

Water-Data Report 2011

06436760 HORSE CREEK ABOVE VALE, SD

Belle Fourche Basin
Lower Belle Fourche Subbasin

LOCATION.--Lat 44°39'09.60", long 103°21'58.44" referenced to North American Datum of 1927, in SW ¼ NW ¼ SW ¼ sec.14, T.8 N., R.6 E., Butte County, SD, Hydrologic Unit 10120202, on left bank 2.6 mi upstream from Dry Creek, 5.5 mi upstream from mouth, 3.0 mi northeast of Vale, and 4.5 mi southeast of Newell.

DRAINAGE AREA.--461 mi².

SURFACE-WATER RECORDS

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

REVISED RECORDS.--WDR SD-10-1: Drainage area, Location.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 2,710 ft above NGVD of 1929, from topographic map. April 1962 to September 1980, water-stage recorder, at site 2.7 mi downstream, at different datum.

REMARKS.--Records good except those for November 5-16 and estimated daily discharges, which are poor. Natural flow of stream affected by return flow from Belle Fourche Irrigation Project. Satellite data-collection platform at station. Water temperature and specific conductance measured with each discharge measurement.

06436760 HORSE CREEK ABOVE VALE, SD—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	34	4.8	e4.7	e2.3	e8.0	e11	128	89	1,330	40	47	45
2	31	4.6	e4.5	e3.0	e6.0	e11	287	68	834	79	44	41
3	15	4.2	e4.0	e3.8	e8.0	e10	320	79	587	108	45	42
4	14	4.4	e4.0	e4.3	e12	e9.5	209	54	501	59	72	42
5	6.7	5.1	e3.8	e4.7	e20	e9.0	118	36	463	42	110	42
6	4.4	3.9	e3.7	e5.0	e20	e8.5	86	29	451	36	64	37
7	6.8	3.5	e3.8	e5.2	e18	e8.0	66	22	435	35	54	44
8	8.1	3.2	e3.8	e5.2	e16	e9.0	52	17	335	36	240	43
9	7.6	4.2	e4.0	e4.8	e12	e8.5	45	15	274	219	139	41
10	11	4.1	e4.2	e3.0	e10	e8.0	42	15	212	144	96	39
11	8.4	3.1	e4.0	e2.2	e10	e20	38	14	185	95	73	37
12	7.1	2.5	e3.7	e2.0	e30	e40	35	82	177	64	65	35
13	6.9	2.2	e3.5	e2.8	e37	e500	32	113	175	50	51	40
14	6.2	2.5	e3.5	e3.3	e60	e1,000	30	85	411	40	47	38
15	4.4	4.5	e3.7	e3.5	e85	e900	30	56	1,080	37	45	37
16	4.1	e4.9	e4.0	e3.6	e115	747	32	35	474	33	47	38
17	4.3	e4.7	e3.8	e3.6	e230	688	29	24	285	34	43	33
18	4.2	e4.6	e3.7	e3.6	e140	550	31	20	221	35	39	32
19	4.3	e4.3	e3.3	e3.6	e115	562	35	22	196	31	35	29
20	4.3	e3.8	e3.0	e3.5	e95	378	36	354	177	29	35	29
21	4.2	e3.3	e3.0	e3.3	e75	224	41	5,820	166	22	34	35
22	3.9	e2.4	e3.1	e3.2	e60	155	64	5,740	137	29	31	36
23	4.4	e2.4	e3.3	e3.2	e70	126	70	5,180	101	37	34	35
24	4.7	e2.9	e3.5	e3.3	e35	101	91	3,890	88	47	40	35
25	4.6	e3.5	e3.6	e3.2	e20	81	132	5,410	87	55	45	34
26	5.1	e4.0	e3.7	e3.5	e18	69	157	3,380	63	54	55	33
27	4.6	e4.3	e3.6	e6.0	e13	53	91	1,540	149	53	51	32
28	4.8	e4.3	e3.4	e19	e11	51	58	893	62	48	48	34
29	4.9	e4.5	e3.2	e17	---	52	230	712	53	44	53	28
30	5.3	e4.6	e3.0	e16	---	50	178	878	46	44	63	27
31	5.0	---	e2.6	e13	---	57	---	1,500	---	49	48	---
Total	244.3	115.3	112.7	163.7	1,349.0	6,496.5	2,793	36,172	9,755	1,728	1,893	1,093
Mean	7.88	3.84	3.64	5.28	48.2	210	93.1	1,167	325	55.7	61.1	36.4
Max	34	5.1	4.7	19	230	1,000	320	5,820	1,330	219	240	45
Min	3.9	2.2	2.6	2.0	6.0	8.0	29	14	46	22	31	27
Ac-ft	485	229	224	325	2,680	12,890	5,540	71,750	19,350	3,430	3,750	2,170

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1981 - 2011, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	15.3	5.16	3.01	3.87	33.5	74.1	70.3	168	99.5	63.0	48.8	45.5
Max	169	26.9	8.50	31.7	424	257	754	1,167	849	464	103	311
(WY)	(1983)	(1999)	(1983)	(1983)	(1997)	(2009)	(2009)	(2011)	(2008)	(1993)	(2009)	(1986)
Min	1.46	1.82	1.15	0.85	1.24	1.30	0.75	1.42	2.45	21.4	24.8	11.3
(WY)	(1992)	(1991)	(1993)	(2007)	(1992)	(1992)	(1992)	(2007)	(2005)	(2005)	(2006)	(1992)

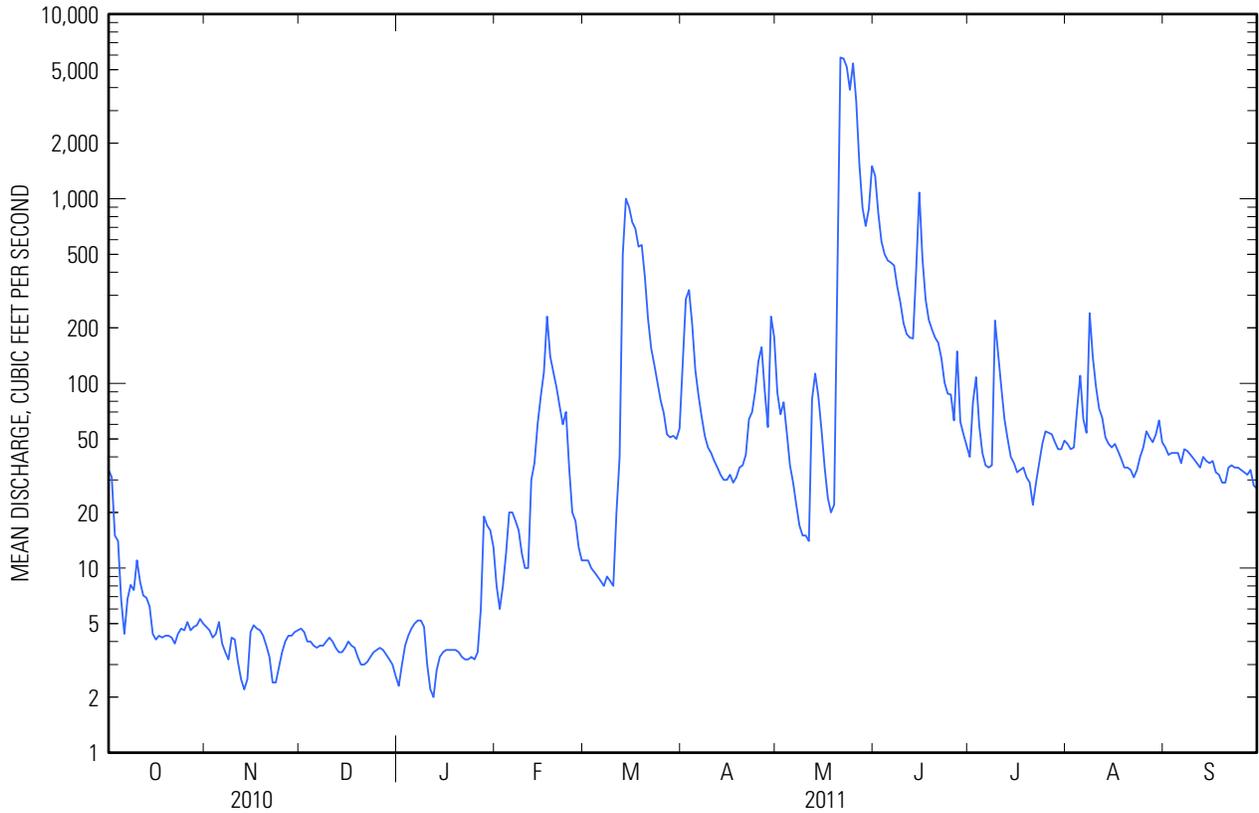
06436760 HORSE CREEK ABOVE VALE, SD—Continued

