

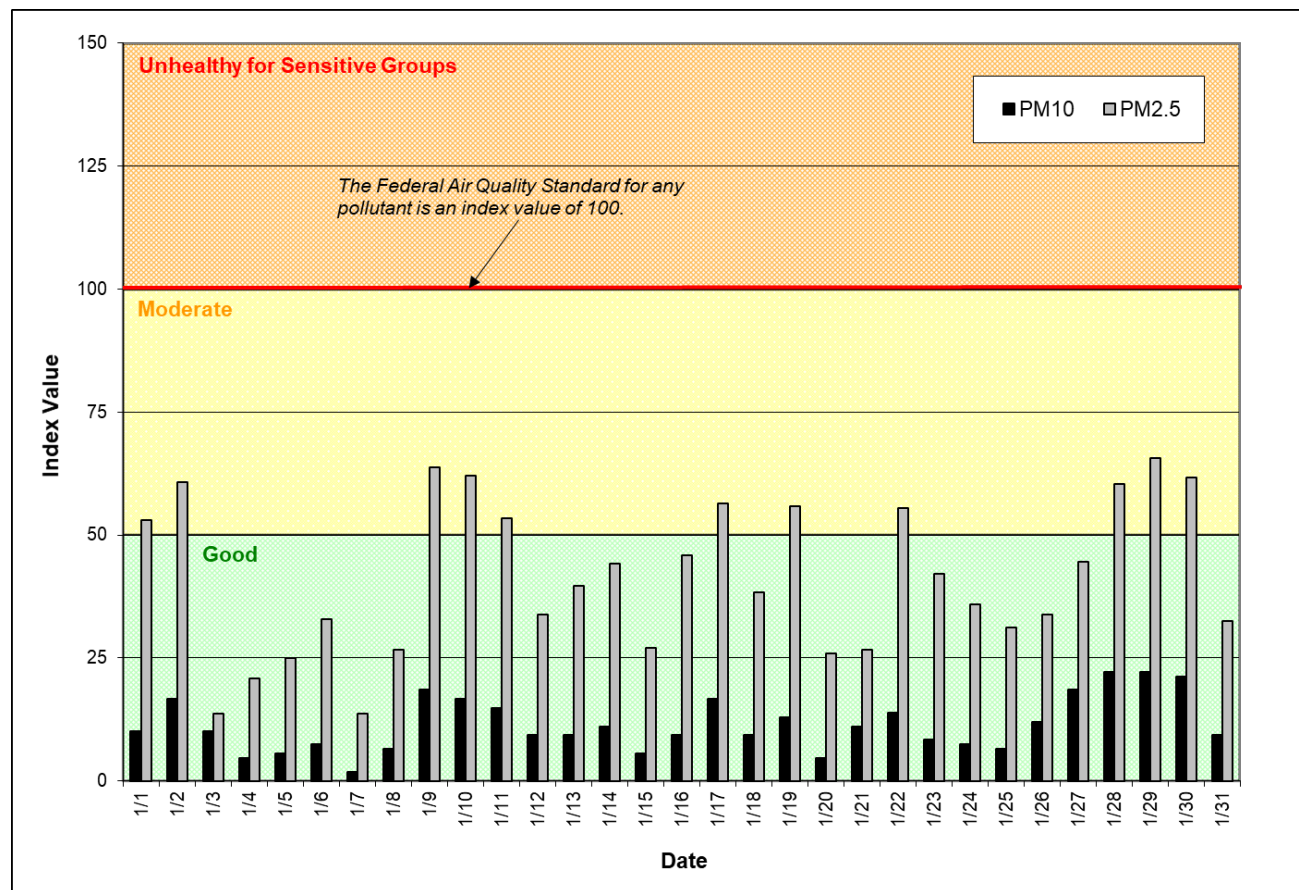
Spokane Regional Clean Air Agency

Air Quality Report - January 2022

January particle pollution levels followed a characteristic pattern for this time of year, with the daily Air Quality Index (AQI) rising into the MODERATE category during periods of high atmospheric pressure when particle pollution accumulated at ground level because of light wind conditions and nighttime temperature inversions. Air quality improved during alternating periods when storm systems and other weather disturbances (low pressure) brought stronger winds and more effective atmospheric mixing and precipitation (Figure 1). As usual in wintertime, the Spokane-Augusta and Spokane Valley-Broadway air monitoring stations recorded the highest PM_{2.5} and PM₁₀ readings in the Spokane area because of their central urban and lower elevation locations (Figure 2 and 3).

