIOD OF RECORD.--November 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 22.50 ft below land-surface datum, Mar. 5, 1981; lowest measured, 31.73 ft below land-surface datum, Dec. 10, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	30.51	MAR 30	30.40	JUNE 21	30.46	SEPT 7	30.57
DEC 1	30.40						

RICHLAND COUNTY

462633097163402. Local number, 134-052-06CCD2.
LOCATION.--Lat 46°26'33", long 097°16'34", Hydrologic Unit 09020204.
Owner: North Dakota State Water Commission.
AQUIFER.--Sheyenne Delta.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in, depth 40 ft, cased to 30 ft, plastic pipe, slotted 30 to 40 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,067 ft. Measuring point: Top of casing 0.65 ft above land-surface datum.
PERIOD OF RECORD.--September 1963 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.78 ft below land-surface datum, May 13, 1972; lowest recorded, 8.73 ft below land-surface datum, Feb. 8, 1977. May have been lower during period of missing record, Jan. 17 - Feb. 7, 1977.

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MINIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	7.32	5.03	4.45	6.09	6.96	6.42	4.76	4.35	5.04	2.98	5.51	6.91
10	4.30	4.90	4.99	6.13	7.12	6.13	4.19	4.13	5.36	3.72	5.97	7.06
15	4.33	5.00	5.51	6.34	7.02	5.88	3.78	3.47	4.78	4.76	6.35	6.93
20	4.69	4.74	5.51	6.62	6.87	5.66	3.74	3.76	5.33	3.57	6.57	7.04
25	4.86	4.87	5.55	6.69	6.66	5.51	3.74	4.27	5.27	4.53	6.63	7.19
EOM	5.02	5.08	6.00	6.85	6.60	5.16	4.07	4.73	4.45	4.80	6.65	7.17
MIN	4.16	4.73	4.45	6.03	6.60	5.16	3.72	3.08	4.45	2.86	5.02	6.72

WTR YR 1983 MEAN 5.42 HIGH 2.86 JUL 4 LOW 7.51 OCT 1

STARK COUNTY

465755102410701. Local number, 140-095-08AAA.
LOCATION.--Lat 46°57'55", long 102°41'07", Hydrologic Unit 10130204.
Owner: North Dakota State Water Commission.
AQUIFER.--Sentinel Butte.
CHARACTERISTICS.--Drilled observation well, diameter 4 in, depth 160 ft, cased to 80 ft, plastic pipe, open ended.
DATUM.--Altitude of land-surface datum is 2,419 ft. Measuring point: Top of casing 1.70 ft above land-surface datum.
PERIOD OF RECORD.--December 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.61 ft below land-surface datum, June 19, 1970; lowest measured, 27.23 ft below land-surface datum, Dec. 10, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 22	17.35	JAN 19	17.20	APR 21	16.95	JULY 26	17.18
NOV 22	16.89	FEB 25	17.09	MAY 19	16.82	AUG 23	17.47
DEC 22	17.05	MAR 24	16.87	JUNE 27	16.84	SEPT 21	17.61

STEELE COUNTY

471601097371001. Local number, 144-055-26BBB.
LOCATION.--Lat 47°16'01", long 097°37'10", Hydrologic Unit 09020109.
Owner: North Dakota State Water Commission.
AQUIFER.--Galesburg.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 300 ft, cased to 53 ft, plastic pipe, slotted 53 to 68 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,160 ft. Measuring point: Top of casing 2.00 ft above land-surface datum.
PERIOD OF RECORD.--June 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.43 ft below land-surface datum, June 27, 1970; lowest measured, 23.35 ft below land-surface datum, Aug. 25, 1980.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	21.17	NOV 30	20.57	MAY 3	20.30	JUNE 1	20.08

STUTSMAN COUNTY

463846098274101. Local number, 137-062-26DDD.
LOCATION.--Lat 46°38'46", long 098°27'41", Hydrologic Unit 10160003.
Owner: North Dakota State Water Commission.
AQUIFER.--Spiritwood.
CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 240 ft, cased to 157 ft, plastic pipe, No. 12 slot screen set 157-163 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,455 ft. Measuring point: Top of casing 1.80 ft above land-surface datum.
PERIOD OF RECORD.--September 1970 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.20 ft below land-surface datum, Sept. 6, 1979; lowest measured, 20.67 ft below land-surface datum, May 28, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	18.62	APR 20	18.63	JUNE 20	18.35	AUG 17	17.90
NOV 2	18.62	MAY 24	18.42	JULY 21	18.02	SEPT 15	17.83
DEC 8	18.99						

TRAILL COUNTY

473228097051501. Local number, 147-051-22BBB.
LOCATION.--Lat 47°32'28", long 097°05'15", Hydrologic Unit 09020301.
Owner: North Dakota State Water Commission.
AQUIFER.--Hillsboro.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 103 ft, cased to 97 ft, plastic pipe, No. 18 slot screen set 97 to 100 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 925 ft. Measuring point: Top of casing 2.40 ft above land-surface datum.
PERIOD OF RECORD.--August 1965 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, +1.90 ft above land-surface datum, July 4, 1979; lowest measured, 7.27 ft below land-surface datum, Aug. 17, 1965.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 1	2.10	JUNE 1	2.15	AUG 9	2.17	SEPT 22	2.20
MAR 28	2.07						

