Water-Data Report 2013

12447390 ANDREWS CREEK NEAR MAZAMA, WA

Upper Columbia Basin
Methow Subbasin

LOCATION.--Lat 48°49′23″, long 120°08′41″ referenced to North American Datum of 1927, in NE ¼ sec.1, T.38 N., R.21 E., Okanogan County, WA, Hydrologic Unit 17020008, Okanogan National Forest, on left bank 50 ft upstream from Blizzard Creek, 3.5 mi upstream from mouth, and 20 mi northeast of Mazama.

DRAINAGE AREA.--22.1 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--June 1968 to current year.

REVISED RECORDS.--WDR WA-76-2: 1975. WDR WA-77-2: 1976.

GAGE.--Water-stage recorder. Elevation of gage is 4,300 ft above NGVD of 1929, from topographic map.

REMARKS.--Records poor. No regulation or diversion. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE FOR PERIOD OF RECORD.--45 years (water years 1969-2013), 32.6 ft^3/s, 20.04 in/yr, 23,610 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,120 ft^3/s, June 10, 1972, gage height, 4.00 ft, from rating curve extended above 440 ft^3/s; minimum discharge 0.97 ft^3/s, Oct. 30, 2002.

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

Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 10	2000	*495	*3.14
May 21	1730	283	2.56

Minimum daily discharge, 2.5 ft^3/s, Jan. 10.

Suggested citation: U.S. Geological Survey, 2014, Water-resources data for the United States, Water Year 2013: U.S. Geological Survey Water-Data Report WDR-US-2013, site 12447390, accessed at http://wdr.water.usgs.gov/wy2013/pdfs/12447390.2013.pdf

12447390 ANDREWS CREEK NEAR MAZAMA, WA—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	3.9	22	e5.0	e3.0	e4.0	e6.0	27	71	e118	79	19	12
2	3.9	15	e6.0	e3.0	e4.0	e7.0	41	77	e125	76	21	11
3	3.8	14	e6.0	e4.0	e4.0	e7.0	50	99	e140	71	22	11
4	3.8	14	e7.0	e4.0	e4.0	e7.0	61	127	e150	65	20	12
5	3.8	17	e7.0	e4.0	e4.0	e7.0	69	164	152	59	22	11
6	3.8	15	e7.0	e4.0	e5.0	e7.0	71	223	157	55	18	42
7	3.8	18	e6.0	e3.0	e5.0	e7.0	63	282	155	54	17	30
8	3.8	e12	e6.0	e3.0	e5.0	e7.0	55	350	e147	52	16	28
9	3.8	e10	e6.0	e3.0	e4.0	e7.0	50	335	e134	47	15	22
10	3.8	e7.0	e5.0	e2.5	e4.0	e7.0	52	353	122	44	16	20
11	3.8	e7.0	e5.0	e3.0	e4.0	e7.0	51	373	114	41	22	18
12	3.8	e6.0	e5.0	e4.0	e4.0	e7.0	47	352	106	39	18	17
13	4.4	e6.0	e5.0	e4.0	e5.0	e7.5	44	306	e100	40	16	15
14	6.7	e6.0	e4.0	e4.0	e5.0	11	41	e250	94	36	15	14
15	7.8	e6.0	e4.0	e4.0	e5.0	13	39	e195	91	34	14	14
16	12	e6.0	e4.0	e4.0	e5.0	e10	37	e200	91	32	17	21
17	9.3	e6.0	e3.0	e4.0	e5.0	e10	35	e195	93	31	15	18
18	8.0	e6.0	e4.0	e4.0	e5.0	e10	35	188	e94	30	14	20
19	8.0	e7.0	e4.0	e4.0	e5.0	e10	39	180	92	28	13	17
20	8.9	e7.0	e4.0	e4.0	e5.0	e9.0	43	191	e95	27	12	16
21	7.4	e6.0	e4.0	e4.0	e5.0	e9.0	43	220	90	e26	12	15
22	7.1	e6.0	e4.0	e4.0	e5.0	e9.0	40	189	85	e24	11	15
23	7.1	e6.0	e4.0	e4.0	e5.0	e9.0	41	e155	80	23	11	19
24	e6.2	e6.0	e4.0	e4.0	e5.0	e9.0	43	139	e105	e22	11	20
25	e7.0	e5.0	e4.0	e4.0	e5.0	e10	53	126	e115	e21	11	19
26	7.0	e5.0	e4.0	e4.0	e6.0	e10	69	115	e100	e20	12	18
27	6.9	e5.0	e4.0	e4.0	e6.0	e10	85	e110	e95	e20	14	17
28	6.9	e5.0	e4.0	e4.0	e6.0	e10	92	e120	e88	e19	12	31
29	7.9	e5.0	e4.0	e5.0	---	e11	88	e125	e85	19	14	67
30	11	e5.0	e4.0	e5.0	---	e12	76	122	82	19	17	61
31	17	---	e3.0	e5.0	---	e12	---	118	---	19	13	---
Total	202.4	261.0	146.0	119.5	134.0	274.5	1,580	6,050	3,295	1,172	480	651
Mean	6.53	8.70	4.71	3.85	4.79	8.85	52.7	195	110	37.8	15.5	21.7
Max	17	22	7.0	5.0	6.0	13	92	373	157	79	22	67
Min	3.8	5.0	3.0	2.5	4.0	6.0	27	71	80	19	11	11
Ac-ft	401	518	290	237	266	544	3,130	12,000	6,540	2,320	952	1,290
Cfsm	0.30	0.39	0.21	0.17	0.22	0.40	2.38	8.83	4.97	1.71	0.70	0.98
In.	0.34	0.44	0.25	0.20	0.23	0.46	2.66	10.18	5.55	1.97	0.81	1.10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2013, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	7.68	7.59	5.64	4.80	4.31	5.02	22.0	121	146	43.9	13.8	8.73
Max	31.2	22.1	13.4	13.6	12.8	16.3	101	265	419	125	34.7	40.8
(WY)	(2004)	(2000)	(2000)	(2005)	(2005)	(2007)	(2004)	(2006)	(1974)	(1999)	(1976)	(1978)
Min	2.58	2.72	2.17	1.69	1.71	1.81	2.95	36.4	34.9	13.6	5.36	3.28
(WY)	(1971)	(1971)	(1971)	(1971)	(2001)	(2001)	(1975)	(1984)	(2001)	(2001)	(1973)	(1970)

