

Spokane Regional Clean Air Agency Air Quality Report – July 2021

The Air Quality Index (AQI) was in the UNHEALTHY FOR SENSITIVE GROUPS (USG) category on three days and in the MODERATE category on 20 days in July as wildfire smoke caused a rise in fine particle pollution (PM_{2.5}) and ground-level ozone concentrations (Figure 1 and Table 1). The maximum daily AQI for the month was 146 (USG) based on a 24-hour average PM_{2.5} concentration of 53.6 µg/m³ recorded at the Spokane Valley-Broadway air monitoring station on the 31st (Figure 2 and Table 2). That was also the maximum AQI so far this calendar year (through July). Ozone was the predominant pollutant on the other two days (July 13th and 14th) when the AQI was in the USG category. Maximum PM₁₀ and ozone concentrations for the year-to-date (through July) were also recorded in July (Table 3). Figure 3 shows the day-to-day variation in ground-level ozone readings in Spokane County.

See Appendix 1 of this report for information about federal air quality standards and Appendix 2 for a description of the AQI. The daily air quality data for July for all monitoring stations in the Spokane region are provided in Appendix 3. Current and historical air quality data can be obtained electronically from the Washington State Department of Ecology’s air monitoring data website, <https://enviwa.ecology.wa.gov/home/map>.

Figure 1: Air Quality Index (AQI) values for July 2021. The data represent the maximum AQI values across all monitoring stations within Spokane County.

