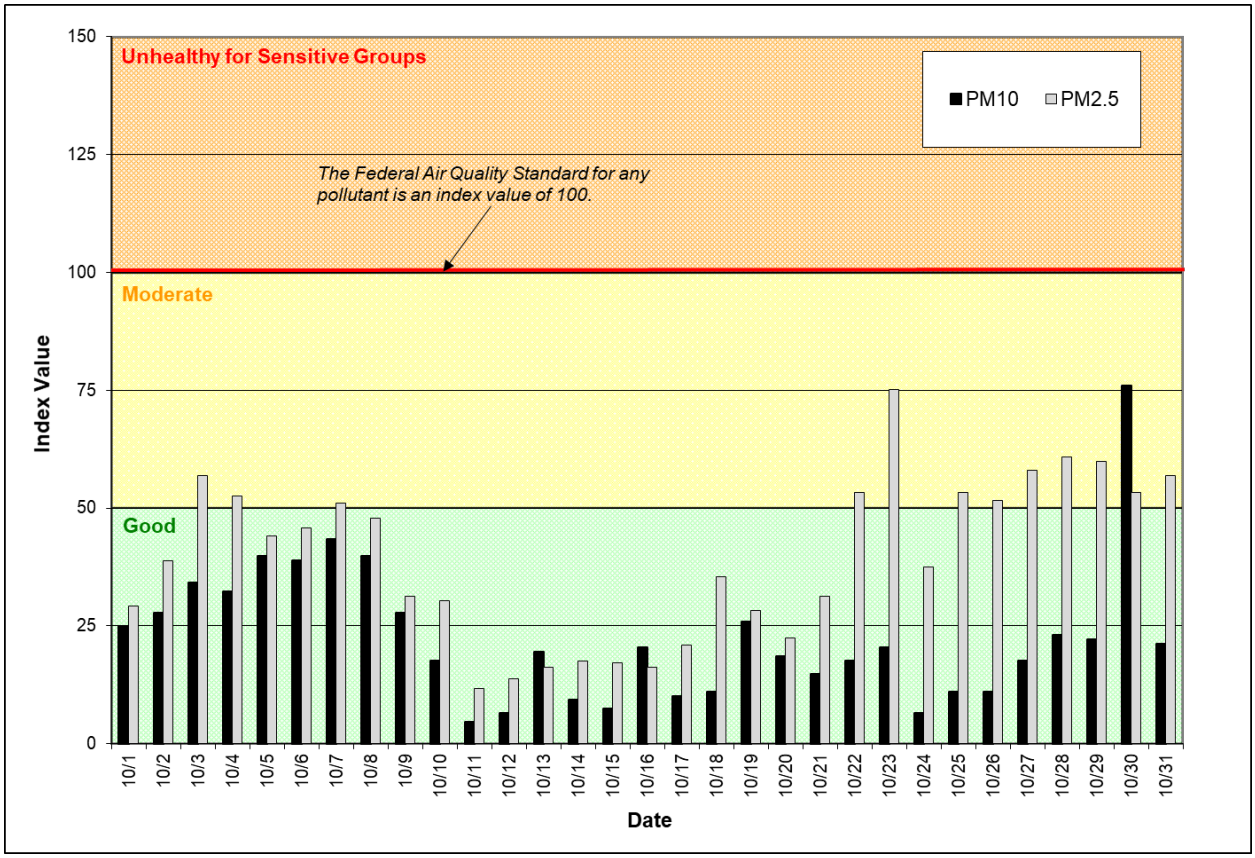
Spokane Regional Clean Air Agency
Air Quality Report - October 2020

The maximum Air Quality Index (AQI) for the month was 76 (MODERATE air quality), a result of elevated PM_{10} levels caused by blowing dust on the 30th (Spokane-Augusta & Fiske, 24-hour average PM_{10} = 106 µg/m^3). The maximum AQI for PM2.5 was 75 (MODERATE, Spokane Valley-Broadway & Glenn, 24-hour average $PM_{2.5}$ = 106 µg/m^3), recorded on the 23rd during a period of stagnant atmospheric conditions and temperature inversions. Ground-level ozone is monitored only from May through September each year. There were a total of 19 GOOD air quality days and 12 MODERATE air quality days in October.

See Figures 1 and 2 for graphical representations of air quality throughout the month. Tables 1 and 2 contain the maximum AQI values for each pollutant for the month and for the year to date. Table 3 summarizes the year to date daily AQIs by category. Appendix 1 of this report provides information about federal air quality standards, Appendix 2 describes the AQI, and Appendix 3 provides daily air quality data for October for all monitoring stations in the Spokane region. Current and historical air quality data can be obtained electronically from Ecology's air monitoring data website, https://enviwa.ecology.wa.gov/home/map.

Figure 1: Air Quality Index (AQI) values for October 2020. The data represent the maximum AQI values across all monitoring stations within Spokane County. See Appendix 1 of this report for information about federal air quality standards or Appendix 2 for a description of the AQI.



<u>Figure 2</u>: Multi-station 24-hour average $PM_{2.5}$ for October 2020; Spokane County.