The maximum daily AQI for the month was 66 (24-hour average PM_{2.5} mass concentration = 19.1 µg/m³) recorded at the Spokane Valley-Broadway Ave monitoring station on the 29th (Table 1). Air quality was at AQI-GOOD levels on 20 days and AQI-MODERATE levels on 11 days (Table 2).

Figure 1: Air Quality Index (AQI) values for January 2022. 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, Appendix 2 for a description of the AQI, or Appendix 3 for a summary of daily PM_{2.5} and PM₁₀ mass concentrations and AQIs across the Spokane-area ambient air monitoring network. Current and historical ambient air quality data can also be obtained from the Washington State Department of Ecology's air monitoring data website, <https://fortress.wa.gov/ecy/enviwa/Default.htm>.

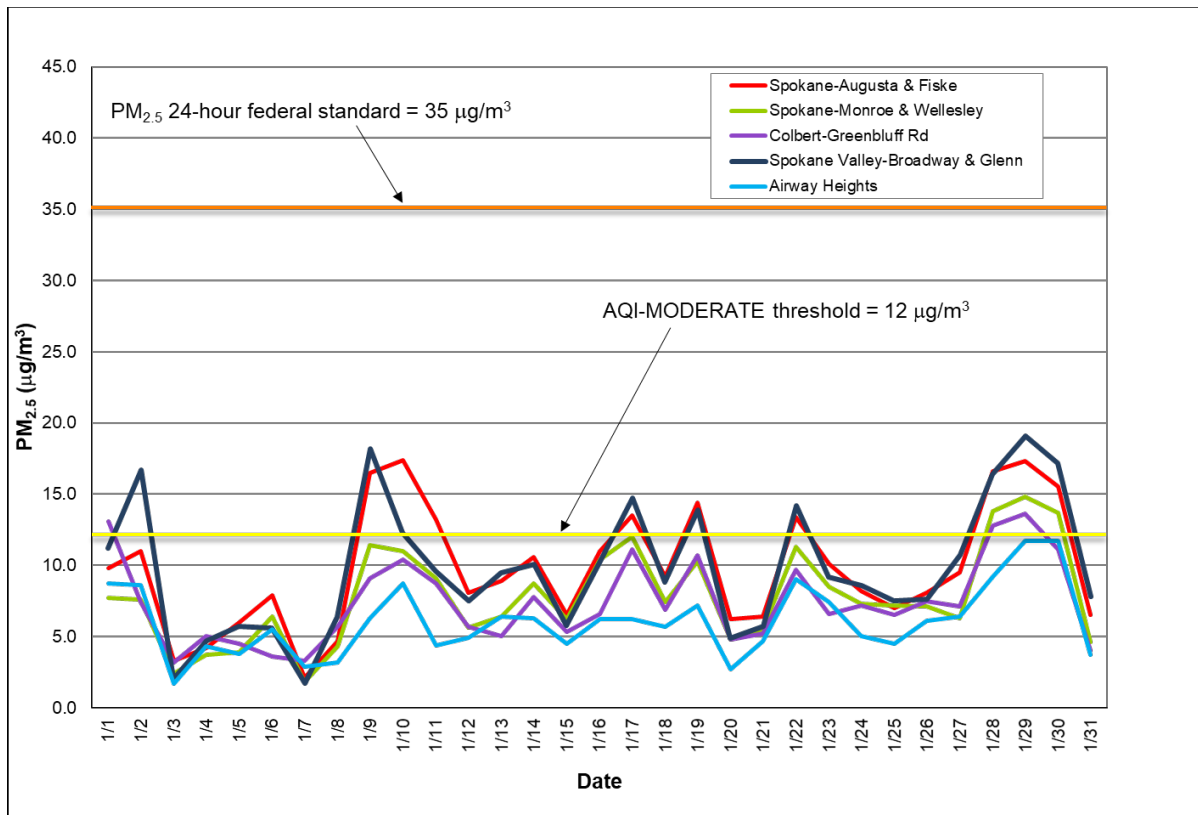
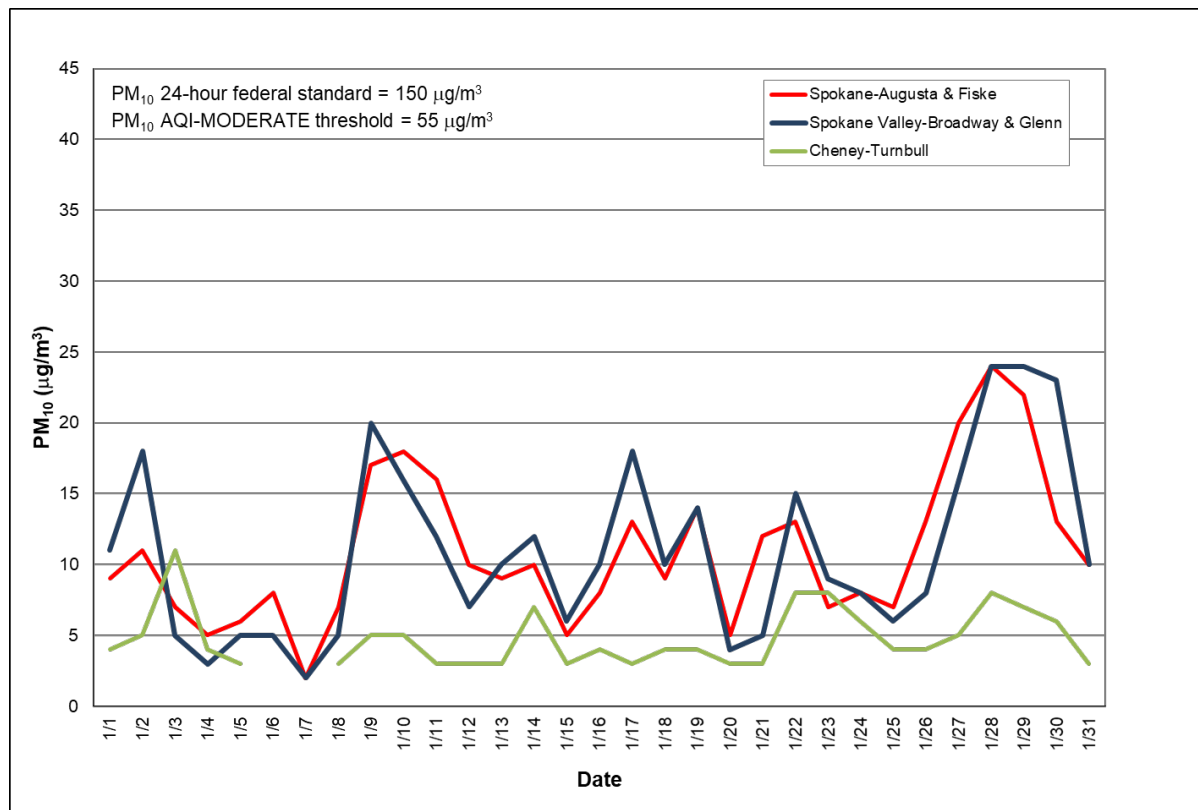
Figure 2: Multi-station 24-hour average PM_{2.5} for January 2022; Spokane County.**Figure 3: Multi-station 24-hour average PM₁₀ for January 2022; Spokane County.**