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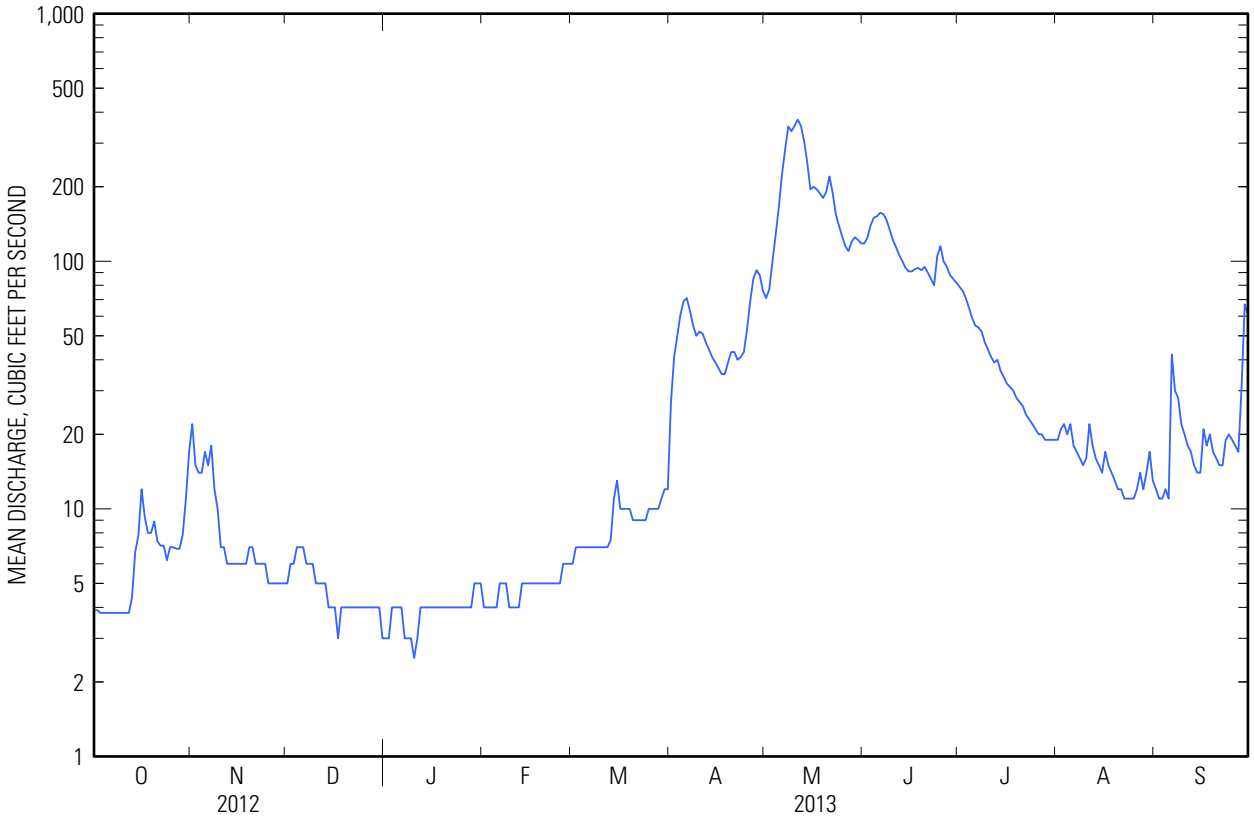
SUMMARY STATISTICS

