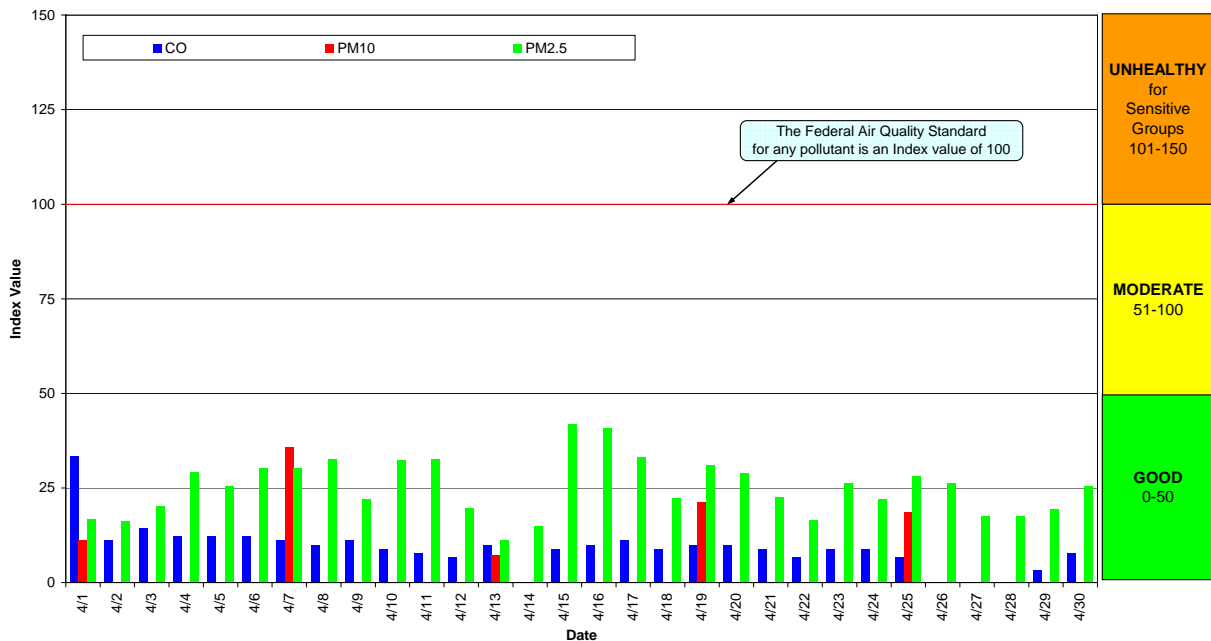


Spokane Regional Clean Air Agency Air Quality Report - April 2009

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). These are known as “criteria” pollutants because EPA established regulatory limits to concentrations in ambient air using human health or environmentally based criteria. See Table A-1 (p. 6) for a summary of the NAAQS. 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). Ozone monitoring at Ecology-operated stations at Greenbluff and Turnbull National Wildlife Refuge near Cheney resumed May 1, 2009 and ozone data will be included in the May 2009 air quality report. The SRCAA did not operate wind speed or direction sensors in April. The meteorology tower was removed from the Freya & Ferry station and was re-installed at the Augusta monitoring station in May.

Figure 1 shows the daily maximum Air Quality Index (AQI) for each pollutant in April. The 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” (orange, 101-150), “unhealthy” (red, 151-200), “very unhealthy” (purple, 201-300) and “hazardous” (maroon, 301-500). The Spokane region’s air quality is mostly in the good range of the AQI and sometimes in the moderate range. About once every three years, on average, the AQI reaches the unhealthy for sensitive groups category as a result of a summertime dust storm. For more information about the AQI, see EPA’s AirNow AQI web page (<http://airnow.gov/index.cfm?action=static.aqi>).

Figure 1: Air Quality Index (AQI) values for April 2009



The data used for calculating the AQIs are obtained using automated air pollution monitoring methods that provide “real time” data, which the SRCAA uses in its day-to-day programs, e.g., air quality forecasting and burning curtailment. For measurement of particulate matter concentrations, the SRCAA operates a network of continuous particulate matter monitors consisting of Tapered Element Oscillating Microbalances (TEOM) and nephelometers. The SRCAA had no automated PM₁₀ monitors operating in April. The PM₁₀ data shown in figure 1 were obtained using a manual method, which was operated once every six days. Manual method data are not used for daily reporting of the AQI because samples must be analyzed in a laboratory and results are not available until a few weeks after the run date. The Department of Ecology operates the CO monitor near the the intersection of 3rd & Washington in downtown Spokane.

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 and compares them to last year's AQIs.

