# Physical Characteristics of Stream Subbasins in the Upper Minnesota River Basin, West-Central Minnesota, Northeastern South Dakota and Southeastern North Dakota

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## Abstract

Data that describe the physical characteristics of stream subbasins upstream from selected points on streams in the Upper Minnesota River Basin, located in west-central Minnesota, north-eastern South Dakota, and southeastern North Dakota, are presented in this report. The physical characteristics are the drainage area of the subbasin, the percentage area of the subbasin covered only by lakes, the percentage area of the subbasin covered by both lakes and wetlands, the main-channel length, and the main-channel slope. The points on the stream include outlets of subbasins of at least 5 square miles, outlets of sewage treatment plants, and locations of U.S. Geological Survey low-flow, high-flow, and continuous-record gaging stations.

## Introduction

This is the eighth report in a series of reports detailing subbasin characteristics of streams in Minnesota and adjacent states. The Upper Minnesota River Basin drains an area of 2,090 square miles and is represented by hydrologic accounting unit 07020001 (U.S. Geological Survey, 1974a and 1974b). The Upper Minnesota River Basin includes parts of Traverse, Stevens, Big Stone, Swift, Lac qui Parle, and Chippewa Counties in west-central Minnesota, Roberts, Marshall, Grant, Codington, and Deuel Counties in northeastern South Dakota, and Richland County in southeastern North Dakota.

Selected data for points on streams at outlets of subbasins larger than about 5 square miles; at outfalls of sewage treatment plants; and at locations of U.S. Geological Survey low-flow, high-flow, and continuous-record gaging stations located in the Upper Minnesota River Basin are presented in this report.

This report was prepared in cooperation with the Minnesota Department of Transportation.

### Acknowledgments

The Minnesota State Planning Land Management Information Center (LMIC) provided assistance with the digitizing and programming. Jim L. Krumrie, a student at the University of Minnesota, did much of the digitizing and assisted in the preparation of this report. These contributions were essential for the completion of this report.

## Methods

U.S. Geological Survey 7-1/2 minute series topographic maps were used as source maps to obtain the areas for the subbasin boundaries, lakes, marshes, the main-channel length, and the contour elevation points used in this report. Paper copies of the maps were used. A geographic information system (GIS) was used to define the geographic location and extent of the subbasins, lakes, marshes, main-channels, and elevation points described below. Data digitized from paper copies were in error by no more than twice the horizontal accuracy of National Mapping Standards of 40 feet (Thompson, 1987, p. 104). All thematic(digitized) data were projected into an Albers Equal-Area projection for storage and analysis.

Subbasin boundaries were delineated on the basis of human activities and topographic contours. Human activities, such as the installation of storm sewers, the drainage of wetlands, and the diversion of streams, may alter the drainage area of the stream. Data from field inspections and recent drainage-ditch maps, therefore, were transferred to the topographic maps. The subbasin boundaries were digitized by LMIC using a GIS.

Lake and marsh data were digitized using a computer-aided drafting (CAD) system and transferred to the GIS. Lake and marsh boundaries were overlaid on the subbasin boundaries to associate each lake and marsh with a subbasin. The total area of lakes and marshes within each subbasin was calculated by the GIS. Total marsh area plus total lake area is defined as storage area. Lakes and marshes were digitized by the U.S. Geological Survey Minnesota.

Main channels were delineated for each subbasin on the 7-1/2 minute topographic maps starting at the outflow of the subbasin and continuing upstream. Whenever the main channel joined with another stream, the stream upstream of the junction that drained the largest area was selected as the main channel. The main channel is continuous and is defined as a single trace that passes through marshes, lakes, and the midline of rivers and braided streams from the basin outlet, to the point within the basin that drains the greatest area; this is generally the basin divide. The main channels were digitized by the U.S. Geological Survey Minnesota, using a CAD system and transferred to the GIS. The main channel data were overlaid onto the subbasin data to associate each main channel with its subbasin.

Elevation points were digitized at the intersection of topographic contour lines and main channels. The elevation data was recorded using a CAD system and transferred to the GIS. The elevation data was overlaid onto the main channel data to associate each elevation data point with a main channel. Two points on the main channel, at 10 percent and at 85 percent of the main channel length from the basin outlet to the drainage divide, were located by the GIS. The elevations of these two points were interpolated from the digitized elevation data. Main-channel slope was calculated by dividing the difference in elevation between these points by the distance along the stream channel between these points.

## Physical Characteristics of Upper Minnesota River Subbasins

Physical characteristics determined for each of the subbasins shown on plate 1 are presented in table 1. Subbasins are presented in order from headwaters to mouth. The rank of the subbasin stream is shown by indentation; whenever two subbasin streams joined, the stream draining the least cumulative area was assigned a lower rank and indented in the table.

The data for drainage area, main-channel length, and main-channel slope are reported using three significant figures or rounded to the nearest one-hundredth of a unit. The data for lake area and storage area are reported using two significant figures or rounded to the nearest one-tenth of a percent.

The following is an explanation of terms used in table 1:

Subbasin Number. A seven digit number based on the Minnesota Common Stream and Watershed Numbering System (Minnesota Department of Natural Resources, 1981). The first two digits are 22 and identify the Upper Minnesota River Basin. The following five digits are arbitrary and are used to identify each individual subbasin.

Stream Name. The name of the stream or ditch shown on U.S. Geological Survey 7-1/2 minute topographic maps. The relative position of the subbasin above other subbasins, streams, gaging stations, and outfalls from sewage treatment plants also is given.

Outlet Location. The U.S. Public Lands Survey System is used to describe the location the stream exits the subbasin, down to quarter-quarter section. The description includes quarter-quarter section, section, township, and range.

Drainage area. That area, measured on a horizontal plane, enclosed by a topographic divide, within which direct surface runoff from precipitation normally flows by gravity into a watercourse above a specific point. This may include closed basins and other areas that do not contribute directly to surface runoff.

Lake Area. The percentage of the drainage area covered by open water as shown on 7-1/2 minute topographic maps.