	Calendar Year 2012		Water Year 2013		Water Years 1968 - 2013	
Annual total	15,619.0		14,365.4			
Annual mean	42.7		39.4		32.6	
Highest annual mean					59.1	1972
Lowest annual mean					10.7	2001
Highest daily mean	310	May 15	373	May 11	874	Jun 16, 1974
Lowest daily mean	3.0	Jan 12	2.5	Jan 10	1.2	Dec 30, 1968
Annual seven-day minimum	3.8	Oct 3	3.2	Jan 5	1.4	Apr 4, 1975
Annual runoff (ac-ft)	30,980		28,490		23,610	
Annual runoff (cfsm)	1.93		1.78		1.47	
Annual runoff (inches)	26.29		24.18		20.04	
10 percent exceeds	161		116		101	
50 percent exceeds	6.3		12		7.5	
90 percent exceeds	4.0		4.0		3.1	



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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses water years 1972-96, 2004 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 2011 to current year.

INSTRUMENTATION.--Water Temperature recorder with a 15-minute logging interval.

REMARKS.--Temperature records excellent except May 15, 18-19, June 4, 23, July 19, 29, Aug. 5-7, fair.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum 17.3°C, July 21, Aug. 7, 10; minimum 0.4°C, Jan. 12 but may have been higher or lower during periods of missing record.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Part 1 of 3

[N, nitrogen; P, phosphorus; SiO_2, silicon dioxide; ft^3/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; --, no data; <, less than; b, value extrapolated at low end; n, below the LRL and above the LT-MDL]

Date	Sample start time	Temperature, air, °C (00020)	Discharge, instantaneous, ft^3/s (00061)	pH, water, filtered, laboratory, standard units (00408)	Specific conductance, water, unfiltered, laboratory, µS/cm at 25°C (90095)	Temperature, water, °C (00010)	Calcium, water, filtered, mg/L (00915)	Magnesium, water, filtered, mg/L (00925)	Potassium, water, filtered, mg/L (00935)	Sodium, water, filtered, mg/L (00930)
10-24-2012	**1200**	3.3	6.2	7.9	59	2.8	7.46	1.11	0.708	2.30
04-30-2013	**1200**	5.7	70	--	36	3.5	4.81	.741	.548	1.61
06-15-2013	**1100**	16.8	93	--	--	7.2	3.52	.487	.358	1.21
08-07-2013	**1030**	18.2	17	--	--	11.2	6.68	.993	.670	1.90
09-19-2013	**0900**	2.9	20	--	--	5.6	5.97	.860	.588	1.76

12447390 ANDREWS CREEK NEAR MAZAMA, WA—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Part 2 of 3

[N, nitrogen; P, phosphorus; SiO_2, silicon dioxide; ft^3/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; --, no data; <, less than; b, value extrapolated at low end; n, below the LRL and above the LT-MDL]