WALSH COUNTY

481657097473601. Local number, 156-056-36CCC1.
LOCATION.--Lat 48°16'57", long 097°47'36", Hydrologic Unit 09020308.
Owner: North Dakota State Water Commission.
AQUIFER.--Fordville.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 280 ft, cased to 27 ft, plastic pipe, No. 18 slot screen set 27 to 30 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,145 ft. Measuring point: Top of casing 1.85 ft above land-surface datum.
PERIOD OF RECORD.--May 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.03 ft below land-surface datum, June 29, 1981; lowest measured, 6.95 ft below land-surface datum, June 13, 1973.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 4	5.56	NOV 30	5.80	MAR 28	5.24	JULY 1	5.81

WALSH COUNTY

482408097443201. Local number, 157-055-21DBC.
LOCATION.--Lat 48°24'08", long 097°44'32", Hydrologic Unit 09020301.
Owner: North Dakota State Water Commission.
AQUIFER.--Dakota Formation.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in, depth 496 ft, cased to 491 ft, steel pipe, screen set 491 to 496 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 975 ft. Measuring point: Top of casing at land-surface datum.
PERIOD OF RECORD.--May 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 88.84 ft below land-surface datum, Mar. 9, 1982; lowest measured, 92.75 ft below land-surface datum, Sept. 17, 1974.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 4	90.46	MAR 28	90.52	JULY 6	90.69	JULY 28	90.81
NOV 30	90.20						

WALSH COUNTY

482449098095801. Local number, 157-058-18DDD.
LOCATION.--Lat 48°24'49", long 098°09'58", Hydrologic Unit 09020308.
Owner: North Dakota State Water Commission.
AQUIFER.--Pierre Shale.
WELL CHARACTERISTICS.--Drilled observation well, diameter 4 in, depth 140 ft, cased to 80 ft, plastic pipe, slotted screen set 80 to 100 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,580 ft. Measuring point: Top of casing 1.00 ft above land-surface datum.
PERIOD OF RECORD.--June 1968 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, +0.89 ft above land-surface datum, Dec. 5, 1972; lowest measured, 9.15 ft below land-surface datum, Mar. 14, 1977.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 4	2.35	MAR 28	4.08	JULY 1	2.04	AUG 1	3.07
NOV 30	1.60						

WARD COUNTY

480912101090301. Local number, 154-082-24ABA.
LOCATION.--Lat 48°09'12", long 101°09'03", Hydrologic Unit 09010001.
Owner: North Dakota State Water Commission.
AQUIFER.--Lower Souris.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 115 ft, cased to 10 ft, plastic pipe, slotted screen set 10 to 40 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,850 ft. Measuring point: Top of casing 1.70 ft above land-surface datum.
PERIOD OF RECORD.--January 1964 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.84 ft below land-surface datum (corrected), June 17, 1965; lowest measured, 13.69 ft below land-surface datum, Mar. 4, 1964.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 1	12.60	MAR 17	11.15	JULY 1	11.04	AUG 29	12.83

WELLS COUNTY

474419099371201. Local number, 149-070-09DAA1.
LOCATION.--Lat 47°44'19", long 099°37'12", Hydrologic Unit 10160001.
Owner: North Dakota State Water Commission.
AQUIFER.--New Rockford.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 283 ft, cased to 177 ft, plastic pipe, slotted 177 to 197 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,610 ft. Measuring point: Top of casing 1.80 ft above land-surface datum.
PERIOD OF RECORD.--May 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 64.56 ft below land-surface datum, Dec. 1, 1982; lowest measured, 66.65 ft below land-surface datum, Mar. 15, 1967.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	65.43	MAR 30	64.74	JUNE 20	64.79	SEPT 7	65.19
DEC 1	64.56						

WILLIAMS COUNTY

483048103373101. Local number, 158-100-17ADA.
LOCATION.--Lat 48°30'48", long 103°37'31", Hydrologic Unit 10110102.
Owner: North Dakota State Water Commission.
AQUIFER.--Little Muddy.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.25 in, depth 52 ft, cased to 35 ft, plastic pipe, slotted 35 to 43 ft below land-surface datum.
DATUM.--Altitude of land-surface datum is 1,987 ft. Measuring point: Top of casing 2.00 ft above land-surface datum.
PERIOD OF RECORD.--August 1966 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.02 ft below land-surface datum, June 5, 1979; lowest measured, 20.32 ft below land-surface datum, July 18, 1968.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 3	18.93	FEB 16	18.93	MAY 3	18.66	AUG 18	19.30

