Water-Data Report 2012

# 05120500 WINTERING RIVER NEAR KARLSRUHE, ND

Souris Basin
Lower Souris Subbasin

LOCATION.--Lat 48°08′18″, long 100°32′22″ referenced to North American Datum of 1927, in SW ¼ SW ¼ SW ¼ sec.23, T.154 N., R.77 W., McHenry County, ND, Hydrologic Unit 09010003, on right bank 400 ft south of county highway bridge, 9 mi upstream from mouth, and 5 mi northeast of Karlsruhe.

DRAINAGE AREA.--705 $mi^2$ of which 420 $mi^2$ probably is noncontributing.

## SURFACE-WATER RECORDS

PERIOD OF RECORD.--DAILY DISCHARGE--March 1937 to current year. Monthly discharge only for some periods, published in WSP 1308.

PERIOD OF RECORD.--DAILY GAGE HEIGHT--October 2000 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,500 ft above National Geodetic Vertical Datum of 1929, from topographic map. March 1937 to September 30, 1994, at site 5 mi downstream, at datum 20 ft lower.

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

REGULATION.--Some regulation by Fish and Wildlife Service dams on Cottonwood and Wintering Lakes, controlled capacity, about 850 acre-ft.



Suggested citation: U.S. Geological Survey, 2013, Water-resources data for the United States, Water Year 2012: U.S. Geological Survey Water-Data Report WDR-US-2012, site 05120500, accessed at http://wdr.water.usgs.gov/wy2012/pdfs/05120500.2012.pdf

**05120500 WINTERING RIVER NEAR KARLSRUHE, ND—Continued**

**DISCHARGE, CUBIC FEET PER SECOND**
**WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012**
**DAILY MEAN VALUES**
[e, estimated]