Date	Sample start time	Alkalinity, water, filtered, inflection-point titration method (incremental titration method), laboratory, milligrams per liter as calcium carbonate (39087)	Carbon (inorganic plus organic), suspended sediment, total, mg/L (00694)	Chloride, water, filtered, mg/L (00940)	Silica, water, filtered, mg/L as SiO_2 (00955)	Sulfate, water, filtered, mg/L (00945)	Nitrate plus nitrite, water, filtered, mg/L as N (00631)	Particulate nitrogen, suspended in water, mg/L (49570)	Phosphorus, water, unfiltered, mg/L as P (00665)
10-24-2012	1200	27	< .05	0.43	10.6	1.09	< .01	< .017	< .004
04-30-2013	1200	--	.18	.16	10.1	.85	< .01	< .017	< .004
06-15-2013	1100	--	.25	.06	7.53	.59	< .01	.018 n	.004 n
08-07-2013	1030	--	.11	.11	10.4	.81	.01 n	< .017	< .004
09-19-2013	0900	--	.10	.26	9.48	.72	< .01	< .017	< .004

WATER-QUALITY DATA
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Part 3 of 3

[N, nitrogen; P, phosphorus; SiO_2, silicon dioxide; ft^3/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; --, no data; <, less than; b, value extrapolated at low end; n, below the LRL and above the LT-MDL]

Date	Sample start time	Total nitrogen, water, filtered, analytically determined, mg/L (62854)	Organic carbon, water, filtered, mg/L (00681)
10-24-2012	1200	0.07 n	1.05 b
04-30-2013	1200	.08 n	2.76 b
06-15-2013	1100	< .05	1.58 b
08-07-2013	1030	.10	1.11 b
09-19-2013	0900	.07 n	1.72 b

12447390 ANDREWS CREEK NEAR MAZAMA, WA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		October			November			December			January	
1	10.6	7.2	8.7	4.4	3.0	3.5	1.6	1.2	1.4	0.8	0.6	0.7
2	9.7	5.7	7.6	4.2	2.6	3.5	1.5	1.1	1.3	0.7	0.6	0.6
3	8.0	4.6	5.9	4.4	3.9	4.1	1.6	1.1	1.3	0.6	0.5	0.6
4	7.5	4.1	5.5	4.9	4.1	4.6	1.3	0.8	1.2	0.7	0.6	0.6
5	7.3	3.7	5.2	5.1	3.8	4.5	1.4	1.1	1.3	0.6	0.6	0.6
6	7.3	3.7	5.2	4.9	3.3	4.1	1.3	0.9	1.1	0.7	0.6	0.6
7	7.8	4.1	5.7	4.4	2.0	3.5	1.2	0.8	1.0	0.8	0.6	0.7
8	8.2	4.8	6.3	2.2	1.4	1.8	1.1	0.8	0.9	0.7	0.6	0.7
9	8.3	5.1	6.5	1.8	1.2	1.5	1.1	0.8	0.9	0.9	0.6	0.7
10	8.2	5.0	6.4	1.9	1.1	1.4	1.1	0.8	0.9	0.7	0.5	0.6
11	8.1	5.0	6.4	1.6	0.9	1.3	1.1	0.8	1.0	0.7	0.5	0.6
12	6.9	5.8	6.4	1.5	1.1	1.3	1.3	0.8	1.0	0.6	0.4	0.5
13	7.5	6.5	7.0	1.7	1.2	1.3	1.0	0.7	0.8	0.6	0.5	0.6
14	7.5	7.0	7.2	2.0	1.1	1.4	1.1	0.7	0.9	0.7	0.5	0.6
15	8.1	6.4	7.3	1.5	1.0	1.2	0.9	0.7	0.8	0.7	0.5	0.6
16	7.6	5.2	6.6	2.1	1.2	1.6	1.1	0.8	0.9	0.7	0.5	0.6
17	6.4	4.2	5.2	1.7	1.0	1.4	1.1	0.8	0.9	0.7	0.6	0.6
18	7.0	5.0	5.8	1.4	0.8	1.1	0.9	0.7	0.7	0.7	0.6	0.6
19	6.8	5.0	5.9	1.2	0.8	1.1	0.8	0.7	0.8	0.7	0.6	0.6
20	5.5	3.6	4.5	1.4	1.1	1.2	0.9	0.7	0.8	0.7	0.6	0.6
21	4.1	2.8	3.4	1.6	1.0	1.2	0.9	0.7	0.8	0.7	0.5	0.6
22	3.9	3.0	3.3	1.3	0.9	1.1	1.0	0.8	0.9	0.6	0.5	0.6
23	4.1	2.9	3.4	1.2	1.0	1.1	1.0	0.8	0.9	0.6	0.5	0.6
24	3.7	3.1	3.4	1.4	0.9	1.1	1.1	0.8	0.9	0.7	0.5	0.6
25	4.6	2.4	3.3	1.2	0.7	1.0	1.0	0.8	0.9	0.7	0.5	0.6
26	3.3	2.5	2.8	1.3	0.7	0.9	1.1	0.9	1.0	0.7	0.5	0.5
27	2.9	2.4	2.6	1.2	0.9	1.0	1.0	0.8	0.9	0.6	0.5	0.5
28	3.9	2.4	3.1	1.2	0.8	1.0	0.9	0.8	0.9	0.7	0.5	0.6
29	4.5	3.0	3.7	1.1	0.9	1.1	1.0	0.8	0.9	0.7	0.6	0.6
30	4.0	3.0	3.5	1.3	0.9	1.2	0.8	0.7	0.7	0.8	0.6	0.7
31	4.3	3.6	3.9	---	---	---	0.8	0.7	0.7	0.8	0.7	0.8
Month	10.6	2.4	5.2	5.1	0.7	1.9	1.6	0.7	0.9	0.9	0.4	0.6