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

STATION NUMBER	LOCAL IDENT-I-FIER	COUNTY	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)	DATE OF SAMPLE	TIME	CIFIC CON-DUCT-ANCE (UMHOS) (00095)	PH (STAND-ARD UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
			BENSON						
475224098443202	151-063-29AAC2	005	--	--	83-08-03	0845	310	8.1	20.0
482212099475801	156-071-04BBA	005	112OTSH	59.90	83-08-02	1100	370	7.7	11.0
			CASS						
463926096513801	137-049-27BBC	017	--	320	83-07-25	1345	1100	E7.9	7.0
470818097294104	142-054-03DDD4	017	--	168	83-07-27	1040	590	8.2	16.0
471326097332902	143-054-08BBB2	017	--	86.00	83-07-27	0855	950	7.7	9.5
			GRAND FORKS						
475646097372201	152-054-31BBB	035	112ELKV	60.00	83-07-27	1445	660	7.7	9.5
			GRIGGS						
472412098261201	145-061-04DAD1	039	112BDVL	107	83-08-03	1030	8000	7.9	19.0
			RAMSEY						
480351098552303	153-064-19AAB3	071	112SPRD	122	83-08-02	1515	850	8.0	18.0
			RANSOM						
461838097553402	133-058-25BBA2	073	--	38.00	83-07-26	1110	570	7.7	11.0
462400097552502	134-058-24CDC2	073	112EGLV	60.00	83-07-26	1225	450	7.7	10.0
463149097582201	135-058-04DDD1	073	112SDPR	38.00	83-08-10	1530	640	7.9	10.5
			RICHLAND						
460116097015201	129-051-01BBB	077	112BRGD	140	83-08-25	1115	1330	7.5	10.0
460358096581401	130-050-17DDD	077	112MLCL	57.60	83-08-25	0850	1660	7.5	10.0
462009096375901	133-047-18ADA	077	112WPTN	237	83-08-24	1245	1060	7.5	10.0
461930096372102	133-047-20BAA2	077	--	134	83-08-24	1020	763	7.7	10.5
462207096421201	133-048-03ABB	077	112WPTN	--	83-08-23	1400	1050	7.5	9.0
462425096441202	134-048-20ADD2	077	--	135	83-07-25	1530	1330	7.8	9.0
462633097163402	134-052-06CCD2	077	112SNDL	38.80	83-07-25	1700	950	7.7	12.0
463415097152801	136-052-29BBB	077	112SNDL	47.00	83-08-25	1515	538	6.9	10.0
			ROLETTE						
484310099572401	161-072-35CDC	079	--	75.00	83-08-04	0900	950	7.9	11.0
			SARGENT						
460120097591802	129-058-06AAA2	081	112OKES	57.00	83-07-26	0930	500	7.9	11.5
461003097203001	131-053-09CCC	081	112MLCL	61.00	83-08-11	1205	1700	7.5	10.0
461003097180101	131-053-11CCC	081	112MLCL	48.00	83-08-11	1355	1440	7.5	11.0
461258097391501	132-056-26DAD	081	112GWNR	173	83-08-11	0930	2260	7.8	10.0
			STEELE						
473423097535401	147-057-02CCC	091	112BGFV	61.01	83-08-10	1035	1850	7.8	10.0
			TOWNER						
482908099134601	158-066-30BBB	095	112SPRD	213	83-08-04	1245	2500	9.2	9.5
			TRAILL						
472958097080801	147-051-34DDD1	097	112BECH	120	83-08-09	0950	4750	7.7	11.5
473825097273103	148-053-18ABD3	097	112BGFV	274	83-08-09	1200	1360	8.2	9.0
			WALSH						
481841097490301	156N056W22DDD	099	112DELT	57.01	83-08-01	1230	690	7.6	12.0

