Water-Data Report 2012

06066500 MISSOURI RIVER BELOW HOLTER DAM, NEAR WOLF CREEK, MT

Upper Missouri Basin
Upper Missouri-Dearborn Subbasin

LOCATION.--Lat 46°59'41", long 112°00'39" referenced to North American Datum of 1983, in NE ¼ SW ¼ SE ¼ sec.5, T.14 N., R.3 W., Lewis and Clark County, MT, Hydrologic Unit 10030102, on left bank 0.4 mi downstream from Holter Dam, 2.8 mi southeast of Wolf Creek, and at river mile 2,210.7.

DRAINAGE AREA.--17,149 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1945 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,464.11 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Records are good. Flow is regulated by nine smaller irrigation reservoirs and powerplants, Clark Canyon Reservoir (station number 06015300), and Canyon Ferry Lake (station number 06058500). Diversions for irrigation include about 594,400 acres. U.S. Geological Survey satellite telemeter is located at the station.

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 06066500, accessed at http://wdr.water.usgs.gov/wy2012/pdfs/06066500.2012.pdf

06066500 MISSOURI RIVER BELOW HOLTER DAM, NEAR WOLF CREEK, MT—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2011 TO SEPTEMBER 2012
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	4,020	5,140	5,880	5,300	5,350	5,210	5,310	6,700	4,760	4,180	4,110	3,720
2	4,250	5,050	5,780	5,270	5,360	5,150	5,310	6,740	4,690	4,350	4,100	3,700
3	4,460	5,040	5,680	5,260	5,390	5,120	5,320	6,730	4,690	4,420	4,100	3,660
4	4,710	5,070	5,690	5,240	5,420	5,130	5,330	6,600	4,870	4,420	4,090	3,650
5	4,780	5,110	5,770	5,210	5,400	5,230	5,340	6,540	5,330	4,390	4,100	3,660
6	4,800	5,180	5,680	5,190	5,400	5,280	5,360	6,650	6,350	4,330	4,060	3,610
7	4,680	5,320	5,580	5,210	5,350	5,270	5,330	6,380	8,590	4,270	4,000	3,510
8	4,570	5,370	5,560	5,220	5,340	5,270	5,340	6,020	8,950	4,210	4,030	3,550
9	4,560	5,390	5,640	5,250	5,280	5,270	5,350	5,720	8,730	4,210	4,030	3,590
10	4,530	5,350	5,690	5,310	5,230	5,270	5,350	5,380	8,610	4,270	4,020	3,650
11	4,410	5,280	5,690	5,330	5,190	5,240	5,340	5,010	8,300	4,150	4,040	3,660
12	4,410	5,260	5,530	5,330	5,260	5,220	5,340	4,840	7,110	4,160	4,120	3,660
13	4,510	5,230	5,510	5,330	5,250	5,160	5,340	4,810	6,920	4,130	4,090	3,670
14	4,610	5,310	5,460	5,330	5,270	5,030	5,350	4,850	7,010	4,040	4,010	3,660
15	4,630	5,380	5,440	5,260	5,260	4,850	5,380	4,830	7,130	4,080	3,980	3,660
16	4,620	5,470	5,430	5,070	5,320	4,770	5,440	4,690	6,930	4,180	3,910	3,630
17	4,420	5,640	5,380	5,220	5,260	4,750	6,270	4,530	6,890	4,330	3,920	3,580
18	4,320	5,740	5,350	5,250	5,230	4,790	6,810	4,580	6,950	4,440	3,930	3,550
19	4,440	5,740	5,040	5,310	5,220	4,840	7,070	4,620	6,940	4,580	3,930	3,550
20	4,770	5,760	5,080	5,480	5,210	5,140	6,930	4,610	6,850	4,550	3,930	3,540
21	4,870	5,680	5,310	5,550	5,130	5,440	6,750	4,540	6,820	4,500	3,910	3,560
22	4,950	5,650	5,020	5,510	5,070	5,410	6,740	4,590	6,840	4,410	3,870	3,560
23	5,050	5,630	5,090	5,350	5,160	5,330	6,770	4,790	6,760	4,370	3,840	3,570
24	5,080	5,540	5,080	5,180	5,210	5,310	6,860	4,760	6,580	4,270	3,750	3,500
25	5,090	5,570	5,100	5,140	5,260	5,310	6,750	4,720	6,760	4,160	3,700	3,530
26	5,080	5,670	5,120	5,210	5,270	5,310	6,660	4,600	6,320	4,130	3,720	3,550
27	5,100	5,670	5,200	5,250	5,270	5,310	6,670	4,540	5,760	4,080	3,740	3,550
28	5,280	5,690	5,240	5,320	5,250	5,290	6,700	4,590	5,670	4,090	3,780	3,560
29	5,300	5,810	5,310	5,310	5,200	5,260	6,710	4,730	5,230	4,100	3,810	3,590
30	5,230	5,860	5,390	5,350	---	5,270	6,700	4,830	4,430	4,100	3,800	3,620
31	5,210	---	5,410	5,360	---	5,280	---	4,790	---	4,110	3,780	---
Total	146,740	163,600	168,130	163,900	152,810	160,510	179,920	162,310	197,770	132,010	122,200	108,050
Mean	4,734	5,453	5,424	5,287	5,269	5,178	5,997	5,236	6,592	4,258	3,942	3,602
Max	5,300	5,860	5,880	5,550	5,420	5,440	7,070	6,740	8,950	4,580	4,120	3,720
Min	4,020	5,040	5,020	5,070	5,070	4,750	5,310	4,530	4,430	4,040	3,700	3,500
Ac-ft	291,100	324,500	333,500	325,100	303,100	318,400	356,900	321,900	392,300	261,800	242,400	214,300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2012, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	4,408	4,705	4,909	4,949	4,901	4,993	5,449	6,664	8,920	5,971	4,256	4,183
Max	10,140	8,500	9,645	6,637	7,954	9,186	11,130	15,710	23,370	16,580	7,590	10,010
(WY)	(1966)	(1966)	(1960)	(1997)	(1997)	(1968)	(1976)	(1948)	(1948)	(1975)	(1984)	(1984)
Min	2,710	2,968	3,024	3,068	3,036	2,757	2,489	2,063	1,533	2,454	1,969	2,077
(WY)	(1954)	(1989)	(2002)	(2002)	(2002)	(1959)	(1959)	(1955)	(1955)	(1954)	(1954)	(1959)