SUMMARY STATISTICS

	Calendar Year 2010		Water Year 2011		Water Years 1981 - 2011	
Annual total	16,181.2		61,915.5		a52.6	
Annual mean	44.3		170		170 2011	
Highest annual mean					9.06 2005	
Lowest annual mean					14,000 May 21, 1982	
Highest daily mean	591	May 13	5,820	May 21		
Lowest daily mean	2.2	Nov 13	2.0	Jan 12	0.07 Nov 7, 1985	
Annual seven-day minimum	2.9	Feb 8	2.9	Jan 10	0.28 Dec 25, 1990	
Maximum peak flow			11,100	May 21	b17,700 May 21, 1982	
Maximum peak stage			21.05	May 21	24.80 May 21, 1982	
Annual runoff (ac-ft)	32,100		122,800		38,120	
10 percent exceeds	103		234		70	
50 percent exceeds	12		34		8.5	
90 percent exceeds	3.5		3.5		1.7	

a Median of annual mean discharges, 39 ft³/s.

b From rating curve extended above 1,000 ft³/s on basis of slope-area measurement of peak flow.



06436760 HORSE CREEK ABOVE VALE, SD—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analysis: Water years 1986-91, 1994, 2002-03. Sediment records: Periodic samples taken August 1986 to March 1987 and May 2004 to October 2011.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 2004 to October 2011(seasonal), discontinued.

pH: May 2004 to October 2011(seasonal), discontinued.

WATER TEMPERATURE: May 2004 to October 2011(seasonal), discontinued.

DISSOLVED OXYGEN: May 2004 to October 2011(seasonal), discontinued.

TURBIDITY: May 2004 to October 2011(seasonal), discontinued.

REMARKS.--Data published in the tables below are rated as follows: specific conductance excellent except for May 18 to June 15, 2011 and Aug. 8 to Sept. 7, 2011 which are good; pH excellent; water temperature excellent; dissolved oxygen excellent except for Oct. 5-18, 2010, Aug. 30 to Sept. 7, 2011, and Oct. 5-18, 2011 which are good; Oct. 19-20, 2010 which are fair. turbidity excellent except for Apr. 15 to May 1, 2011, June 22-29, 2011, Aug. 22 to Aug. 30, 2011 and Sept. 26 to Oct. 15, 2011 which are good, Oct. 1-4, 2010, May 2-4, 2011, June 30 to July 6, 2011, and Oct. 16-18, 2011 which are fair, Oct. 5-18, 2010 and July 7-15, 2011, which are poor.

Daily records are collected at 15-minute intervals using a multi-parameter water-quality instrument from April to October. Satellite data-collection platform at station.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 5,520 $\mu\text{S}/\text{cm}$, May 7, 2005; minimum, 460 $\mu\text{S}/\text{cm}$, Apr. 23, 2006.

pH: Maximum, 8.7 standard units, Jul. 1, 2007; minimum, 7.3 standard units, Aug. 23, 2006.

WATER TEMPERATURE: Maximum, 32.9°C, Jun. 22, 2005.

DISSOLVED OXYGEN: Maximum, 18.0 mg/L, Oct. 18, 2006; minimum, 1.0 mg/L, Jun. 3, 5-8, 2005.

TURBIDITY: Maximum, >1,690 FNU units May 24-25, 2008; minimum, 1.0 FNU units, Oct. 19, 26, 2004.

EXTREMES FOR CURRENT YEAR.—

Extremes for period October 2010 to October 2011

SPECIFIC CONDUCTANCE: Maximum, 3,930 $\mu\text{S}/\text{cm}$, Oct. 16, 17, 2010; minimum, 718 $\mu\text{S}/\text{cm}$, May 22, 23.

pH: Maximum, 8.6 standard units, Aug. 19, 20; minimum, 7.6 standard units, Oct. 6-11, 13-20, 2010 and May 21, 2011.

WATER TEMPERATURE: Maximum, 31.7°C, July 18, 2011.

DISSOLVED OXYGEN: Maximum, 15.0 mg/L, Aug. 20, 2011; minimum, 5.9 mg/L, July 19, 20, 2011 and Aug. 3, 2011.

TURBIDITY: Maximum, >1430 FN units Aug. 8, 2011; minimum, 4.9 FN units, Oct. 16, 2011.

06436760 HORSE CREEK ABOVE VALE, SD—Continued

**SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	2,230	2,030	2,090	---	---	---	---	---	---	---	---	---
2	2,190	2,000	2,050	---	---	---	---	---	---	---	---	---
3	2,410	2,190	2,360	---	---	---	---	---	---	---	---	---
4	2,380	2,260	2,310	---	---	---	---	---	---	---	---	---
5	2,420	2,070	2,250	---	---	---	---	---	---	---	---	---
6	2,500	2,420	2,460	---	---	---	---	---	---	---	---	---
7	2,600	2,500	2,550	---	---	---	---	---	---	---	---	---
8	2,680	2,600	2,640	---	---	---	---	---	---	---	---	---
9	2,850	2,480	2,750	---	---	---	---	---	---	---	---	---
10	2,800	2,010	2,660	---	---	---	---	---	---	---	---	---
11	3,000	2,720	2,910	---	---	---	---	---	---	---	---	---
12	3,200	2,980	3,100	---	---	---	---	---	---	---	---	---
13	3,460	3,200	3,300	---	---	---	---	---	---	---	---	---
14	3,500	3,460	3,490	---	---	---	---	---	---	---	---	---
15	3,700	3,500	3,570	---	---	---	---	---	---	---	---	---
16	3,930	3,700	3,850	---	---	---	---	---	---	---	---	---
17	3,930	3,780	3,870	---	---	---	---	---	---	---	---	---
18	3,780	3,670	3,730	---	---	---	---	---	---	---	---	---
19	3,680	3,560	3,620	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
Month	---	---	---	---	---	---	---	---	---	---	---	---

