

## **Appendix II:**

# **Summary of Annual and Monthly PM<sub>10</sub> Statistics at Selected Monitoring Sites in British Columbia**



## Guide to Interpretation of the Data

All analyses are based on PM<sub>10</sub> data collected from 1990-1995. Data were obtained from both manual and continuous samplers. In the present analyses, they are treated as equivalent. As manual samplers generally provide measurements every sixth day while continuous samplers can provide daily measurements, data from the latter tend to provide a more representative picture of ambient conditions.

For each of the selected monitoring sites, two tables are presented in this Appendix. Parameters included in the table are as defined in Section 6. The upper table includes analyses performed on an annual basis. For any particular year, *mean conc.* refers to an annual PM<sub>10</sub> average and *maximum conc.* refers to the highest PM<sub>10</sub> concentration measured over a 24-hour period (midnight-to-midnight). The lower table includes analyses performed on a monthly basis. For any particular month, *mean conc.* refers to a monthly PM<sub>10</sub> average based on all available data collected between 1990-1995, unless specified otherwise. Also, *maximum conc.* refers to the highest PM<sub>10</sub> concentration measured over a 24-hour period (midnight-to-midnight) for that particular month. All concentrations are given in units of micrograms per cubic metre ( $\mu\text{g}/\text{m}^3$ ). *Exceedance frequency* refers to the percentage of samples (on an annual basis) that exceed the BC air quality objective of  $50 \mu\text{g}/\text{m}^3$ . The *number of increments* refers to the sum of  $10 \mu\text{g}/\text{m}^3$  increments above  $20 \mu\text{g}/\text{m}^3$ , adjusted for an entire year.

Where less than 75% data capture was obtained in any particular year, the entries are identified by presenting the text in italics. Caution should be exercised in drawing conclusions based on incomplete datasets. Data capture rates were not calculated for monthly statistics.



**Table II-1. Victoria PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	0	0	-	-	-	-
1991	0	0	-	-	-	-
1992	11	18	16	31	0.0	33
1993	55	90	20	47	0.0	66
1994	56	92	17	32	0.0	7
1995	56	92	14	38	0.0	13

**Table II-2. Port Alberni PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	30	49	20	36	0.0	73
1991	39	64	19	58	2.6	112
1992	26	43	24	81	3.8	225
1993	58	95	24	61	8.6	208
1994	57	93	13	31	0.0	6
1995	46	75	11	34	0.0	8

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	13	19	35
Feb	13	22	40
Mar	15	19	30
Apr	15	14	21
May	13	14	22
Jun	11	12	16
Jul	15	12	18
Aug	15	14	22
Sep	14	17	32
Oct	17	20	47
Nov	18	18	31
Dec	17	17	35

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	19	25	51
Feb	17	25	61
Mar	17	22	37
Apr	23	15	45
May	24	13	32
Jun	26	12	81
Jul	26	14	28
Aug	20	14	31
Sep	20	19	37
Oct	18	19	55
Nov	21	21	49
Dec	21	24	50

**Table II-3. Pitt Meadows PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	0	0	-	-	-	-
1991	51	84	16	37	0.0	50
1992	44	72	17	38	0.0	58
1993	48	79	19	47	0.0	76
1994	56	92	13	38	0.0	20
1995	58	95	13	34	0.0	13

**Table II-4. Abbotsford PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	0	0	-	-	-	-
1991	0	0	-	-	-	-
1992	26	43	21	50	0.0	140
1993	56	92	23	56	3.6	124
1994	59	97	18	51	1.7	49
1995	336*	92	18	60	1.2	64

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	20	19	47
Feb	19	15	35
Mar	27	17	38
Apr	25	13	32
May	24	15	32
Jun	21	13	32
Jul	18	15	35
Aug	18	15	23
Sep	23	21	41
Oct	21	19	47
Nov	21	12	34
Dec	20	12	31

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	22	24	41
Feb	28	17	51
Mar	40	17	37
Apr	41	17	39
May	45	23	56
Jun	45	20	60
Jul	39	20	42
Aug	41	18	35
Sep	45	29	57
Oct	42	16	45
Nov	43	15	48
Dec	46	14	36

\* Data from continuous sampler

**Table II-5. Hope PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	0	0	-	-	-	-
1991	47	77	16	46	0.0	31
1992	50	82	20	107	4.0	139
1993	56	92	16	35	0.0	20
1994	67	100+	13	35	0.0	5
1995	53	87	14	49	0.0	34

**Table II-6. Kitsilano PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	0	0	-	-	-	-
1991	22	36	21	40	0.0	66
1992	55	90	18	44	0.0	46
1993	51	84	21	58	3.9	115
1994	333*	91	15	37	0.0	6
1995	347*	95	15	39	0.0	12

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	20	12	28
Feb	12	16	29
Mar	22	25	107
Apr	20	15	37
May	26	17	36
Jun	22	13	23
Jul	21	15	31
Aug	22	16	31
Sep	30	20	49
Oct	28	15	27
Nov	27	13	38
Dec	23	9	16

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	62	21	58
Feb	60	16	34
Mar	72	15	34
Apr	68	14	37
May	67	15	33
Jun	64	14	25
Jul	65	15	30
Aug	61	14	26
Sep	72	18	34
Oct	70	17	43
Nov	73	14	43
Dec	83	16	38

\* Data from continuous sampler.