Storage Area. The percentage of a drainage area covered by open water and marshes as shown on 7-1/2 minute topographic maps. Marsh areas are not shown on plate 1.

Main-Channel Length. The total length of the main channel from the basin outlet to the point within the basin that drains the greatest area; this is generally the drainage divide. The main channel is the watercourse that drains the greatest area.

Main-Channel Slope. The average slope of the watercourse between the points at 10 and at 85 percent of the distance along the main channel from the basin outlet to the drainage divide.

## References Cited

Minnesota Department of Natural Resources, 1981, The Common Stream And Watershed Numbering System: Minnesota Department of Natural Resources Stream Inventory and Data Retrieval Systems Report 7002, unpaged.

Thompson, M.M., 1987, Maps for America, Third edition: U.S. Geological Survey, 265 p.

U.S. Geological Survey, 1974a, Hydrologic unit map--1974 State of Minnesota: 1 plate, scale 1:500,000.

U.S. Geological Survey, 1974b, Hydrologic unit map--1974 State of South Dakota: 1 plate, scale 1:500,000.

Table 1.—***Physical characteristic data for the Upper Minnesota River Basin***

[Outlet location is quarter-quarter section, section, township, range; --, not determined]

| Basin number | Stream name and location | Outlet location | | | | By subbasin | | | Cumulative to mouth of basin | | | Main-channel length (miles) | Main-channel slope (foot per mile) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Drainage area (square miles) | Lake area (percent of sub-basin area) | Storage area (percent of sub-basin area) | Drainage area (square miles) | Lake area (percent of total area) | Storage area (percent of total area) | | |
| | First Rank / Second Rank / Third Rank / Fourth Rank | | | | | | | | | | | | |
| 2209900 | La Frambois Creek above Little Minnesota River | $SE^1/_4SE^1/_4$ | 18 | 128N | 52W | 17.2 | 3.9 | 6.7 | 17.2 | 3.9 | 6.7 | 15.6 | 54.6 |
| 2210000 | Little Minnesota River above La Frambois Creek (subbasin 2209900) | $SE^1/_4SE^1/_4$ | 18 | 128N | 52W | 12.1 | .0 | .7 | 12.1 | .0 | .7 | 10.1 | 27.2 |
| 2209209 | Noncontributing are in subbasin 2209200 | | | | | 10.6 | .3 | 10. | 10.6 | .3 | 10 | -- | -- |
| 2209800 | Munson Creek to unnamed tributary above mouth | $SE^1/_4SW^1/_4$ | 10 | 127N | 52W | 15.4 | 3.6 | 5.2 | 15.4 | 3.6 | 5.2 | 13.4 | 67.1 |
| 2209700 | Unnamed tributary to unnamed tributary (subbasin 2209600) | $NW^1/_4SW^1/_4$ | 30 | 127N | 51W | 18.3 | .9 | 1.1 | 18.3 | .9 | 1.1 | 11.3 | 72.8 |
| 2209600 | Unnamed tributary to unnamed tributary (subbasin 2209500) | $NW^1/_4SW^1/_4$ | 30 | 127N | 51W | 13.0 | .8 | 1.1 | 13.0 | .8 | 1.1 | 11.6 | 83.1 |
| 2209500 | Unnamed tributary to unnamed tributary (subbasin 2209400) | $NE^1/_4SW^1/_4$ | 19 | 127N | 51W | 1.88 | .0 | 2.1 | 33.2 | .8 | 1.1 | 13.6 | 55.1 |
| 2209400 | Unnamed tributary to Little Minnesota River above mouth | $NE^1/_4SE^1/_4$ | 33 | 127N | 51W | 46.9 | .4 | 4.0 | 95.5 | 1.1 | 3.2 | 31.6 | 4.9 |
| 2209200 | Little Minnesota River above unnamed tributary (subbasin 2209300) | $NE^1/_4NE^1/_4$ | 15 | 126N | 51W | 91.0 | .1 | 7.5 | 226 | .8 | 5.4 | 43.6 | 17.9 |

Table 1.—***Physical characteristic data for the Upper Minnesota River Basin—Continued***

| Basin number | Stream name and location | Outlet location | | | | By subbasin | | | Cumulative to mouth of basin | | | Main-channel length (miles) | Main-channel slope (foot per mile) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Drainage area (square miles) | Lake area (percent of sub-basin area) | Storage area (percent of sub-basin area) | Drainage area (square miles) | Lake area (percent of total area) | Storage area (percent of total area) | | |
| 2209301 | Unnamed tributary above gaging station near Sisseton, South Dakota. Gaging station number is 05289950. | NE¼NW¼ | 32 | 126N | 51W | 4.22 | 0.2 | 0.2 | 4.22 | 0.2 | 0.2 | 6.27 | 141 |
| 2209300 | Unnamed tributary to Little Minnesota River above mouth | NE¼NE¼ | 15 | 126N | 51W | 19.3 | 3.9 | 4.4 | 23.5 | 3.2 | 3.6 | 20.4 | 53.3 |
| 2209100 | Unnamed tributary to Little Minnesota River above mouth | NW¼NE¼ | 23 | 126N | 51W | 19.0 | .4 | .5 | 19.0 | .4 | .5 | 15.6 | 61.6 |
| 2202804 | Little Minnesota River above outfall from sewage disposal ponds for Sisseston, South Dakota. | SW¼NW¼ | 24 | 126N | 51W | 4.78 | 1.7 | 1.7 | 274 | 1.0 | 4.8 | 47.0 | 14.6 |
| 2209000 | Unnamed tributary to Peever Slough above mouth | SW¼NW¼ | 19 | 125N | 50W | 13.0 | .1 | .4 | 13.0 | .1 | .4 | 13.4 | 47.5 |
| 2208900 | Goodwill Creek to Peever Slough above mouth | NW¼NE¼ | 30 | 125N | 50W | 11.8 | 2.8 | 4.4 | 11.8 | 2.8 | 4.4 | 18.2 | 55.1 |
| 2208800 | Jorgensen River above Hines Creek, subbasin 2208700, (above outlet of Peever Slough). | SW¼NW¼ | 32 | 125N | 50W | 26.3 | 1.6 | 5.0 | 51.1 | 1.5 | 3.7 | 16.0 | 34.0 |
| 2208700 | Hines Creek to Jorgensen River above mouth | SW¼NW¼ | 32 | 125N | 50W | 13.0 | .8 | 1.0 | 13.0 | .8 | 1.0 | 13.0 | 59.2 |
| 2208501 | Jorgensen River above outfall from sewage treatment plant for Peever, South Dakota | SE¼SE¼ | 5 | 124N | 50W | 4.32 | 2.0 | 3.2 | 68.5 | 1.4 | 3.2 | 18.0 | 27.8 |
| 2208600 | Big Spring Creek to Jorgensen River above mouth | SW¼SE¼ | 8 | 124N | 50W | 12.3 | .5 | .7 | 12.3 | .5 | .7 | 14.2 | 51.9 |
| 2208500 | Jorgensen River above Big Coulee Creek | NE¼SW¼ | 21 | 124N | 50W | 12.9 | .8 | 1.1 | 93.7 | 1.2 | 2.6 | 22.3 | 18.5 |