06436760 HORSE CREEK ABOVE VALE, SD—Continued

**SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	February			March			April			May		
1	---	---	---	---	---	---	2,210	2,010	2,140	1,690	1,500	1,600
2	---	---	---	---	---	---	2,370	1,510	1,650	1,500	1,470	1,490
3	---	---	---	---	---	---	2,060	1,520	1,680	1,570	1,460	1,500
4	---	---	---	---	---	---	1,590	1,470	1,520	1,900	1,570	1,770
5	---	---	---	---	---	---	1,590	1,580	1,580	2,100	1,890	1,980
6	---	---	---	---	---	---	1,730	1,580	1,640	2,150	2,090	2,130
7	---	---	---	---	---	---	1,820	1,730	1,770	2,150	2,090	2,120
8	---	---	---	---	---	---	1,910	1,820	1,870	2,220	2,150	2,190
9	---	---	---	---	---	---	1,990	1,910	1,950	2,280	2,220	2,250
10	---	---	---	---	---	---	2,050	1,980	2,020	2,440	2,280	2,350
11	---	---	---	---	---	---	2,070	2,040	2,050	2,540	2,440	2,500
12	---	---	---	---	---	---	2,110	2,070	2,090	2,610	2,140	2,510
13	---	---	---	---	---	---	2,130	2,100	2,110	2,550	1,980	2,320
14	---	---	---	---	---	---	2,130	2,090	2,110	2,460	1,570	2,000
15	---	---	---	---	---	---	2,150	2,100	2,140	1,570	1,490	1,520
16	---	---	---	---	---	---	2,170	2,150	2,160	1,770	1,560	1,650
17	---	---	---	---	---	---	2,180	2,150	2,160	2,410	1,770	2,170
18	---	---	---	---	---	---	2,240	2,180	2,220	2,410	2,150	2,250
19	---	---	---	---	---	---	2,240	2,200	2,210	2,820	2,300	2,540
20	---	---	---	---	---	---	2,270	2,220	2,250	2,830	1,200	2,450
21	---	---	---	---	---	---	2,260	2,230	2,240	1,220	742	951
22	---	---	---	---	---	---	2,250	2,110	2,200	759	718	736
23	---	---	---	---	---	---	2,380	2,060	2,220	815	718	746
24	---	---	---	---	---	---	2,550	2,320	2,420	943	815	878
25	---	---	---	---	---	---	2,960	2,240	2,540	901	768	801
26	---	---	---	---	---	---	3,170	2,130	2,420	1,070	832	909
27	---	---	---	---	---	---	2,320	2,220	2,250	1,350	1,070	1,250
28	---	---	---	---	---	---	2,230	2,080	2,170	1,460	1,350	1,410
29	---	---	---	---	---	---	2,710	1,230	2,040	1,570	1,460	1,520
30	---	---	---	2,050	1,820	1,880	1,630	1,180	1,300	1,590	1,220	1,530
31	---	---	---	2,100	2,030	2,060	---	---	---	1,220	1,100	1,160
Month	---	---	---	---	---	---	3,170	1,180	2,040	2,830	718	1,720

06436760 HORSE CREEK ABOVE VALE, SD—Continued

**SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	1,360	1,160	1,290	2,370	2,210	2,310	2,160	2,100	2,120	2,080	2,010	2,050
2	1,520	1,360	1,470	2,380	2,140	2,270	2,180	2,060	2,120	2,080	2,020	2,050
3	1,490	1,460	1,470	2,590	1,340	2,040	2,220	2,070	2,140	2,230	2,060	2,130
4	1,500	1,480	1,490	2,100	1,190	1,820	2,240	2,120	2,170	2,250	2,220	2,230
5	1,500	1,490	1,500	2,260	1,990	2,130	2,420	2,080	2,190	2,220	2,140	2,170
6	1,500	1,480	1,490	2,460	2,260	2,360	2,550	2,370	2,480	2,160	2,100	2,130
7	1,520	1,470	1,490	2,570	2,460	2,530	2,570	2,320	2,450	2,280	2,150	2,210
8	1,530	1,480	1,500	2,560	2,420	2,490	2,760	1,580	2,110	2,200	2,080	2,130
9	1,560	1,490	1,530	2,900	1,620	2,360	1,580	1,270	1,330	2,170	2,100	2,150
10	1,640	1,560	1,600	1,780	1,320	1,590	1,570	1,360	1,460	2,130	2,070	2,100
11	1,660	1,640	1,650	1,680	1,450	1,530	1,690	1,570	1,640	2,120	2,080	2,100
12	1,690	1,640	1,670	1,620	1,470	1,540	1,810	1,690	1,770	2,130	2,080	2,110
13	1,710	1,690	1,700	1,810	1,620	1,690	1,830	1,790	1,810	2,340	2,100	2,230
14	2,100	1,610	1,710	2,000	1,810	1,900	2,020	1,830	1,900	2,290	2,150	2,200
15	1,980	1,270	1,390	2,020	1,980	1,990	2,140	2,020	2,110	2,210	2,150	2,190
16	1,530	1,460	1,500	2,040	1,970	2,010	2,170	2,090	2,120	2,220	2,080	2,150
17	1,470	1,430	1,450	1,970	1,850	1,940	2,320	2,170	2,240	2,150	2,080	2,110
18	1,560	1,450	1,500	1,920	1,820	1,850	2,390	2,320	2,370	2,290	2,150	2,250
19	1,620	1,560	1,590	2,020	1,910	1,970	2,470	2,380	2,420	2,300	2,230	2,270
20	1,660	1,620	1,640	2,120	1,970	2,000	2,500	2,380	2,440	2,250	2,220	2,230
21	1,690	1,660	1,670	2,250	2,120	2,190	2,470	2,300	2,380	2,220	2,050	2,100
22	1,730	1,690	1,700	2,290	2,060	2,200	2,430	2,290	2,360	2,140	2,050	2,100
23	1,860	1,730	1,800	2,090	1,970	2,020	2,330	2,210	2,260	2,180	2,130	2,140
24	1,900	1,730	1,860	2,110	1,970	2,040	2,330	2,230	2,270	2,230	2,180	2,190
25	2,070	1,770	1,940	2,290	2,090	2,150	2,320	2,130	2,240	2,220	2,190	2,200
26	2,260	1,940	2,010	2,440	2,150	2,310	2,150	2,060	2,110	2,220	2,180	2,200
27	2,360	1,560	1,990	2,150	2,040	2,100	2,080	2,000	2,040	2,310	2,190	2,260
28	2,390	2,030	2,180	2,170	1,980	2,060	2,060	1,990	2,020	2,190	2,160	2,180
29	2,480	2,390	2,460	2,150	2,050	2,090	2,040	1,950	1,990	2,310	2,180	2,250
30	2,460	2,370	2,430	2,370	2,090	2,270	2,060	2,020	2,040	2,410	2,260	2,320
31	---	---	---	2,310	2,120	2,230	2,050	1,990	2,020	---	---	---
Month	2,480	1,160	1,690	2,900	1,190	2,060	2,760	1,270	2,100	2,410	2,010	2,170

06436760 HORSE CREEK ABOVE VALE, SD—Continued

PH, WATER, UNFILTERED, FIELD, STANDARD UNITS
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Day	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
	October		November		December		January		February		March	
1	8.0	7.9	---	---	---	---	---	---	---	---	---	---
2	8.0	7.9	---	---	---	---	---	---	---	---	---	---
3	8.0	7.8	---	---	---	---	---	---	---	---	---	---
4	7.9	7.8	---	---	---	---	---	---	---	---	---	---
5	8.0	7.7	---	---	---	---	---	---	---	---	---	---
6	8.0	7.6	---	---	---	---	---	---	---	---	---	---
7	7.9	7.6	---	---	---	---	---	---	---	---	---	---
8	7.8	7.6	---	---	---	---	---	---	---	---	---	---
9	7.8	7.6	---	---	---	---	---	---	---	---	---	---
10	7.8	7.6	---	---	---	---	---	---	---	---	---	---
11	7.9	7.6	---	---	---	---	---	---	---	---	---	---
12	7.9	7.7	---	---	---	---	---	---	---	---	---	---
13	7.8	7.6	---	---	---	---	---	---	---	---	---	---
14	7.8	7.6	---	---	---	---	---	---	---	---	---	---
15	7.8	7.6	---	---	---	---	---	---	---	---	---	---
16	7.7	7.6	---	---	---	---	---	---	---	---	---	---
17	7.7	7.6	---	---	---	---	---	---	---	---	---	---
18	7.7	7.6	---	---	---	---	---	---	---	---	---	---
19	7.8	7.6	---	---	---	---	---	---	---	---	---	---
20	---	7.6	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	8.1	8.1
30	---	---	---	---	---	---	---	---	---	---	8.1	8.1
31	---	---	---	---	---	---	---	---	---	---	8.2	8.1
Month	---	---	---	---	---	---	---	---	---	---	---	---