+ Sampling frequency was greater than 1-in-6 days for part of the year.

**Table II-7. Port Moody PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	46	75	20	47	0.0	79
1991	51	84	21	53	2.0	93
1992	54	89	19	42	0.0	54
1993	46	75	19	42	0.0	71
1994	345*	95	17	39	0.0	21
1995	334*	92	17	40	0.0	24

**Table II-8. Surrey PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	0	0	-	-	-	-
1991	0	0	-	-	-	-
1992	0	0	-	-	-	-
1993	0	0	-	-	-	-
1994	342*	94	14	34	0.0	2
1995	336*	92	14	34	0.0	3

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	50	22	42
Feb	62	17	42
Mar	79	17	47
Apr	79	16	53
May	82	18	32
Jun	77	17	40
Jul	80	19	36
Aug	72	17	35
Sep	71	23	41
Oct	78	19	39
Nov	76	16	34
Dec	77	13	32

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	40	17	34
Feb	52	11	29
Mar	57	13	29
Apr	60	14	34
May	62	16	24
Jun	58	13	27
Jul	62	15	28
Aug	59	13	24
Sep	57	18	30
Oct	57	13	24
Nov	53	11	28
Dec	61	10	20

\* Data from continuous sampler

**Table II-9. Kamloops PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	47	77	29	221	8.5	412
1991	56	92	26	139	10.7	313
1992	54	89	18	47	0.0	41
1993	55	90	27	93	7.3	239
1994	59	97	19	52	1.7	74
1995	353*	97	17	85	2.3	64

**Table II-10. Merritt PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	56	92	43	120	32.1	750
1991	52	85	42	137	26.9	765
1992	46	75	34	86	15.2	452
1993	42	69	43	117	23.8	687
1994	54	89	32	167	7.4	406
1995	55	90	36	153	20.0	577

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	58	16	49
Feb	49	31	221
Mar	56	26	116
Apr	54	18	67
May	49	17	58
Jun	42	15	35
Jul	49	16	52
Aug	50	16	46
Sep	52	24	49
Oct	54	22	139
Nov	54	20	61
Dec	57	19	85

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	29	33	126
Feb	26	62	153
Mar	25	48	97
Apr	25	35	66
May	28	35	108
Jun	23	40	137
Jul	21	41	106
Aug	25	39	90
Sep	24	29	53
Oct	24	33	125
Nov	26	29	100
Dec	29	35	167

\* Data from continuous sampler.

**Table II-11. Trail PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	41	67	24	47	0.0	125
1991	63	100+	27	73	3.2	214
1992	51	84	24	48	0.0	129
1993	44	72	25	60	2.3	174
1994	45	74	23	70	6.7	178
1995	287*	79	21	58	0.7	79

**Table II-12. Creston PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	20	33	25	56	5.0	183
1991	52	85	34	419	5.8	491
1992	52	85	54	151	38.5	1130
1993	44	72	25	65	4.5	191
1994	49	80	24	60	6.1	179
1995	48	79	20	51	2.1	84

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	49	22	47
Feb	32	27	73
Mar	53	25	46
Apr	50	19	42
May	56	23	48
Jun	49	22	49
Jul	49	23	70
Aug	29	24	59
Sep	50	26	44
Oct	50	22	54
Nov	40	24	60
Dec	24	18	46

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	19	49	145
Feb	16	45	151
Mar	21	35	102
Apr	22	27	105
May	17	29	80
Jun	23	25	79
Jul	24	27	60
Aug	20	28	44
Sep	28	33	118
Oct	25	41	419
Nov	25	24	76
Dec	25	20	47

+ Sampling frequency was greater than 1-in-6 days for part of the year.

\* Data from continuous sampler

**Table II-13. Cranbrook PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	74	100+	31	127	16.2	404
1991	55	90	28	62	12.7	285
1992	44	72	31	150	15.9	431
1993	50	82	29	90	10.0	307
1994	60	98	28	115	13.3	341
1995	54	89	21	55	5.6	142

**Table II-14. Golden PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	0	0	-	-	-	-
1991	0	0	-	-	-	-
1992	30	49	44	106	30.0	803
1993	53	87	40	96	32.1	647
1994	58	95	34	160	15.5	453
1995	52	85	32	104	13.5	372

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	39	32	150
Feb	29	30	127
Mar	32	47	123
Apr	25	25	62
May	24	27	90
Jun	29	18	50
Jul	25	23	54
Aug	33	23	55
Sep	26	28	73
Oct	25	26	59
Nov	28	26	81
Dec	22	25	51

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	19	52	105
Feb	19	56	106
Mar	17	64	160
Apr	15	32	69
May	16	27	55
Jun	14	18	42
Jul	16	20	56
Aug	17	19	38
Sep	14	27	65
Oct	16	37	59
Nov	19	36	96
Dec	11	41	76

+ Sampling frequency was greater than 1-in-6 days for part of the year.

