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**PUGET SOUND CLEAN AIR AGENCY**

**[www.pscleanair.org](http://www.pscleanair.org)**

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# **2005**

## Air Quality Data Summary Appendix

July 2006

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**Working Together for Clean Air**

## Air Quality Index 1980 - 2005

<b>Snohomish County</b>																	
Days in Each Air Quality Category						Pollutant Determining the AQI							Highest Value				
Year	Good		Moderate		Unhealthy		All Days				Unhealthy Days			AQI	Date	Pollutant	
					Groups	Unhealthy	Very Unhealthy	PM	CO	SO <sub>2</sub>	O <sub>3</sub>	PM	CO				SO <sub>2</sub>
1980	340	19			0	0	356		3			0	0	60	Jan 23	PM	
1981	350	11			0	0	340		21			0	0	62	Jan 16	PM	
1982	334	30			1	0	277	70	18			0	1	0	117	Dec 30	CO
1983	308	56			1	0	191	150	24			0	1	0	117	Nov 30	CO
1984	309	57			0	0	105	217	44			0	0	0	92	Sep 28	PM
1985	300	64			1	0	152	166	47			0	1	0	117	Dec 11	CO
1986	324	41			0	0	169	148	48			0	0	0	89	Jan 25	CO
1987	203	158			3	0	96	250	18			0	3	0	117	Jun 26 #	CO
1988	174	184			8	0	15	345	6			0	8	0	133	Sep 13 #	CO
1989	150	213			2	0	26	338	1			0	2	0	133	Feb 10	CO
1990	166	197			2	0	29	335	1			0	2	0	117	Mar 2 #	CO
1991	188	176			1	0	32	333	0			0	1	0	117	Dec 16	CO
1992	180	186			0	0	34	332	0			0	0	0	100	Feb 4 #	CO
1993	237	128			0	0	56	306	0	3		0	0	0	79	Jan 11	PM
1994	294	71			0	0	28	334	1	2		0	0	0	78	Dec 30	CO
1995	316	49			0	0	59	294	1	11		0	0	0	78	Jul 7	CO
1996	340	26			0	0	54	299	0	13		0	0	0	67	Jul 26	O <sub>3</sub>
1997	348	17			0	0	210	151	0	4		0	0	0	67	Jan 14	PM
1998	353	11			1	0	143	219	3			1	0	0	153	Dec 22	PM
1999	300	62	3		0	0	260	105	0			3	0	0	129	Jan 3	PM
2000	253	79	5		0	0	301	36				5	0		113	Jul 4	PM
2001	290	73	2		0	0	356	9				2	0		111	Nov 10	PM
2002	288	69	8		0	0	343	22				8	0		116	Nov 4	PM
2003	282	80	3		0	0	364	1				3	0		108	Nov 4	PM
2004	279	84	3		0	0	365	1				3	0		116	Nov 5	PM
2005	<u>288</u>	<u>72</u>	<u>5</u>		<u>0</u>	<u>0</u>	<u>360</u>	<u>5</u>				<u>5</u>	<u>0</u>		139	Dec 11	PM
Totals	7194	2213	29		20	0	4721	4466	236	33		30	19	0			

PM = Particulate Matter      CO = Carbon Monoxide      SO<sub>2</sub> = Sulfur Dioxide      O<sub>3</sub> = Ozone      # = 1st Occurrence

Note: In 1987 the particulate matter (PM) standard, total suspended particulates (TSP), was replaced by only that fraction of particulate matter with particle diameters equal to or less than 10 micrometers (PM<sub>10</sub>).

In 1999 the Pollutant Standard Index (PSI) was replaced by the Air Quality Index (AQI) and included new and more stringent fine particle (PM<sub>2.5</sub>) and 8-hour ozone (O<sub>3</sub>) standards.

## Air Quality Index 1980 - 2005

<b>King County</b>																
Days in Each Air Quality Category						Pollutant Determining the AQI							Highest Value			
Year	Good		Moderate		Unhealthy		All Days				Unhealthy Days			AQI	Date	Pollutant
					for Sensitive Groups	Unhealthy	Very Unhealthy	PM	CO	SO <sub>2</sub>	O <sub>3</sub>	PM	CO			
1980	73	275		18	0	95	270	1		1	17		194	Jan 23	PM	
1981	69	267		28	1	109	254	2		5	24		213	Jan 15	CO	
1982	86	268		10	1	96	264	5		1	10		214	Feb 6	PM	
1983	98	258		9	0	101	261	3		0	9		183	Jan 28	CO	
1984	146	218		2	0	111	242	13		2	0		103	Dec 6	PM	
1985	150	202		10	3	156	206	3		6	7		204	Dec 12	PM	
1986	130	226		8	1	113	246	6		1	8		206	Jan 7	PM	
1987	120	238		7	0	119	246	0		3	4		184	Feb 6	PM	
1988	215	146		5	0	67	298	1		2	3		150	Dec 3	CO	
1989	231	134		0	0	129	233	3		0	0		100	Jan 19 #	CO	
1990	216	145		4	0	139	201	6	19	0	0	4	131	Aug 11	O <sub>3</sub>	
1991	229	136		0	0	140	190	8	27	0	0	0	100	Dec 15 #	CO	
1992	206	159		1	0	103	230	1	32	0	1	0	167	Feb 3	CO	
1993	240	125		0	0	118	235	1	11	0	0	0	88	Jan 11	PM	
1994	293	70		2	0	72	270	1	22	0	0	2	134	Jul 21	O <sub>3</sub>	
1995	299	66		0	0	95	249	5	16	0	0	0	89	Jan 3	CO	
1996	297	69		0	0	85	252	2	27	0	0	0	100	Oct 9	CO	
1997	302	63		0	0	117	230	0	18	0	0	0	94	Jan 16	PM	
1998	317	46		2	0	111	228	0	26	0	0	2	114	Jul 27 #	O <sub>3</sub>	
1999	267	92	6	0	0	251	60	0	54	5	0	1	134	Jan 4	PM	
2000	241	118	7	0	0	288	25		53	5	0	2	114	Nov 21	PM	
2001	273	86	6	0	0	295	10		60	6	0	0	118	Nov 10	PM	
2002	262	99	4	0	0	275	11		79	4	0	0	113	Nov 27	PM	
2003	268	95	2	0	0	250	5		110	0	0	2	132	Jun 6	O <sub>3</sub>	
2004	257	103	6	0	0	279	2		85	5	0	1	132	Dec 18	PM	
2005	<u>254</u>	<u>106</u>	<u>5</u>	<u>0</u>	<u>0</u>	<u>302</u>	<u>3</u>		<u>60</u>	<u>5</u>	<u>0</u>	<u>0</u>	117	Dec 11	PM	
Totals	5539	3810	36	106	6	4016	4721	61	699	51	83	14				

PM = Particulate Matter      CO = Carbon Monoxide      SO<sub>2</sub> = Sulfur Dioxide      O<sub>3</sub> = Ozone      # = 1st Occurrence

Note: In 1987 the particulate matter (PM) standard, total suspended particulates (TSP), was replaced by only that fraction of particulate matter with particle diameters equal to or less than 10 micrometers (PM<sub>10</sub>).

In 1999 the Pollutant Standard Index (PSI) was replaced by the Air Quality Index (AQI) and included new and more stringent fine particle (PM<sub>2.5</sub>) and 8-hour ozone (O<sub>3</sub>) standards.