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

Pollutant	AQI/Concentration	Location	Date
CO	33/3 ppm	3 rd & Washington	4/1/09
PM ₁₀	36/39 µg/m ³	Augusta & Fiske	4/7/09
PM _{2.5}	42/12.9 µg/m ³	Broadway (near University)	4/15/09

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

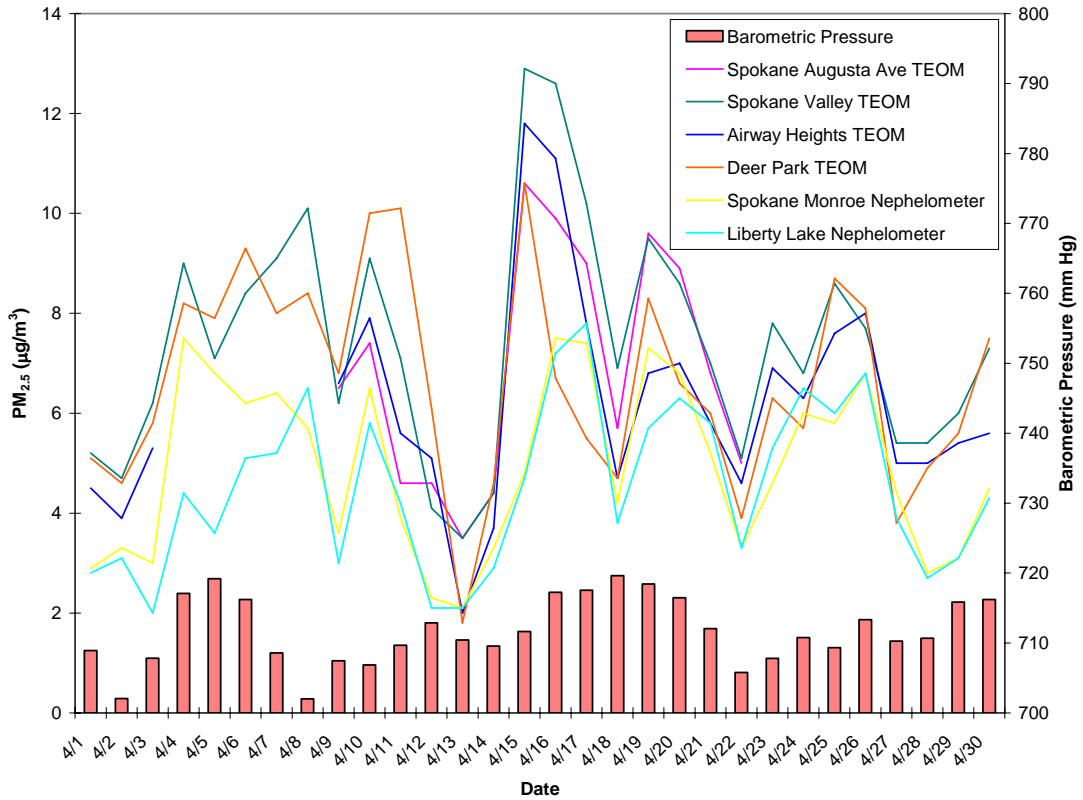
Pollutant	AQI/Concentration	Location	Date
CO	33/3 ppm	3 rd & Washington	4/1/09
PM ₁₀	44/47 µg/m ³	Freya & Ferry	3/15/09
PM _{2.5}	67/23.9 µg/m ³	Freya & Ferry	1/28/09

Table 3: AQI summary as of April 30, 2009

Category	Number of Days This Year	Last Year to Date
Good (0-50)	116	103
Moderate (51-100)	4	18
Unhealthy for Sensitive Groups (101-150)	0	0
Unhealthy (151-200)	0	0
Very Unhealthy (201-300)	0	0
Hazardous (>300)	0	0

Figure 2 shows the 24 hour average PM_{2.5} concentrations across the monitoring network as they change through the month.

Figure 2: PM_{2.5} multi-station time series for April 2009



The Augusta monitoring station is located in a mixed commercial/light industrial and residential area on the eastern side of the City of Spokane and contains both automated and manual methods for monitoring PM_{2.5}. The manually-operated Federal Reference Method (FRM) is the “gold-standard” for measurement of the 24-hour average particulate matter concentration and meets the requirements for demonstrating attainment of federal air quality standards. The accuracy of the TEOM sample data can be verified by comparison with co-located FRM data. The correlation coefficient (R²) for the PM_{2.5} TEOM and FRM data was 0.98 for the month of April. The trend for the month was for the TEOM to over-report slightly compared to the FRM (Figure 3).

Figure 3: Comparison between Augusta Ave PM_{2.5} TEOM and FRM data for April 2009.