06436760 HORSE CREEK ABOVE VALE, SD—Continued

PH, WATER, UNFILTERED, FIELD, STANDARD UNITS
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Day	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
	April		May		June		July		August		September	
1	8.2	8.1	8.0	7.9	7.9	7.9	8.2	8.0	8.4	8.1	8.3	8.1
2	8.1	8.0	8.0	7.9	7.9	7.9	8.1	8.0	8.4	8.1	8.3	8.1
3	8.1	8.0	8.0	8.0	8.0	7.9	8.1	7.9	8.3	8.0	8.3	8.1
4	8.0	8.0	8.1	8.0	8.0	8.0	8.1	7.8	8.4	7.9	8.3	8.1
5	8.0	8.0	8.1	8.0	8.0	8.0	8.2	8.0	8.3	8.0	8.3	8.1
6	8.1	8.0	8.2	8.0	8.0	8.0	8.2	8.1	8.4	8.0	8.3	8.0
7	8.1	8.1	8.4	8.1	8.1	8.0	8.2	8.1	8.3	8.2	8.4	8.1
8	8.1	8.1	8.4	8.2	8.0	8.0	8.2	8.0	8.2	7.9	8.3	8.1
9	8.1	8.1	8.3	8.2	8.1	8.0	8.1	7.9	7.9	7.9	8.3	8.1
10	8.2	8.1	8.4	8.1	8.1	8.0	7.9	7.9	8.0	7.9	8.3	8.1
11	8.2	8.2	8.4	8.2	8.1	8.0	7.9	7.9	8.1	8.0	8.3	8.0
12	8.3	8.2	8.3	8.1	8.1	8.0	8.0	7.9	8.3	8.0	8.3	8.0
13	8.4	8.2	8.1	8.0	8.1	8.0	8.1	8.0	8.4	8.1	8.3	8.1
14	8.4	8.3	8.1	8.0	8.1	7.8	8.2	8.0	8.5	8.2	8.3	8.1
15	8.4	8.3	8.0	7.9	7.9	7.8	8.4	8.0	8.5	8.3	8.3	8.1
16	8.4	8.3	8.0	7.9	8.0	7.9	8.4	8.2	8.4	8.2	8.3	8.2
17	8.4	8.3	8.1	8.0	8.0	8.0	8.3	8.2	8.4	8.2	8.3	8.1
18	8.3	8.2	8.1	8.1	8.0	8.0	8.2	8.1	8.4	8.1	8.3	8.1
19	8.2	8.2	8.1	8.1	8.0	8.0	8.2	8.1	8.6	8.2	8.3	8.1
20	8.2	8.2	8.1	7.7	8.1	8.0	8.3	8.1	8.6	8.3	8.4	8.1
21	8.2	8.2	7.9	7.6	8.1	8.1	8.3	8.2	8.4	8.2	8.3	8.2
22	8.2	8.2	7.8	7.7	8.1	8.1	8.2	8.1	8.3	8.1	8.4	8.2
23	8.2	8.2	7.8	7.7	8.1	8.1	8.2	8.1	8.3	8.1	8.4	8.2
24	8.2	8.2	7.8	7.7	8.2	8.1	8.2	8.1	8.2	8.0	8.3	8.1
25	8.2	8.1	7.8	7.7	8.1	8.0	8.2	8.1	8.2	8.0	8.3	8.1
26	8.1	8.0	7.8	7.7	8.0	7.9	8.3	8.1	8.2	8.0	8.3	8.1
27	8.0	7.9	7.9	7.8	8.0	8.0	8.3	8.1	8.2	8.0	8.3	8.1
28	8.0	8.0	7.9	7.9	8.0	8.0	8.2	8.1	8.2	8.0	8.3	8.1
29	8.0	7.9	8.0	7.9	8.1	8.0	8.3	8.1	8.1	8.0	8.3	8.1
30	8.0	8.0	8.0	7.9	8.2	8.0	8.4	8.1	8.2	8.0	8.3	8.1
31	---	---	7.9	7.9	---	---	8.4	8.1	8.2	8.0	---	---
Month	8.4	7.9	8.4	7.6	8.2	7.8	8.4	7.8	8.6	7.9	8.4	8.0

06436760 HORSE CREEK ABOVE VALE, SD—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	16.6	14.1	15.4	---	---	---	---	---	---	---	---	---
2	15.5	12.9	14.0	---	---	---	---	---	---	---	---	---
3	15.1	11.7	13.5	---	---	---	---	---	---	---	---	---
4	15.9	12.3	14.3	---	---	---	---	---	---	---	---	---
5	17.3	13.9	15.6	---	---	---	---	---	---	---	---	---
6	17.1	14.2	15.6	---	---	---	---	---	---	---	---	---
7	17.2	14.0	15.6	---	---	---	---	---	---	---	---	---
8	16.9	15.1	15.9	---	---	---	---	---	---	---	---	---
9	15.8	13.3	14.5	---	---	---	---	---	---	---	---	---
10	16.2	13.2	14.5	---	---	---	---	---	---	---	---	---
11	16.5	13.2	14.9	---	---	---	---	---	---	---	---	---
12	15.4	12.9	14.2	---	---	---	---	---	---	---	---	---
13	13.1	10.3	12.0	---	---	---	---	---	---	---	---	---
14	13.7	9.9	11.7	---	---	---	---	---	---	---	---	---
15	13.9	10.2	12.0	---	---	---	---	---	---	---	---	---
16	12.6	10.3	11.5	---	---	---	---	---	---	---	---	---
17	11.7	9.7	10.5	---	---	---	---	---	---	---	---	---
18	11.2	8.3	9.6	---	---	---	---	---	---	---	---	---
19	10.7	8.1	9.2	---	---	---	---	---	---	---	---	---
20	---	7.6	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
Month	---	---	---	---	---	---	---	---	---	---	---	---

06436760 HORSE CREEK ABOVE VALE, SD—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	February			March			April			May		
1	---	---	---	---	---	---	7.5	5.9	6.6	8.6	5.8	7.0
2	---	---	---	---	---	---	8.3	4.6	6.6	11.5	6.4	8.7
3	---	---	---	---	---	---	8.5	6.2	7.6	12.1	7.8	9.9
4	---	---	---	---	---	---	6.6	4.8	5.8	14.0	10.1	11.9
5	---	---	---	---	---	---	7.1	5.3	6.3	15.9	10.3	13.1
6	---	---	---	---	---	---	8.6	5.7	7.2	16.2	12.0	14.2
7	---	---	---	---	---	---	10.6	6.8	8.6	16.4	13.0	14.7
8	---	---	---	---	---	---	11.7	8.5	9.9	18.8	13.8	16.2
9	---	---	---	---	---	---	10.4	9.1	9.6	17.3	15.5	16.0
10	---	---	---	---	---	---	11.1	8.6	9.7	17.3	14.0	15.4
11	---	---	---	---	---	---	13.0	8.0	10.4	14.5	12.3	13.0
12	---	---	---	---	---	---	13.2	9.8	11.5	12.3	11.2	11.6
13	---	---	---	---	---	---	13.1	10.3	11.6	13.4	10.6	11.9
14	---	---	---	---	---	---	11.0	6.8	8.3	12.1	10.2	10.9
15	---	---	---	---	---	---	10.2	5.7	7.8	14.5	9.6	11.8
16	---	---	---	---	---	---	11.0	6.7	8.9	15.4	10.3	12.9
17	---	---	---	---	---	---	9.8	7.6	8.6	13.8	11.6	12.6
18	---	---	---	---	---	---	8.2	6.1	7.2	14.8	12.2	13.5
19	---	---	---	---	---	---	6.6	4.7	5.6	13.7	11.4	12.3
20	---	---	---	---	---	---	9.5	3.8	6.6	14.1	11.0	12.3
21	---	---	---	---	---	---	12.3	6.7	9.4	13.8	12.3	13.1
22	---	---	---	---	---	---	11.2	8.0	9.5	13.7	12.8	13.2
23	---	---	---	---	---	---	10.5	6.9	8.7	16.0	13.2	14.4
24	---	---	---	---	---	---	11.6	7.6	9.4	15.5	14.2	14.9
25	---	---	---	---	---	---	12.3	9.1	10.8	14.9	12.9	13.8
26	---	---	---	---	---	---	12.0	10.2	11.2	14.1	12.8	13.4
27	---	---	---	---	---	---	11.6	10.2	10.9	14.0	12.7	13.3
28	---	---	---	---	---	---	13.8	9.1	11.4	15.2	12.9	14.0
29	---	---	---	5.2	---	---	12.6	9.2	11.2	14.5	13.5	13.9
30	---	---	---	6.7	2.7	4.6	9.2	6.3	7.5	13.5	11.9	12.7
31	---	---	---	7.0	4.7	5.8	---	---	---	13.6	11.7	12.6
Month	---	---	---	---	---	---	13.8	3.8	8.8	18.8	5.8	12.9