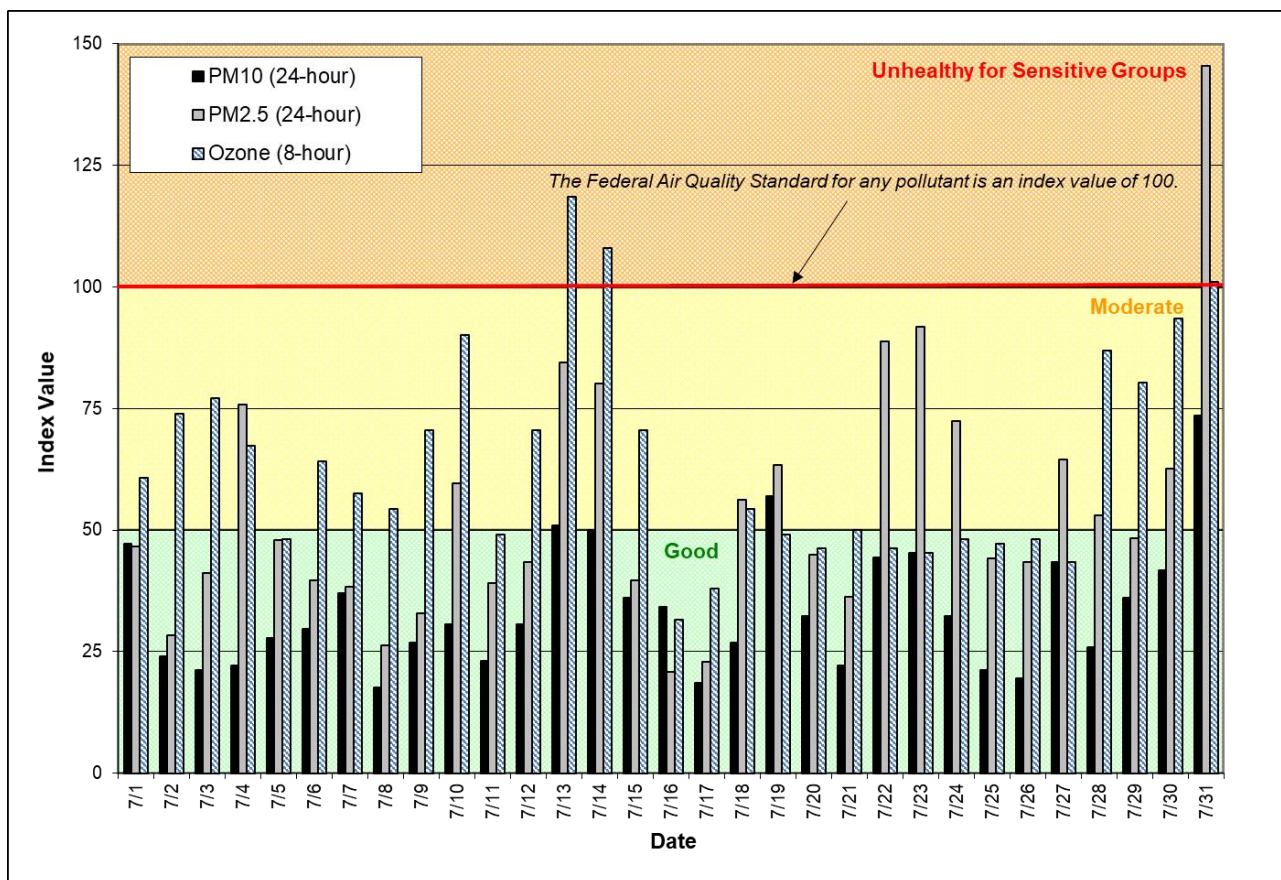


Figure 2: Multi-station 24-hour average PM_{2.5} for July 2021; Spokane County.