12447390 ANDREWS CREEK NEAR MAZAMA, WA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		February			March			April			May	
1	0.9	0.7	0.8	1.5	1.3	1.4	4.1	0.9	1.9	5.9	0.8	3.0
2	0.8	0.7	0.8	1.4	1.1	1.3	3.2	0.8	1.6	7.0	2.3	4.1
3	0.8	0.7	0.8	1.4	1.1	1.2	3.5	0.8	1.7	7.2	2.6	4.3
4	1.0	0.8	0.9	1.3	1.0	1.2	2.2	1.1	1.7	7.0	2.1	4.0
5	1.2	1.0	1.1	1.4	1.1	1.2	2.8	1.6	2.0	6.8	2.3	4.0
6	1.2	1.1	1.2	1.5	1.2	1.4	3.3	1.7	2.3	6.7	2.5	3.9
7	1.3	1.1	1.2	1.7	1.4	1.5	2.7	1.4	1.9	---	---	---
8	1.1	0.8	0.9	1.7	1.2	1.4	3.8	1.5	2.5	7.1	2.6	4.1
9	1.0	0.8	0.9	1.3	1.0	1.1	4.0	1.6	2.7	---	---	---
10	1.1	0.9	1.0	1.5	0.9	1.2	4.4	2.2	2.9	7.7	2.8	4.5
11	1.0	0.9	0.9	1.3	1.0	1.2	4.8	1.5	2.8	---	---	---
12	1.2	0.9	1.0	1.9	1.3	1.6	2.9	1.3	2.1	---	---	---
13	1.3	1.0	1.2	2.0	1.5	1.7	3.9	1.1	2.3	5.5	2.6	4.0
14	1.3	1.0	1.2	1.6	1.1	1.4	2.4	0.8	1.6	---	---	---
15	1.3	1.0	1.1	1.9	1.0	1.4	2.9	1.2	1.8	6.4	2.3	4.3
16	1.1	1.0	1.0	2.0	1.4	1.6	3.8	0.8	2.0	---	---	---
17	1.3	1.0	1.1	2.1	1.3	1.6	3.7	0.9	2.0	---	---	---
18	1.1	0.9	1.0	1.9	0.9	1.5	5.1	1.7	3.1	5.8	3.8	4.4
19	1.2	0.9	1.0	1.6	0.8	1.1	5.7	2.4	3.7	7.7	3.2	4.5
20	1.0	0.7	0.8	1.9	0.9	1.3	6.2	2.3	3.7	---	---	---
21	0.9	0.7	0.8	2.0	1.0	1.4	3.8	1.8	2.7	4.7	3.1	4.0
22	1.0	0.8	0.9	1.3	0.7	1.1	5.4	0.9	2.7	4.9	2.7	3.5
23	1.1	0.9	1.0	1.3	0.8	1.0	4.6	1.3	2.8	---	---	---
24	1.0	0.9	0.9	1.3	0.7	1.0	6.5	1.4	3.6	---	---	---
25	1.1	1.0	1.0	1.2	0.8	0.9	7.3	1.9	4.0	6.6	2.5	4.5
26	1.0	0.9	1.0	1.9	0.8	1.3	6.8	2.2	3.9	5.6	3.3	4.6
27	1.3	1.0	1.1	3.2	1.0	1.9	6.3	2.3	3.7	---	---	---
28	1.3	1.1	1.2	3.6	1.4	2.3	5.6	1.8	3.3	---	---	---
29	---	---	---	3.8	1.3	2.4	3.7	1.6	2.7	---	---	---
30	---	---	---	4.0	1.3	2.4	4.5	0.9	2.4	---	---	---
31	---	---	---	4.4	1.1	2.4	---	---	---	8.8	2.8	5.4
Month	1.3	0.7	1.0	4.4	0.7	1.5	7.3	0.8	2.6	---	---	---