06436760 HORSE CREEK ABOVE VALE, SD—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	15.1	12.2	13.5	24.6	22.5	23.6	28.7	25.2	26.9	23.6	20.7	22.3
2	17.6	14.1	15.8	23.3	21.3	22.3	28.5	24.6	26.5	22.9	20.2	21.6
3	18.5	16.3	17.4	25.0	20.4	22.6	26.4	23.9	24.9	21.3	18.1	19.4
4	18.3	16.3	17.3	27.0	22.6	24.8	26.7	22.1	24.4	19.6	16.0	18.0
5	19.6	17.0	18.2	28.1	24.4	26.2	26.5	23.7	25.1	20.4	16.0	18.2
6	21.4	18.7	19.9	26.9	23.6	25.3	25.9	22.5	24.2	19.5	17.1	18.4
7	21.0	19.4	20.5	28.1	23.5	25.8	25.7	22.5	24.2	20.8	16.7	18.7
8	19.4	16.4	18.0	28.6	25.1	26.9	25.1	22.9	23.9	21.2	17.3	19.3
9	16.4	14.3	15.2	27.5	25.2	26.5	23.4	20.9	22.0	21.3	17.6	19.5
10	15.8	13.5	14.5	26.4	24.1	25.2	23.8	20.2	21.9	21.3	17.5	19.5
11	17.3	14.2	15.6	24.9	22.0	23.5	24.5	21.1	22.7	21.8	17.9	19.9
12	18.7	16.5	17.4	23.1	20.9	22.0	24.3	21.1	22.7	20.8	18.1	19.6
13	21.3	17.1	19.1	23.4	20.7	22.0	24.8	20.8	22.8	19.5	16.9	18.3
14	20.9	19.4	20.1	27.4	21.9	24.5	24.7	21.2	23.1	18.1	14.4	15.9
15	20.5	18.4	19.4	28.8	24.4	26.6	26.1	21.6	23.8	14.4	11.7	12.8
16	20.1	18.6	19.2	30.4	25.3	27.7	24.8	22.1	23.6	14.3	11.1	12.5
17	20.3	18.1	19.1	30.0	26.5	28.4	25.0	20.4	22.8	15.1	12.9	14.0
18	21.2	17.7	19.4	31.7	27.0	29.3	25.8	22.1	23.9	16.4	13.1	14.8
19	21.0	19.1	20.0	31.6	27.9	29.8	23.8	20.7	21.9	17.1	13.6	15.4
20	20.3	18.8	19.4	30.3	26.2	27.7	23.3	19.0	21.2	15.8	12.9	14.0
21	19.4	17.7	18.6	28.4	23.6	26.0	24.7	20.4	22.5	14.3	11.6	13.0
22	21.3	17.1	19.1	28.9	24.6	26.8	26.4	21.9	24.1	14.7	11.2	13.1
23	22.8	18.7	20.7	27.4	24.6	26.0	25.0	22.5	23.9	16.3	12.5	14.4
24	24.6	20.0	21.9	27.5	23.8	25.6	24.9	21.2	23.1	17.8	14.2	16.0
25	24.3	19.9	22.1	28.5	24.4	26.3	25.0	21.2	23.2	18.6	15.3	17.0
26	23.7	21.0	22.6	26.0	23.2	23.9	25.2	21.7	23.5	18.4	15.5	17.1
27	22.9	19.8	21.3	26.4	22.2	24.1	25.9	21.8	23.8	18.2	15.3	16.9
28	24.5	19.7	22.2	26.2	22.9	24.5	26.1	22.6	24.4	18.1	15.5	16.9
29	27.4	22.1	24.7	26.0	22.6	24.4	24.6	20.5	22.2	16.9	15.0	16.0
30	26.1	24.3	25.2	27.3	22.6	25.0	23.1	19.4	21.2	16.2	13.1	14.7
31	---	---	---	28.0	24.5	26.2	24.6	20.3	22.4	---	---	---
Month	27.4	12.2	19.2	31.7	20.4	25.5	28.7	19.0	23.4	23.6	11.1	16.9

06436760 HORSE CREEK ABOVE VALE, SD—Continued

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	10.2	8.1	9.0	---	---	---	---	---	---	---	---	---
2	10.7	8.2	9.4	---	---	---	---	---	---	---	---	---
3	10.9	8.6	9.6	---	---	---	---	---	---	---	---	---
4	10.7	8.4	9.3	---	---	---	---	---	---	---	---	---
5	10.7	7.8	8.9	---	---	---	---	---	---	---	---	---
6	11.0	7.3	8.9	---	---	---	---	---	---	---	---	---
7	10.5	7.4	8.6	---	---	---	---	---	---	---	---	---
8	9.7	7.1	8.2	---	---	---	---	---	---	---	---	---
9	9.1	7.5	8.3	---	---	---	---	---	---	---	---	---
10	9.4	7.2	8.2	---	---	---	---	---	---	---	---	---
11	10.6	7.0	8.7	---	---	---	---	---	---	---	---	---
12	11.9	7.9	9.7	---	---	---	---	---	---	---	---	---
13	12.9	8.6	10.6	---	---	---	---	---	---	---	---	---
14	13.1	9.0	10.8	---	---	---	---	---	---	---	---	---
15	12.9	9.2	10.7	---	---	---	---	---	---	---	---	---
16	13.3	9.2	11.0	---	---	---	---	---	---	---	---	---
17	13.7	10.3	11.4	---	---	---	---	---	---	---	---	---
18	13.8	10.3	11.7	---	---	---	---	---	---	---	---	---
19	14.0	11.0	12.1	---	---	---	---	---	---	---	---	---
20	---	10.8	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
Month	---	---	---	---	---	---	---	---	---	---	---	---