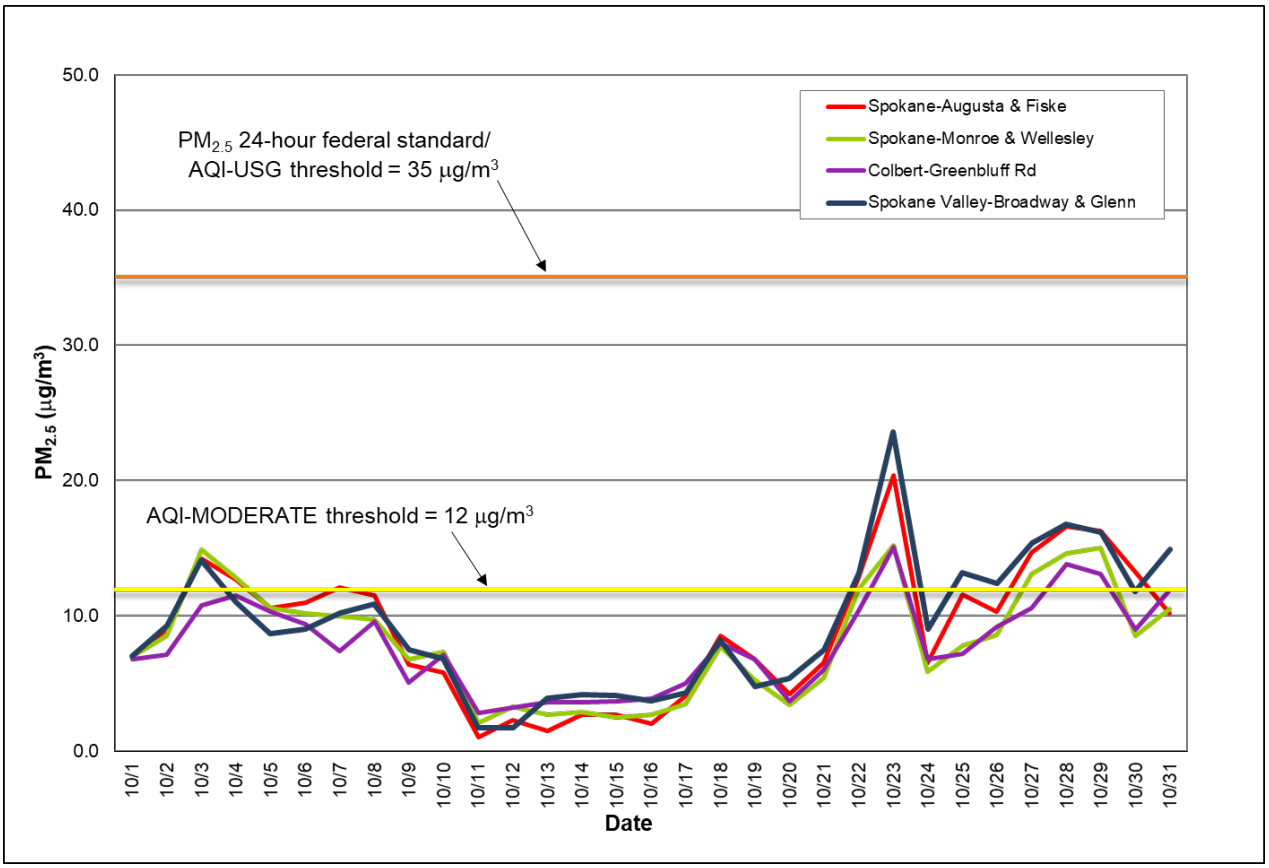


Table 1: Maximum AQI values and pollutant concentrations for this reporting period.

Pollutant	AQI		Location	Date
O_3	Ground-level ozone is monitored in Spokane County from May through September.			
PM_{10}	76 (conc. = 106 µg/m^3)	Moderate	Spokane-Augusta & Fiske	10/30
$PM_{2.5}$	75 (conc. = 23.6 µg/m^3)	Moderate	Spokane Valley-Broadway & Glenn	10/23

Table 2: Maximum AQI values and pollutant concentrations for this year to date.

Pollutant	AQI		Location	Date
O_3	71 (conc. = 0.061 ppm)	Moderate	Spokane-Greenbluff	9/11
PM_{10}	315 (conc. = 436 µg/m^3)	Hazardous	Spokane-Augusta & Fiske	9/13
$PM_{2.5}$	479 (conc. = 468.6 µg/m^3)	Hazardous	Spokane-Monroe & Wellesley	9/13

Table 3: AQI summary as of October 31, 2020

Category	Number of days in October	Number of days this year to date
Good (0-50)	19	267
Moderate (51-100)	12	31
Unhealthy for Sensitive Groups (101-150)	0	0
Unhealthy (151-200)	0	2
Very Unhealthy (201-300)	0	1
Hazardous (>300)	0	4

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 (NO_2), particulate matter (PM_{10} and $PM_{2.5}$), ground-level ozone (O_3) and sulfur dioxide (SO_2; 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 (NO_2)		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 (O_3)		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 (SO_2)		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/m^3 as a calendar quarter average) also remain in effect.