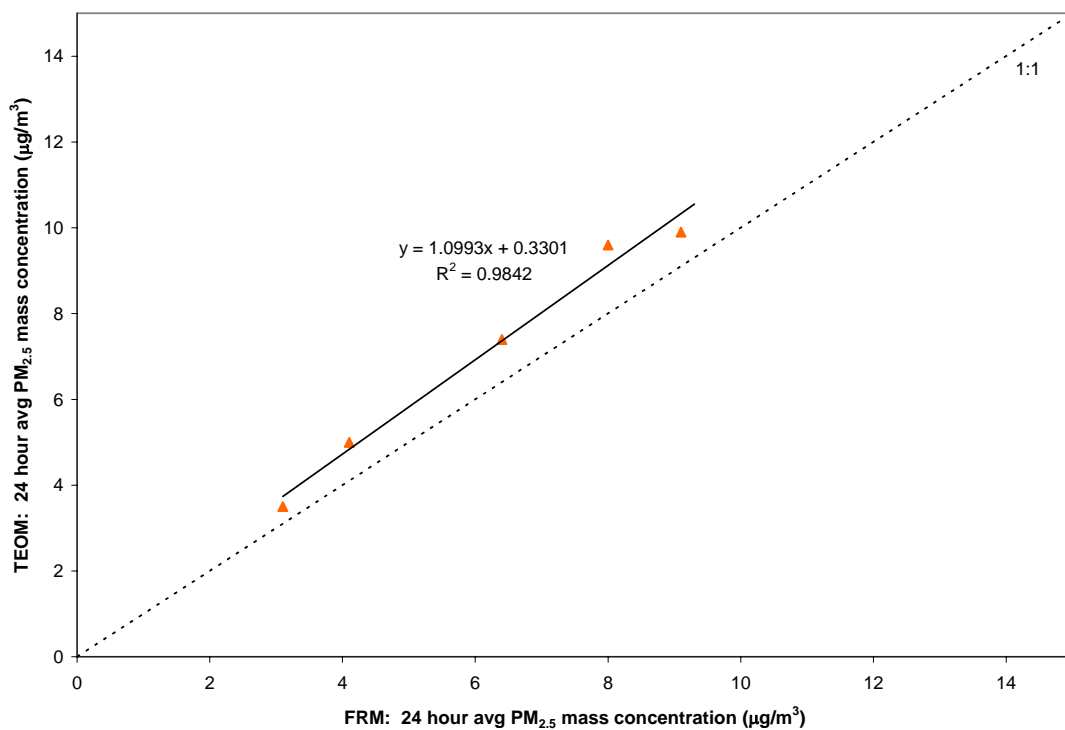


Table 4 summarizes the air quality data measured throughout the monitoring network in April. Some PM_{2.5} TEOM data are missing because of monitor malfunctions and data transmission errors. The SRCAA did not operate any PM₁₀ TEOMs in April. A dichotomous (PM_{2.5} and PM₁₀) TEOM was installed at the Augusta monitoring station in May and PM₁₀ continuous data will be reported again soon.

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Table 4: The table below summarizes the air quality data for April from all of the analyzers operated in Spokane County. The CO and data are 8-hour maximums in parts per million (ppm) and the PM data are 24-hour averages in micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$).