Table 1.—*Physical characteristic data for the Upper Minnesota River Basin—Continued*

| Basin number | Stream name and location | Outlet location | | | | By subbasin | | | Cumulative to mouth of basin | | | Main-channel length (miles) | Main-channel slope (foot per mile) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Drainage area (square miles) | Lake area (percent of sub-basin area) | Storage area (percent of sub-basin area) | Drainage area (square miles) | Lake area (percent of total area) | Storage area (percent of total area) | | |
| 2208400 | Big Coulee Creek to Jorgensen River above mouth | NE¼SW¼ | 21 | 124N | 50W | 22.3 | 0.3 | 0.6 | 22.3 | 0.3 | 0.6 | 18.1 | 40.0 |
| 2208300 | Jorgensen River to Little Minnesota River above mouth | SW¼SW¼ | 10 | 125N | 50W | 21.7 | 1.1 | 3.3 | 138 | 1.0 | 2.4 | 42.1 | 6.2 |
| 2202803 | Little Minnesota River above gaging station near Peever, South Dakota. Gaging station number is 05290000. | SE¼SW¼ | 13 | 125N | 50W | 26.9 | .4 | .6 | 438 | 1.0 | 3.8 | 66.4 | 5.0 |
| 2202802 | Little Minnesota River above gaging station at Browns Valley, Minnesota. Gaging station number is 05290020. | NW¼SE¼ | 33 | 125N | 49W | 7.51 | .8 | 1.2 | 446 | 1.0 | 3.8 | 71.5 | 4.8 |
| 2202801 | Little Minnesota River above outfall from sewage treatment plant for Browns Valley, Minnesota | SW¼SE¼ | 33 | 125N | 49W | .11 | .0 | .0 | 446 | 1.0 | 3.8 | 71.8 | 4.7 |
| 2202701 | Unnamed tributary to Little Minnesota River above gaging station near Browns Valley, Minnesota. Gaging station number is 4535430964912 | SW¼NW¼ | 34 | 125N | 49W | 3.39 | .2 | .2 | 3.39 | .2 | .2 | 2.92 | 63.4 |
| 2202700 | Unnamed tributary to Little Minnesota River above mouth | SW¼NE¼ | 9 | 124N | 49W | 1.78 | .0 | .0 | 5.16 | .1 | .1 | 5.40 | 32.6 |
| 2202800 | Little Minnesota River above Big Stone Lake | SE¼NW¼ | 15 | 124N | 49W | 8.63 | .3 | 6.3 | 460 | .9 | 3.8 | 75.4 | 5.0 |
| 2205309 | Noncontributing area within subbasin 2205300. | | | | | 7.61 | 2.3 | 6.2 | 7.61 | 2.3 | 6.2 | -- | -- |
| 2205300 | Unnamed tributary above unnamed tributary (subbasin 2203400) | SE¼SE¼ | 14 | 124N | 49W | 3.78 | .1 | .1 | 11.4 | 1.6 | 4.2 | 5.57 | 11.0 |

Table 1.—*Physical characteristic data for the Upper Minnesota River Basin—Continued*