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SUMMARY STATISTICS

	Calendar Year 2011		Water Year 2012		Water Years 1946 - 2012	
Annual total	2,834,500		1,857,950			
Annual mean	7,766		5,076		5,357	
Highest annual mean					8,497	1984
Lowest annual mean					3,008	2002
Highest daily mean	23,000	Jul 3	8,950	Jun 8	34,000	Jun 8, 1948
Lowest daily mean	4,020	Oct 1	3,500	Sep 24	747	May 27, 1962
Annual seven-day minimum	4,400	Sep 29	3,540	Sep 19	1,040	May 16, 1957
Maximum peak flow			9,130	Jun 7	34,800	Jun 8, 1948
Maximum peak stage			4.77	Jun 7	11.70	Jun 8, 1948
Instantaneous low flow					[a]250	Jul 26, 1968
Annual runoff (ac-ft)	5,622,000		3,685,000		3,881,000	
10 percent exceeds	15,100		6,590		7,920	
50 percent exceeds	5,670		5,210		4,610	
90 percent exceeds	5,020		3,790		3,060	

	Water Years 1946 – 1952*		Water Years 1953 - 2012**	
Annual mean	5,882		5,296	
Highest annual mean	7,787	1948	8,497	1984
Lowest annual mean	4,651	1946	3,008	2002
Highest daily mean	34,000	Jun 8, 1948	25,600	Jun 20, 1964
Lowest daily mean	1,560	Aug 31, 1946	747	May 27, 1962
Annual seven-day minimum	2,310	Aug 2, 1949	1,040	May 16, 1957
Maximum peak flow	34,800	Jun 8, 1948	27,100	Jun 19, 1964
Maximum peak stage	11.70	Jun 2, 1948	10.04	Jun 19, 1964
Instantaneous low flow	[b]742	Nov 25, 1949	[a]250	Jul 26, 1968
Annual runoff (ac-ft)	4,261,000		3,837,000	
10 percent exceeds	10,800		7,700	
50 percent exceeds	4,520		4,630	
90 percent exceeds	3,350		3,050	

*Before Canyon Ferry Dam completion.
**After Canyon Ferry Dam completion.
[a]Gage height, 0.18 ft.
[b]Probably less than; during powerplant shutdown.