(2) The level of the annual NO_2 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) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

(4) The previous SO_2 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 SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 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 October for air monitoring stations in Spokane County. Particulate matter mass concentration is reported as 24-hour averages in micrograms per cubic meter of air (µg/m^3) and daily 8-hour maximum ozone concentrations are reported in parts per million (ppm). The reason for the missing Turnbull PM_{10} data on the 24th is unknown. BAM = Beta Attenuation Monitor, TEOM = Tapered Element Oscillating Microbalance. See Appendix 2 for information about the Air Quality Index.

Pollutant Concentration						
Date	$PM_{2.5}$ - Augusta & Fiske BAM (24 hour avg, µg/m^3)	$PM_{2.5}$ - Broadway & Glenn BAM (24 hour avg, µg/m^3)	$PM_{2.5}$ - Colbert TEOM (24 hour avg, µg/m^3)	$PM_{2.5}$ - Monroe & Wellesley nephelometer (24 hour avg, µg/m^3)	PM_{10} - Augusta & Fiske TEOM (24 hour avg, µg/m^3)	PM_{10} - Turnbull NWR BAM (24 hour avg, µg/m^3)
10/1	7.0	7.0	6.8	7.0	27	26
10/2	9.0	9.3	7.1	8.5	28	30
10/3	14.2	14.1	10.8	14.9	37	37
10/4	12.7	11.0	11.5	12.8	35	32
10/5	10.6	8.7	10.3	10.6	43	28
10/6	11.0	9.0	9.4	10.2	42	35
10/7	12.1	10.2	7.4	10.0	42	47
10/8	11.5	10.9	9.6	9.7	43	39
10/9	6.4	7.5	5.1	6.8	30	17
10/10	5.8	6.8	7.1	7.3	19	18
10/11	1.0	1.7	2.8	2.1	5	3
10/12	2.3	1.7	3.2	3.3	7	5
10/13	1.5	3.9	3.6	2.7	15	21
10/14	2.7	4.2	3.6	2.9	10	5
10/15	2.7	4.1	3.7	2.5	8	3
10/16	2.0	3.7	3.9	2.7	22	16
10/17	4.1	4.3	5.0	3.5	11	4
10/18	8.5	8.2	8.0	7.7	12	10
10/19	6.8	4.8	6.8	5.3	28	19
10/20	4.2	5.4	3.7	3.4	20	5
10/21	6.5	7.5	6.0	5.4	16	5
10/22	12.8	13.2	10.4	12.0	19	8
10/23	20.4	23.6	15.1	15.2	22	15
10/24	6.5	9.0	6.8	5.9	7	
10/25	11.6	13.2	7.2	7.8	12	6
10/26	10.3	12.4	9.2	8.6	12	6
10/27	14.7	15.4	10.6	13.1	19	6
10/28	16.6	16.8	13.8	14.6	25	6
10/29	16.3	16.2	13.1	15.0	24	5
10/30	13.2	11.8	9.0	8.5	106	94
10/31	10.2	14.9	11.9	10.5	23	8
AVG	8.9	9.4	7.8	8.1	25	19
MAX	20.4	23.6	15.1	15.2	106	94

Air Quality Index (AQI)							
Date	$PM_{2.5}$ - Augusta & Fiske BAM	$PM_{2.5}$ - Broadway & Glenn BAM	$PM_{2.5}$ - Colbert TEOM	$PM_{2.5}$ - Monroe & Wellesley nephelometer	PM_{10} - Augusta & Fiske TEOM	PM_{10} - Turnbull NWR BAM	MAXIMUM
10/1	29	29	28	29	25	24	29
10/2	38	39	30	35	26	28	39
10/3	55	55	45	57	34	34	57
10/4	52	46	48	52	32	30	52
10/5	44	36	43	44	40	26	44
10/6	46	38	39	43	39	32	46
10/7	51	43	31	42	39	44	51
10/8	48	45	40	40	40	36	48
10/9	27	31	21	28	28	16	31
10/10	24	28	30	30	18	17	30
10/11	4	7	12	9	5	3	12
10/12	10	7	13	14	6	5	14
10/13	6	16	15	11	14	19	19
10/14	11	18	15	12	9	5	18
10/15	11	17	15	10	7	3	17
10/16	8	15	16	11	20	15	20
10/17	17	18	21	15	10	4	21
10/18	35	34	33	32	11	9	35
10/19	28	20	28	22	26	18	28
10/20	18	23	15	14	19	5	23
10/21	27	31	25	23	15	5	31
10/22	52	53	43	50	18	7	53
10/23	68	75	57	58	20	14	75
10/24	27	38	28	25	6		38
10/25	48	53	30	33	11	6	53
10/26	43	52	38	36	11	6	52
10/27	56	58	44	53	18	6	58
10/28	60	61	55	56	23	6	61
10/29	60	60	53	57	22	5	60
10/30	53	49	38	35	76	70	76
10/31	43	57	50	44	21.3	7	57
AVG	36	37	32	33	22	17	40
MAX	68	75	57	58	76	70	76