| Basin number | Stream name and location | Outlet location | | | | By subbasin | | | Cumulative to mouth of basin | | | Main-channel length (miles) | Main-channel slope (foot per mile) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Drainage area (square miles) | Lake area (percent of sub-basin area) | Storage area (percent of sub-basin area) | Drainage area (square miles) | Lake area (percent of total area) | Storage area (percent of total area) | | |
| 2203400 | Unnamed tributary to Big Stone Lake above mouth | NE¼SW¼ | 23 | 124N | 49W | 20.4 | 0.4 | 1.2 | 31.8 | 0.8 | 2.3 | 11.2 | 15.1 |
| 2205000 | Unnamed tributary to Fish Creek above mouth | NE¼NE¼ | 23 | 124N | 48W | 31.8 | 1.8 | 8.5 | 31.7 | 1.8 | 8.5 | 9.31 | 5.2 |
| 2204800 | Unnamed tributary to Fish Creek above mouth | NE¼NE¼ | 23 | 124N | 48W | 11.3 | 1.2 | 3.0 | 11.3 | 1.2 | 3.0 | 9.70 | 8.4 |
| 2204900 | Fish Creek above Big Stone Lake | NE¼SE¼ | 1 | 123N | 49W | 15.5 | .5 | 1.1 | 58.5 | 1.3 | 5.5 | 16.5 | 5.0 |
| 2208200 | Unnamed tributary to Big Stone Lake above mouth | NE¼NE¼ | 13 | 123N | 49W | 14.8 | .9 | 1.8 | 14.8 | .9 | 1.8 | 10.7 | 12.9 |
| 2203709 | Noncontributing area within subbasin 2203701 | | | | | 1.40 | 1.3 | 3.4 | 1.40 | 1.3 | 3.4 | -- | -- |
| 2205100 | Unnamed tributary above unnamed tributary (subbasin 2204700) | NE¼SW¼ | 26 | 123N | 48W | 11.2 | .6 | 1.9 | 11.2 | .6 | 1.9 | 5.56 | 10.8 |
| 2204700 | Unnamed tributary to Big Stone Lake above mouth | NW¼NE¼ | 2 | 122N | 48W | 15.5 | .1 | 1.7 | 26.7 | .3 | 1.8 | 10.3 | 16.8 |
| 2204600 | Unnamed tributary to Big Stone Lake above mouth | SE¼SW¼ | 10 | 122N | 47W | 10.5 | .7 | 3.0 | 10.5 | .7 | 3.0 | 9.11 | 20.9 |
| 2203708 | Noncontributing area within subbasin 2203701 | | | | | .84 | 2.5 | 6.8 | .84 | 2.5 | 6.8 | -- | ---- |
| 2204500 | Unnamed tributary to Big Stone Lake above mouth | SE¼NE¼ | 14 | 122N | 47W | 19.1 | .9 | 5.7 | 19.1 | .9 | 5.7 | 11.6 | 15.7 |
| 2203701 | Drainage basin above Big Stone Lake outlet | NW¼SW¼ | 9 | 121N | 46W | 107 | 18 | 20 | 730 | 3.5 | 6.1 | 102 | 3.2 |
| 2203600 | Unnamed tributary to Minnesota River above mouth | SW¼SW¼ | 9 | 121N | 46W | 9.99 | 2.3 | 6.4 | 9.99 | 2.3 | 6.4 | 8.90 | 19.8 |
| 2203700 | Minnesota River above Whetstone River | NW¼NW¼ | 16 | 121N | 46W | .44 | .1 | 12 | 741 | 3.4 | 6.1 | 102 | 3.2 |

Table 1.—*Physical characteristic data for the Upper Minnesota River Basin—Continued*

| Basin number | Stream name and location | Outlet location | | | | By subbasin | | | Cumulative to mouth of basin | | | Main-channel length (miles) | Main-channel slope (foot per mile) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Drainage area (square miles) | Lake area (percent of sub-basin area) | Storage area (percent of sub-basin area) | Drainage area (square miles) | Lake area (percent of total area) | Storage area (percent of total area) | | |
| 2207802 | Unnamed tributary to North Fork Whetstone River above gaging station near Wilmot, South Dakota. Gaging station number is 05290300. | NE¼SE¼ | 18 | 123N | 50W | 0.96 | 0.1 | 0.1 | 0.96 | 0.1 | 0.1 | 3.55 | 60.5 |
| 2208100 | Unnamed tributary to North Fork Whetstone River above mouth | SE¼SE¼ | 23 | 123N | 50W | 13.5 | .9 | 1.4 | 13.5 | .9 | 1.4 | 18.5 | 45.9 |
| 2208000 | Unnamed tributary to North Fork Whetstone River above mouth | SW¼NW¼ | 31 | 123N | 49W | 18.6 | 1.4 | 1.5 | 18.6 | 1.4 | 1.5 | 18.0 | 49.2 |
| 2207801 | Unnamed tributary to North Fork Whetstone River above outfall from sewage treatment pond for Wilmot, South Dakota | NE¼NE¼ | 6 | 122N | 49W | 4.06 | .4 | 1.4 | 4.06 | .4 | 1.4 | 2.94 | 24.9 |
| 2207909 | Noncontributing area within subbasin 2207900 | | | | | 2.29 | 4.4 | 7.0 | 2.29 | 4.4 | 7.0 | -- | -- |
| 2207900 | Unnamed tributary to North Fork Whetstone River above mouth | NE¼NW¼ | 9 | 122N | 49W | 37.7 | 3.7 | 7.0 | 40.0 | 3.7 | 7.0 | 28.5 | 24.7 |
| 2207800 | North Fork Whetstone River above unnamed tributary (subbasin 2207700) | NW¼SE¼ | 9 | 122N | 49W | 20.5 | .9 | 1.5 | 97.7 | 2.1 | 3.7 | 25.1 | 31.6 |
| 2207700 | Unnamed tributary to North Fork Whetstone River above mouth | NW¼SE¼ | 9 | 122N | 49W | 18.6 | 1.5 | 1.6 | 18.6 | 1.5 | 1.6 | 23.8 | 36.7 |
| 2207600 | Unnamed tributary to unnamed tributary (subbasin 2207500) | NW¼NE¼ | 33 | 122N | 49W | 15.0 | 2.6 | 3.2 | 15.0 | 2.6 | 3.2 | 20.7 | 41.2 |
| 2207500 | Unnamed tributary to North Fork Whetstone River above mouth | NE¼NE¼ | 23 | 122N | 49W | 21.0 | 4.7 | 5.2 | 36.0 | 3.8 | 4.4 | 29.8 | 30.6 |

Table 1.—*Physical characteristic data for the Upper Minnesota River Basin—Continued*