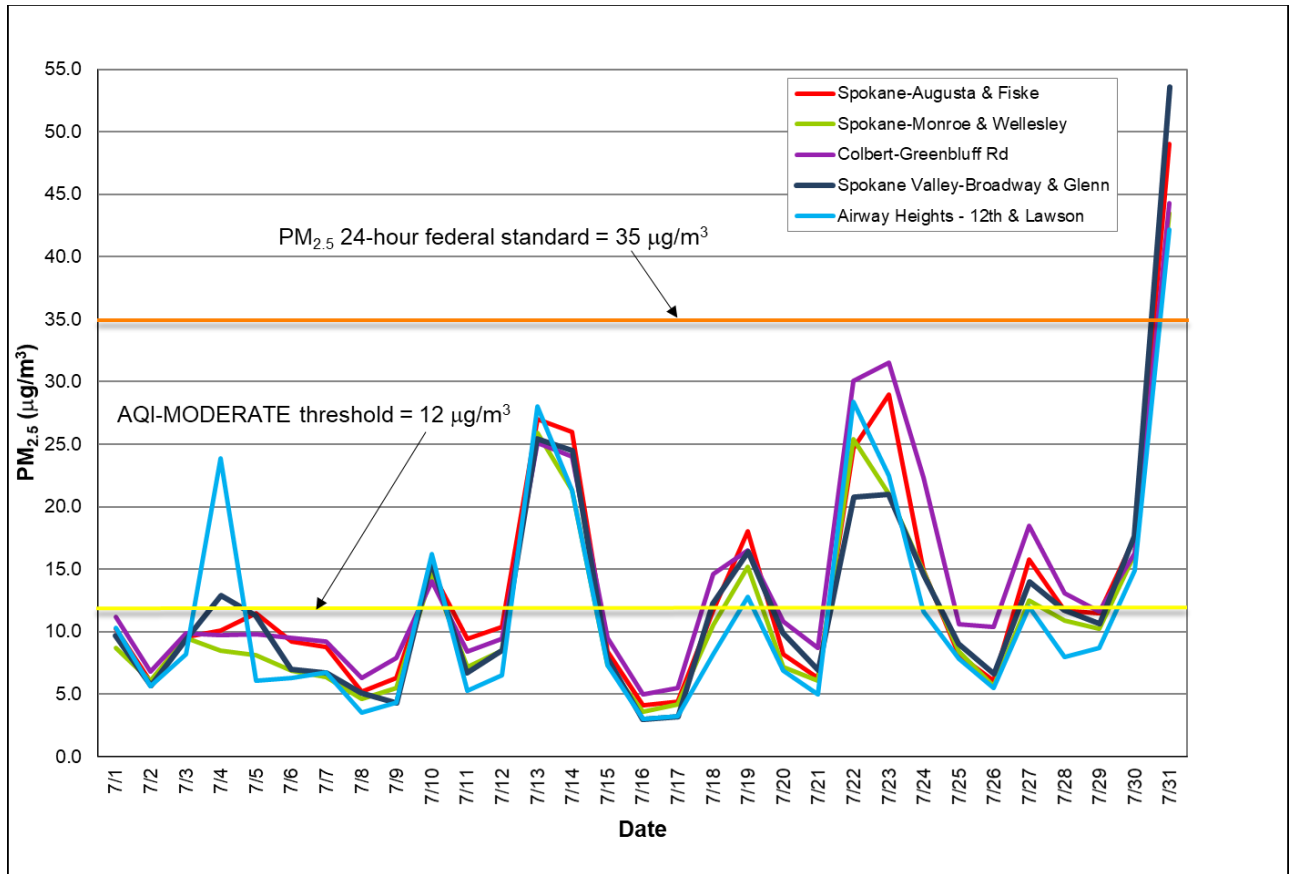


Figure 3: Eight-hour maximum ozone concentrations for the Spokane region in July. The threshold for the moderate category of the AQI for ozone is 0.055 ppm averaged over eight hours. An ozone measurement above 0.070 ppm, averaged over eight hours, is the level of the federal ozone standard.