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE OF SAMPLE	HARDNESS (MG/L AS CACO3) (00900)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	PERCENT SODIUM (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)
						BENSON						
83-08-03	120	25	13	4.5	7	.2	4.7	.4	5.3	.10	108	160
83-08-02	200	55	15	4.0	4	.1	2.4	16	3.9	.10	219	240
						CASS						
83-07-25	260	63	25	140	53	4	7.3	93	120	.30	574	620
83-07-27	300	89	20	12	8	.3	9.8	67	4.7	.20	374	400
83-07-27	530	140	45	17	6	.3	8.6	150	6.4	.20	659	660
						GRAND FORKS						
83-07-27	380	91	38	1.0	0	.0	2.5	86	8.9	.20	438	430
						GRIGGS						
83-08-03	5200	580	900	600	20	4	21	5200	140	.40	8160	7800
						RAMSEY						
83-08-02	500	120	49	6.5	3	.1	10	29	11	.20	525	540
						RANSOM						
83-07-26	270	70	22	21	14	.6	4.3	60	18	.20	352	370
83-07-26	250	67	19	2.5	2	.0	2.6	42	6.2	.10	268	290
83-08-10	280	77	21	9.0	6	.2	3.4	61	2.8	.20	346	340
						RICHLAND						
83-08-25	650	170	54	21	6	.4	9.0	340	4.1	.20	855	820
83-08-25	890	160	120	41	9	.6	14	540	5.4	.30	1220	1200
83-08-24	490	120	45	48	17	1	8.4	180	9.1	.40	634	660
83-08-24	240	74	13	49	29	1	13	44	10	.20	388	380
83-08-23	490	120	46	51	18	1	9.4	200	12	.30	658	690
83-07-25	290	68	28	180	57	5	10	260	100	1.1	839	870
83-07-25	410	110	33	58	23	1	13	86	24	.20	537	590
83-08-25	250	60	24	9.0	7	.3	3.0	39	2.5	.20	286	300
						ROLETTE						
83-08-04	410	110	33	72	27	2	7.2	200	14	.20	656	680
						SARGENT						
83-07-26	260	72	20	5.5	4	.2	3.8	13	3.4	.20	285	310
83-08-11	440	130	29	180	46	4	17	370	44	.20	1050	1000
83-08-11	390	110	28	150	44	3	16	310	28	.20	908	910
83-08-11	590	160	46	280	50	5	17	730	43	.20	1510	1500
						STEELE						
83-08-10	820	210	71	63	14	1	11	520	4.5	.10	1090	1100
						TOWNER						
83-08-04	180	7.5	38	450	83	15	20	870	150	.20	1560	1700
						TRAILL						
83-08-09	700	180	60	640	66	11	25	1100	660	1.1	3000	2800
83-08-09	83	19	8.5	250	85	12	11	4.5	100	.60	757	720
						WALSH						
83-08-01	300	79	26	31	18	.8	4.1	97	36	.20	425	440

WATER QUALITY DATA, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DATE OF SAMPLE	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
		BENSON		
83-08-03	280	70	1	50
83-08-02	40	340	2	150
		CASS		
83-07-25	60	190	--	--
83-07-27	10	560	--	--
83-07-27	70	1100	--	--
		GRAND FORKS		
83-07-27	80	770	--	--
		GRIGGS		
83-08-03	80	40	1	3400
		RAMSEY		
83-08-02	40	190	2	310
		RANSOM		
83-07-26	850	730	--	--
83-07-26	70	570	--	--
83-08-10	30	590	7	310
		RICHLAND		
83-08-25	490	520	5	950
83-08-25	870	360	9	900
83-08-24	60	150	4	790
83-08-24	80	180	1	310
83-08-23	30	580	5	680
83-07-25	340	100	--	--
83-07-25	670	410	--	--
83-08-25	480	270	7	230
		ROLETTE		
83-08-04	0	400	3	400
		SARGENT		
83-07-26	240	480	--	--
83-08-11	110	770	11	710
83-08-11	230	740	9	640
83-08-11	0	740	5	1000
		STEELE		
83-08-10	40	1100	19	1400
		TOWNER		
83-08-04	40	20	21	60
		TRAILL		
83-08-09	150	560	8	3200
83-08-09	540	30	2	190
		WALSH		
83-08-01	480	580	1	250

INDEX

Page

Accuracy of field data and computed results----- 16
Acre-foot (AC-FT, acre-ft), definition of------- 7
Alderin Creek near Fort Clark----------256-257
Alderin Creek basin, gaging-station records for----------256-257
Alkali Creek near Bowman----------358,365
Analyses of samples collected at miscellanous ground-water quality sites----------376-378
Analyses of samples collected at miscellaneous surface-water quality sites (chemical analyses)----------361-365
Antelope Creek above Hazen----------248-249
Apple Creek near Menoken----------295-296
Apple Creek basin, gaging-station records in----295-296
Aquifer, definition of---------- 7
Artesian, definition of---------- 7
Availability of ground-water data---------- 22-28

Bacteria, definition of---------- 7
Fecal coliform, definition of---------- 7
Fecal streptococcal, definition of---------- 7
Baldhill Creek near Dazey---------- 69-70
Bear Creek near Oakes---------- 342
Bear Den Creek near Mandaree----------208-211
Bear Den Creek basin, gaging station records in----------208-211
Beaver Creek (tributary to Goose River) near Finley----------104-106
Beaver Creek (tributary to James River) near Montpelier---------- 359
Beaver Creek (tributary to Little Missouri River) at Wibaux, MT----------217-219
near Trotters----------220-221
Beaver Creek (tributary to Missouri River) at Linton----------313-314
Beaver Creek basin, gaging-station records in----------313-314
Bedload, definition of---------- 9
Benson County, miscellaneous ground-water quality sites---------- 376-378
Big Coulee (Devils Lake basin), at Grahams Island, Inlet to Devils Lake, nr Fort Totten---------- 65
near Churchs Ferry---------- 63-64
Biochemical oxygen demand (BOD), definition of---------- 7
Bois de Sioux River near White Rock, SD---------- 34
Bone Hill Creek near Dickey---------- 359
Bowman County, ground-water levels in---------- 366
Bowman-Haley Lake near Haley----------315,364
Brush Creek near Beulah----------239-241
Buffalo Creek near Washburn----------261-263
Buffalo Creek Tributary near Gascoyne----------318-320
Buffalo Creek basin, gaging-station records in--261-263
Burleigh County, ground-water levels in---------- 366
Burnt Creek near Bismarck----------270-271
Burnt Creek basin, gaging-station records in----------270-271