## Air Quality Index 1980 - 2005

<b>Pierce County</b>															
Days in Each Air Quality Category						Pollutant Determining the AQI							Highest Value		
Year	Good	Moderate	Unhealthy for Sensitive		Very Unhealthy	All Days				Unhealthy Days			AQI	Date	Pollutant
			Groups	Unhealthy		PM	CO	SO <sub>2</sub>	O <sub>3</sub>	PM	CO	O <sub>3</sub>			
1980	83	271		12	0	256	107	3		4	8		160	Apr 12	PM
1981	74	278		10	3	222	137	6		1	12		227	Jan 12	CO
1982	119	242		4	0	255	101	9		0	4		167	Dec 30	CO
1983	140	222		3	0	228	128	9		1	2		137	Dec 23	PM
1984	162	198		6	0	207	149	10		0	6		117	Jan 19 #	CO
1985	140	213		12	0	252	109	4		1	11		165	Dec 13	PM
1986	161	197		7	0	247	114	4		2	5		167	Oct 23	CO
1987	173	177		13	2	227	136	2		5	10		220	Feb 5	CO
1988	226	132		8	0	184	175	7		3	5		183	Jan 27	CO
1989	260	103		2	0	217	121	27		0	2		117	Nov 30 #	CO
1990	271	91		3	0	219	87	41	18	1	0	2	118	May 5	PM
1991	261	103		1	0	247	85	12	21	0	1	0	117	Jan 31	CO
1992	260	106		0	0	231	83	27	25	0	0	0	100	Feb 3 #	CO
1993	289	76		0	0	247	82	23	13	0	0	0	89	Feb 1	CO
1994	313	51		1	0	235	75	31	24	0	0	1	105	Jul 21	O <sub>3</sub>
1995	307	58		0	0	239	97	13	16	0	0	0	83	Jan 3	PM
1996	322	44		0	0	206	119	23	18	0	0	0	78	Oct 9	CO
1997	316	49		0	0	262	75	16	12	0	0	0	84	Jan 16	PM
1998	338	25		2	0	213	112	25	15	0	0	2	120	Jul 27	O <sub>3</sub>
1999	265	97	3	0	0	318	1	1	45	3	0	0	139	Jan 4	PM
2000	242	110	13	1	0	318	2		46	14	0	0	153	Dec 6	PM
2001	271	83	11	0	0	306	2		57	11	0	0	139	Nov 10	PM
2002	267	88	9	1	0	291	1		73	10	0	0	158	Nov 27	PM
2003	265	92	8	0	0	264	1		100	8	0	0	122	Jan 8	PM
2004	246	112	8	0	0	257	17		92	8	0	0	137	Nov 5	PM
2005	275	82	8	0	0	276	2		87	8	0	0	120	Dec 10	PM
Totals	6046	3300	60	86	5	6424	2118	293	662	80	66	5			

PM = Particulate Matter      CO = Carbon Monoxide      SO<sub>2</sub> = Sulfur Dioxide      O<sub>3</sub> = Ozone      # = 1st Occurrence

Note: In 1987 the particulate matter (PM) standard, total suspended particulates (TSP), was replaced by only that fraction of particulate matter with particle diameters equal to or less than 10 micrometers (PM<sub>10</sub>).

In 1999 the Pollutant Standard Index (PSI) was replaced by the Air Quality Index (AQI) and included new and more stringent fine particle (PM<sub>2.5</sub>) and 8-hour ozone (O<sub>3</sub>) standards.

## Air Quality Index 1990 - 2005

Days in Each Air Quality Category						Pollutant Determining the AQI						Highest Value				
Year	Good	Moderate	Unhealthy		Very Unhealthy	All Days				Unhealthy Days			AQI	Date	Pollutant	
			for Sensitive Groups	Unhealthy		PM	CO	SO <sub>2</sub>	O <sub>3</sub>	PM	CO	O <sub>3</sub>				
1990																
1991																
1992	353	8		0	0	361					0		68	Nov 25	PM	
1993	343	12		0	0	355					0		62	Jan 11	PM	
1994	364	1		0	0	248	117			0	0		54	Dec 23	CO	
1995	361	4		0	0	86	279			0	0		57	Jan 5	CO	
1996	361	1		0	0	206	156			0	0		51	Mar 2	PM	
1997	361	1		0	0	362				0			55	Jan 15	PM	
1998	347	9		0	0	356				0			87	Nov 8	PM	
1999	333	32	0	0	0	365				0			81	Jan 5 #	PM	
2000	290	75	0	1	0	366				1			159	Jul 4	PM	
2001	320	42	0	0	0	362				0			91	Dec 25	PM	
2002	324	41	0	0	0	365				0			78	Nov 2	PM	
2003	318	47	0	0	0	365				0			78	Nov 3	PM	
2004	340	26	0	0	0	366				0			80	Jul 4	PM	
2005	<u>328</u>	<u>35</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>365</u>				<u>2</u>			136	Jul 4	PM	
Totals	4743	334	2	1	0	4528	552	0	0	3	0	0				

PM = Particulate Matter      CO = Carbon Monoxide      SO<sub>2</sub> = Sulfur Dioxide      O<sub>3</sub> = Ozone      # = 1st Occurrence

Note: In 1999 the Pollutant Standard Index (PSI) was replaced by the Air Quality Index (AQI) and included new and more stringent fine particle (PM<sub>2.5</sub>) and 8-hour ozone (O<sub>3</sub>) standards.

## Burn Bans 1988 - 2005

1988	Jan 25(0830) - Jan 28 (0830) Feb 5 (1630) - Feb 6 (0930) Dec 1 (1430) - Dec 2 (0800) Dec 4 (1430) - Dec 5 (1400) Dec 16 (1430) - Dec 18 (1430)	1997	Nov 13 (1500) - Nov 15 (1500) Dec 4 (1500) - Dec 7 (1800)
1989	Jan 19 (1430) - Jan 20 (1430) Jan 24 (1430) - Jan 26 (0930) Feb 6 (1430) - Feb 8 (0930) Feb 10 (1430) - Feb 16 (0930) Nov 29 (1430) - Dec 2 (0930) Dec 22 (1430) - Dec 23 (1430)	1998	None
1990	Jan 19 (1430) - Jan 21 (1430) Dec 7 (1430) - Dec 8 (0930) Dec 25 (1430) - Dec 27 (0815)* *(Dec 26 1430 - Dec 27 0815) 2 <sup>nd</sup> Stage	1999	Jan 5 (1400) - Jan 6 (1000) Dec 29 (1400) - Dec 31 (0600)
1991	Jan 5 (1430) - Jan 6 (0930) Jan 21 (1430) - Jan 24 (1500)* *(Jan 22 0930 - Jan 24 1500) 2 <sup>nd</sup> Stage Jan 29 (1430) - Jan 31 (0830) Dec 15 (1430) - Dec 17 (1430)* *(Dec 16 1430 - Dec 17 0930) 2 <sup>nd</sup> Stage	2000	Feb 18 (1400) - Feb 20 (1000) Nov 15 (1700) - Nov 23 (0600)
1992	Jan 8 (1430) - Jan 9 (0930) Jan 19 (1430) - Jan 20 (1430) Feb 5 (1000) - Feb 6 (1430) Nov 25 (1430) - Nov 26 (1430)	2001	Nov 8 (1400) - Nov 12 (1800)
1993	Jan 11 (1430) - Jan 13 (0830) Jan 15 (1430) - Jan 16 (0700) Jan 17 (1430) - Jan 19 (0600) Jan 31 (1430) - Feb 3 (0830) Dec 20 (1430) - Dec 21 (1430) Dec 26 (1430) - Dec 29 (0830)	2002	Nov 1 (1500) - Nov 6 (0900) Nov 27 (1000) - Dec 4 (1000)
1994	None	2003	Jan 7 (1500) - Jan 9 (1300)
1995	Jan 4 - Jan 7	2004	None
1996	Feb 14 (1430) - Feb 16 (1630)	2005	Feb 21 (1600) - Feb 28 (0800) Dec 9 (1700) - Dec 18 (1200)

**PARTICULATE MATTER (PM10) - Continuous**

Micrograms per Cubic Meter

Equivalent Sampling Methods: B - BetaAtten ANDERSEN FH62I-N      Glass Fiber strip  
 T - Mass Transducer R&P TEOM 1400a      Teflon Coated Glass Fiber

2005

Location	Method	Number of Values	Quarterly Arithmetic Averages				Year Arith Mean	99th Percentile	Max Value
			1st	2nd	3rd	4th			
17171 Bothell Way NE, Lake Forest Park	B	171	17.1	13.7				30	35
Duwamish, 4752 E Marginal Way S, Seattle	T	361	33.7	21.5	24.5	27.8	26.9	63	91
James St & Central Ave, Kent	T	363	23.5	15.3	20.3	20.1	19.8	49	58
Port of Tacoma, 2301 Alexander Ave, Tacoma	B	307	25.6	19.2		23.5	22.7	54	75

Notes

- (1) Sampling occurs continuously for 24 hours each day.  
 Quarterly averages are shown only if 75 percent or more of the data is available.
- (2) Annual averages are shown only if there are at least three quarterly averages.
- (3) All data values are adjusted using seasonal site-specific relationships with Federal Reference Method samplers.