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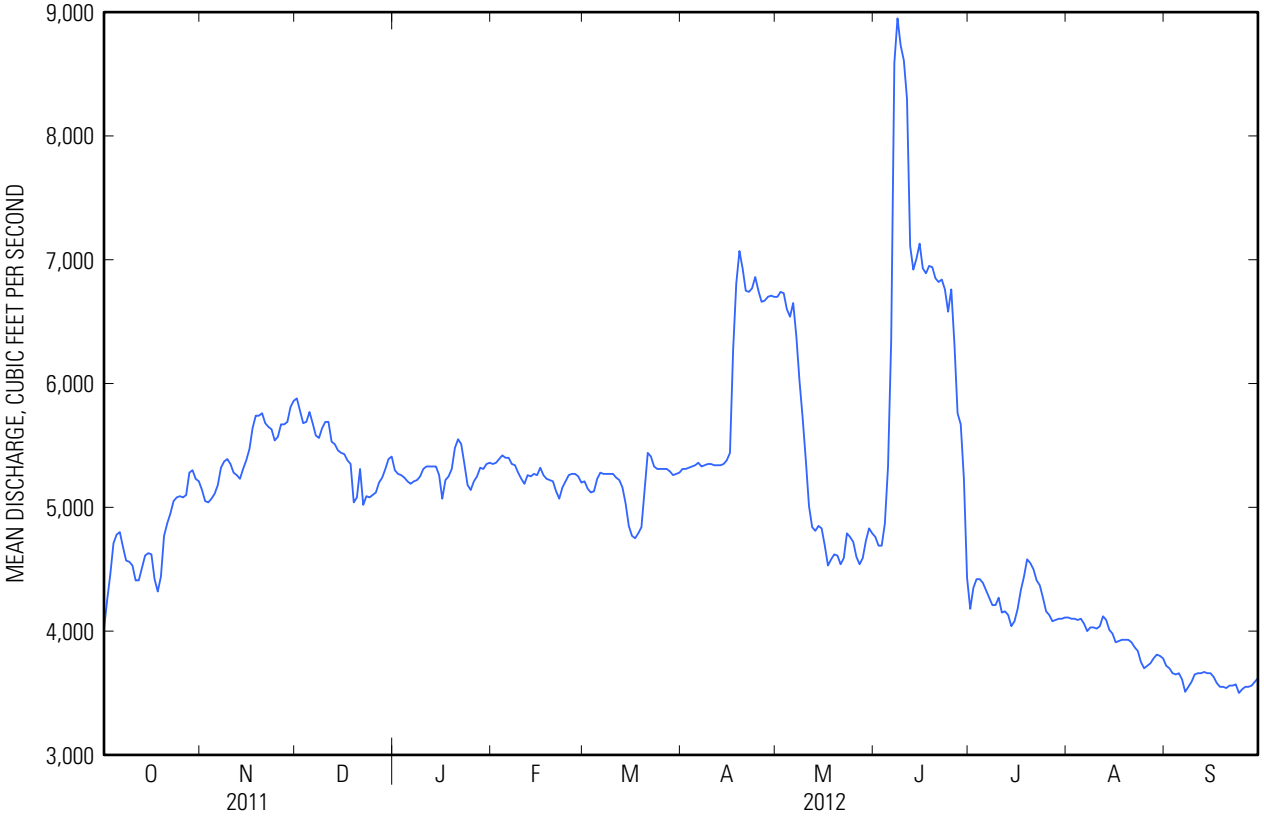

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WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1999 to current year.

INSTRUMENTATION.--Water temperature probe was installed Sept. 30, 1999.