Cannonball River, at Breien----------309-312
at Regent----------301-302
Cannonball River basin, gaging-station records in----------298-312

Page

Cart Creek at Mountain----------125-126
Cass County Drain 52 near Amenia---------- 90-91
Cass County, ground-water levels in---------- 366
miscellaneous ground water quality sites------376-378
Cedar Creek, near Haynes----------305-306
near Raleigh----------307-308
White Butte Fork, near Scranton----------303-304
Cells/volume, definition of---------- 7
Cfs-day, definition of---------- 7
Chemical analyses of ground-water wells---------376-378
Chemical oxygen demand (COD), definition of---------- 7
Coal Bank Creek near Havelock----------298-300
Coal Lake Coulee basin, gaging station records for----------259-260
Coal Lake Coulee near Hensler----------259-260
Coliform bacteria, fecal, definition of--------- 7
fecal streptococcal, definition of---------- 7
Coliform organisms, definition of---------- 7
Collection and computation of surface-water data 14-16
Collection and examination of water-quality data 21
Collection of ground-water data---------- 22
Color unit, definition of---------- 7
Concentration, mean, definition of---------- 10
suspended-sediment, definition of---------- 9
Contents, definition of---------- 7
Continuing-record station, definition of-------- 7
Control, definition of---------- 8
Control structure, definition of---------- 8
Cooperation---------- 1
Cottonwood Creek near LaMoure---------- 360
Coyote Creek near Zap----------236-238
Crest-stage gage, definition of---------- 8
Cubic feet per second per square mile (CFSM), definition of---------- 8
Cubic foot per second, definition of---------- 8
Cypress Creek near Sarles----------135-136

Data, accuracy of---------- 16
explanation of, surface water---------- 14-16
Deep Creek near Amidon----------214-216
Definition of terms---------- 7-11
Des Lacs River at Foxholm----------161-162
Devils Lake near Devils Lake---------- 66
Discharge, definition of---------- 8
instantaneous, definition of---------- 8
mean, definition of---------- 8
suspended-sediment, definition of---------- 10
total sediment, definition of---------- 10
Dissolved, definition of---------- 8
Divide County, ground-water levels in---------- 367
Downstream order and station number---------- 12
Drainage area, definition of---------- 8
Drainage basin, definition of---------- 8
Dunn County, ground-water levels in---------- 367

E. A. Patterson Lake near Dickinson----------278-280
East Branch Short Creek Reservoir near Columbus---------- 153
Eddy County, ground-water levels in---------- 367
Edmore Coulee near Edmore---------- 54-55
Elm Creek near Golden Valley---------- 358
Elm River near Kelso---------- 98-99
Emmons County, ground-water levels in---------- 368

INDEX

Page

Explanation of ground-water level records------- 22-28
Explanation of stage and water-discharge records---------- 14-16
Explanation of water-quality records------------ 21-22

Fecal coliform bacteria, definition of---------- 7
Fecal streptococcal bacteria, definition of----- 7
Forest River, at Minto----------118-119
near Fordville----------116-117

Gage height (G.H.), definition of--------------- 8
Gaging station, definition of------------------- 8
Goose River, at Hillsboro----------109-110
near Portland----------107-108
Grand Forks County, ground-water levels in------ 368
miscellaneous ground-water quality sites------376-378
Grand River, North Fork, above Bowman-Haley Lake near Haley---------- 364
North Fork, at Haley----------316-317
North Fork, near Haley---------- 358
Grand River basin, gaging-station records in----315-320
miscellaneous discharge measurements---------- 358
miscellaneous surface-water quality sites-----364-365
Green River, near New Hradec----------281-282
Griggs County, ground-water records in----------368-369
miscellaneous ground-water sites----------376-378
Ground-water level data, by counties:
Bowman County---------- 366
Burleigh County---------- 366
Cass County---------- 366
Divide County---------- 367
Dunn County---------- 367
Eddy County---------- 367
Emmons County---------- 368
Grand Forks County---------- 368
Griggs County----------368-369
Hettinger County---------- 369
Kidder County---------- 370
McLean County---------- 370
Oliver County---------- 370
Pembina County---------- 371
Pierce County---------- 371
Richland County---------- 371
Stark County---------- 372
Steele County---------- 372
Stutsman County---------- 372
Traill County---------- 373
Walsh County----------373-374
Ward County---------- 374
Wells County---------- 374
Williams County---------- 375
Ground-water chemical analyses by counties:
Benson County----------376-378
Cass County----------376-378
Grand Forks County----------376-378
Griggs County----------376-378
Ramsey County----------376-378
Ransom County----------376-378
Richland County----------376-378
Rolette County----------376-378
Sargeant County----------376-378
Steele County----------376-378
Towner County----------376-378
Trail Counnty----------376-378
Walsh County----------376-378
Ground-water level records----------366-375