**Summary of Maximum Observed Concentrations and Values >60**

Location	Method	Jan	Jan	Feb	Feb	Feb	Feb	Mar	Aug	Dec
		5	21	2	18	23	24	11	23	16
		Wed	Fri	Wed	Fri	Wed	Thu	Fri	Tue	Fri
17171 Bothell Way NE, Lake Forest Park	B	35					--	--	--	
Duwamish, 4752 E Marginal Way S, Seattle	T	62	63	81	61	68	91	61	61	63
James St & Central Ave, Kent	T					58				
Port of Tacoma, 2301 Alexander Ave, Tacoma	B					75	63		--	

-- Indicates no sample on specified day

**Air Quality Index Summary**

Location	Method	Unhealthy for Sensitive Groups		
		Good	Moderate	
17171 Bothell Way NE, Lake Forest Park	B	171	0	0
Duwamish, 4752 E Marginal Way S, Seattle	T	346	15	0
James St & Central Ave, Kent	T	362	1	0
Port of Tacoma, 2301 Alexander Ave, Tacoma	B	304	3	0

## PARTICULATE MATTER (PM<sub>2.5</sub>)

Micrograms per Cubic Meter

Reference Sampling Method: R&P Partisol 2025 Sampler Teflon Filter

2005

Location	Number of Values	Quarterly Arithmetic Averages				Year Arith Mean	98th Percentile	Max Value
		1st	2nd	3rd	4th			
Marysville JHS, 1605 7th St, Marysville	119	14.8	6.1	7.2	13.1	10.3	37	42
6120 212 <sup>th</sup> St SW, Lynnwood	114	12.1	5.6	6.5	11.3	8.8	27	35
17171 Bothell Way NE, Lake Forest Park	113	12.0	5.6	7.6	11.1	9.0	25	36
Beacon Hill, 15th S & Charlestown, Seattle	359	9.1	6.1	7.6	8.9	7.9	20	28
Duwamish, 4752 E Marginal Way S, Seattle	110	14.0	8.3	9.4	14.2	11.6	30	31
7802 South L St, Tacoma	120	16.5	5.3	7.1	17.1	11.5	41	46

Notes

- (1) Sampling occurs for a 24 hour period from midnight to midnight. Quarterly averages are shown only if 75 percent or more of the data is available.
- (2) Annual averages are shown only if there are at least three quarterly averages.

### Summary of Maximum Observed Concentrations and Values >40

Location	Jan	Jan	Jan	Jul	Nov	Dec	Dec	Dec
	4	25	26	5	15	6	15	18
	Tue	Tue	Wed	Tue	Tue	Tue	Thu	Sun
Marysville JHS, 1605 7th St Marysville	42	--	--	--				
6120 212 <sup>th</sup> St SW, Lynnwood			--	--	--	--		35
17171 Bothell Way NE, Lake Forest Park			--	36	--	--	--	--
Beacon Hill, 15th S & Charlestown				28	--	--		
Duwamish, 4752 E Marginal Way, Seattle		31	--	--	--			
7802 South L St, Tacoma			--	--	41	44	46	

-- Indicates no sample on specified day

### Air Quality Index Summary

Location	Unhealthy for Sensitive Groups		
	Good	Moderate	
Marysville JHS, 1605 7 <sup>th</sup> St, Marysville	99	19	1
6120 212 <sup>th</sup> St SW, Lynnwood	100	14	
17171 Bothell Way NE, Lake Forest Park	98	15	
Beacon Hill, 15th S & Charlestown, Seattle	335	24	
Duwamish, 4752 E Marginal Way S, Seattle	89	21	
7802 South L St, Tacoma	96	21	3

## PARTICULATE MATTER (PM2.5) - Continuous

Micrograms per Cubic Meter

Equivalent Sampling Methods: T - Mass Transducer R&P TEOM 1400a Tef-coat Glass Fiber  
 B - BetaAtten ANDERSEN FH62I-N Glass Fiber strip

2005

Location	Method	Number of Values	Quarterly Arithmetic Averages				Year Arith Mean	98 <sup>th</sup> Percentile	Max Value
			1st	2nd	3rd	4th			
Marysville JHS, 1605 7th St, Marysville	T	331	15.1	7.3	8.5	13.1	10.9	31	40
6120 212th St SW, Lynnwood	T	353	13.2	5.4	6.8	11.7	9.3	29	45
17171 Bothell Way NE, Lake Forest Park	T	356	13.9	6.5	7.6	13.2	10.2	27	48
Duwamish, 4752 E Marginal Way S, Seattle	T	312	14.6	8.3			12.0	27	40
601 143rd Ave NE, Bellevue	T	276	10.4	5.6	6.7		7.3	17	28
James St & Central Ave, Kent	T	324	13.9	7.2	8.9		10.9	27	40
Port of Tacoma, 2301 Alexander Ave, Tacoma	T	248	17.8	7.5	9.6		11.5	30	36
7802 South L St, Tacoma	T	360	16.0	5.5	7.4	15.1	11.0	37	49
South Hill, 9616 128th St E, Puyallup	B	66				16.7			37
*Meadowdale, 7252 Blackbird Dr NE, Kitsap Co	B	338	10.7	7.9	9.5	10.9	9.7	20	58
*10955 Silverdale Way NW, Silverdale	B	352	8.0	7.3	8.9	8.5	8.1	14	17

**Notes**

- (1) Sampling occurs continuously for 24 hours each day.  
 Quarterly averages are shown only if 75 percent or more of the data is available.
- (2) Annual averages are shown only if there are at least three quarterly averages.
- (3) All data values are adjusted using seasonal site-specific relationships with Federal Reference Method samplers except those marked with an asterisk.