| Basin number | Stream name and location | Outlet location | | | | By subbasin | | | Cumulative to mouth of basin | | | Main-channel length (miles) | Main-channel slope (foot per mile) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Drainage area (square miles) | Lake area (percent of sub-basin area) | Storage area (percent of sub-basin area) | Drainage area (square miles) | Lake area (percent of total area) | Storage area (percent of total area) | | |
| 2207400 | Unnamed tributary to North Fork Whetstone River above mouth | NE¼SE¼ | 19 | 122N | 48W | 24.7 | 1.0 | 1.8 | 24.7 | 1.0 | 1.8 | 29.4 | 27.4 |
| 2207300 | North Fork Whetstone River above unnamed tributary (subbasin 2207200) | SW¼NE¼ | 33 | 122N | 48W | 29.4 | .4 | .7 | 206 | 2.0 | 3.0 | 37.7 | 14.6 |
| 2207200 | Unnamed tributary to North Fork Whetstone River above mouth | SW¼NE¼ | 33 | 122N | 48W | 20.1 | .1 | .1 | 20.1 | .1 | .1 | 14.8 | 12.3 |
| 2207109 | Noncontributing area within subbasin 2207100 | | | | | 5.45 | 3.3 | 6.5 | 5.45 | 3.3 | 6.5 | -- | -- |
| 2207100 | North Fork Whetstone River above South Fork Whetstone River | SE¼SW¼ | 21 | 121N | 47W | 24.4 | .6 | 1.3 | 256 | 1.7 | 2.7 | 48.1 | 8.5 |
| 2206900 | Unnamed tributary to South Fork Whetstone River | NE¼NW¼ | 11 | 120N | 50W | 22.6 | 2.2 | 5.9 | 22.6 | 2.2 | 5.9 | 19.1 | 44.5 |
| 2206800 | Unnamed tributary to South Fork Whetstone River above mouth | NE¼NW¼ | 11 | 120N | 50W | 10.4 | 2.0 | 6.1 | 10.4 | 2.0 | 6.1 | 15.0 | 54.3 |
| 2206700 | Unnamed tributary to South Fork Whetstone River above mouth | SW¼SW¼ | 1 | 120N | 49W | 32.6 | .7 | 1.0 | 32.6 | .7 | 1.0 | 26.5 | 26.3 |
| 2206601 | South Fork Whetstone River above outfall for sewage disposal plant for Milbank, South Dakota. | NW¼SE¼ | 6 | 120N | 48W | 10.0 | 1.7 | 2.3 | 75.6 | 1.5 | 3.3 | 32.7 | 31.1 |
| 2207001 | Unnamed tributary to South Fork Whetstone River near location of Blue Cloud Abbey sewage treatment pond. | NW¼NW¼ | 36 | 121N | 50W | 5.10 | 1.3 | 1.6 | 5.10 | 1.3 | 1.6 | 7.07 | 67.7 |
| 2207000 | Unnamed tributary to South Fork Whetstone River above mouth | NE¼NW¼ | 28 | 121N | 47W | 48.4 | .4 | .6 | 53.5 | .4 | .7 | 40.0 | 16.0 |

Table 1.—*Physical characteristic data for the Upper Minnesota River Basin—Continued*

| Basin number | Stream name and location | Outlet location | | | | By subbasin | | | Cumulative to mouth of basin | | | Main-channel length (miles) | Main-channel slope (foot per mile) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Drainage area (square miles) | Lake area (percent of sub-basin area) | Storage area (percent of sub-basin area) | Drainage area (square miles) | Lake area (percent of total area) | Storage area (percent of total area) | | |
| 2206600 | South Fork Whetstone River to Whetstone River above mouth | SE¼SW¼ | 21 | 121N | 47W | 6.63 | 0.5 | 0.7 | 136 | 1.0 | 2.2 | 41.0 | 26.9 |
| 2205202 | Whetstone River above gaging station near Big Stone City, South Dakota. Gaging station number is 05291000. | SE¼NW¼ | 18 | 121N | 46W | 11.4 | .0 | .3 | 403 | 1.4 | 2.4 | 55.2 | 7.3 |
| 2205201 | Whetstone River above abandoned gaging station at Big Stone City, South Dakota. Gaging station number is 05291050. | SE¼SE¼ | 17 | 121N | 46W | 12.6 | .7 | 3.5 | 416 | 1.4 | 2.5 | 59.8 | 6.9 |
| 2205200 | Whetstone River to Minnesota River above mouth | NW¼NW¼ | 16 | 121N | 46W | .23 | .0 | .0 | 416 | 1.4 | 2.5 | 60.6 | 6.9 |
| 2201005 | Minnesota River above outfall from sewage treatment plant for Ortonville. | NW¼NW¼ | 16 | 121N | 46W | .01 | .0 | .0 | 1,160 | 2.7 | 4.8 | 102 | 3.2 |
| 2201004 | Minnesota River above gaging station at Ortonville, Minnesota. Gaging station number is 05292000. | NE¼NW¼ | 16 | 121N | 46W | .16 | .0 | .0 | 1,160 | 2.7 | 4.8 | 102 | 3.2 |
| 2201003 | Minnesota River above gaging station near Ortonville, Minnesota. Gaging station number is 05292050. | NE¼SE¼ | 27 | 121N | 46W | 4.03 | 5.6 | 7.2 | 1,160 | 2.7 | 4.8 | 107 | 3.0 |
| 2200100 | Unnamed tributary to Benson Lake above mouth | NE¼NW¼ | 18 | 122N | 45W | 44.5 | 6.6 | 14 | 44.5 | 6.6 | 14 | 19.2 | 4.3 |
| 2204200 | Unnamed tributary above unnamed tributary (subbasin 2204100) | NW¼SE¼ | 20 | 123N | 45W | 7.26 | .5 | 2.8 | 7.26 | .5 | 2.8 | 5.89 | 7.7 |
| 2204100 | Unnamed tributary above unnamed tributary (subbasin 2204000) | NW¼SE¼ | 20 | 123N | 45W | 6.42 | .8 | 3.3 | 6.42 | .8 | 3.3 | 6.12 | 8.7 |