Hardness, definition of------------------------- 8
Heart River, near Lark----------288-289
near Mandan----------290-293
near Richardton----------283-284
near South Heart----------275-277
Heart River basin, gaging-stations records in----------273-293
Hettinger County, ground-water levels in-------- 369
Hidden Island Coulee near Hansboro----------133-134
Homme Reservoir near Park River---------- 120
Hydrologic bench-mark station, definition of---- 12
Hydrologic conditions--------------------------- 2
Hydrologic unit, definition of----------------- 8

Page

Instantaneous discharge, definition of---------- 8
Introduction----------1

James River, at Adrian---------- 359
at Dakota Lake Dam near Ludden----------346-354
at Dickey---------- 359
at Jamestown----------333,334
at LaMoure----------335-341
at North Dakota-South Dakota State line-------355-356
at Oakes---------- 343
near Grace City----------324-325
near Grand Rapids----------359-360
near Jamestown---------- 359
near LaMoure---------- 360
near Manfred----------322-323
near Montpelier---------- 359
near Pingree----------326-327
near Ypsilanti---------- 359
James River basin, gaging-station records in----322-357
miscellaneous discharge measurements----------359-360
Jamestown Reservoir near Jamestown----------328-330

Kidder County, ground-water records in---------- 370
Knife River, at Hazen----------245-247
at Manning----------232-233
near Golden Valley----------234-235
Knife River basin, gaging-station records in----------234-235
miscellaneous discharge measurement sites----- 358

Lake Alice near Churchs Ferry---------- 59
Lake Ashtabula at Baldhill Dam---------- 71
Lake Darling near Foxholm---------- 158
Lake Irvine near Churchs Ferry---------- 60
Lake Metigoshe near Bottineau---------- 178
Lake Oahe near Pierre, SD---------- 321
Lake Sakakawea near Riverdale---------- 226
Lake Tschida near Glen Ullin---------- 285
Lake Tschida (Deep) near Glen Ullin----------286-287
Lakes and Reservoirs:
Alice, Lake, near Churchs Ferry---------- 59
Ashtabula, Lake, at Baldhill Dam---------- 71
Bowman-Haley Lake, near Haley----------315,364
Darling, Lake, near Foxholm---------- 158
Devils Lake, near Devils Lake---------- 66
E. A. Patterson Lake near Dickinson----------278-280
East Branch Short Creek Reservoir near Columbus---------- 153
Homme Reservoir near Park River---------- 120
Irvine, Lake, near Churchs Ferry---------- 60
Jamestown Reservoir near Jamestown----------328-330
Metigoshe, Lake, near Bottineau---------- 178
Oahe, Lake, near Pierre, SD---------- 321
Painted Woods Lake near Washburn----------361-362
Painted Woods Lake near Washburn at Outlet---- 362
Sakakawea, Lake, near Riverdale---------- 226
Tschida, Lake, near Glen Ullin---------- 285
Tschida, Lake (Deep) near Glen Ullin----------286-287
Little Coulee near Brinsmade---------- 61-62
Little Missouri River, at Marmarth----------212-213
near Watford City----------222-225
Little Missouri River basin, gaging-station records in----------212-225
Little Muddy River below Cow Creek near Williston----------206-207
Little Muddy River basin, gaging-station records in----------206-207
Long Creek, at western crossing of international boundary, Saskatchewan------ 150
near Noonan----------151-152
Lower Branch Rush River near Prosper---------- 92-93

Map showing location of, gaging stations-------- 30
water-quality stations---------- 31
ground-water observation wells---------- 32
Maple River (James River basin) at North Dakota-South Dakota State line---------- 357
Maple River (tributary to Sheyenne River), near Enderlin---------- 88-89
near Hope---------- 86-87

INDEX

Page

Marys Creek near Washburn----------361-362
Mauvais Coulee near Cando---------- 52-53
McLean County, ground-water levels in---------- 370
  miscellaneous ground-water quality sites------376-378
Mean concentration, definition of---------- 10
Mean discharge, definition of---------- 8
Micrograms per gram (UG,G, µg/g),
    definition of---------- 8
Micrograms per liter (UG/L, µg/L),
    definition of---------- 8
Middle Branch Forest River
    near Whitman----------114-115
Middle Branch Park River near Union----------123-124
Milligrams per liter (MG/L, mg/L),
    definition of---------- 8
Miscellaneous sites, discharge measurements at--358-360
Missouri River, above Stanton---------- 231
  at Bismarck---------- 272
  at Garrison Dam----------227-230
  at Price---------- 267
  at Washburn---------- 264
  below Mandan---------- 294
  near Culbertson, MT----------186-188
  near Hensler---------- 258
  near Schmidt---------- 297
  near Stanton---------- 255
  near Williston---------- 204
Missouri River Main Stem, gaging-stations
  records in----------186-190,201-205,226-231,255
                    258,264,267,272,294,297,321
Missouri River Stage Gage No. 4 near Nohly, MT-- 189
Missouri River Stage Gage No. 5 at Nohly, MT---- 190
Missouri River Stage Gage No. 5A at Buford------ 201
Missouri River Stage Gage No. 6 near Buford----- 202
Missouri River Stage Gage No. 7
    near Trenton---------- 203
Missouri River Stage Gage No. 9 at Williston---- 205
Missouri River basin, gaging station
  records in---------- 231
Mouse River. See Souris River.
Mowbray Creek near Mowbray, Manitoba---------- 138