06436760 HORSE CREEK ABOVE VALE, SD—Continued

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	February			March			April			May		
1	---	---	---	---	---	---	11.3	11.1	11.3	11.2	10.8	11.0
2	---	---	---	---	---	---	11.6	10.5	11.2	11.1	10.4	10.8
3	---	---	---	---	---	---	11.1	10.4	10.6	10.6	9.9	10.3
4	---	---	---	---	---	---	11.6	11.1	11.5	9.9	9.4	9.7
5	---	---	---	---	---	---	11.6	11.0	11.3	10.0	9.3	9.7
6	---	---	---	---	---	---	11.2	10.8	11.1	10.5	9.0	9.7
7	---	---	---	---	---	---	10.8	10.2	10.6	11.0	8.9	9.9
8	---	---	---	---	---	---	10.3	9.9	10.1	11.5	8.8	10.0
9	---	---	---	---	---	---	10.2	9.9	10.1	9.8	8.4	9.1
10	---	---	---	---	---	---	10.4	10.1	10.2	10.4	8.3	9.4
11	---	---	---	---	---	---	10.8	10.0	10.5	10.7	8.7	9.7
12	---	---	---	---	---	---	10.9	9.9	10.3	10.3	9.3	9.7
13	---	---	---	---	---	---	11.2	9.8	10.4	9.8	9.4	9.6
14	---	---	---	---	---	---	11.5	10.2	10.9	10.0	9.4	9.7
15	---	---	---	---	---	---	12.2	11.1	11.6	10.1	9.4	9.8
16	---	---	---	---	---	---	11.7	10.6	11.2	9.9	9.0	9.5
17	---	---	---	---	---	---	11.5	10.4	11.0	9.6	8.9	9.3
18	---	---	---	---	---	---	11.8	10.6	11.2	9.6	8.9	9.2
19	---	---	---	---	---	---	12.3	11.3	11.8	9.7	9.0	9.4
20	---	---	---	---	---	---	12.2	11.1	11.8	9.5	6.3	8.6
21	---	---	---	---	---	---	11.4	10.2	11.0	7.6	6.4	7.2
22	---	---	---	---	---	---	10.6	10.0	10.3	7.9	7.6	7.8
23	---	---	---	---	---	---	11.2	10.5	10.9	8.1	7.5	7.9
24	---	---	---	---	---	---	10.8	10.2	10.6	7.7	7.6	7.6
25	---	---	---	---	---	---	10.6	9.4	10.1	8.1	7.6	7.9
26	---	---	---	---	---	---	9.7	9.4	9.6	8.2	8.0	8.1
27	---	---	---	---	---	---	9.8	9.6	9.7	8.6	8.1	8.4
28	---	---	---	---	---	---	10.0	9.3	9.8	8.7	8.5	8.6
29	---	---	---	---	12.3	---	9.9	9.2	9.4	8.8	8.6	8.7
30	---	---	---	12.4	11.5	12.1	11.0	9.9	10.6	9.1	8.8	9.0
31	---	---	---	11.6	11.3	11.5	---	---	---	9.1	8.7	8.8
Month	---	---	---	---	---	---	12.3	9.2	10.7	11.5	6.3	9.2

06436760 HORSE CREEK ABOVE VALE, SD—Continued

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	9.2	8.7	8.9	9.1	6.7	7.9	11.6	6.3	8.6	10.1	7.2	8.4
2	8.8	8.1	8.4	7.9	7.1	7.5	11.4	6.1	8.4	10.3	7.3	8.6
3	8.2	8.0	8.1	7.8	6.7	7.3	10.2	5.9	7.5	10.6	7.5	9.0
4	8.4	8.1	8.3	7.9	6.7	7.3	12.4	6.2	8.7	10.9	8.2	9.4
5	8.3	7.9	8.2	9.3	6.6	7.8	10.3	6.5	7.9	10.9	8.3	9.4
6	7.9	7.6	7.8	9.2	6.8	7.8	11.4	6.6	8.7	10.7	7.7	9.1
7	7.7	7.5	7.6	8.7	6.3	7.5	10.4	6.6	8.2	11.4	7.9	9.4
8	8.4	7.6	8.0	8.3	6.2	7.1	7.2	6.5	6.7	11.2	7.9	9.3
9	8.9	8.4	8.7	6.6	6.1	6.4	7.4	6.7	7.2	11.4	7.6	9.2
10	9.1	8.8	9.0	6.9	6.5	6.8	7.8	7.4	7.6	11.5	7.7	9.2
11	9.0	8.4	8.8	7.3	6.8	7.1	8.1	7.4	7.7	11.1	7.5	9.0
12	8.4	8.1	8.3	7.7	7.3	7.6	9.3	7.3	8.1	11.0	7.4	9.0
13	8.3	7.7	8.1	8.1	7.5	7.7	10.4	7.5	8.7	11.0	7.7	9.1
14	7.9	6.6	7.6	8.5	7.2	7.8	11.2	7.4	9.1	10.8	8.0	9.2
15	7.5	6.4	7.0	9.3	6.8	7.9	10.3	7.1	8.5	11.4	8.9	10
16	7.7	7.5	7.6	9.1	6.8	7.7	9.8	7.0	8.3	11.9	9.5	10.4
17	7.9	7.7	7.8	7.9	6.2	6.9	9.7	7.2	8.3	11.5	9.0	10
18	8.1	7.6	7.9	7.6	6.1	6.7	9.6	6.7	8.0	11.9	8.7	10.0
19	7.8	7.6	7.7	7.5	5.9	6.6	13.4	6.9	9.8	12.1	8.5	10.0
20	8.0	7.6	7.8	7.9	5.9	6.9	15.0	8.1	11.1	11.5	8.6	10
21	8.3	8.0	8.2	8.4	6.4	7.4	11.6	7.7	9.5	11.9	9.0	10.3
22	8.5	7.8	8.2	8.3	6.4	7.2	10.3	6.9	8.4	11.9	9.0	10.3
23	8.3	7.6	8.0	7.9	6.4	7.0	9.5	6.5	7.9	11.6	8.8	10
24	8.4	7.3	7.9	8.1	6.7	7.3	9.5	6.9	8.0	11.4	8.3	9.6
25	7.5	6.9	7.2	8.3	6.8	7.2	9.2	6.9	7.8	11.3	7.8	9.3
26	7.9	6.8	7.3	9.3	6.7	7.6	9.1	6.9	7.8	11.2	7.6	9.2
27	7.7	7.3	7.5	9.9	7.2	8.2	9.1	6.9	7.8	11.0	7.5	9.0
28	7.8	7.1	7.5	9.6	7.0	8.1	8.9	6.7	7.6	10.6	7.7	8.9
29	8.3	7.0	7.5	10.1	7.0	8.4	7.6	6.7	7.2	10.8	7.5	9.0
30	8.8	6.5	7.6	11.7	7.0	9.1	9.2	7.3	8.1	11.0	8.1	9.3
31	---	---	---	11.6	6.7	8.7	9.4	7.2	8.1	---	---	---
Month	9.2	6.4	8.0	11.7	5.9	7.5	15.0	5.9	8.2	12.1	7.2	9.4

06436760 HORSE CREEK ABOVE VALE, SD—Continued

TURBIDITY, WATER, UNFILT, NEAR IR LED LIGHT, 780-900 NM, DETECT ANG. 90 DEG, FORMAZIN NEPHELOMETRIC UNITS
 WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

[>, greater than]

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	26	14	19	---	---	---	---	---	---	---	---	---
2	28	14	21	---	---	---	---	---	---	---	---	---
3	16	9.0	14	---	---	---	---	---	---	---	---	---
4	21	12	17	---	---	---	---	---	---	---	---	---
5	23	10	16	---	---	---	---	---	---	---	---	---
6	22	7.8	15	---	---	---	---	---	---	---	---	---
7	21	7.7	14	---	---	---	---	---	---	---	---	---
8	28	12	19	---	---	---	---	---	---	---	---	---
9	98	14	24	---	---	---	---	---	---	---	---	---
10	210	15	41	---	---	---	---	---	---	---	---	---
11	32	14	22	---	---	---	---	---	---	---	---	---
12	32	14	24	---	---	---	---	---	---	---	---	---
13	22	10	15	---	---	---	---	---	---	---	---	---
14	22	11	15	---	---	---	---	---	---	---	---	---
15	28	12	17	---	---	---	---	---	---	---	---	---
16	28	13	18	---	---	---	---	---	---	---	---	---
17	27	9.0	17	---	---	---	---	---	---	---	---	---
18	18	9.1	13	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
Month	---	---	---	---	---	---	---	---	---	---	---	---

06436760 HORSE CREEK ABOVE VALE, SD—Continued

TURBIDITY, WATER, UNFILT, NEAR IR LED LIGHT, 780-900 NM, DETECT ANG. 90 DEG, FORMAZIN NEPHELOMETRIC UNITS
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

[>, greater than]