| Day | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 25 | 19 | 17 | e7.2 | e5.2 | e4.0 | 37 | 53 | 24 | 5.4 | e2.0 | e0.85 |
| 2 | 25 | 19 | e16 | e7.4 | e5.3 | e4.1 | 40 | 51 | 22 | 4.9 | e2.1 | e0.95 |
| 3 | 25 | 19 | e15 | e7.5 | e5.5 | e4.2 | 39 | 51 | 21 | 4.7 | e2.4 | e1.0 |
| 4 | 25 | 19 | e14 | e7.6 | e5.5 | e4.4 | 40 | 52 | 19 | 4.4 | e2.7 | e0.98 |
| 5 | 24 | 19 | e13 | e7.7 | e5.4 | e4.6 | 39 | 54 | 18 | 4.3 | e2.4 | e0.92 |
| 6 | 24 | 19 | e12 | e7.6 | e5.2 | e4.8 | 39 | 58 | 16 | 6.0 | e2.2 | e0.97 |
| 7 | 24 | 19 | e12 | e7.5 | e4.6 | e5.3 | 43 | 59 | 24 | 5.5 | e2.0 | e1.0 |
| 8 | 23 | 19 | e12 | e7.4 | e4.4 | e5.8 | 41 | 58 | 31 | 4.5 | e2.2 | e1.0 |
| 9 | 23 | 19 | e12 | e7.3 | e4.1 | e6.4 | 39 | 59 | 24 | 4.1 | e2.4 | e0.92 |
| 10 | 25 | 20 | e12 | e7.4 | e3.7 | e7.0 | 36 | 57 | 22 | 4.0 | e2.1 | e0.88 |
| 11 | 23 | 19 | e12 | e7.2 | e3.5 | e7.8 | 34 | 54 | 19 | 3.7 | e2.1 | e0.80 |
| 12 | 23 | 19 | e11 | e6.9 | e3.5 | e8.7 | 32 | 53 | 17 | 3.5 | e2.2 | e0.74 |
| 13 | 23 | 19 | e11 | e6.6 | e3.6 | e10 | 37 | 52 | 15 | 3.4 | e2.1 | e0.72 |
| 14 | 23 | 19 | e11 | e6.3 | e3.8 | e11 | 41 | 50 | 14 | 3.2 | e2.0 | e0.77 |
| 15 | 22 | e18 | e11 | e6.0 | e3.9 | e12 | 43 | 48 | 13 | 3.3 | e2.2 | e0.82 |
| 16 | 21 | e17 | e11 | e5.9 | e4.1 | e13 | 46 | 46 | 14 | 3.3 | e2.0 | e0.88 |
| 17 | 21 | e18 | e11 | e5.4 | e4.2 | e15 | 46 | 45 | 12 | 3.1 | e1.8 | e0.90 |
| 18 | 20 | e19 | e11 | e4.9 | e4.2 | 16 | 43 | 43 | 12 | 3.0 | e1.9 | e0.90 |
| 19 | 20 | e20 | e10 | e4.7 | e4.3 | 17 | 40 | 43 | 11 | 2.8 | e1.9 | e0.86 |
| 20 | 19 | 21 | e10 | e4.6 | e4.3 | 16 | 44 | 42 | 12 | 2.5 | e1.7 | e0.81 |
| 21 | 19 | 22 | e10 | e4.6 | e4.3 | 17 | 46 | 39 | 10 | 2.6 | e1.6 | e0.85 |
| 22 | 19 | 22 | e9.8 | e4.7 | e4.2 | 20 | 46 | 36 | 9.2 | 2.4 | e1.5 | e0.88 |
| 23 | 19 | 22 | e9.6 | e4.8 | e4.1 | 26 | 45 | 33 | 8.6 | 2.2 | e1.4 | e0.88 |
| 24 | 20 | 22 | e9.4 | e5.0 | e3.9 | 29 | 44 | 30 | 8.1 | 2.6 | e1.6 | e0.99 |
| 25 | 20 | 20 | e9.1 | e5.1 | e3.8 | 28 | 43 | 28 | 7.6 | 2.8 | e1.3 | e1.0 |
| 26 | 21 | 19 | e8.9 | e5.2 | e3.7 | 29 | 41 | 28 | 7.0 | 2.4 | e1.2 | e1.1 |
| 27 | 20 | 19 | e8.7 | e5.1 | e3.7 | 36 | 47 | 30 | 6.6 | 2.3 | e1.1 | e1.1 |
| 28 | 20 | 19 | e8.5 | e5.0 | e3.8 | 37 | 55 | 32 | 5.7 | e2.4 | e1.0 | e1.1 |
| 29 | 20 | 18 | e8.3 | e4.9 | e3.9 | 39 | 59 | 30 | 5.2 | e2.3 | e0.90 | e1.1 |
| 30 | 20 | 18 | e8.0 | e5.0 | --- | 39 | 56 | 28 | 5.5 | e2.2 | e0.85 | e1.1 |
| 31 | 20 | --- | e7.6 | e5.1 | --- | 38 | --- | 26 | --- | e2.1 | e0.81 | --- |
| Total | 676 | 581 | 341.9 | 187.6 | 123.7 | 515.1 | 1,281 | 1,368 | 433.5 | 105.9 | 55.66 | 27.77 |
| Mean | 21.8 | 19.4 | 11.0 | 6.05 | 4.27 | 16.6 | 42.7 | 44.1 | 14.4 | 3.42 | 1.80 | 0.93 |
| Max | 25 | 22 | 17 | 7.7 | 5.5 | 39 | 59 | 59 | 31 | 6.0 | 2.7 | 1.1 |
| Min | 19 | 17 | 7.6 | 4.6 | 3.5 | 4.0 | 32 | 26 | 5.2 | 2.1 | 0.81 | 0.72 |
| Ac-ft | 1,340 | 1,150 | 678 | 372 | 245 | 1,020 | 2,540 | 2,710 | 860 | 210 | 110 | 55 |

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1937 - 2012, BY WATER YEAR (WY)**