**Summary of Maximum Observed Concentrations and Values >40**

Location	Method	Jan 5	Jan 25	Jan 26	Feb 27	Jul 4	Jul 5	Dec 10	Dec 16
		Wed	Tue	Wed	Sun	Mon	Tue	Sat	Fri
Marysville JHS, 1605 7th St, Marysville	T	--					40		
6120 212th St SW, Lynnwood	T	45							
17171 Bothell Way NE, Lake Forest Park	T						48		
Duwamish, 4752 E Marginal Way S, Seattle	T								40
601 143rd Ave NE, Bellevue	T			28					
James St & Central Ave, Kent	T							40	
Port of Tacoma, 2301 Alexander Ave, Tacoma	T			36				--	--
7802 South L St, Tacoma	T	41	42					49	
South Hill, 9616 128th St E, Puyallup	B	--	--	--	--	--	--		33
*Meadowdale, 7252 Blackbird Dr NE, Kitsap Co	B					58	52		
*10955 Silverdale Way NW, Silverdale	B	--			17				

-- Indicates no sample on specified day

**Air Quality Index Summary**

Location	Method	Good	Moderate	Unhealthy for Sensitive Groups	
				Unhealthy	Very Unhealthy
Marysville JHS, 1605 7th St, Marysville	T	279	52	0	
6120 212th St SW, Lynnwood	T	305	47	1	
17171 Bothell Way NE, Lake Forest Park	T	302	53	1	
Duwamish, 4752 E Marginal Way S, Seattle	T	245	67	0	
601 143rd Ave NE, Bellevue	T	269	7	0	
James St & Central Ave, Kent	T	270	54	0	
Port of Tacoma, 2301 Alexander Ave, Tacoma	T	186	62	0	
7802 South L St, Tacoma	T	292	65	3	
South Hill, 9616 128th St E, Puyallup	B	40	26	0	
*Meadowdale, 7252 Blackbird Dr NE, Kitsap Co	B	311	25	2	
*10955 Silverdale Way NW, Silverdale	B	349	3	0	

## PARTICULATE MATTER (PM2.5) - Continuous

Micrograms per Cubic Meter

Sampling Method: Equivalent - Radiance Research M903 Nephelometer

2005

Location	Number of Values	Quarterly Arithmetic Averages				Year Arith Mean	98 <sup>th</sup> Percentile	Max Value
		1st	2nd	3rd	4th			
Marysville JHS, 1605 7th St, Marysville	360	13.6	6.0	7.0	12.0	9.6	35	48
6120 212th St SW, Lynnwood	329	11.4		6.5	13.1	9.3	33	60
17171 Bothell Way NE, Lake Forest Park	363	10.9	5.0	7.4	11.8	8.8	28	43
Queen Anne Hill, 400 W Garfield St, Seattle	362	7.1	4.8	6.5	9.4	7.0	21	32
Olive & Boren, Seattle	365	9.3	5.7	6.9	9.1	7.8	23	32
Beacon Hill, 15th S & Charlestown, Seattle	361	8.6	6.3	7.3	8.8	7.7	21	25
Duwamish, 4752 E Marginal Way S, Seattle	361	12.5	7.5	10.4	14.4	11.2	31	44
South Park, 8025 10 <sup>th</sup> Ave S, Seattle	349	11.7	6.1	7.8	13.8	9.7	35	48
City Hall, 15670 NE 85 <sup>th</sup> , Redmond	301	9.8		5.7	7.3	7.1	20	42
601 143rd Ave NE,, Bellevue	360	6.5	5.7	6.8	7.7	6.7	18	25
305 Bellevue Way NE, Bellevue	342	8.1	5.3	6.3	8.3	7.0	18	26
42404 SE North Bend Way, North Bend	365	5.1	3.7	5.4	4.3	4.6	15	20
James St & Central Ave, Kent	365	11.8	6.5	8.0	12.5	9.7	32	48
Port of Tacoma, 2301 Alexander Ave, Tacoma	365	12.6	6.4	8.3	14.2	10.4	30	46
7802 South L St, Tacoma	323		4.7	6.0	14.6	9.0	35	50

**Notes**

- (1) Sampling occurs continuously for 24 hours each day.  
Quarterly averages are shown only if 75 percent or more of the data is available.
- (2) Annual averages are shown only if there are at least three quarterly averages.
- (3) All data values are correlated using site-specific relationships with Federal Reference Method samplers.

**Summary of Maximum Observed Concentrations and Values >40**

Location	Jan 3	Jan 5	Jan 26	Feb 26	Nov 23	Dec 10	Dec 11	Dec 16	Dec 18	
	Mon	Wed	Wed	Sat	Wed	Sat	Sun	Fri	Sun	
Marysville JHS, 1605 7th St, Marysville	48									
6120 212th St SW, Lynnwood	45						60	49	43	
17171 Bothell Way NE, Lake Forest Park								43		
Queen Anne Hill, 400 W Garfield St, Seattle								32		
Olive & Boren, Seattle	32									
Beacon Hill, 15th S & Charlestown, Seattle	25									
Duwamish, 4752 E Marginal Way S, Seattle							44	42		
South Park, 8025 10 <sup>th</sup> Ave S, Seattle							48	41		
City Hall, 15670 NE 85 <sup>th</sup> , Redmond	42				-- --					
601 143rd Ave NE,, Bellevue	25									
305 Bellevue Way NE, Bellevue	26			--						
42404 SE North Bend Way, North Bend	20									
James St & Central Ave, Kent							41	48		
Port of Tacoma, 2301 Alexander Ave, Tacoma								46		
7802 South L St, Tacoma	--	--	--	42	50		44			

-- Indicates no sample on specified day

**Air Quality Index Summary**

Location	Unhealthy for Sensitive			
	Good	Moderate	Groups	Unhealthy
Marysville JHS, 1605 7th St, Marysville	303	56	1	
6120 212th St SW, Lynnwood	282	43	4	
17171 Bothell Way NE, Lake Forest Park	356	46	1	
Queen Anne Hill, 400 W Garfield St, Seattle	344	18	0	
Olive & Boren, Seattle	344	21	0	
Beacon Hill, 15th S & Charlestown, Seattle	343	18	0	
Duwamish, 4752 E Marginal Way S, Seattle	292	67	2	
South Park, 8025 10 <sup>th</sup> Ave S, Seattle	291	56	2	
City Hall, 15670 NE 85 <sup>th</sup> , Redmond	282	18	1	
601 143rd Ave NE,, Bellevue	345	15	0	
305 Bellevue Way NE, Bellevue	331	11	0	
42404 SE North Bend Way, North Bend	361	4	0	
James St & Central Ave, Kent	312	51	2	
Port of Tacoma, 2301 Alexander Ave, Tacoma	295	69	1	
7802 South L St, Tacoma	277	43	3	

**PM<sub>2.5</sub> Speciation Analytes Monitored at Beacon Hill in 2005**  
**Average Annual Concentrations in Micrograms per Cubic Meter**