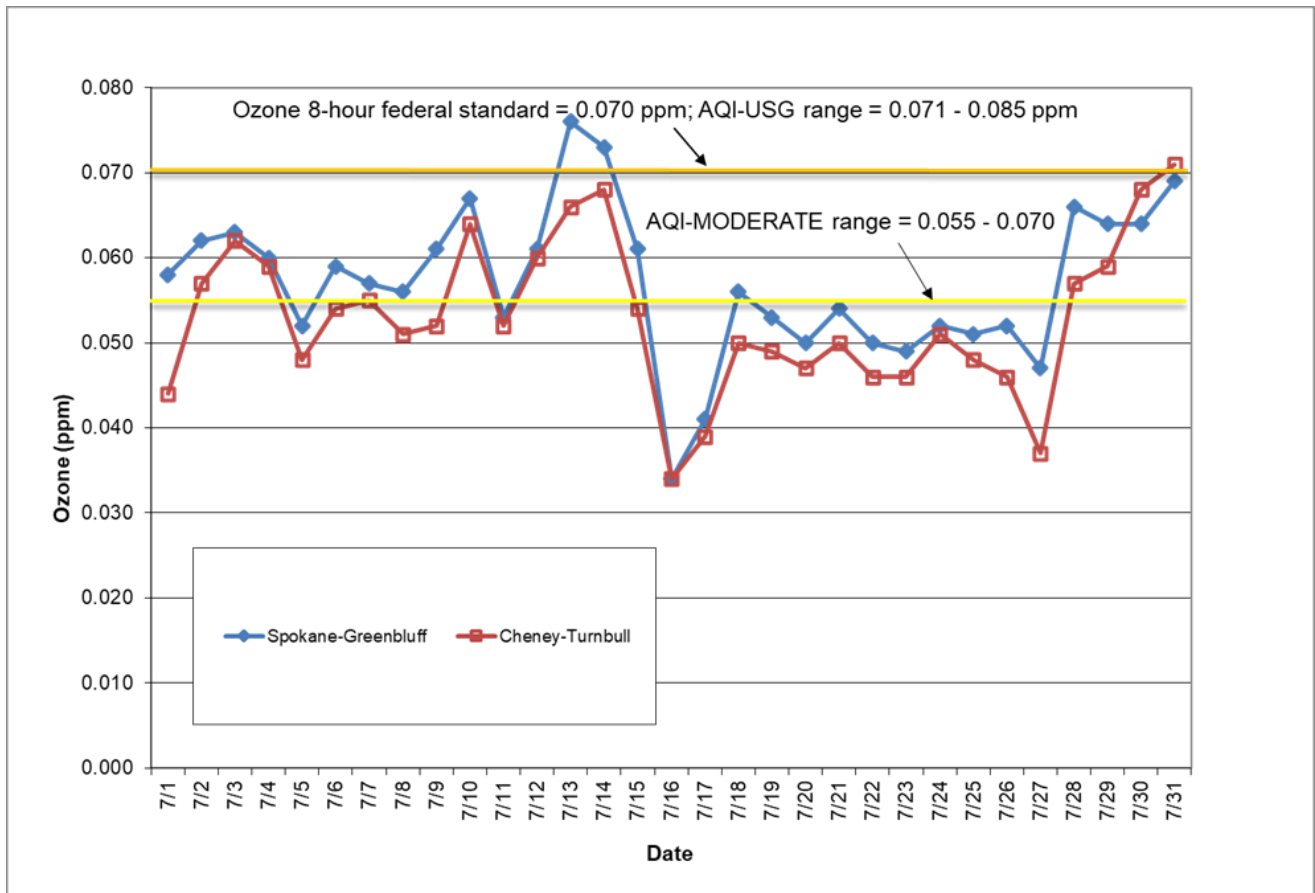


Table 1 summarizes the daily AQIs by category for the month and year-to-date and Tables 2 and 3 contain the maximum AQI values for each pollutant for the month and for the year-to-date, respectively.

Table 1: AQI summary as of July 31, 2021

Category	Number of days in July	Number of days this year to date
Good (0-50)	8	168
Moderate (51-100)	20	41
Unhealthy for Sensitive Groups (101-150)	3	3
Unhealthy (151-200)	0	0
Very Unhealthy (201-300)	0	0
Hazardous (>300)	0	0

Table 2: Maximum AQI values and pollutant concentrations for this reporting period.

Pollutant	AQI		Location	Date
O ₃	119 (conc. = 0.076 ppm)	USG	Greenbluff	7/13
PM ₁₀	74 (conc. = 101 µg/m ³)	Moderate	Spokane-Augusta & Fiske	7/31
PM _{2.5}	146 (conc. = 53.6 µg/m ³)	USG	Spokane Valley – Broadway & Glenn	7/31

Table 3: Maximum AQI values and pollutant concentrations for this year to date.

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Appendix 1 – National Ambient Air Quality Standards

The Clean Air Act requires EPA to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants, carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), particulate matter (PM₁₀ and PM_{2.5}), ground-level ozone (O₃) and sulfur dioxide (SO₂; Table A-1). These are known as “criteria” pollutants because the US EPA established regulatory limits to concentrations in ambient air using human health or environmentally based criteria. Carbon monoxide, particulate matter and ozone are monitored in Spokane County by the Spokane Regional Clean Air Agency (SRCAA) and the Washington State Department of Ecology (Ecology).

Table A-1: National Ambient Air Quality Standards

Pollutant [links to historical tables of NAAQS reviews]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3 month period	0.15 µg/m ³ (1)	Not to be exceeded
Nitrogen Dioxide (NO₂)		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb (2)	Annual Mean
Ozone (O₃)		primary and secondary	8 hours	0.070 ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	PM _{2.5}	primary	1 year	12.0 µg/m ³	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m ³	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m ³	98th percentile, averaged over 3 years
	PM ₁₀	primary and secondary	24 hours	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO₂)		primary	1 hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m³ as a calendar quarter average) also remain in effect.

(2) The level of the annual NO₂ standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O₃ standards additionally remain in effect in some areas. Revocation of the previous (2008) O₃ standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

(4) The previous SO₂ standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO₂ standards or is not meeting the requirements of a SIP call under the previous SO₂ standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the require NAAQS.

Appendix 2 – Air Quality Index

The Air Quality Index (AQI) is EPA’s color-coded tool for communicating daily air quality to the public and can be calculated for any of the criteria pollutants except lead, provided monitoring data are available. An index value above 100 indicates that the concentration of a criteria pollutant exceeded the limit established in the NAAQS. Categories of the AQI are “Good” (green, 0-50), “Moderate” (yellow, 51-100), “Unhealthy for Sensitive Groups” (USG; orange, 101-150), “Unhealthy” (red, 151-200), “Very Unhealthy” (purple, 201-300) and “Hazardous” (maroon, 301-500; Table A-2).

Table A-2: Air pollutant breakpoints for the Air Quality Index.