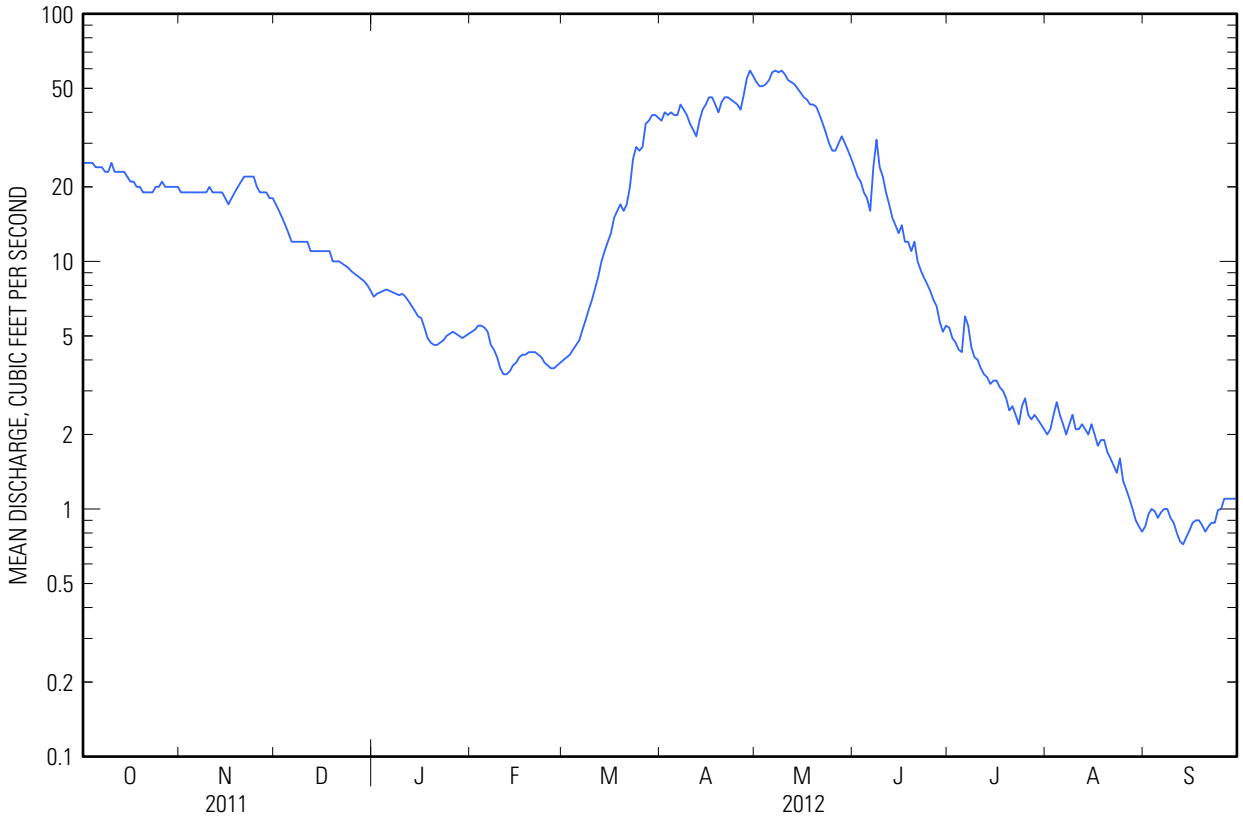
| | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean | 6.44 | 6.17 | 2.76 | 1.47 | 1.62 | 24.0 | 83.0 | 37.3 | 22.4 | 14.2 | 7.92 | 6.01 |
| Max | 109 | 98.8 | 22.7 | 9.77 | 10.7 | 343 | 681 | 304 | 277 | 155 | 87.3 | 67.3 |
| (WY) | (1995) | (1995) | (2001) | (2002) | (2000) | (1995) | (2011) | (1999) | (2011) | (2011) | (1993) | (1999) |
| Min | 0.03 | 0.50 | 0.00 | 0.00 | 0.00 | 0.00 | 1.15 | 1.14 | 0.43 | 0.19 | 0.01 | 0.00 |
| (WY) | (1993) | (1938) | (1938) | (1938) | (1938) | (1951) | (2008) | (2008) | (1992) | (2006) | (1989) | (1992) |