Date	CO 3rd & Washington (ppm)	PM10 Augusta TEOM ($\mu\text{g}/\text{m}^3$)	PM10 Augusta FRM ($\mu\text{g}/\text{m}^3$)	PM2.5 Augusta TEOM ($\mu\text{g}/\text{m}^3$)	PM2.5 Augusta FRM ($\mu\text{g}/\text{m}^3$)	PM2.5 Monroe & College TEOM ($\mu\text{g}/\text{m}^3$)	PM2.5 Monroe & Wellesley Nephelometer ($\mu\text{g}/\text{m}^3$)	PM10 Turnbull Wildlife Refuge FRM ($\mu\text{g}/\text{m}^3$)	PM2.5 Turnbull Wildlife Refuge ($\mu\text{g}/\text{m}^3$)	PM10 Liberty Lake ($\mu\text{g}/\text{m}^3$)	PM10-2.5 Liberty Lake ($\mu\text{g}/\text{m}^3$)	PM2.5 Liberty Lake ($\mu\text{g}/\text{m}^3$)	PM2.5 Deer Park TEOM ($\mu\text{g}/\text{m}^3$)	PM2.5 Spokane Valley TEOM ($\mu\text{g}/\text{m}^3$)	PM2.5 Airway Heights TEOM ($\mu\text{g}/\text{m}^3$)
4/1	3	NA	12		4		2.9	5	2.8	10.3	6.6	3.70	5.1	5.2	4.5
4/2	1	NA				5.01	3.3						4.6	4.7	3.9
4/3	1.3	NA					3						5.8	6.2	5.3
4/4	1.1	NA			7		7.5						8.2	9	
4/5	1.1	NA					6.8						7.9	7.1	
4/6	1.1	NA				7.39	6.2						9.3	8.4	
4/7	1	NA	39		9		6.4	12	2.8	16.4	10.8	5.6	8	9.1	
4/8	0.9	NA					5.7						8.4	10.1	
4/9	1	NA		6.5		5.99	3.6						6.8	6.2	6.6
4/10	0.8	NA		7.4	6		6.5						10	9.1	7.9
4/11	0.7	NA		4.6			3.9						10.1	7.1	5.6
4/12	0.6	NA		4.6			2.3						6.1	4.1	5.1
4/13	0.9	NA	8	3.5	3		2.1	3	0.5	4.4	3.5	0.8	1.8	3.5	2
4/14		NA		4.4		3.85	3.3						4.6	4.4	3.7
4/15	0.8	NA		10.6			4.8						10.6	12.9	11.8
4/16	0.9	NA		9.9	9		7.5						6.7	12.6	11.1
4/17	1	NA		9			7.4						5.5	10.2	7.8
4/18	0.8	NA		5.7			4.2						4.7	6.9	4.7
4/19	0.9	NA	23	9.6	8		7.3	15	4.6	16.4	11.2	5.2	8.3	9.5	6.8
4/20	0.9	NA		8.9		8.28	6.8						6.6	8.6	7
4/21	0.8	NA		6.8			5.2						6	7	5.8
4/22	0.6	NA		5	4		3.3						3.9	5.1	4.6
4/23	0.8	NA				8.07	4.6						6.3	7.8	6.9
4/24	0.8	NA					6						5.7	6.8	6.3
4/25	0.6	NA	18		6		5.8	11	5.3	20.3	14.8	5.4	8.7	8.6	7.6
4/26		NA					6.8						8.1	7.7	8
4/27		NA				5.15	4.4						3.8	5.4	5
4/28		NA			3		2.8						4.9	5.4	5
4/29	0.3	NA					3.1						5.6	6	5.4
4/30	0.7	NA		7.9			4.5						7.5	7.3	5.6

Maximum	3	NA	39	10.6	9	8.28	7.5	15	5.3	20.3	14.8	5.6	10.6	12.9	11.8
Average	0.94	NA	20	6.96	6	6	5	9	3	14	9	4	7	7	6

Appendix

Table A-1: National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Carbon Monoxide	9 ppm (10 mg/m ³)	8-hour ⁽¹⁾	None	
	35 ppm (40 mg/m ³)	1-hour ⁽¹⁾		
Lead	0.15 µg/m ³ ⁽²⁾	Rolling 3-Month Average	Same as Primary	
	1.5 µg/m ³	Quarterly Average	Same as Primary	
Nitrogen Dioxide	0.053 ppm (100 µg/m ³)	Annual (Arithmetic Mean)	Same as Primary	
Particulate Matter (PM ₁₀)	150 µg/m ³	24-hour ⁽³⁾	Same as Primary	
Particulate Matter (PM _{2.5})	15.0 µg/m ³	Annual ⁽⁴⁾ (Arithmetic Mean)	Same as Primary	
	35 µg/m ³	24-hour ⁽⁵⁾	Same as Primary	
Ozone	0.075 ppm (2008 std)	8-hour ⁽⁶⁾	Same as Primary	
	0.08 ppm (1997 std)	8-hour ⁽⁷⁾	Same as Primary	
	0.12 ppm	1-hour ⁽⁸⁾ (Applies only in limited areas)	Same as Primary	
Sulfur Dioxide	0.03 ppm	Annual (Arithmetic Mean)	0.5 ppm (1300 µg/m ³)	3-hour ⁽¹⁾
	0.14 ppm	24-hour ⁽¹⁾		

⁽¹⁾ Not to be exceeded more than once per year.

⁽²⁾ Final rule signed October 15, 2008.

⁽³⁾ Not to be exceeded more than once per year on average over 3 years.

⁽⁴⁾ To attain this standard, the 3-year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.

⁽⁵⁾ To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population oriented monitor within an area must not exceed 35 µg/m³ (effective December 17, 2006).

⁽⁶⁾ To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008)

⁽⁷⁾ (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
(b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.

⁽⁸⁾ (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1.
(b) As of June 15, 2005 EPA revoked the 1-hour ozone standard in all areas except the 8-hour ozone nonattainment Early Action Compact (EAC) Areas.