REMARKS.--Daily water temperature records are complete and rated good. Several unpublished observations of specific conductance and water temperature were made during the year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 22.5°C, July 27, 2007; minimum, 0.5°C, many days in winter months.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 20.2°C, July 23; Minimum, 1.0°C, January 19, 26-28.

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	16.6	16.0	16.2	11.2	10.9	11.1	4.4	4.1	4.3	1.8	1.6	1.6
2	16.3	15.9	16.1	10.9	10.4	10.7	4.2	4.1	4.1	1.8	1.6	1.7
3	16.5	15.8	16.2	10.4	10.3	10.3	4.1	3.8	3.9	1.9	1.7	1.8
4	16.4	16.1	16.2	10.3	10.0	10.2	3.9	3.5	3.8	2.0	1.7	1.9
5	16.3	15.9	16.0	10.0	9.8	9.9	3.5	3.2	3.3	2.1	1.9	1.9
6	16.0	15.7	15.9	9.8	9.5	9.7	3.2	3.0	3.1	2.0	1.9	1.9
7	15.8	15.6	15.7	9.5	9.3	9.4	3.2	3.0	3.1	1.9	1.6	1.8
8	15.8	15.4	15.6	9.4	9.1	9.2	3.1	2.9	3.0	1.7	1.6	1.7
9	15.5	15.3	15.4	9.2	8.9	9.0	2.9	2.7	2.8	1.9	1.7	1.8
10	15.4	15.1	15.3	8.9	8.6	8.8	2.9	2.7	2.8	2.0	1.8	1.8
11	15.3	14.8	15.1	8.8	8.5	8.6	2.8	2.7	2.7	1.8	1.5	1.6
12	15.0	14.7	14.8	8.5	8.1	8.3	2.8	2.4	2.7	1.6	1.4	1.5
13	14.8	14.5	14.6	8.2	7.8	8.0	2.4	2.3	2.3	1.6	1.4	1.5
14	14.6	14.4	14.5	7.9	7.5	7.7	2.5	2.3	2.4	1.5	1.4	1.5
15	14.5	14.2	14.3	7.6	7.1	7.4	2.4	2.2	2.3	1.5	1.4	1.4
16	14.2	14.0	14.1	7.2	6.9	7.1	2.4	2.1	2.3	2.0	1.3	1.4
17	14.1	13.8	13.9	7.0	6.8	6.9	2.2	2.0	2.2	1.4	1.1	1.3
18	13.9	13.6	13.7	6.8	6.4	6.6	2.3	2.1	2.2	1.3	1.1	1.2
19	13.6	13.4	13.5	6.4	6.0	6.2	2.2	2.1	2.1	1.3	1.0	1.1
20	13.6	13.3	13.4	6.1	5.9	6.0	2.1	2.0	2.1	1.3	1.1	1.2
21	13.4	13.1	13.2	5.9	5.6	5.8	2.1	1.9	2.0	1.3	1.1	1.2
22	13.2	12.9	13.1	5.7	5.5	5.6	1.9	1.7	1.7	1.3	1.1	1.2
23	13.0	12.8	12.9	5.5	5.3	5.5	1.7	1.6	1.6	1.4	1.2	1.2
24	12.9	12.5	12.7	5.4	5.2	5.3	1.7	1.6	1.6	1.3	1.1	1.2
25	12.5	12.3	12.4	5.3	5.1	5.2	1.8	1.6	1.7	1.4	1.2	1.2
26	12.3	12.0	12.1	5.1	4.9	5.0	1.7	1.6	1.6	1.3	1.0	1.1
27	12.2	11.8	12.0	5.0	4.8	4.9	1.6	1.5	1.6	1.2	1.0	1.0
28	11.8	11.5	11.7	4.9	4.6	4.8	1.8	1.6	1.7	1.1	1.0	1.1
29	11.6	11.4	11.5	4.7	4.6	4.7	1.9	1.7	1.7	1.2	1.1	1.1
30	11.5	11.3	11.4	4.7	4.4	4.5	1.9	1.7	1.8	1.2	1.1	1.1
31	11.4	11.1	11.3	---	---	---	2.0	1.7	1.8	1.3	1.1	1.2
Month	16.6	11.1	14.0	11.2	4.4	7.4	4.4	1.5	2.5	2.1	1.0	1.4