**05120500 WINTERING RIVER NEAR KARLSRUHE, ND—Continued**

**SUMMARY STATISTICS**

| | Calendar Year 2011 | | Water Year 2012 | | Water Years 1937 - 2012 | |
|---|---|---|---|---|---|---|
| **Annual total** | 45,825.7 | | 5,697.13 | | | |
| **Annual mean** | 126 | | 15.6 | | 18.0 | |
| **Highest annual mean** | | | | | 126 | 2011 |
| **Lowest annual mean** | | | | | 0.49 | 2008 |
| **Highest daily mean** | 1,320 | Apr 12 | 59 | Apr 29 | 2,500 | Apr 7, 1949 |
| **Lowest daily mean** | 4.0 | Mar 7 | 0.72 | Sep 13 | 0.00 | Mar 1, 1937 |
| **Annual seven-day minimum** | 4.1 | Mar 5 | 0.80 | Sep 10 | 0.00 | Mar 1, 1937 |
| **Maximum peak flow** | | | [a]59 | Apr 29[b] | [c]3,000 | Apr 7, 1949 |
| **Maximum peak stage** | | | [d]4.57 | Mar 11 | [e]12.00 | Apr 7, 1949 |
| **Annual runoff (ac-ft)** | 90,900 | | 11,300 | | 13,010 | |
| **10 percent exceeds** | 315 | | 41 | | 36 | |
| **50 percent exceeds** | 21 | | 9.9 | | 3.5 | |
| **90 percent exceeds** | 5.7 | | 1.3 | | 0.10 | |

[a] Gage height, 3.42 ft.
[b] Also occurred on May 7.
[c] By velocity-area study.
[d] Backwater from ice.
[e] Channel choked by packed snow.