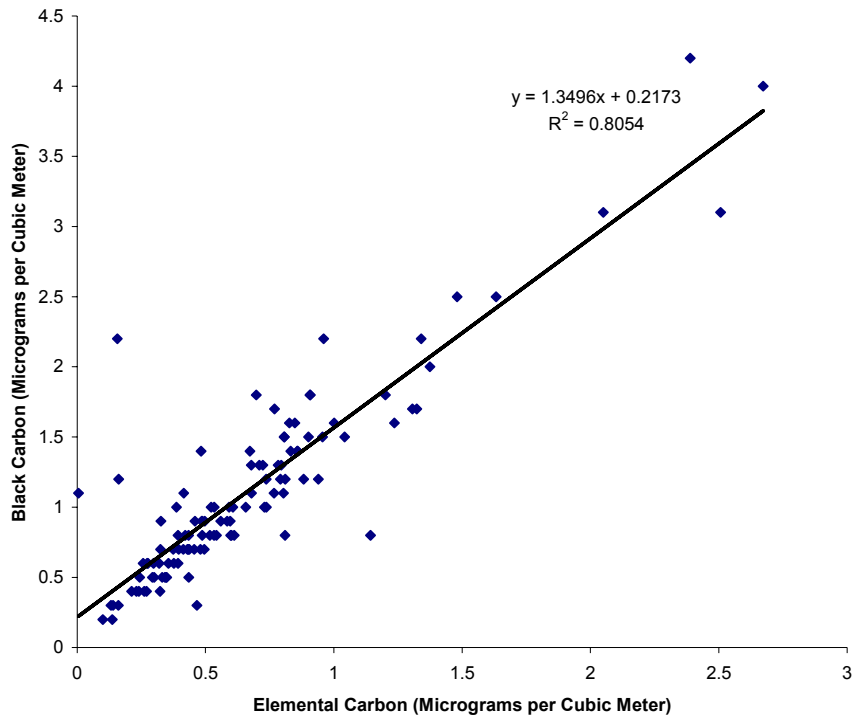
Analyte	Beacon Hill	Duwamish	Olive Street	Lake Forest Park
Total Mass	9.65	12.48	10.49	9.98
Ammonium	4.26E-01	6.40E-01	6.28E-01	4.49E-01
Nitrate	6.09E-01	1.01E+00	1.20E+00	8.04E-01
Nitrate_Non-volatile	3.45E-01	na	na	na
Nitrate_volatile	2.64E-01	na	na	na
Potassium	4.09E-02	5.80E-02	4.96E-02	6.65E-02
Sodium	1.30E-01	2.53E-01	2.06E-01	1.90E-01
Sulfate	1.13E+00	1.94E+00	1.45E+00	1.40E+00
OC and EC Ext3 PM2_5Elemental carbon	6.44E-01	1.52E+00	1.12E+00	9.71E-01
OC and EC Ext3 PM2_5Organic carbon	2.77E+00	4.78E+00	4.70E+00	4.80E+00
OC and EC Ext3 PM2_5Pk1_OC	6.91E-01	1.45E+00	1.36E+00	9.78E-01
OC and EC Ext3 PM2_5Pk2_OC	7.28E-01	1.23E+00	1.29E+00	1.38E+00
OC and EC Ext3 PM2_5Pk3_OC	5.98E-01	1.01E+00	9.84E-01	1.11E+00
OC and EC Ext3 PM2_5Pk4_OC	6.84E-01	1.02E+00	1.00E+00	1.14E+00
OC and EC Ext3 PM2_5PyroIC	6.68E-02	6.23E-02	5.98E-02	1.95E-01
OC and EC Ext3 PM2_5Total carbon	3.41E+00	6.30E+00	5.83E+00	5.77E+00
XRF - Aluminum	4.29E-03	2.00E-02	1.30E-02	7.29E-03
XRF - Antimony	3.42E-03	4.02E-03	2.46E-03	1.95E-03
XRF - Arsenic	1.10E-03	1.76E-03	8.97E-04	1.22E-03
XRF - Barium	5.28E-03	7.22E-03	8.80E-03	5.76E-03
XRF - Bromine	1.91E-03	2.95E-03	2.52E-03	3.16E-03
XRF - Cadmium	6.13E-04	1.03E-03	1.43E-03	6.66E-04
XRF - Calcium	2.05E-02	1.94E-01	4.80E-02	2.10E-02
XRF - Cerium	1.21E-03	2.04E-02	5.69E-03	3.82E-03
XRF - Cesium	1.55E-04	3.22E-04	1.09E-03	1.49E-03
XRF - Chlorine	4.02E-02	9.77E-02	7.49E-02	4.92E-02
XRF - Chromium	1.37E-03	4.71E-03	1.73E-03	5.51E-04
XRF - Cobalt	1.10E-04	7.76E-05	5.19E-05	8.50E-05
XRF - Copper	2.47E-03	6.11E-03	7.17E-03	3.05E-03
XRF - Europium	9.15E-04	2.00E-03	1.36E-03	7.34E-04
XRF - Gallium	1.19E-04	2.26E-04	1.74E-04	1.55E-04
XRF - Gold	4.02E-04	4.68E-04	2.65E-04	3.18E-04
XRF - Hafnium	7.63E-04	1.69E-03	9.07E-04	1.09E-03
XRF - Indium	1.01E-03	1.09E-03	9.89E-04	1.62E-03
XRF - Iridium	8.38E-05	3.19E-04	6.05E-05	1.21E-04
XRF - Iron	5.19E-02	1.90E-01	1.44E-01	5.56E-02
XRF - Lanthanum	1.62E-03	1.89E-02	3.34E-03	2.85E-03
XRF - Lead	3.08E-03	7.76E-03	3.40E-03	3.42E-03
XRF - Magnesium	5.73E-03	9.31E-03	1.24E-02	8.92E-03
XRF - Manganese	4.80E-03	1.70E-02	4.58E-03	1.43E-03
XRF - Mercury	1.24E-03	1.08E-03	8.91E-04	1.15E-03
XRF - Molybdenum	4.56E-05	1.05E-03	2.95E-04	2.31E-04
XRF - Nickel	2.10E-03	5.23E-03	2.36E-03	9.43E-04
XRF - Niobium	1.18E-05	1.96E-04	1.65E-04	1.89E-04

PM<sub>2.5</sub> Speciation Analytes Monitored at Beacon Hill in 2005  
Average Annual Concentrations in Micrograms per Cubic Meter  
(Contd.)

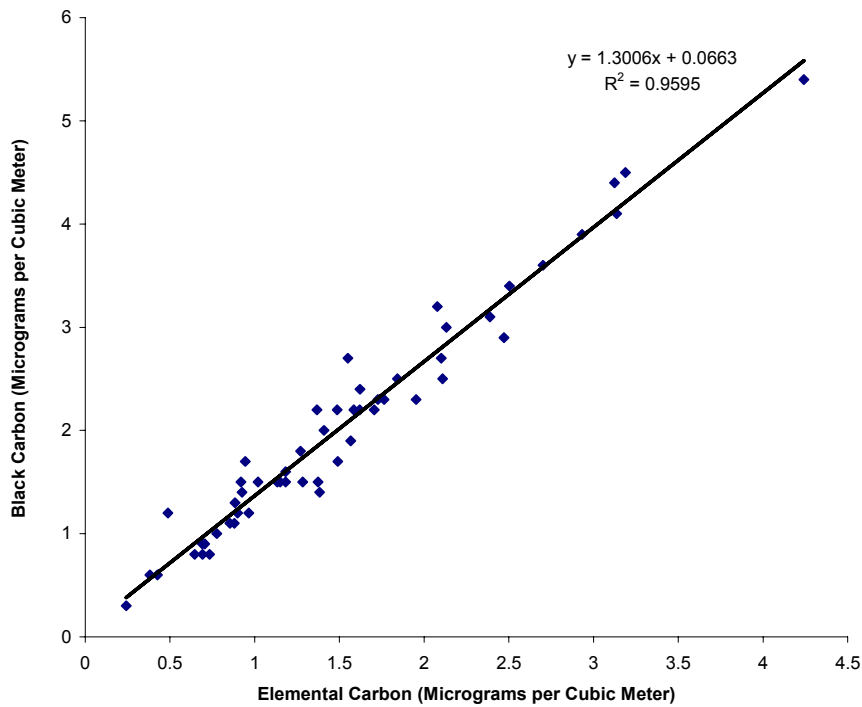
Analyte	Beacon Hill	Duwamish	Olive Street	Lake Forest Park
XRF - Phosphorus	1.23E-04	4.07E-04	6.19E-04	1.16E-04
XRF - Potassium	4.63E-02	7.78E-02	6.52E-02	8.22E-02
XRF - Rubidium	1.06E-04	2.12E-04	1.55E-04	1.46E-04
XRF - Samarium	4.45E-04	2.14E-03	1.38E-03	4.49E-04
XRF - Scandium	1.52E-06	1.08E-04	4.29E-05	6.89E-05
XRF - Selenium	1.61E-03	4.19E-03	1.39E-03	6.61E-04
XRF - Silicon	2.33E-02	1.01E-01	5.24E-02	3.91E-02
XRF - Silver	1.23E-03	9.20E-04	8.36E-04	1.05E-03
XRF - Sodium	9.45E-02	2.07E-01	1.60E-01	1.13E-01
XRF - Strontium	4.50E-04	1.90E-03	9.20E-04	6.99E-04
XRF - Sulfur	3.94E-01	6.75E-01	4.79E-01	4.59E-01
XRF - Tantalum	2.09E-04	3.51E-04	2.66E-04	2.27E-04
XRF - Terbium	2.07E-03	7.18E-03	4.59E-03	1.82E-03
XRF - Tin	2.47E-03	6.85E-03	2.85E-03	2.57E-03
XRF - Titanium	9.00E-04	9.72E-03	6.48E-03	2.63E-03
XRF - Vanadium	5.03E-03	1.18E-02	5.79E-03	2.91E-03
XRF - Wolfram	2.76E-04	3.77E-04	6.35E-04	2.73E-04
XRF - Yttrium	1.80E-04	2.77E-04	1.40E-04	3.02E-04
XRF - Zinc	9.62E-03	3.08E-02	2.17E-02	1.02E-02
XRF - Zirconium	3.22E-04	7.06E-04	1.18E-03	5.52E-04