Table 1.—*Physical characteristic data for the Upper Minnesota River Basin—Continued*

| Basin number | Stream name and location | Outlet location | | | | By subbasin | | | Cumulative to mouth of basin | | | Main-channel length (miles) | Main-channel slope (foot per mile) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Drainage area (square miles) | Lake area (percent of sub-basin area) | Storage area (percent of sub-basin area) | Drainage area (square miles) | Lake area (percent of total area) | Storage area (percent of total area) | | |
| 2204300 | Unnamed tributary to unnamed tributary (subbasin 2204000) | NW¼NW¼ | 31 | 123N | 45W | 11.5 | 0.4 | 4.8 | 11.5 | 0.4 | 4.8 | 6.80 | 9.2 |
| 2204000 | Unnamed tributary above Munnwyler Lake | NE¼SW¼ | 1 | 122N | 46W | 7.43 | 2.1 | 7.0 | 32.6 | .9 | 4.6 | 12.2 | 5.8 |
| 2203900 | Drainage basin above outlet of Bentsen Lake | SW¼NE¼ | 13 | 122N | 46W | 7.48 | 14 | 18 | 84.6 | 5.0 | 11 | 20.7 | 4.1 |
| 2204400 | Unnamed tributary above Lysing Lake | NW¼NE¼ | 34 | 123N | 46W | 7.77 | 7.1 | 11 | 7.77 | 7.1 | 11 | 4.14 | 14.8 |
| 2203800 | Unnamed tributary to Stony Run above mouth | NW¼SW¼ | 24 | 122N | 46W | 10.2 | 15 | 20 | 18.0 | 12 | 16 | 10.2 | 8.2 |
| 2203501 | Stony Run above gaging station at Odessa, Minnesota. Gaging station number is 05292400. | SW¼SW¼ | 20 | 121N | 45W | 22.1 | 6.1 | 8.7 | 125 | 6.2 | 11 | 33.3 | 4.7 |
| 2203500 | Stony Run above Highway 75 Reservoir | SW¼SE¼ | 30 | 121N | 45W | .28 | 11 | 11 | 125 | 6.2 | 11 | 34.8 | 5.1 |
| 2201002 | Minnesota River above gaging station near Odessa, Minnesota. Gaging station number is 05292500. | SW¼SW¼ | 29 | 121N | 45W | 18.3 | 29 | 30 | 1,300 | 3.4 | 5.8 | 112 | 2.8 |
| 2201001 | Minnesota River above outfall from sewage treatment plant for Odessa, Minnesota | SE¼NE¼ | 32 | 121N | 45W | 0.45 | 71 | 71 | 1,300 | 3.5 | 5.8 | 112 | 2.8 |
| 2206300 | North Fork Yellow Bank River above unnamed tributary (subbasin 2206200) | SE¼SW¼ | 25 | 120N | 49W | 45.3 | 3.3 | 5.0 | 45.3 | 3.3 | 5.0 | 37.1 | 25.9 |
| 2206400 | Unnamed tributary to unnamed tributary to North Fork Yellow Bank River above mouth | NW¼NW¼ | 2 | 119N | 49W | 18.1 | 1.2 | 1.5 | 18.1 | 1.2 | 1.5 | 17.9 | 41.0 |
| 2206201 | Unnamed tributary to North Fork Yellow Bank River above gaging station near Stockholm, South Dakota. Gaging station number is 05292600. | SE¼SE¼ | 16 | 119N | 50W | 8.14 | 2.8 | 4.3 | 8.14 | 2.8 | 4.3 | 7.64 | 38.6 |

Table 1.—***Physical characteristic data for the Upper Minnesota River Basin—Continued***

| Basin number | Stream name and location | Outlet location | | | | By subbasin | | | Cumulative to mouth of basin | | | Main-channel length (miles) | Main-channel slope (foot per mile) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Drainage area (square miles) | Lake area (percent of sub-basin area) | Storage area (percent of sub-basin area) | Drainage area (square miles) | Lake area (percent of total area) | Storage area (percent of total area) | | |
| 2206200 | Unnamed tributary to North Fork Yellow Bank River above mouth | SE¼SW¼ | 25 | 120N | 49W | 11.2 | 0.6 | 0.6 | 37.5 | 1.4 | 1.8 | 22.0 | 33.7 |
| 2206100 | Unnamed tributary to unnamed tributary to North Fork Yellow Bank River above mouth | NW¼SE¼ | 9 | 119N | 48W | 16.9 | .5 | .9 | 16.9 | .5 | .9 | 22.3 | 34.2 |
| 2206000 | Unnamed tributary to North Fork Yellow Bank River above mouth | NE¼SE¼ | 27 | 120N | 48W | 33.2 | .5 | .7 | 50.1 | .5 | .8 | 31.1 | 22.3 |
| 2205800 | Unnamed tributary to North Fork Yellow Bank River above mouth | NW¼NE¼ | 32 | 120N | 47W | 12.6 | .8 | 2.3 | 12.6 | .8 | 2.3 | 11.3 | 7.1 |
| 2205900 | North Fork Yellow Bank River above unnamed tributary (subbasin 2206500) | SW¼SW¼ | 17 | 120N | 47W | 14.9 | .2 | .7 | 160 | 1.5 | 2.3 | 54.9 | 19.4 |
| 2206500 | Unnamed tributary to North Fork Yellow Bank River above mouth | SW¼SW¼ | 17 | 120N | 47W | 32.2 | .7 | 1.4 | 32.2 | .7 | 1.4 | 25.0 | 6.4 |
| 2202200 | North Fork Yellow Bank River above mouth | NE¼NE¼ | 25 | 120N | 46W | 23.2 | 2.4 | 4.6 | 216 | 1.5 | 2.4 | 67.9 | 16.6 |
| 2205500 | Caine Creek to South Fork Yellow Bank River above mouth | NE¼SW¼ | 35 | 118N | 49W | 39.0 | 7.4 | 10 | 39.0 | 7.4 | 10 | 20.0 | 12.3 |
| 2205600 | South Fork Yellow Bank River above Caine Creek | NE¼SW¼ | 35 | 118N | 49W | 20.5 | 2.3 | 4.9 | 20.5 | 2.3 | 4.9 | 10.7 | 33.1 |
| 2205401 | Unnamed tributary to Mud Creek above outfall from sewage treatment plant for Revillo, South Dakota | SE¼NE¼ | 22 | 118N | 48W | 4.12 | .3 | .3 | 4.12 | .3 | .3 | 7.00 | 43.4 |
| 2205400 | Mud Creek to South Fork Yellow Bank River above mouth | NE¼NE¼ | 8 | 118N | 47W | 21.8 | 1.0 | 1.4 | 25.9 | .9 | 1.2 | 22.7 | 24.1 |