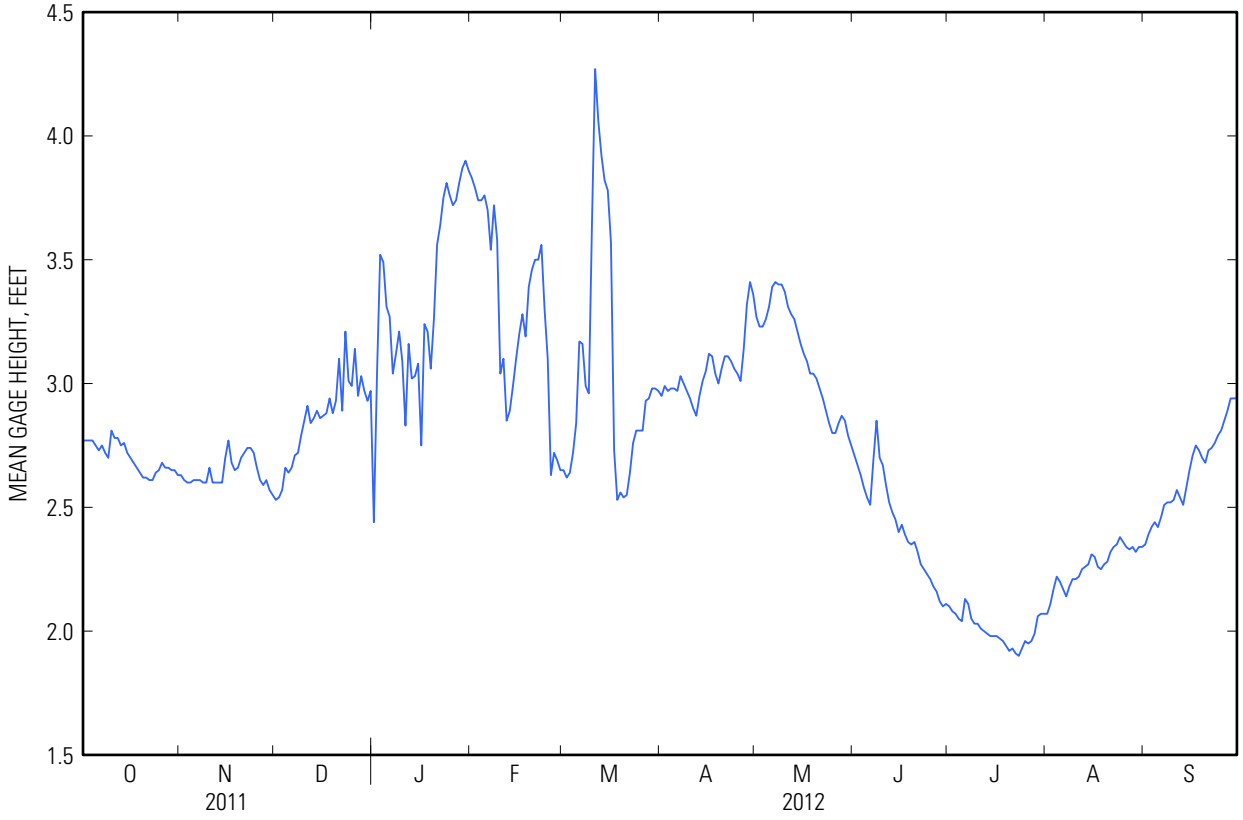


**05120500 WINTERING RIVER NEAR KARLSRUHE, ND—Continued**

**GAGE HEIGHT, FEET**
**WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012**
**DAILY MEAN VALUES**

| Day | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.77 | 2.63 | 2.53 | 2.44 | 3.83 | 2.65 | 2.95 | 3.27 | 2.71 | 2.10 | 2.07 | 2.35 |
| 2 | 2.77 | 2.61 | 2.54 | 3.04 | 3.79 | 2.62 | 2.99 | 3.23 | 2.67 | 2.08 | 2.11 | 2.39 |
| 3 | 2.77 | 2.60 | 2.57 | 3.52 | 3.74 | 2.64 | 2.97 | 3.23 | 2.63 | 2.07 | 2.17 | 2.42 |
| 4 | 2.77 | 2.60 | 2.66 | 3.49 | 3.74 | 2.72 | 2.98 | 3.26 | 2.58 | 2.05 | 2.22 | 2.44 |
| 5 | 2.75 | 2.61 | 2.64 | 3.31 | 3.76 | 2.84 | 2.98 | 3.31 | 2.54 | 2.04 | 2.20 | 2.42 |
| 6 | 2.73 | 2.61 | 2.66 | 3.27 | 3.70 | 3.17 | 2.97 | 3.39 | 2.51 | 2.13 | 2.17 | 2.46 |
| 7 | 2.75 | 2.61 | 2.71 | 3.04 | 3.54 | 3.16 | 3.03 | 3.41 | 2.69 | 2.11 | 2.14 | 2.51 |
| 8 | 2.72 | 2.60 | 2.72 | 3.12 | 3.72 | 2.99 | 3.00 | 3.40 | 2.85 | 2.05 | 2.18 | 2.52 |
| 9 | 2.70 | 2.60 | 2.79 | 3.21 | 3.58 | 2.96 | 2.97 | 3.40 | 2.70 | 2.03 | 2.21 | 2.52 |
| 10 | 2.81 | 2.66 | 2.85 | 3.09 | 3.04 | 3.65 | 2.94 | 3.37 | 2.67 | 2.03 | 2.21 | 2.53 |
| 11 | 2.78 | 2.60 | 2.91 | 2.83 | 3.10 | 4.27 | 2.90 | 3.31 | 2.59 | 2.01 | 2.22 | 2.57 |
| 12 | 2.78 | 2.60 | 2.84 | 3.16 | 2.85 | 4.06 | 2.87 | 3.28 | 2.52 | 2.00 | 2.25 | 2.54 |
| 13 | 2.75 | 2.60 | 2.86 | 3.02 | 2.89 | 3.92 | 2.95 | 3.26 | 2.48 | 1.99 | 2.26 | 2.51 |
| 14 | 2.76 | 2.60 | 2.89 | 3.03 | 2.99 | 3.82 | 3.01 | 3.21 | 2.45 | 1.98 | 2.27 | 2.58 |
| 15 | 2.72 | 2.70 | 2.86 | 3.08 | 3.10 | 3.78 | 3.05 | 3.16 | 2.40 | 1.98 | 2.31 | 2.65 |
| 16 | 2.70 | 2.77 | 2.87 | 2.75 | 3.20 | 3.57 | 3.12 | 3.12 | 2.43 | 1.98 | 2.30 | 2.71 |
| 17 | 2.68 | 2.68 | 2.88 | 3.24 | 3.28 | 2.73 | 3.11 | 3.09 | 2.39 | 1.97 | 2.26 | 2.75 |