12447390 ANDREWS CREEK NEAR MAZAMA, WA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		June			July			August			September	
1	---	---	---	14.9	9.1	11.9	12.3	10.0	11.3	11.7	9.9	10.6
2	---	---	---	16.1	9.7	12.6	12.4	10.0	11.0	11.7	10.3	11.0
3	---	---	---	15.2	9.5	12.1	13.3	9.1	11.1	11.7	10.6	11.1
4	10.9	4.0	6.8	14.7	8.7	11.4	14.1	9.9	11.6	11.5	10.7	11.0
5	9.9	5.1	7.3	13.6	8.5	10.9	15.2	9.0	11.8	11.6	10.6	11.0
6	10.8	3.8	7.5	13.4	8.9	10.8	16.1	9.4	12.7	12.0	10.4	11.3
7	10.4	5.6	7.4	12.0	8.6	10.1	17.3	9.4	13.2	11.5	9.8	10.6
8	---	---	---	13.3	7.7	10.4	16.9	10.2	13.4	12.4	9.0	10.6
9	---	---	---	14.5	8.5	11.3	16.8	10.9	13.5	11.7	9.3	10.5
10	---	---	---	15.7	9.0	11.9	17.3	11.5	14.0	11.2	9.8	10.6
11	---	---	---	14.4	8.5	11.1	16.9	11.8	13.8	11.7	9.9	10.8
12	---	---	---	11.2	7.7	9.4	16.4	10.7	13.2	12.1	10.0	11.0
13	---	---	---	13.9	6.8	10.0	16.5	10.3	13.1	12.1	10.3	11.2
14	8.8	4.9	6.6	14.5	7.3	10.7	14.3	10.3	12.4	11.9	10.3	11.2
15	11.5	4.7	7.9	14.9	7.7	11.0	14.3	11.3	12.7	11.6	10.4	11.0
16	11.7	6.2	8.8	15.3	7.4	11.2	15.7	9.8	12.5	11.1	10.1	10.7
17	11.6	6.9	9.2	15.9	9.9	12.2	13.8	10.1	11.8	10.6	9.7	10.0
18	---	---	---	---	---	---	15.2	8.8	11.8	9.8	9.1	9.4
19	---	---	---	17.0	9.9	13.5	14.8	9.2	11.7	9.4	8.4	9.0
20	---	---	---	---	---	---	11.5	8.1	10.0	9.4	8.1	8.8
21	7.7	5.1	6.5	---	---	---	11.8	9.9	10.8	9.5	8.6	9.0
22	---	---	---	---	---	---	11.8	10.3	11.0	9.2	8.1	8.4
23	10.6	6.8	8.7	---	---	---	11.7	10.9	11.2	8.3	7.7	8.1
24	---	---	---	---	---	---	11.5	10.2	10.7	8.1	7.0	7.6
25	---	---	---	---	---	---	11.5	10.2	10.9	7.9	7.1	7.6
26	---	---	---	---	---	---	11.5	10.8	11.1	7.6	7.2	7.4
27	---	---	---	---	---	---	11.0	9.9	10.5	7.4	6.9	7.1
28	---	---	---	---	---	---	10.9	10.1	10.5	7.2	6.0	6.7
29	---	---	---	---	---	---	11.3	10.5	10.8	6.0	5.3	5.7
30	14.9	8.2	11.3	14.3	9.0	11.3	11.2	10.1	10.7	5.9	4.2	5.1
31	---	---	---	---	---	---	11.1	9.7	10.3	---	---	---
Month	---	---	---	---	---	---	17.3	8.1	11.8	12.4	4.2	9.5