# Aethalometer and Speciation Data Correlations

**Seattle Beacon Hill, Urban Neighborhood Site, 2005**  
Speciation Data Elemental Carbon and Black Carbon Aethalometer Correlation

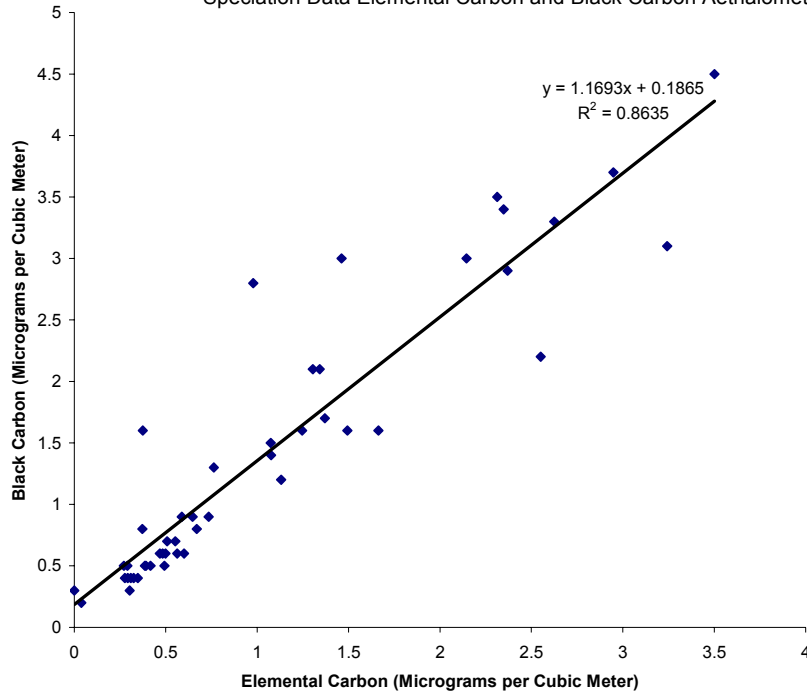


**Seattle Duwamish, Industrial Mix Site, 2005**  
Speciation Data Elemental Carbon and Black Carbon Aethalometer Correlation

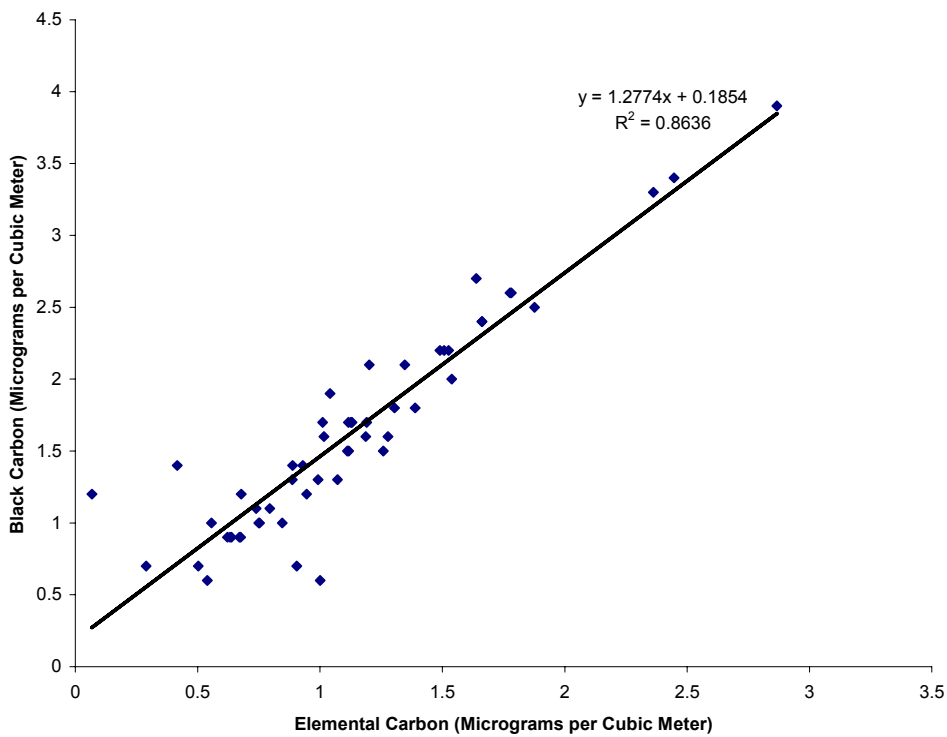


# Aethalometer and Speciation Data Correlations

**Lake Forest Park, Residential Wood Burning Site, 2005**  
Speciation Data Elemental Carbon and Black Carbon Aethalometer Correlation



**Seattle Olive St, Freeway (Onroad Mobile) Site, 2005**  
Speciation Data Elemental Carbon and Black Carbon (Aethalometer) Correlation



**PM2.5 BLACK CARBON**  
Micrograms per Cubic Meter

Sampling Method: Light Absorption by Aethalometer

2005

Location	Number of Values	Quarterly Arithmetic Averages				Annual Mean	Max Value
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>		
17171 Bothell Way NE, Lake Forest Park	344	2.0	0.6		1.6	1.3	5.4
Olive & Boren, Seattle	364	1.9	1.3	1.3	2.1	1.6	5.0
Beacon Hill, 15th S & Charlestown, Seattle	315	1.3	0.8	1.0	1.3	1.1	5.1
Duwamish, 4752 E Marginal Way S, Seattle	351	2.8	1.5	1.9	2.5	2.1	8.1
7802 South L St, Tacoma	304	2.0	0.7		2.1	1.4	6.7

Notes

- (1) Sampling occurs continuously for 24 hours each day.  
Quarterly averages are shown only if 75 percent or more of the data is available.
- (2) Annual averages are shown only if there are at least three quarterly averages.

**Summary of Maximum Observed Concentrations**

Location	Jan	Jan	Apr	Dec
	21	26	5	10
	Fri	Tue	Thu	Fri
17171 Bothell Way NE, Lake Forest Park	--	5.4		
Olive & Boren, Seattle		5.0		
Beacon Hill, 15th S & Charlestown, Seattle			5.1	
Duwamish, 4752 E Marginal Way S, Seattle	8.1			
7802 South L St, Tacoma				6.7