| 18 | 2.66 | 2.65 | 2.94 | 3.21 | 3.19 | 2.53 | 3.04 | 3.04 | 2.36 | 1.96 | 2.25 | 2.73 |
| 19 | 2.64 | 2.66 | 2.88 | 3.06 | 3.39 | 2.56 | 3.00 | 3.04 | 2.35 | 1.94 | 2.27 | 2.70 |
| 20 | 2.62 | 2.70 | 2.93 | 3.26 | 3.46 | 2.54 | 3.06 | 3.02 | 2.36 | 1.92 | 2.28 | 2.68 |
| 21 | 2.62 | 2.72 | 3.10 | 3.56 | 3.50 | 2.55 | 3.11 | 2.98 | 2.32 | 1.93 | 2.32 | 2.73 |
| 22 | 2.61 | 2.74 | 2.89 | 3.64 | 3.50 | 2.64 | 3.11 | 2.94 | 2.27 | 1.91 | 2.34 | 2.74 |
| 23 | 2.61 | 2.74 | 3.21 | 3.75 | 3.56 | 2.76 | 3.09 | 2.89 | 2.25 | 1.90 | 2.35 | 2.76 |
| 24 | 2.64 | 2.72 | 3.01 | 3.81 | 3.30 | 2.81 | 3.06 | 2.84 | 2.23 | 1.93 | 2.38 | 2.79 |
| 25 | 2.65 | 2.66 | 2.99 | 3.76 | 3.10 | 2.81 | 3.04 | 2.80 | 2.21 | 1.96 | 2.36 | 2.81 |
| 26 | 2.68 | 2.61 | 3.14 | 3.72 | 2.63 | 2.81 | 3.01 | 2.80 | 2.18 | 1.95 | 2.34 | 2.85 |
| 27 | 2.66 | 2.59 | 2.95 | 3.74 | 2.72 | 2.93 | 3.14 | 2.84 | 2.16 | 1.96 | 2.33 | 2.89 |
| 28 | 2.66 | 2.61 | 3.03 | 3.81 | 2.69 | 2.94 | 3.32 | 2.87 | 2.12 | 1.99 | 2.34 | 2.94 |
| 29 | 2.65 | 2.57 | 2.97 | 3.87 | 2.65 | 2.98 | 3.41 | 2.85 | 2.10 | 2.06 | 2.32 | 2.94 |
| 30 | 2.65 | 2.55 | 2.93 | 3.90 | --- | 2.98 | 3.36 | 2.79 | 2.11 | 2.07 | 2.34 | 2.94 |
| 31 | 2.63 | --- | 2.97 | 3.86 | --- | 2.97 | --- | 2.75 | --- | 2.07 | 2.34 | --- |
| Mean | 2.70 | 2.64 | 2.86 | 3.34 | 3.29 | 3.04 | 3.05 | 3.10 | 2.43 | 2.00 | 2.26 | 2.65 |
| Max | 2.81 | 2.77 | 3.21 | 3.90 | 3.83 | 4.27 | 3.41 | 3.41 | 2.85 | 2.13 | 2.38 | 2.94 |
| Min | 2.61 | 2.55 | 2.53 | 2.44 | 2.63 | 2.53 | 2.87 | 2.75 | 2.10 | 1.90 | 2.07 | 2.35 |

**05120500 WINTERING RIVER NEAR KARLSRUHE, ND—Continued**



**05120500 WINTERING RIVER NEAR KARLSRUHE, ND—Continued**

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1954-56, 1972 to current year.