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	February			March			April			May		
1	---	---	---	---	---	---	810	92	240	>1,240	850	>1,130
2	---	---	---	---	---	---	>1,230	810	>1,160	850	500	610
3	---	---	---	---	---	---	>1,230	>1,170	>1,200	590	460	510
4	---	---	---	---	---	---	>1,200	670	>940	460	230	330
5	---	---	---	---	---	---	690	470	570	230	130	170
6	---	---	---	---	---	---	490	300	390	140	100	120
7	---	---	---	---	---	---	310	230	270	120	86	110
8	---	---	---	---	---	---	240	170	200	110	67	84
9	---	---	---	---	---	---	180	130	150	92	63	74
10	---	---	---	---	---	---	180	100	120	84	60	71
11	---	---	---	---	---	---	110	89	97	72	43	55
12	---	---	---	---	---	---	110	83	91	410	43	170
13	---	---	---	---	---	---	110	76	84	>1,310	410	>770
14	---	---	---	---	---	---	83	52	65	>1,290	990	>1,220
15	---	---	---	---	---	---	54	41	46	>1,280	630	>1,080
16	---	---	---	---	---	---	46	37	42	630	250	410
17	---	---	---	---	---	---	54	37	41	250	130	190
18	---	---	---	---	---	---	46	29	35	150	130	140
19	---	---	---	---	---	---	32	23	27	250	110	140
20	---	---	---	---	---	---	31	19	24	>1,310	180	>720
21	---	---	---	---	---	---	48	24	33	>1,310	1,020	>1,280
22	---	---	---	---	---	---	83	40	63	1,290	760	940
23	---	---	---	---	---	---	74	61	67	1,020	570	750
24	---	---	---	---	---	---	120	64	94	820	550	670
25	---	---	---	---	---	---	510	91	210	970	530	700
26	---	---	---	---	---	---	760	510	680	730	550	620
27	---	---	---	---	---	---	710	370	550	1,050	670	890
28	---	---	---	---	---	---	370	210	280	1,040	820	910
29	---	---	---	---	---	---	>1,280	190	>840	950	670	800
30	---	---	---	150	98	120	>1,260	>1,240	>1,250	1,270	600	820
31	---	---	---	110	89	96	---	---	---	1,290	820	1,080
Month	---	---	---	---	---	---	1,280	19	330	1,310	43	570

06436760 HORSE CREEK ABOVE VALE, SD—Continued

TURBIDITY, WATER, UNFILT, NEAR IR LED LIGHT, 780-900 NM, DETECT ANG. 90 DEG, FORMAZIN NEPHELOMETRIC UNITS
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

[>, greater than]

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
June			July			August			September			
1	930	610	740	79	38	55	53	15	27	---	---	---
2	700	500	580	330	50	120	32	14	20	---	---	---
3	600	470	530	380	120	230	69	12	23	---	---	---
4	570	430	480	1,220	140	240	82	15	32	---	---	---
5	560	400	460	180	77	110	190	20	49	---	---	---
6	520	370	390	98	60	78	56	16	26	---	---	---
7	440	340	370	74	45	61	52	17	22	---	---	---
8	540	340	370	140	50	58	>1,430	29	>700	16	9.5	12
9	390	310	350	>1,250	140	>850	>1,420	840	>1,250	17	9.5	12
10	330	280	290	>1,240	500	>830	850	310	530	16	8.8	12
11	290	250	260	500	300	390	310	130	200	19	9.5	12
12	640	220	330	300	170	220	160	72	110	15	9.5	12
13	380	190	240	170	97	130	83	43	58	16	10	13
14	>1,360	200	>500	99	70	85	57	32	43	16	8.1	11
15	>1,360	650	>1,020	94	61	76	53	30	38	17	6.4	11
16	690	550	600	80	55	67	49	32	39	19	5.2	10
17	630	460	520	100	56	70	46	31	36	22	9.7	12
18	480	340	410	110	52	83	51	31	36	16	9.3	12
19	360	250	300	92	60	73	52	32	40	18	8.0	11
20	250	170	200	90	44	68	47	28	37	22	9.6	14
21	180	150	160	74	43	54	46	25	32	17	10	13
22	170	140	150	73	45	59	38	26	31	17	10	14
23	180	150	160	89	66	77	46	28	34	20	12	14
24	610	92	170	110	78	90	53	31	40	19	12	15
25	690	160	280	100	63	84	62	31	50	18	12	14
26	240	77	120	82	48	64	73	36	51	18	12	15
27	540	230	400	76	46	61	53	31	40	19	13	14
28	430	120	240	69	36	52	48	30	38	20	13	16
29	130	83	100	65	30	38	120	34	48	18	11	13
30	100	53	75	40	23	29	76	30	47	15	9.5	11
31	---	---	---	43	18	26	---	---	---	---	---	---
Month	1,360	53	360	1,250	18	150	---	---	---	---	---	---

06436760 HORSE CREEK ABOVE VALE, SD—Continued

**SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	2,610	2,410	2,520	---	---	---	---	---	---	---	---	---
2	2,770	2,570	2,630	---	---	---	---	---	---	---	---	---
3	2,820	2,740	2,760	---	---	---	---	---	---	---	---	---
4	2,870	2,630	2,810	---	---	---	---	---	---	---	---	---
5	2,630	2,130	2,350	---	---	---	---	---	---	---	---	---
6	2,620	2,500	2,570	---	---	---	---	---	---	---	---	---
7	2,950	2,620	2,810	---	---	---	---	---	---	---	---	---
8	3,020	2,940	2,970	---	---	---	---	---	---	---	---	---
9	3,040	3,010	3,030	---	---	---	---	---	---	---	---	---
10	3,010	2,950	2,970	---	---	---	---	---	---	---	---	---
11	3,020	2,960	2,980	---	---	---	---	---	---	---	---	---
12	3,050	3,020	3,040	---	---	---	---	---	---	---	---	---
13	3,120	3,050	3,080	---	---	---	---	---	---	---	---	---
14	3,130	3,040	3,090	---	---	---	---	---	---	---	---	---
15	3,060	3,030	3,040	---	---	---	---	---	---	---	---	---
16	3,110	3,060	3,080	---	---	---	---	---	---	---	---	---
17	3,240	3,100	3,170	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
Month	---	---	---	---	---	---	---	---	---	---	---	---

06436760 HORSE CREEK ABOVE VALE, SD—Continued

PH, WATER, UNFILTERED, FIELD, STANDARD UNITS
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Day	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
	October		November		December		January		February		March	
1	8.3	8.1	---	---	---	---	---	---	---	---	---	---
2	8.3	8.1	---	---	---	---	---	---	---	---	---	---
3	8.3	8.1	---	---	---	---	---	---	---	---	---	---
4	8.3	8.1	---	---	---	---	---	---	---	---	---	---
5	8.2	8.0	---	---	---	---	---	---	---	---	---	---
6	8.2	8.1	---	---	---	---	---	---	---	---	---	---
7	8.2	8.0	---	---	---	---	---	---	---	---	---	---
8	8.2	8.1	---	---	---	---	---	---	---	---	---	---
9	8.2	8.1	---	---	---	---	---	---	---	---	---	---
10	8.2	8.1	---	---	---	---	---	---	---	---	---	---
11	8.2	8.1	---	---	---	---	---	---	---	---	---	---
12	8.2	8.0	---	---	---	---	---	---	---	---	---	---
13	8.3	8.1	---	---	---	---	---	---	---	---	---	---
14	8.2	8.1	---	---	---	---	---	---	---	---	---	---
15	8.2	8.1	---	---	---	---	---	---	---	---	---	---
16	8.2	8.2	---	---	---	---	---	---	---	---	---	---
17	8.3	8.2	---	---	---	---	---	---	---	---	---	---
18	8.2	8.2	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
Month	---	---	---	---	---	---	---	---	---	---	---	---