Air Quality Index Levels of Health Concern	Color Code	Index Numerical Value	Breakpoints				Health Effects
			O ₃ (ppm) 8-hour	PM _{2.5} (µg/m ³) 24-hour	PM ₁₀ (µg/m ³) 24-hour	CO (ppm) 8-hour	
Good	Green	0-50	0.000-0.054	0.0-12.0	0-54	0.0-4.4	Air quality is considered satisfactory and air pollution poses little or no risk.
Moderate	Yellow	51-100	0.055-0.070	12.1-35.4	55-154	4.5-9.4	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	Orange	101-150	0.071-0.085	35.5-55.4	155-254	9.5-12.4	People especially sensitive to air pollution may experience health effects. The general public is not likely to be affected. An AQI in this category or above indicates that air pollution exceeds levels acceptable under federal air quality standards.
Unhealthy	Red	151-200	0.086-0.105	55.5-150.4	255-354	12.5-15.4	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	Purple	201-300	0.106-0.200	150.5-250.4	355-424	15.5-30.4	Health alert: everyone may experience more serious health effects.
Hazardous	Maroon	>300	0.201 to the Significant Harm Level* (0.600 ppm, 2 hour average)	250.5+	425+	30.5+	Health warnings of emergency conditions. The entire population is more likely to be affected.

*The significant harm level (SHL) is set at a level that represents imminent and substantial endangerment to public health.

Appendix 3

Table A-3: Summary air quality data for July for air monitoring stations in Spokane County. Particulate matter mass concentration is reported as 24-hour averages in micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$) and daily 8-hour maximum ozone concentrations are reported in parts per million (ppm). The Turnbull PM_{10} monitor was down July 6-12 for maintenance and calibration. The Augusta & Fiske PM_{10} monitor was down on July 26 for a routine quality control check and maintenance. See Appendix 2 for an explanation of AQI color codes.