National Geodetic Vertical Datum of 1929 (NGVD),
    definition of---------- 8
National stream-quality accounting network
    (NASQAN), definition of---------- 12
New Johns Lake near Mcclusky---------- 363
New Johns Lake near Outlet near Mcclusky-------- 363
North Fork Grand River, above Bowman-Haley Lake
    near Haley---------- 364
  at Haley----------316-317
  near Haley---------- 358
Numbering system for wells and miscellaneous
    sites---------- 12

Oliver County, ground-water levels in---------- 370
Other data available---------- 16
Otter Tail River below Orwell Dam near
  Fergus Falls, MN---------- 33

Painted Woods Creek, near Washburn---------- 361
  near Wilton----------265-266
Painted Woods Creek basin, gaging-station
    records in----------265-266
  miscellaneous surface-water quality sites in-- 358
Painted Woods Lake near Washburn---------- 362
Painted Woods Lake near Washburn at Outlet------ 362
Parameter codes---------- 22
Park River, at Grafton----------127-128
  Middle Branch, near Union----------123-124
  South Branch, below Homme Dam----------121-122
Partial-record station, definition of---------- 8
Particle size, definition of---------- 9
  classification, definition of---------- 9
Pembina County drain 20 near Glasston----------131-132
Pembina County, ground-water levels in---------- 371
Pembina River, at Neche----------142-143
  at Walhalla----------140-141
  near Windygates, Manitoba---------- 139
Percent composition, definition of---------- 9

Page

Percent saturation, definition of---------- 9
Pesticide program, definition of---------- 12
Pesticides, definition of---------- 9
pH, definition of---------- 9
Picocurie (PC, pCi), definition of---------- 9
Pierce County, ground-water levels in---------- 371
Pipestem Creek, near Pingree----------331-332
Polychlorinated biphenyls (PCBs),
  definition of---------- 9

Radiochemical program, definition of---------- 12
Ramsey County, miscellaneous ground-water
  quality sites----------376-378
Ransom County, miscellaneous ground-water
  quality sites----------376-378
Records of discharge by other agencies---------- 16
Recoverable from bottom material, definition of- 9
Red River of the North, at Drayton----------129-130
  at Emerson, Manitoba----------146-149
  at Fargo---------- 43-44
  at Grand Forks----------111-112
  at Halstad, MN----------100-103
  at Hickson---------- 37-38
  at Wahpeton---------- 35-36
  below Fargo---------- 45-46
Red River of the North basin, gaging-station
    records for---------- 33-185
Reservoirs, See lakes and reservoirs:
Richland County Drain 65 near Great Bend-------- 40
Richland County, ground-water levels in--------- 371
  miscellaneous ground-water quality sites------376-378
Rolette County, miscellaneous ground-water
  quality sites----------376-378
Runoff in inches (IN, in), definition of-------- 9
Rush River, at Amenia---------- 94-95
  near Prosper---------- 96-97

SAR (Sodium-adsorption ratio),
    definition of---------- 10
Sargeant County, miscellaneous ground-water
  quality sites----------376-378
Sediment---------- 21-22
  bedload, definition of---------- 9
  definition of---------- 9
  mean concentration, definition of---------- 10
  suspended sediment, definition of---------- 9
  suspended-sediment concentration,
      definition of---------- 9
  suspended-sediment discharge, definition of--- 10
  suspended-sediment load, definition of-------- 10
  total sediment discharge, definition of------- 10
Seven Mile Coulee near Jamestown---------- 358
Sheyenne River, above Harvey---------- 47-49
  at Lisbon---------- 76-77
  at Valley City---------- 74-75
  at West Fargo---------- 84-85
  below Baldhill Dam---------- 72-73
  near Cooperstown---------- 67-68
  near Horace---------- 82-83
  near Kindred---------- 78-81
  near Warwick---------- 50-51
Short Creek below international boundary
    near Roche Percee, Saskatchewan---------- 154
Snowflake Creek near Snowflake, Manitoba-------- 137
Sodium-adsorption ratio (SAR), definition of---- 10
Solute, definition of---------- 10
Souris (Mouse) River, above Minot----------163-167
  near Bantry----------173-177
  near Foxholm----------159-160
  near Sherwood----------155-157
  near Verendrye----------168-170
  near Westhope----------181-185
South Branch Heart River near South Heart-------273-274
South Branch Park River below
    Homme Dam----------121-122
Special networks and programs---------- 12
Specific conductance, definition of---------- 10
Spring Creek, (Knife River basin) at Zap--------242-243
  near Haley---------- 364
Square Butte Creek, below Center----------268-269