### WATER-QUALITY DATA
### WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 1 of 5

[ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; $SiO_2$, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than]

| Date | Sample start time | Discharge, instantaneous, ft³/s (00061) | pH, water, unfiltered, field, standard units (00400) | pH, water, unfiltered, laboratory, standard units (00403) | Specific conductance, water, unfiltered, laboratory, µS/cm at 25°C (90095) | Specific conductance, water, unfiltered, µS/cm at 25°C (00095) | Temperature, water, °C (00010) | Dissolved solids, water, filtered, sum of constituents, mg/L (70301) | Dissolved solids, water, tons per day (70302) | Hardness, water, mg/L as $CaCO_3$ (00900) |
|---|---|---|---|---|---|---|---|---|---|---|
| **03-27-2012** | **1457** | 38 | -- | 8.1 | 1,280 | 1,210 | 6.0 | 794 | 81.5 | 287 |
| **07-23-2012** | **1140** | 2.3 | 8.3 | 8.3 | 1,680 | 1,670 | 22.7 | 1,040 | 6.46 | 419 |

### WATER-QUALITY DATA
### WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 2 of 5

[ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; $SiO_2$, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than]

| Date | Sample start time | Calcium, water, filtered, mg/L (00915) | Magnesium, water, filtered, mg/L (00925) | Potassium, water, filtered, mg/L (00935) | Sodium adsorption ratio, water, number (00931) | Sodium fraction of cations, water, percent in equivalents of major cations (00932) | Sodium, water, filtered, mg/L (00930) | ANC, water, unfiltered, fixed endpoint (pH 4.5) titration, laboratory, mg/L as $CaCO_3$ (90410) | Chloride, water, filtered, mg/L (00940) | Fluoride, water, filtered, mg/L (00950) |
|---|---|---|---|---|---|---|---|---|---|---|
| **03-27-2012** | **1457** | 48.8 | 40.1 | 12.7 | 4.9 | 59 | 189 | 375 | 30.8 | 0.19 |
| **07-23-2012** | **1140** | 79.2 | 53.8 | 7.05 | 5.3 | 56 | 248 | 504 | 29.4 | .21 |

### WATER-QUALITY DATA
### WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Part 3 of 5

[ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; $SiO_2$, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than]

| Date | Sample start time | Silica, water, filtered, mg/L as $SiO_2$ (00955) | Sulfate, water, filtered, mg/L (00945) | Aluminum, water, filtered, µg/L (01106) | Barium, water, filtered, µg/L (01005) | Beryllium, water, filtered, µg/L (01010) | Cadmium, water, filtered, µg/L (01025) | Chromium, water, filtered, µg/L (01030) | Copper, water, filtered, µg/L (01040) | Iron, water, filtered, µg/L (01046) |
|---|---|---|---|---|---|---|---|---|---|---|
| **03-27-2012** | **1457** | 11.9 | 266 | < 50 | 66.5 | < 5.00 | < 5.00 | < 5.0 | < 5.0 | 204 |
| **07-23-2012** | **1140** | 25.1 | 394 | < 50 | 168 | < 5.00 | < 5.00 | 5.9 | < 5.0 | 99.0 |

**05120500 WINTERING RIVER NEAR KARLSRUHE, ND—Continued**

**WATER-QUALITY DATA**
**WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012**
Part 4 of 5
[ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; $SiO_2$, silicon dioxide; $ft^3/s$, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than]

| Date | Sample start time | Lead, water, filtered, µg/L (01049) | Manganese, water, filtered, µg/L (01056) | Nickel, water, filtered, µg/L (01065) | Silver, water, filtered, µg/L (01075) | Thallium, water, filtered, µg/L (01057) | Zinc, water, filtered, µg/L (01090) | Antimony, water, filtered, µg/L (01095) | Arsenic, water, filtered, µg/L (01000) | Boron, water, filtered, µg/L (01020) |
|---|---|---|---|---|---|---|---|---|---|---|
| **03-27-2012** | **1457** | < 5.00 | 165 | < 5.0 | < 5.00 | < 5.00 | < 5.0 | < 5.00 | < 5.0 | 244 |
| **07-23-2012** | **1140** | < 5.00 | 368 | < 5.0 | < 5.00 | < 5.00 | < 5.0 | < 5.00 | 8.7 | 367 |

**WATER-QUALITY DATA**
**WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012**
Part 5 of 5
[ANC, acid neutralizing capacity; $CaCO_3$, calcium carbonate; $SiO_2$, silicon dioxide; $ft^3/s$, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than]

| Date | Sample start time | Selenium, water, filtered, µg/L (01145) |
|---|---|---|
| **03-27-2012** | **1457** | < 5.0 |
| **07-23-2012** | **1140** | < 5.0 |