Table 1.—*Physical characteristic data for the Upper Minnesota River Basin—Continued*

| Basin number | Stream name and location | Outlet location | | | | By subbasin | | | Cumulative to mouth of basin | | | Main-channel length (miles) | Main-channel slope (foot per mile) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Drainage area (square miles) | Lake area (percent of sub-basin area) | Storage area (percent of sub-basin area) | Drainage area (square miles) | Lake area (percent of total area) | Storage area (percent of total area) | | |
| 2201700 | South Fork Yellow Bank River above unnamed tributary (subbasin 2201800) | SE¼NW¼ | 28 | 119N | 46W | 23.6 | 1.3 | 2.7 | 109 | 3.6 | 5.5 | 50.2 | 15.5 |
| 2201802 | Unnamed tributary to South Fork Yellow Bank River at gaging station above Labolt Lake near Labolt, South Dakota. Gaging station number is 450317096412102. | SW¼SW¼ | 3 | 118N | 49W | 18.0 | 1.6 | 5.7 | 18.0 | 1.6 | 5.7 | 16.8 | 29.3 |
| 2201801 | Unnamed tributary to South Fork Yellow Bank River above gaging station at outlet of Labolt Lake, near Labolt, South Dakota. Gaging station number is 450317096412100. | NW¼SE¼ | 3 | 118N | 49W | .24 | 4.2 | 4.2 | 18.2 | 1.7 | 5.6 | 18.0 | 32.1 |
| 2205700 | Unnamed tributary to unnamed tributary to South Fork Yellow Bank River above mouth | SE¼SW¼ | 33 | 119N | 48W | 11.2 | .3 | .8 | 11.2 | .3 | .8 | 10.9 | 39.5 |
| 2201800 | Unnamed tributary to South Fork Yellow Bank River above mouth | SE¼NW¼ | 28 | 119N | 46W | 24.7 | .6 | 1.9 | 54.1 | .9 | 2.9 | 48.1 | 17.6 |
| 2201900 | Unnamed tributary to South Fork Yellow Bank River above mouth | SE¼SE¼ | 17 | 119N | 46W | 17.0 | .8 | 2.9 | 17.0 | .8 | 2.9 | 15.7 | 6.5 |
| 2202500 | Unnamed tributary to South Fork Yellow Bank River above mouth | SW¼NW¼ | 15 | 119N | 46W | 7.58 | .0 | 1.0 | 7.58 | .0 | 1.0 | 6.47 | 3.3 |
| 2201600 | Unnamed tributary to South Fork Yellow Bank River above mouth | NW¼SW¼ | 14 | 119N | 46W | 5.92 | .0 | 4.2 | 5.92 | .0 | 4.2 | 4.52 | 7.1 |
| 2202401 | South Fork Yellow Bank River above gaging station near Bellingham, Minnesota. Station number is 05292900. | NE¼SE¼ | 25 | 120N | 46W | 16.0 | .1 | 1.6 | 210 | 2.2 | 4.1 | 65.2 | 12.6 |

Table 1.—*Physical characteristic data for the Upper Minnesota River Basin—Continued*

| Basin number | Stream name and location | Outlet location | | | | By subbasin | | | Cumulative to mouth of basin | | | Main-channel length (miles) | Main-channel slope (foot per mile) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Drainage area (square miles) | Lake area (percent of sub-basin area) | Storage area (percent of sub-basin area) | Drainage area (square miles) | Lake area (percent of total area) | Storage area (percent of total area) | | |
| 2202400 | South Fork Yellow Bank River above mouth | NE¼NE¼ | 25 | 120N | 46W | 0.22 | 0.0 | 0.0 | 210 | 2.2 | 4.1 | 66.0 | 12.5 |
| 2201400 | Unnamed tributary to Yellow Bank River above mouth | NW¼SW¼ | 19 | 120N | 45W | 20.1 | 1.3 | 5.9 | 20.1 | 1.3 | 5.9 | 13.2 | 9.1 |
| 2201100 | Unnamed tributary to Yellow Bank River above mouth | NE¼SW¼ | 12 | 120N | 46W | 9.06 | .1 | 1.2 | 9.06 | .1 | 1.2 | 8.16 | 14.7 |
| 2201201 | Yellow Bank River above gaging station near Odessa, Minnesota. Gaging station number is 05293000. | SW¼SW¼ | 6 | 120N | 45W | 4.37 | .1 | .8 | 459 | 1.7 | 3.3 | 75.0 | 15.0 |
| 2201200 | Yellow Bank River above inlet to Highway 75 Reservoir | SW¼SE¼ | 32 | 121N | 45W | 1.11 | 12 | 12 | 460 | 1.8 | 3.3 | 77.3 | 14.9 |
| 2201000 | Minnesota River above dam at outlet of Highway 75 Reservoir | SE¼NW¼ | 34 | 121N | 45W | 9.71 | 40 | 41 | 1,770 | 3.2 | 5.4 | 115 | 2.8 |
| 2203300 | Unnamed tributary to Minnesota River above mouth | SW¼NE¼ | 34 | 121N | 45W | 12.2 | 1.9 | 7.3 | 12.2 | 1.9 | 7.3 | 8.09 | 21.3 |
| 2200901 | Minnesota River above abandoned Corps Of Engineers gage above old confluence of Yellow Bank and Minnesota River. | NE¼NW¼ | 3 | 120N | 45W | .71 | .0 | .0 | 1,790 | 3.2 | 5.4 | 117 | 2.8 |
| 2201500 | Unnamed tributary to unnamed tributary (subbasin 2202601) | NW¼NW¼ | 30 | 120N | 44W | 35.6 | .0 | .5 | 35.6 | .0 | .5 | 16.1 | 4.4 |
| 2202601 | Unnamed tributary above gaging station near Bellingham, Minnesota. Gaging station number is 05293003. | NE¼SW¼ | 24 | 120N | 45W | 12.0 | .0 | 1.2 | 47.6 | .0 | .7 | 17.4 | 4.3 |
| 2202600 | Unnamed tributary to Marsh Lake above mouth | SW¼NW¼ | 17 | 120N | 44W | 3.53 | 3.0 | 5.2 | 51.2 | .2 | 1.0 | 21.1 | 5.3 |