06066500 MISSOURI RIVER BELOW HOLTER DAM, NEAR WOLF CREEK, MT—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
		February			March			April			May	
1	1.3	1.1	1.2	1.9	1.6	1.7	4.7	4.2	4.4	9.1	7.9	8.5
2	1.3	1.1	1.2	2.0	1.7	1.8	4.8	4.3	4.5	9.5	8.0	8.8
3	1.3	1.1	1.2	1.9	1.7	1.8	5.1	4.4	4.8	9.4	8.5	9.0
4	1.3	1.1	1.2	2.1	1.8	1.9	5.5	4.8	5.1	9.3	8.6	8.9
5	1.4	1.2	1.2	2.2	1.8	1.9	5.4	4.7	5.1	9.0	8.2	8.5
6	1.3	1.2	1.2	2.1	1.9	1.9	5.3	4.7	4.9	9.4	8.2	8.9
7	1.4	1.2	1.3	2.2	1.8	2.0	5.2	4.8	5.0	10.1	9.0	9.5
8	1.4	1.2	1.3	2.3	1.9	2.1	5.4	4.9	5.1	10.9	9.1	9.9
9	1.5	1.3	1.4	2.4	2.1	2.2	5.4	5.0	5.1	11.0	8.9	9.9
10	1.5	1.3	1.4	2.4	2.0	2.2	5.4	5.0	5.2	9.0	8.2	8.6
11	1.6	1.3	1.4	2.5	2.1	2.2	5.6	5.0	5.3	10.6	8.3	9.6
12	1.6	1.3	1.4	2.5	2.1	2.3	6.1	5.2	5.6	10.8	9.5	10.2
13	1.6	1.4	1.5	2.6	2.1	2.3	6.5	5.6	6.1	12.1	9.9	11.0
14	1.7	1.4	1.5	2.5	2.0	2.2	6.9	5.9	6.3	10.8	9.8	10.2
15	1.6	1.4	1.4	2.7	2.1	2.4	5.9	5.4	5.7	12.3	10.2	11.1
16	1.6	1.4	1.5	2.5	2.2	2.3	6.4	5.4	6.0	11.3	10.0	10.7
17	1.7	1.4	1.5	2.8	2.4	2.5	6.9	6.3	6.6	11.2	10.0	10.5
18	1.8	1.4	1.5	2.6	2.4	2.5	6.8	6.2	6.5	11.8	9.7	10.9
19	1.7	1.4	1.5	2.8	2.4	2.6	7.0	6.3	6.7	12.2	10.1	11.4
20	1.6	1.4	1.5	2.7	2.3	2.5	7.4	7.0	7.2	13.2	10.8	11.9
21	1.6	1.4	1.5	3.1	2.6	2.8	7.5	6.3	7.0	13.6	11.2	12.3
22	1.8	1.3	1.5	3.4	2.8	3.0	8.6	7.0	7.8	12.7	10.3	11.7
23	1.8	1.4	1.6	3.3	3.1	3.1	9.2	7.9	8.6	12.5	10.5	11.4
24	1.7	1.5	1.6	3.1	3.0	3.1	8.9	7.3	8.2	12.5	10.5	11.5
25	1.7	1.5	1.6	3.4	3.0	3.2	9.5	7.3	8.5	11.5	10.4	10.9
26	1.8	1.5	1.6	3.5	3.2	3.3	9.5	8.5	9.0	11.2	10.0	10.7
27	1.9	1.5	1.6	3.9	3.3	3.6	8.6	7.7	8.1	11.0	10.0	10.7
28	1.9	1.5	1.7	3.9	3.5	3.6	8.8	7.7	8.4	11.8	10.5	11.2
29	1.9	1.6	1.7	4.0	3.5	3.7	9.4	8.5	8.9	12.2	10.5	11.4
30	---	---	---	4.3	3.7	4.0	9.9	8.7	9.2	11.4	10.3	10.9
31	---	---	---	4.7	4.1	4.4	---	---	---	12.0	11.0	11.5
Month	1.9	1.1	1.4	4.7	1.6	2.6	9.9	4.2	6.5	13.6	7.9	10.4