-- Indicates no sample on specified day

**OZONE**  
(Parts per Million)  
2005

Location / Continuous Sampling Period(s)	2005 Six Highest Daily 8-Hour Concentrations			4 <sup>th</sup> Highest Daily 8-Hour Concentration			3-Year Average of 4 <sup>th</sup> Highest 8-Hour Concentration
	Value	Date	End Time	2003	2004	2005	2003 - 2005
Beacon Hill, 15th S & Charlestown Seattle, Wa 1 May-14 Jul, 1 Sep-30 Sep	.050	28 May	1500	.050	.048	.043	.047
	.049	27 Jun	1700				
	.047	28 Jun	0200				
	.043	26 May	1500				
	.040	22 May	1100				
	.039	30 May	1300				
20050 SE 56 <sup>th</sup> Lake Sammamish State Park, Wa 1 May-17 May, 3 Jun-30 Sep	.067	14 Aug	1400	.066	.063	.054	.061
	.058	4 Aug	1500				
	.056	13 Aug	1400				
	.054	21 Jul	1600				
	.051	15 Aug	1400				
	.050	26 Jul	1400				
42404 SE North Bend Way, North Bend, Wa 1 May-30 Sep	.078	28 May	1600	.079	.076	.061	.072
	.068	4 Aug	1600				
	.062	14 Aug	1500				
	.061	15 Aug	1400				
	.058	21 Jul	1600				
	.056	27 May	1500				
30525 SE Mud Mountain Road, Enumclaw, Wa 1 May-30 Sep	.072	27 May	1600	.080	.074	.063	.072
	.069	28 May	1600				
	.066	4 Aug	1500				
	.063	27 Jul	1500				
	.061	14 Aug	1500				
	.060	5 Aug	1400				
Charles L Pack Forest La Grande, Wa 1 May-30 Sep	.069	27 May	1500	.077	.071	.061	.070
	.067	4 Aug	1400				
	.064	14 Aug	1500				
	.061	5 Aug	1400				
	.060	15 Aug	1400				
	.056	21 Jul	1500				
709 Mill Road SE, Yelm, Wa 1 May-30 Sep	.064	4 Aug	1500	.072	.065	.059	.065
	.063	5 Aug	1600				
	.062	27 May	1500				
	.059	14 Aug	1500				
	.055	13 Aug	1500				
	.053	26 May	1500				

Notes

- (1) All ozone stations operated by the Washington State Department of Ecology.
- (2) Ending times are reported in Pacific Standard Time.
- (3) For equal concentration values the date and time refer to the earliest occurrences.
- (4) Continuous sampling periods are those with fewer than 10 consecutive days of missing data.
- (5) At all stations ozone was measured using the continuous ultraviolet p

**OZONE**  
(Parts per Million)  
2005

Location / Continuous Sampling Period(s)	Six Highest Daily Maximum 1 Hour Averages			Estimated No. of Days Daily Maximum 1 Hour Average Exceeded .12 ppm			No. of Days Daily Maximum 1 Hour Average Expected to Exceed .12 ppm
	Value	Date	End Time	2003	2004	2005	
Beacon Hill, 15th S & Charlestown Seattle, Wa 1 May-14 Jul, 1 Sep-30 Sep	.056	27 Jun	1700	0.0	0.0	0.0	0.0
	.055	28 May	1500				
	.055	28 Jun	0400				
	.049	26 May	1800				
	.045	17 Jun	1600				
	.043	16 May	1200				
20050 SE 56th Lake Sammamish State Park, Wa 1 May-17 May, 3 Jun-30 Sep	.077	14 Aug	1500	0.0	0.0	0.0	0.0
	.070	13 Aug	1600				
	.068	4 Aug	1600				
	.066	21 Jul	1700				
	.061	3 Aug	1700				
	.059	18 Jul	1700				
42404 SE North Bend Way, North Bend 1 May-30 Sep	.088	28 May	1700	0.0	0.0	0.0	0.0
	.085	4 Aug	1700				
	.079	14 Aug	1700				
	.075	15 Aug	1700				
	.071	13 Aug	1700				
	.067	27 May	1600				
30525 SE Mud Mountain Road, Enumclaw 1 May-30 Sep	.087	27 May	1600	0.0	0.0	0.0	0.0
	.076	4 Aug	1600				
	.075	28 May	1600				
	.071	5 Aug	1700				
	.070	21 Jul	1700				
	.070	27 Jul	1700				
Charles L Pack Forest La Grande, Wa 1 May-30 Sep	.079	4 Aug	1400	0.0	0.0	0.0	0.0
	.078	14 Aug	1500				
	.077	27 May	1700				
	.068	15 Aug	1600				
	.067	27 Jul	1700				
	.067	5 Aug	1600				
709 Mill Road SE, Yelm, Wa 1 May-30 Sep	.074	4 Aug	1700	0.0	0.0	0.0	0.0
	.070	5 Aug	1600				
	.069	27 May	1500				
	.066	14 Aug	1800				
	.061	13 Aug	1500				
	.060	19 Aug	1700				

Notes

- (1) All ozone stations operated by the Washington State Department of Ecology.
- (2) Ending times are reported in Pacific Standard Time.
- (3) For equal concentration values the date and time refer to the earliest occurrences.
- (4) Continuous sampling periods are those with fewer than 10 consecutive days of missing data.
- (5) At all stations ozone was measured using the continuous ultraviolet photometric detection method.

**NITROGEN DIOXIDE**  
(Parts per Million)  
2005

Monthly and Annual Arithmetic Averages

Location	Monthly Arithmetic Averages							No of 1 Hour Samples	Year Arith Mean
	Jan	Feb Aug	Mar Sep	Apr Oct	May Nov	Jun Dec	Jul		
Beacon Hill, 15th S & Charlestown, Seattle	.020	.024	.018	.015 .018	.015	.015	.017	6449	.018

Maximum and Second Highest Concentrations

Location / Continuous Sampling Period(s)	1 Hour Average		
	Value	Date	End Time
Beacon Hill, 15th S & Charlestown, Seattle 1 Jan-16 Aug, 8 Sep-28 Sep, 1 Nov-12 Dec, 27 Dec-31 Dec	.078	6 Jun	0000
	.078	6 Jun	0100

Notes

- (1) Ending times are reported in Pacific Standard Time.
- (2) For equal concentration values the date and time refer to the earliest occurrences.
- (3) Continuous sampling periods are those with fewer than 10 consecutive days of missing data.
- (4) At all stations nitrogen dioxide was measured using the continuous chemiluminescence method.

**CARBON MONOXIDE**  
(Parts per Million)  
2005

Location / Continuous Sampling Period(s)	Six Highest Concentrations						Number of 8 Hour Averages Exceedin g 9 ppm	Number of Days 8 Hour Average Exceeded 9 ppm
	1 Hour Average			8 Hour Average				
	Value	Date	End Time	Value	Date			
44th Ave W & 196th St SW Lynnwood 11 Feb-31 Dec	5.1	16 Dec	2200	4.3	16 Dec		0	0
	5.0	24 Feb	0800	3.6	18 Dec			
	4.7	16 Dec	2000	3.5	11 Dec			
	4.5	16 Dec	1800	3.5	17 Dec			
	4.5	16 Dec	2300	3.2	12 Dec			
	4.4	18 Dec	1800	3.1	14 Nov			
2421 148th Ave NE Bellevue 1 Jan-31 Dec	5.9	5 Jan	1700	4.0	23 Feb		0	0
	5.9	5 Jan	1800	3.8	5 Jan			
	5.7	11 Feb	1900	3.4	24 Feb			
	5.3	23 Feb	1800	3.2	2 Feb			
	5.0	24 Jan	1900	3.2	23 Nov			
	4.6	13 Dec	1800	3.0	11 Dec			
University District, 1307 NE 45th St Seattle 1 Jan-31 Dec	4.6	23 Feb	2200	3.8	23 Feb		0	0
	4.4	23 Feb	2100	3.7	24 Feb			
	4.1	23 Feb	1900	2.9	5 Jan			
	4.1	23 Feb	2400	2.8	26 Jan			
	3.9	19 Feb	0200	2.8	18 Feb			
	3.8	5 Jan	1700	2.8	19 Feb			
1424 4th Ave Seattle 1 Jan-31 Dec	3.6	24 Feb	0800	2.7	24 Feb		0	0
	3.2	16 Dec	0900	2.5	16 Dec			
	3.1	23 Feb	1700	2.4	11 Dec			
	3.1	16 Dec	0800	2.0	27 Feb			
	2.9	24 Feb	0700	2.0	10 Dec			
	2.9	11 Dec	1700	1.9	26 Jan			
Beacon Hill, 15th S and Charlestown Seattle 1 Jan-31 Dec	2.7	25 Jan	1000	1.9	25 Jan		0	0
	2.7	16 Nov	0800	1.9	24 Feb			
	2.6	21 Jan	1900	1.8	11 Dec			
	2.4	21 Jan	2000	1.7	26 Jan			
	2.4	16 Nov	0700	1.7	12 Dec			
	2.1	25 Jan	0800	1.6	21 Jan			
1101 Pacific Ave Tacoma 1 Jan-15 Aug, 12 Sep-31 Dec	6.6	23 Feb	1800	4.6	23 Feb		0	0
	6.1	2 Feb	1800	3.9	2 Feb			
	5.4	2 Feb	1700	3.7	24 Feb			
	5.4	9 Mar	0900	3.3	26 Jan			
	5.3	23 Feb	1700	3.3	8 Deb			
	4.9	8 Dec	1800	3.1	5 Jan			

Notes

- (1) All carbon monoxide stations operated by the Washington State Department of Ecology.
- (2) Ending times are reported in Pacific Standard Time.
- (3) For equal concentration values the date and time refer to the earliest occurrences.
- (4) Continuous sampling periods are those with fewer than 10 consecutive days of missing data.
- (5) At all stations carbon monoxide was measured using the continuous nondispersive infrared method.