06436760 HORSE CREEK ABOVE VALE, SD—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	16.7	13.5	15.2	---	---	---	---	---	---	---	---	---
2	17.4	14.3	15.9	---	---	---	---	---	---	---	---	---
3	17.9	15.1	16.5	---	---	---	---	---	---	---	---	---
4	18.6	16.0	17.3	---	---	---	---	---	---	---	---	---
5	17.7	16.2	17.0	---	---	---	---	---	---	---	---	---
6	16.7	15.3	15.8	---	---	---	---	---	---	---	---	---
7	15.3	13.6	14.3	---	---	---	---	---	---	---	---	---
8	13.6	12.2	12.7	---	---	---	---	---	---	---	---	---
9	12.5	11.6	12.0	---	---	---	---	---	---	---	---	---
10	13.9	11.5	12.4	---	---	---	---	---	---	---	---	---
11	13.5	11.0	12.1	---	---	---	---	---	---	---	---	---
12	13.4	11.5	12.3	---	---	---	---	---	---	---	---	---
13	12.0	10.1	11.0	---	---	---	---	---	---	---	---	---
14	10.3	9.1	9.7	---	---	---	---	---	---	---	---	---
15	10.8	8.4	9.6	---	---	---	---	---	---	---	---	---
16	10.9	8.6	9.7	---	---	---	---	---	---	---	---	---
17	10.5	9.0	9.8	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
Month	---	---	---	---	---	---	---	---	---	---	---	---

06436760 HORSE CREEK ABOVE VALE, SD—Continued

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	10.9	7.9	9.3	---	---	---	---	---	---	---	---	---
2	10.4	7.8	9.0	---	---	---	---	---	---	---	---	---
3	10.3	7.6	8.9	---	---	---	---	---	---	---	---	---
4	10.5	7.3	8.8	---	---	---	---	---	---	---	---	---
5	9.7	6.8	8.3	---	---	---	---	---	---	---	---	---
6	9.1	7.5	8.1	---	---	---	---	---	---	---	---	---
7	10.3	7.1	8.6	---	---	---	---	---	---	---	---	---
8	10.2	8.2	9.0	---	---	---	---	---	---	---	---	---
9	10.9	8.0	9.1	---	---	---	---	---	---	---	---	---
10	11.3	8.3	9.4	---	---	---	---	---	---	---	---	---
11	11.4	8.5	9.5	---	---	---	---	---	---	---	---	---
12	11.3	8.7	9.7	---	---	---	---	---	---	---	---	---
13	11.5	8.4	9.7	---	---	---	---	---	---	---	---	---
14	11.1	8.8	9.9	---	---	---	---	---	---	---	---	---
15	11.7	9.0	10.2	---	---	---	---	---	---	---	---	---
16	11.9	9.4	10.4	---	---	---	---	---	---	---	---	---
17	11.7	9.5	10.5	---	---	---	---	---	---	---	---	---
18	---	9.6	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
Month	---	---	---	---	---	---	---	---	---	---	---	---

06436760 HORSE CREEK ABOVE VALE, SD—Continued

TURBIDITY, WATER, UNFILT, NEAR IR LED LIGHT, 780-900 NM, DETECT ANG. 90 DEG, FORMAZIN NEPHELOMETRIC UNITS
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	15	9.8	12	---	---	---	---	---	---	---	---	---
2	19	11	13	---	---	---	---	---	---	---	---	---
3	16	10	13	---	---	---	---	---	---	---	---	---
4	18	10	12	---	---	---	---	---	---	---	---	---
5	25	10	18	---	---	---	---	---	---	---	---	---
6	18	9.6	13	---	---	---	---	---	---	---	---	---
7	16	7.4	12	---	---	---	---	---	---	---	---	---
8	15	6.3	10	---	---	---	---	---	---	---	---	---
9	10	5.7	7.7	---	---	---	---	---	---	---	---	---
10	14	5.2	9.8	---	---	---	---	---	---	---	---	---
11	15	6.3	9.8	---	---	---	---	---	---	---	---	---
12	23	6.1	13	---	---	---	---	---	---	---	---	---
13	16	7.2	11	---	---	---	---	---	---	---	---	---
14	18	6.0	10	---	---	---	---	---	---	---	---	---
15	16	6.1	9.7	---	---	---	---	---	---	---	---	---
16	15	4.9	9.5	---	---	---	---	---	---	---	---	---
17	13	5.6	9.4	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
Month	---	---	---	---	---	---	---	---	---	---	---	---

06436760 HORSE CREEK ABOVE VALE, SD—Continued

WATER-QUALITY DATA

WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Part 1 of 2

[FNU, Formazin nephelometric units; LED, light-emitting diode; ft³/s, cubic feet per second; mg/L, milligrams per liter; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; --, no data]

Date	Sample start time	Discharge, instantaneous, ft ³ /s (00061)	Specific conductance, water, unfiltered, µS/cm at 25 °C (00095)	pH, water, unfiltered, field, standard units (00400)	Temperature, air, °C (00020)	Temperature, water, °C (00010)	Turbidity, water, unfiltered, monochrome near infrared LED light, 780-900 nm, detection angle 90 +/- 2.5 degrees, FNU (63680)	Dissolved oxygen, water, unfiltered, mg/L (00300)	Suspended sediment concentration, mg/L (80154)
10-20-2010	1100	4.6	--	--	--	8.4	--	--	44
10-20-2010	1101	4.6	--	--	--	8.4	--	--	61
10-20-2010	1102	--	--	--	--	--	--	--	--
11-16-2010	1305	4.8	3,990	--	6.5	2.7	--	--	--
01-04-2011	1535	4.5	4,330	--	-5	.0	--	--	--
02-10-2011	1235	9.7	2,850	--	.0	.0	--	--	--
02-18-2011	1045	134	781	--	1.5	.0	--	--	--
03-21-2011	1135	226	1,120	--	13.0	6.0	--	--	--
03-29-2011	1350	49	1,820	8.1	4.0	3.5	130	7.8	211
03-29-2011	1351	49	--	--	4.0	--	--	--	211
05-04-2011	1215	--	1,800	8.8	--	12.2	300	9.4	--
05-04-2011	1330	--	1,810	8.1	--	12.8	310	9.9	--
05-04-2011	1334	--	--	--	15.0	--	--	--	447
05-04-2011	1335	--	--	--	15.0	--	--	--	440
05-10-2011	1055	15	2,310	--	13.5	15.0	--	--	--
06-15-2011	1200	--	1,310	7.8	--	19.4	960	7.3	--
06-15-2011	1300	1,070	1,320	--	25.5	19.7	--	--	2,140
06-15-2011	1301	1,070	1,320	--	25.5	19.7	--	--	1,910
07-15-2011	1115	--	2,000	8.1	--	25.3	90	7.8	--
07-15-2011	1345	36	2,000	8.2	31.0	25.7	96	7.9	179
07-15-2011	1346	36	--	--	--	--	--	--	210
09-07-2011	1115	--	2,220	--	--	17.3	--	--	--
09-07-2011	1210	43	2,250	8.3	26.0	17.3	12	8.8	61

06436760 HORSE CREEK ABOVE VALE, SD—Continued**WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO
SEPTEMBER 2011**

Part 2 of 2

[FNU, Formazin nephelometric units;
LED, light-emitting diode; ft³/s, cubic
feet per second; mg/L, milligrams per
liter; nm, nanometers; °C, degrees
Celsius; µS/cm, microsiemens per
centimeter; --, no data]

Date	Sample start time	Suspended sediment discharge, tons per day (80155)
10-20-2010	1100	.55
10-20-2010	1101	.76
10-20-2010	1102	--
11-16-2010	1305	--
01-04-2011	1535	--
02-10-2011	1235	--
02-18-2011	1045	--
03-21-2011	1135	--
03-29-2011	1350	28
03-29-2011	1351	28
05-04-2011	1215	--
05-04-2011	1330	--
05-04-2011	1334	--
05-04-2011	1335	--
05-10-2011	1055	--
06-15-2011	1200	--
06-15-2011	1300	6,180
06-15-2011	1301	5,520
07-15-2011	1115	--
07-15-2011	1345	18
07-15-2011	1346	21
09-07-2011	1115	--
09-07-2011	1210	7.0