Table 1.—*Physical characteristic data for the Upper Minnesota River Basin—Continued*

| Basin number | Stream name and location | Outlet location | | | | By subbasin | | | Cumulative to mouth of basin | | | Main-channel length (miles) | Main-channel slope (foot per mile) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Drainage area (square miles) | Lake area (percent of sub-basin area) | Storage area (percent of sub-basin area) | Drainage area (square miles) | Lake area (percent of total area) | Storage area (percent of total area) | | |
| 2200900 | Minnesota River above inlet to Marsh Lake | NE¼SW¼ | 17 | 120N | 44W | 11.3 | 0.8 | 11 | 1,850 | 3.1 | 5.3 | 124 | 2.7 |
| 2202900 | Unnamed tributary to Marsh Lake above mouth | SE¼SE¼ | 6 | 120N | 44W | 8.07 | .2 | 8.3 | 8.07 | .2 | 8.3 | 7.09 | 8.5 |
| 2203200 | County Ditch No. 2 above unnamed tributary (subbasin 2203000) | SE¼SE¼ | 21 | 121N | 44W | 34.8 | .6 | 2.2 | 34.8 | .6 | 2.2 | 12.0 | 9.2 |
| 2203000 | Unnamed tributary to county Ditch No. 2 above mouth | SE¼SE¼ | 21 | 121N | 44W | 5.48 | .0 | .7 | 5.48 | .0 | .7 | 5.25 | 2.8 |
| 2203100 | County Ditch No. 2 above subbasin 2200401 | NE¼NE¼ | 1 | 120N | 44W | 10.3 | .5 | 2.6 | 50.6 | .5 | 2.1 | 18.2 | 5.6 |
| 2210100 | Unnamed tributary to Shible Lake above mouth | SE¼SW¼ | 27 | 121N | 43W | 12.9 | .3 | 7.4 | 12.9 | .3 | 7.4 | 7.32 | 15.5 |
| 2200401 | Unnamed tributary to Marsh Lake above gaging station near Correll, Minnesota. Station number is 05293006. | NE¼NW¼ | 12 | 120N | 44W | 22.0 | 4.0 | 6.7 | 85.4 | 1.4 | 4.1 | 20.4 | 5.0 |
| 2200400 | Unnamed tributary to Marsh Lake above mouth | NW¼SE¼ | 14 | 120N | 44W | 2.67 | .1 | 1.0 | 88.1 | 1.3 | 4.0 | 24.1 | 6.0 |
| -- | Pomme de Terre River to Marsh Lake above mouth | SW¼NE¼ | 30 | 120N | 43W | 875 | 7.5 | 12 | | | | 133 | 1.96 |
| 2200800 | Minnesota River above Corps of Engineers gage at outlet of Marsh Lake Reservoir (USGS station number is 05294070)Note : The Pomme de Terre River enters Marsh lake northeast of gage. | NE¼SW¼ | 30 | 120N | 43W | 29.2 | 25 | 31 | 2,850 | 4.6 | 7.5 | 131 | 2.6 |
| 2200200 | Minnesota River above Lac qui Parle reservoir | NW¼SW¼ | 33 | 120N | 43W | 12.6 | .3 | 17 | 2,860 | 4.6 | 7.5 | 133 | 2.5 |
| 2202300 | Unnamed tributary to Emily Creek above mouth | SW¼SW¼ | 21 | 119N | 43W | 15.2 | .7 | 2.3 | 15.2 | .7 | 2.3 | 9.74 | 5.6 |
| 2202100 | Unnamed tributary to Emily Creek above mouth | SW¼SW¼ | 21 | 119N | 43W | 6.95 | 1.2 | 3.4 | 6.95 | 1.2 | 3.4 | 6.38 | 10.9 |

Table 1.—***Physical characteristic data for the Upper Minnesota River Basin—Continued***

| Basin number | Stream name and location | Outlet location | | | | By subbasin | | | Cumulative to mouth of basin | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Drainage area (square miles) | Lake area (percent of sub-basin area) | Storage area (percent of sub-basin area) | Drainage area (square miles) | Lake area (percent of total area) | Storage area (percent of total area) | Main-channel length (miles) | Main-channel slope (foot per mile) |
| 2202001 | Emily Creek above gaging station near Louisborg, Minnesota. Station number is 05294500 | NE¼NE¼ | 26 | 119N | 43W | 12.3 | 0.2 | 4.4 | 34.5 | 0.6 | 3.3 | 14.7 | 7.1 |
| 2202000 | Emily Creek above Lac qui Parle Reservoir | SE¼SE¼ | 24 | 119N | 43W | 1.77 | .1 | 2.7 | 36.2 | .6 | 3.2 | 15.8 | 7.1 |
| 2200500 | Unnamed tributary to Lac qui Parle Reservoir above mouth | NE¼NW¼ | 2 | 118N | 42W | 19.9 | .4 | 4.2 | 19.9 | .4 | 4.2 | 13.0 | 3.9 |
| 2200600 | Watson Sag above Lac qui Parle Reservoir | SE¼NW¼ | 2 | 118N | 42W | 8.23 | 3.9 | 9.7 | 8.23 | 3.9 | 9.7 | 6.78 | 1.6 |
| -- | Lac qui Parle River to Minnesota River above mouth | NE¼SE¼ | 14 | 118N | 42W | 1,100 | 1.0 | 3.8 | | | | 90.3 | 4.18 |
| 2200700 | Minnesota River above dam at outlet of Lac qui Parle Reservoir (Corps of Engineers gage site). Note : The Lac qui Parle River enters this subbasin 1.4 miles upstream from gage. | SE¼SW¼ | 13 | 118N | 42W | 41.7 | 22 | 27 | 4,060 | 3.8 | 6.7 | 149 | 2.3 |



* U.S.GOVERNMENT PRINTING OFFICE: 1995-658-281