Table 1 contains the maximum AQI values for each pollutant for the month. Table 2 summarizes the year-to-date daily AQIs by category.

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

Pollutant	AQI		Location	Date
PM ₁₀	22 (conc. = 24 µg/m ³)	Good	Spokane-Augusta Ave (Augusta & Fiske) Spokane Valley-Broadway Ave (Broadway & Glenn)	1/28 1/28 and 1/29
PM _{2.5}	66 (conc. = 19.1 µg/m ³)	Mod	Spokane Valley-Augusta Ave (Broadway & Glenn)	1/29

Table 2: AQI summary as of January 31, 2022

Category	Number of days
Good (0-50)	20
Moderate (51-100)	11
Unhealthy for Sensitive Groups (101-150)	0
Unhealthy (151-200)	0
Very Unhealthy (201-300)	0
Hazardous (>300)	0

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 January for air monitoring stations in Spokane County. Particulate matter mass concentration is reported as 24-hour averages in micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$). The lack of PM_{10} data for Turnbull on the 6th and 7th was a result of a loss of power (tripped GFCI) at the monitoring station.

24 hour Avg Pollutant Concentration ($\mu\text{g}/\text{m}^3$)								
Date	$\text{PM}_{2.5}$ - Airway Heights	$\text{PM}_{2.5}$ - Colbert	$\text{PM}_{2.5}$ - Spokane - Augusta & Fiske	$\text{PM}_{2.5}$ - Spokane Valley - Broadway & Glenn	$\text{PM}_{2.5}$ - Spokane - Monroe & Wellesley	PM_{10} - Turnbull NWR BAM	PM_{10} - Spokane - Augusta & Fiske	PM_{10} - Spokane Valley - Broadway & Glenn
1/1	8.7	13.1	9.8	11.2	7.7	4	9	11
1/2	8.6	7.4	11.0	16.7	7.6	5	11	18
1/3	1.7	3.2	3.3	2.0	2.4	11	7	5
1/4	4.3	5.0	4.2	4.7	3.7	4	5	3
1/5	3.8	4.5	6.0	5.7	3.9	3	6	5
1/6	5.5	3.6	7.9	5.6	6.4		8	5
1/7	2.9	3.3	2.1	1.7	1.8		2	2
1/8	3.2	5.7	4.7	6.4	4.3	3	7	5
1/9	6.3	9.1	16.5	18.2	11.4	5	17	20
1/10	8.7	10.4	17.4	12.3	11.0	5	18	16
1/11	4.4	8.7	13.2	9.6	9.1	3	16	12
1/12	4.9	5.7	8.1	7.5	5.6	3	10	7
1/13	6.4	5.0	8.9	9.5	6.4	3	9	10
1/14	6.3	7.8	10.6	10.1	8.7	7	10	12
1/15	4.5	5.3	6.5	5.8	6.2	3	5	6
1/16	6.2	6.6	11.0	10.2	10.4	4	8	10
1/17	6.2	11.1	13.5	14.7	12.0	3	13	18
1/18	5.7	6.9	9.2	8.8	7.4	4	9	10
1/19	7.2	10.7	14.4	13.9	10.3	4	14	14
1/20	2.7	4.8	6.2	4.9	4.8	3	5	4
1/21	4.7	5.2	6.4	5.7	5.5	3	12	5
1/22	9.0	9.7	13.4	14.2	11.3	8	13	15
1/23	7.4	6.6	10.1	9.2	8.5	8	7	9
1/24	5.0	7.2	8.2	8.6	7.3	6	8	8
1/25	4.5	6.5	7.0	7.5	7.2	4	7	6
1/26	6.1	7.5	8.1	7.6	7.1	4	13	8
1/27	6.4	7.1	9.5	10.7	6.3	5	20	16
1/28	9.2	12.8	16.6	16.4	13.8	8	24	24
1/29	11.7	13.6	17.3	19.1	14.8	7	22	24
1/30	11.7	11.1	15.5	17.2	13.7	6	13	23
1/31	3.7	4.0	6.5	7.8	4.6	3	10	10
AVG	6.1	7.4	9.8	9.8	7.8	5	11	11
MAX	11.7	13.6	17.4	19.1	14.8	11	24	24

Air Quality Index (AQI)									
Date	$\text{PM}_{2.5}$ - Airway Heights	$\text{PM}_{2.5}$ - Colbert	$\text{PM}_{2.5}$ - Spokane - Augusta & Fiske	$\text{PM}_{2.5}$ - Spokane Valley - Broadway & Glenn	$\text{PM}_{2.5}$ - Spokane - Monroe & Wellesley	PM_{10} - Turnbull NWR	PM_{10} - Spokane - Augusta & Fiske	PM_{10} - Spokane Valley - Broadway & Glenn	MAXIMUM
1/1	36	53	41	47	32	4	8	10	53
1/2	36	31	46	61	32	5	10	17	61
1/3	7	13	14	8	10	10	6	5	14
1/4	18	21	18	20	15	4	5	3	21
1/5	16	19	25	24	16	3	6	5	25
1/6	23	15	33	23	27		7	5	33
1/7	12	14	9	7	8		2	2	14
1/8	13	24	20	27	18	3	6	5	27
1/9	26	38	60	64	48	5	16	19	64
1/10	36	43	62	51	46	5	17	15	62
1/11	18	36	53	40	38	3	15	11	53
1/12	20	24	34	31	23	3	9	6	34
1/13	27	21	37	40	27	3	8	9	40
1/14	26	33	44	42	36	6	9	11	44
1/15	19	22	27	24	26	3	5	6	27
1/16	26	28	46	43	43	4	7	9	46
1/17	26	46	54	56	50	3	12	17	56
1/18	24	29	38	37	31	4	8	9	38
1/19	30	45	56	55	43	4	13	13	56
1/20	11	20	26	20	20	3	5	4	26
1/21	20	22	27	24	23	3	11	5	27
1/22	38	40	54	55	47	7	12	14	55
1/23	31	28	42	38	35	7	6	8	42
1/24	21	30	34	36	30	6	7	7	36
1/25	19	27	29	31	30	4	6	6	31
1/26	25	31	34	32	30	4	12	7	34
1/27	27	30	40	45	26	5	19	15	45
1/28	38	52	60	60	55	7	22	22	60
1/29	49	54	62	66	57	6	20	22	66
1/30	49	46	58	62	54	6	12	21	62
1/31	15	17	27	33	19	3	9	9	33
AVG	25	31	39	39	32	4	10	10	41
MAX	49	54	62	66	57	10	22	22	66