Pollutant Concentration										Air Quality Index (AQI)												
Date	Ozone - Turnbull NWR	Ozone - Greenbluff	$\text{PM}_{2.5}$ - Airway Heights (24 hour avg, $\mu\text{g}/\text{m}^3$)	$\text{PM}_{2.5}$ - Colbert (24 hour avg, $\mu\text{g}/\text{m}^3$)	$\text{PM}_{2.5}$ - Spokane, Augusta & Fiske (24 hour avg, $\mu\text{g}/\text{m}^3$)	$\text{PM}_{2.5}$ - Spokane Valley, Broadway & Glenn (24 hour avg, $\mu\text{g}/\text{m}^3$)	$\text{PM}_{2.5}$ - Spokane, Monroe & Wellesley (24 hour avg, $\mu\text{g}/\text{m}^3$)	PM_{10} - Turnbull NWR BAM (24 hour avg, $\mu\text{g}/\text{m}^3$)	PM_{10} - Spokane, Augusta & Fiske (24 hour avg, $\mu\text{g}/\text{m}^3$)	PM_{10} - Spokane, Broadway & Glenn (24 hour avg, $\mu\text{g}/\text{m}^3$)	Date	Ozone - Turnbull NWR	Ozone - Greenbluff	$\text{PM}_{2.5}$ - Airway Heights	$\text{PM}_{2.5}$ - Colbert	$\text{PM}_{2.5}$ - Spokane - Augusta & Fiske	$\text{PM}_{2.5}$ - Broadway & Glenn	$\text{PM}_{2.5}$ - Monroe & Wellesley	PM_{10} - Turnbull NWR	PM_{10} - Augusta & Fiske	PM_{10} - Broadway & Glenn	MAXIMUM
7/1	0.044	0.058	10.3	11.2	10.2	9.7	8.7	51	49	37	7/1	41	61	43	47	43	40	36	47	45	34	61
7/2	0.057	0.062	5.6	6.8	6.0	5.7	6.1	24	26	18	7/2	58	74	23	28	25	24	25	22	24	17	74
7/3	0.062	0.063	8.2	9.9	9.6	9.3	9.5	19	23	19	7/3	74	77	34	41	40	39	40	18	21	18	77
7/4	0.059	0.060	23.9	9.7	10.1	12.9	8.5	24	24	24	7/4	64	67	76	40	42	53	35	22	22	22	76
7/5	0.048	0.052	6.1	9.8	11.5	11.3	8.1	18	30	20	7/5	44	48	25	41	48	47	34	17	28	19	48
7/6	0.054	0.059	6.3	9.5	9.2	7.0	6.9		32	21	7/6	50	64	26	40	38	29	29		30	19	64
7/7	0.055	0.057	6.7	9.2	8.8	6.7	6.4		40	29	7/7	51	58	28	38	37	28	27		37	27	58
7/8	0.051	0.056	3.5	6.3	5.2	5.1	4.6		19	14	7/8	47	54	15	26	22	21	19		18	13	54
7/9	0.052	0.061	4.3	7.9	6.3	4.3	5.5		29	21	7/9	48	71	18	33	26	18	23		27	19	71
7/10	0.064	0.067	16.2	14.0	14.8	15.6	14.6		33	30	7/10	80	90	60	55	57	58	56		31	28	90
7/11	0.052	0.053	5.3	8.4	9.4	6.7	7.2		25	17	7/11	48	49	22	35	39	28	30		23	16	49
7/12	0.060	0.061	6.5	9.4	10.4	8.5	8.5		33	24	7/12	67	71	27	39	43	35	35		31	22	71
7/13	0.066	0.076	28.0	25.1	27.0	25.4	25.9	51	56	42	7/13	87	119	84	78	82	79	80	47	51	39	119
7/14	0.068	0.073	21.3	24.0	26.0	24.5	21.3	42	54	44	7/14	93	108	70	76	80	77	70	39	50	41	108
7/15	0.054	0.061	7.3	9.5	8.4	7.9	7.3	26	39	31	7/15	50	71	30	40	35	33	30	24	36	29	71
7/16	0.034	0.034	3.0	5.0	4.1	3.0	3.6	26	37	28	7/16	31	31	13	21	17	13	15	24	34	26	34
7/17	0.039	0.041	3.2	5.5	4.4	3.2	4.2	12	20	13	7/17	36	38	13	23	18	13	18	11	19	12	38
7/18	0.050	0.056	8.2	14.6	11.7	12.2	10.5	19	29	23	7/18	46	54	34	56	49	51	44	18	27	21	56
7/19	0.049	0.053	12.8	16.5	18.0	16.4	15.2	68	50	43	7/19	45	49	52	60	63	60	58	57	46	40	63
7/20	0.047	0.050	6.9	10.8	8.2	9.9	7.2	20	35	32	7/20	44	46	29	45	34	41	30	19	32	30	46
7/21	0.050	0.054	5.0	8.7	6.3	6.9	6.1	17	24	21	7/21	46	50	21	36	26	29	25	16	22	19	50
7/22	0.046	0.050	28.4	30.1	24.7	20.8	25.4	25	48	36	7/22	43	46	85	89	77	69	79	23	44	33	89
7/23	0.046	0.049	22.5	31.5	29.0	21.0	21.0	29	49	34	7/23	43	45	73	92	87	70	70	27	45	31	92
7/24	0.051	0.052	11.6	22.3	14.9	14.5	14.8	20	35	27	7/24	47	48	48	72	57	56	57	19	32	25	72
7/25	0.048	0.051	7.8	10.6	8.1	9.0	8.4	19	23	20	7/25	44	47	33	44	34	38	35	18	21	19	47
7/26	0.046	0.052	5.5	10.4	6.1	6.6	5.6	21		20	7/26	43	48	23	43	25	28	23	19		19	48
7/27	0.037	0.047	12.0	18.5	15.8	14.0	12.5	26	47	32	7/27	34	44	50	64	59	55	52	24	44	30	64
7/28	0.057	0.066	8.0	13.1	11.7	11.7	10.9	15	28	22	7/28	58	87	33	53	49	49	45	14	26	20	87
7/29	0.059	0.064	8.7	11.6	11.5	10.6	10.2	20	39	26	7/29	64	80	36	48	48	44	43	19	36	24	80
7/30	0.068	0.064	14.9	16.3	17.5	17.6	16.2	32	45	37	7/30	93	80	57	60	62	63	60	30	42	34	93
7/31	0.071	0.069	42.2	44.3	49.0	53.6	43.5	64	101	93	7/31	101	97	117	123	134	146	121	55	74	70	146
AVG	0.053	0.057	11.6	14.2	13.4	12.6	11.8	29	37	29	AVG	56	64	42	51	48	46	43	26	34	26	71
MAX	0.071	0.076	42.2	44.3	49.0	53.6	43.5	68	101	93	MAX	101	119	117	123	134	146	121	57	74	70	146