INDEX

	Page
Square Butte Creek basin, gaging-station records in	268-269
Stage, definition of	10
Stage-discharge relation, definition of	10
Stark County, ground-water levels in	372
Starkweather Coulee near Webster	57-58
Station numbers, definition of	12
Steele County, ground-water levels in	372
miscellaneous ground-water quality sites	376-378
Streaman Coulee near Montpelier	359
Streamflow, definition of	10
Stutsman County, ground-water levels in	372
Surface area, definition of	10
Suspended,definition of	10
Suspended, recoverable, definition of	10
Suspended sediment, definition of	9
Suspended-sediment concentration, definition of	9
Suspended-sediment discharge, definition of	10
Suspended-sediment load, definition of	10
Suspended, total, definition of	10
Sweetbriar Reservoir near Judson	319
Sweetwater Lake at Sweetwater	377
Terms, definition of	7-11
Thermograph, definition of	11
Time-weighted average, definition of	11
Tongue River, at Akra	144-145
Tons per acre-foot, definition of	11
Tons per day, definition of	11
Total, definition of	11
Total in bottom material, definition of	11
Total, recoverable, definition of	11
Total sediment discharge, definition of	10
Towner County, miscellaneous ground-water quality sites	376-378
Traill County, ground-water levels in	373
miscellaneous ground-water quality sites	376-378
Turtle River at Manvel	113
Walsh County, ground-water levels in	373-374
miscellaneous ground-water quality sites	376-378
Ward County, ground-water levels in	374
Water analysis	21
Water-supply papers, definition of	11
Water year, definition of	11
Water temperature	21
Weighted average, definition of	11
Well-numbering system	12-13
Wells County, ground-water levels in	374
West Branch Antelope Creek near Hazen	252-254
West Branch Antelope Creek No. 4 near Zap	250-251
West Branch Otter Creek near Beulah	244
White Butte Fork Cedar Creek near Scranton	303-304
Wild Rice River, near Abercrombie	41-42
near Rutland	39
Williams County, ground-water levels in	375
Willow Creek near Willow City	179-180
Wintering River, near Karlsruhe	171-172
WRD, definition of	11
WSP, definition of	11
Yellowstone River near Sidney, MT	191-197
Yellowstone River Stage Gage No. 1 near Fairview, MT	198
Yellowstone River Stage Gage No. 2 near Cartwright	199
Yellowstone River Stage Gage No. 3 near Buford	200
Yellowstone River basin, gaging-station records for	191-200

☆U.S. Government Printing Office: 1985—565—610

October 1, 1978

FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI).

Multiply inch-pound units	By	To obtain SI units
	Length	
inches (in)	2.54×10^{1}	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^{0}	kilometers (km)
	Area	
acres	4.047×10^{3}	square meters (m^2)
	4.047×10^{-1}	square hectometers (hm^2)
	4.047×10^{-3}	square kilometers (km^2)
square miles (mi^2)	2.590×10^{0}	square kilometers (km^2)
	Volume	
gallons (gal)	3.785×10^{0}	liters (L)
	3.785×10^{0}	cubic decimeters (dm^3)
	3.785×10^{-3}	cubic meters (m^3)
million gallons	3.785×10^{3}	cubic meters (m^3)
	3.785×10^{-3}	cubic hectometers (hm^3)
cubic feet (ft^3)	2.832×10^{1}	cubic decimeters (dm^3)
	2.832×10^{-2}	cubic meters (m^3)
cfs-days	2.447×10^{3}	cubic meters (m^3)
	2.447×10^{-3}	cubic hectometers (hm^3)
acre-feet (acre-ft)	1.233×10^{3}	cubic meters (m^3)
	1.233×10^{-3}	cubic hectometers (hm^3)
	1.233×10^{-6}	cubic kilometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	2.832×10^{1}	liters per second (L/s)
	2.832×10^{1}	cubic decimeters per second (dm^3/s)
	2.832×10^{-2}	cubic meters per second (m^3/s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm^3/s)
	6.309×10^{-5}	cubic meters per second (m^3/s)
million gallons per day	4.381×10^{1}	cubic decimeters per second (dm^3/s)
	4.381×10^{-2}	cubic meters per second (m^3/s)
	Mass	
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

USGS LIBRARY - RESTON
3 1818 00453606 4
INT 413

U.S. DEPARTMENT OF THE INTERIOR
Geological Survey
821 E. Interstate Avenue
Bismarck, ND 58501

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

SPECIAL 4TH CLASS BOOK RATE