06066500 MISSOURI RIVER BELOW HOLTER DAM, NEAR WOLF CREEK, MT—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
		June			July			August			September	
1	11.9	10.8	11.3	17.5	15.7	16.1	18.8	17.5	18.1	19.4	17.4	18.7
2	12.9	11.2	11.9	17.9	16.8	17.4	18.6	17.2	18.0	18.3	17.3	17.8
3	13.0	11.1	12.2	17.0	15.3	16.3	18.7	16.6	17.5	18.1	17.3	17.7
4	12.0	11.0	11.4	17.8	15.5	16.8	19.4	17.7	18.5	17.7	16.8	17.3
5	12.7	10.7	11.6	17.9	16.0	16.7	19.7	18.0	18.7	18.0	16.9	17.5
6	13.3	11.7	12.5	18.2	16.8	17.6	18.9	17.9	18.3	17.1	16.5	16.7
7	13.6	11.6	12.7	18.1	16.8	17.3	19.2	17.5	18.3	17.6	16.7	17.2
8	12.7	11.8	12.3	18.7	16.7	17.6	18.9	17.5	18.3	17.8	17.0	17.5
9	13.1	11.5	12.4	18.9	16.5	17.6	18.6	17.6	18.1	17.8	17.0	17.4
10	12.7	11.8	12.4	18.7	16.7	17.8	19.6	17.9	18.5	17.5	16.6	17.0
11	13.4	12.3	12.8	19.0	17.5	18.1	19.7	17.7	18.6	17.0	16.5	16.7
12	13.5	12.3	12.9	19.7	17.5	18.5	18.4	17.6	18.0	17.0	16.3	16.6
13	13.7	11.8	12.7	18.3	17.3	17.7	18.5	17.7	18.0	17.0	16.2	16.7
14	13.5	11.9	12.8	18.5	17.3	17.7	19.1	16.5	18.1	17.0	16.6	16.7
15	13.5	12.6	13.0	19.6	17.7	18.7	17.5	16.2	16.9	16.8	16.3	16.5
16	14.3	12.5	13.3	18.5	17.4	17.8	18.8	17.3	17.9	16.4	16.0	16.2
17	13.2	11.8	12.7	19.5	17.4	18.4	18.4	17.5	17.9	16.6	15.9	16.3
18	14.3	11.8	13.0	19.5	18.3	18.8	18.2	17.5	17.8	16.7	16.2	16.4
19	13.9	12.5	13.3	19.3	18.0	18.6	18.9	17.3	18.0	16.6	15.8	16.2
20	14.3	13.0	13.8	19.8	17.9	18.7	18.3	17.5	17.9	16.4	16.1	16.2
21	14.5	13.4	13.8	19.4	17.5	18.2	18.9	17.5	18.1	16.4	16.0	16.1
22	13.7	12.9	13.3	19.7	17.6	18.6	19.3	17.4	18.2	16.3	15.8	16.0
23	13.9	12.8	13.3	20.2	17.3	18.8	18.9	17.3	18.0	16.1	15.6	15.9
24	14.8	13.1	14.2	18.9	17.4	18.3	17.9	16.9	17.4	16.1	15.4	15.8
25	15.2	14.0	14.5	18.8	17.4	18.3	18.8	17.0	18.0	16.4	15.9	16.1
26	14.8	13.4	14.2	18.3	17.4	17.8	18.1	17.0	17.6	16.0	15.4	15.6
27	16.1	13.4	14.9	19.9	17.9	18.7	19.0	17.6	18.2	16.1	15.4	15.7
28	17.3	15.2	16.2	19.8	18.1	19.0	18.8	17.3	18.1	16.4	15.8	16.0
29	16.9	15.4	16.0	18.8	17.8	18.5	18.2	17.1	17.6	16.0	15.8	15.9
30	17.5	15.5	16.5	19.5	17.6	18.4	18.5	17.2	18.0	15.8	15.5	15.7
31	---	---	---	18.9	17.2	18.2	18.5	17.2	17.9	---	---	---
Month	17.5	10.7	13.3	20.2	15.3	18.0	19.7	16.2	18.0	19.4	15.4	16.6