**SULFUR DIOXIDE**  
(Parts per Million)  
2005

Monthly and Annual Arithmetic Averages

Location	Monthly Arithmetic Averages							No of 1 Hour Samples	Year Arith Mean
	Jan	Feb Aug	Mar Sep	Apr Oct	May Nov	Jun Dec	Jul		
Beacon Hill, 15th S & Charlestown, Seattle		.006 .005	.004 .004	.005 .003	.003 .002		.003	8095	.004

Maximum and Second Highest Concentrations for Various Averaging Periods

Location / Continuous Sampling Periods(s)	1 Hour Average			3 Hour Average			24 Hour Average		
	Value	Date	End Time	Value	Date	End Time	Value	Date	End Time
Beacon Hill, 15th S & Charlestown, Seattle 1 Jan-31 Dec	.044	21 Oct	1800	.030	23 Feb	2300	.020	7 Apr	0100
	.042	14 Aug	0900	.027	6 Apr	1400	.016	24 Feb	1200

Notes

- (1) Ending times are reported in Pacific Standard Time.
- (2) For equal concentration values the date and time refer to the earliest occurrences.
- (3) Continuous sampling periods are those with fewer than 10 consecutive days of missing data.
- (4) Sulfur dioxide was measured using the continuous ultraviolet fluorescence method.

**Air Toxics**  
 2005 Beacon Hill Statistical Summaries  
 Concentrations in parts per billion by volume (ppbv)

<b>Carbon</b>								
<b>Statistic</b>	<b>Benzene</b>	<b>1,3- butadiene</b>	<b>Tetrachloride</b>	<b>Chloroform</b>	<b>Perc</b>	<b>Trichloroethylene</b>	<b>Acetaldehyde</b>	<b>Formaldehyde</b>
<b>2005 Count</b>	60	60	60	60	60	60	56	56
<b>Non detects</b>	0	0	0	0	0	0	0	0
<b>Median</b>	0.116	0.022	0.100	0.032	0.030	0.025	0.800	1.050
<b>Mean</b>	0.176	0.035	0.100	0.047	0.034	0.030	0.813	1.055
<b>95th Percentile</b>	0.530	0.111	0.110	0.101	0.079	0.078	1.550	1.900
<b>Maximum</b>	0.700	0.130	0.120	0.140	0.110	0.097	1.900	2.700
<b>MDL</b>	0.009	0.018	0.010	0.020	0.010	0.009	0.009	0.016

Perc = tetrachloroethylene

All 60 vinyl chloride and 1,2-dichloropropane samples were non-detect (MDL for both is 0.05 ppb)

All air toxics data (VOC and metals) received from John Williamson, WA Department of Ecology.

MDL = minimum detection limit, provided by WA Department of Ecology.

TSP – total suspended particulate

**Statistical Summaries for 2005 Beacon Hill Air Toxics PM<sub>10</sub> Metals**

Concentrations in nanograms per cubic meter (ng/m<sup>3</sup>)

<b>Statistic</b>	<b>Arsenic</b>	<b>Beryllium</b>	<b>Cadmium</b>	<b>Hexavalent Chromium TSP</b>	<b>Total Chromium</b>	<b>Lead</b>	<b>Manganese</b>	<b>Nickel</b>
<b>2005 Count</b>	61	45	61	49	58	61	61	61
<b>Non detects</b>	0	16	0	10	2	0	0	0
<b>Median</b>	0.883	0.003	0.135	0.031	0.916	3.540	7.300	1.610
<b>Mean</b>	1.022	0.005	0.181	0.041	1.342	4.362	10.386	3.100
<b>95th Percentile</b>	2.510	0.009	0.400	0.101	3.229	9.840	34.800	12.600
<b>Maximum</b>	3.350	0.024	1.560	0.166	10.571	13.400	53.600	16.206
<b>MDL</b>	0.008	0.002	0.001	0.012	0.139	0.069	0.091	0.084

### 2005 Air Toxics Unit Risk Factors

AIR TOXIC	UNIT RISK FACTOR RISK/ $\mu\text{g}/\text{m}^3$	CANCER RATING <sup>1</sup>	SOURCE
Formaldehyde	1.3E-05	B1	IRIS <sup>2</sup>
Benzene	7.8E-06	A	IRIS
Carbon Tetrachloride	1.5E-05	B2	IRIS
Chromium (Hexavalent) (M)	1.2E-02	A	IRIS
Chloroform	2.3E-05	B2	IRIS
Arsenic (M)	4.3E-03	A	IRIS
1,3-Butadiene	3E-05	A	IRIS
Acetaldehyde	2.2E-06	B2	IRIS
Nickel (Subsulfide) (M)	4.8E-04	A	IRIS
Tetrachloroethylene	5.9E-06	B2	CAL EPA <sup>3</sup>
Trichloroethylene	2E-06	B2	CAL EPA, EPA NATA <sup>4</sup>
Cadmium (M)	1.8E-03	B1	IRIS
Lead (M)	1.2E-05	B2	CAL EPA
Beryllium (M)	2.4E-03	B1	IRIS

<sup>1</sup> Ratings per 1986 EPA guidelines.

<sup>2</sup> Integrated Risk Information System. EPA. <http://www.epa.gov/iris/>.

<sup>3</sup> California Environmental Protection Agency. Office of Environmental Health Hazard Assessment. <http://www.arb.ca.gov/toxics/healthval/healthval.htm>.

<sup>4</sup> EPA. National Air Toxics Assessment. Health Effects Information. 1999. <http://www.epa.gov/ttn/atw/nata1999/99pdfs/healtheffectsinfo.pdf>.

**2005 Beacon Hill Potential Cancer Risk Estimate per 1,000,000  
Upper Bound – 95<sup>th</sup> Percentile**

<b>AIR TOXIC</b>	<b>UPPER-BOUND POTENTIAL RISK (95<sup>TH</sup> PERCENTILE)</b>
Formaldehyde	30.3
Chromium (M) <sup>5</sup>	25.6
Benzene	13.2
Chloroform	11.3
Arsenic (M)	10.8
Carbon Tetrachloride	10.4
1,3-Butadiene	7.3
Acetaldehyde	6.1
Nickel (M)	6.0
Tetrachloroethylene	3.1
Trichloroethylene	0.8
Cadmium (M)	0.7
Lead (M)	0.1
Beryllium (M)	0.02
Manganese (M)	na

M = Metal, na = not applicable (manganese is not classified as a carcinogen)

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<sup>5</sup> Chromium estimated risks are based on EPA's 1999 National Air Toxics Assessment (NATA) estimate that 66% of total chromium at Beacon Hill is hexavalent, the most toxic form. EPA 1999 National Air Toxic Assessment. <http://www.epa.gov/ttn/atw/nata1999/>.