**Table II-15. Quesnel PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	11	18	20	62	9	133
1991	57	93	37	150	18	506
1992	51	83	53	391	27	1124
1993	47	77	38	159	17	575
1994	48	79	31	212	13	411
1995	7	11	29	60	14	313

**Table II-16. Williams Lake PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	8	13	13	21	0	0
1991	59	97	36	125	22	551
1992	43	70	27	94	14	314
1993	58	95	32	90	16	384
1994	60	98	25	102	5	213
1995	55	90	22	53	2	153

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	23	34	105
Feb	17	58	159
Mar	16	116	391
Apr	19	37	83
May	19	29	59
Jun	20	25	52
Jul	21	29	51
Aug	17	34	68
Sep	14	30	60
Oct	16	36	77
Nov	18	30	70
Dec	21	20	81

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	27	18	50
Feb	22	36	125
Mar	27	46	109
Apr	25	25	70
May	26	28	80
Jun	20	25	46
Jul	25	26	53
Aug	20	29	51
Sep	23	35	102
Oct	18	34	100
Nov	23	25	115
Dec	27	15	53

**Table II-17. 100 Mile House PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	0	0	-	-	-	-
1991	0	0	-	-	-	-
1992	0	0	-	-	-	-
1993	48	79	18	59	4	91
1994	53	87	24	105	9	248
1995	53	87	27	82	13	282

**Table II-18. Terrace PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	0	0	-	-	-	-
1991	0	0	-	-	-	-
1992	0	0	-	-	-	-
1993	10	16	17	28	0.0	0
1994	46	75	23	76	6.5	175
1995	60	98	21	93	3.3	152

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	8	8	14
Feb	8	21	55
Mar	13	43	105
Apr	15	22	50
May	17	26	59
Jun	14	20	48
Jul	12	26	63
Aug	13	22	35
Sep	16	30	77
Oct	19	21	40
Nov	12	9	19
Dec	7	11	30

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	10	15	26
Feb	10	22	36
Mar	10	33	64
Apr	8	26	39
May	8	24	50
Jun	8	20	44
Jul	11	24	76
Aug	9	21	48
Sep	10	27	93
Oct	11	20	38
Nov	12	15	31
Dec	9	12	23

**Table II-19. New Hazelton PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	0	0	-	-	-	-
1991	0	0	-	-	-	-
1992	0	0	-	-	-	-
1993	30	49	28	86	6.7	304
1994	50	82	25	86	8.0	234
1995	41	67	26	63	12.2	231

**Table II-20. Prince George - Gladstone PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	0	0	-	-	-	-
1991	0	0	-	-	-	-
1992	31	51	20	54	3.2	106
1993	57	93	26	122	8.8	282
1994	60	98	17	50	0.0	85
1995	60	98	17	63	3.3	79

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	9	18	27
Feb	7	12	16
Mar	10	19	32
Apr	7	22	36
May	8	48	73
Jun	8	30	55
Jul	15	28	42
Aug	10	23	40
Sep	12	22	56
Oct	11	23	40
Nov	10	22	63
Dec	8	38	86

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	16	28	52
Feb	14	29	122
Mar	15	22	63
Apr	13	18	42
May	16	18	34
Jun	16	15	49
Jul	19	13	25
Aug	21	24	80
Sep	20	20	50
Oct	20	20	42
Nov	20	14	46
Dec	18	18	54

**Table II-21. Prince George-Plaza 400 PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	29	48	21	90	6.9	239
1991	57	93	30	217	10.5	384
1992	59	97	29	92	10.2	309
1993	60	98	30	92	16.7	347
1994	60	98	24	85	10.0	225
1995	48	79	27	89	10.4	289

**Table II-22. Prince George-BC Rail PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	0	-	-	-	-	-
1991	0	-	-	-	-	-
1992	22	36	31	76	9.1	348
1993	59	97	43	147	28.8	736
1994	57	93	38	143	21.1	596
1995	51	84	41	181	31.4	723

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	27	27	63
Feb	22	34	92
Mar	27	51	217
Apr	21	26	58
May	24	24	49
Jun	24	22	60
Jul	25	21	46
Aug	34	23	74
Sep	30	29	54
Oct	25	25	67
Nov	25	22	51
Dec	29	23	90

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	14	36	67
Feb	12	45	147
Mar	13	63	181
Apr	13	48	143
May	16	44	86
Jun	15	31	71
Jul	15	30	67
Aug	16	47	104
Sep	19	49	110
Oct	17	41	93
Nov	19	26	68
Dec	20	26	76

**Table II-23. Vernon PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	0	0	-	-	-	-
1991	0	0	-	-	-	-
1992	44	72	42	135	31.8	722
1993	49	80	37	111	24.5	544
1994	42	69	25	66	11.9	243
1995	52	85	22	80	1.9	119

**Table II-24. Kelowna PM<sub>10</sub> Levels**

Year	Number of Samples	Data Capture (%)	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )	Exceedance Frequency (%)	Number of Increments
1990	58	95	22	77	5.2	151
1991	59	97	28	130	10.2	309
1992	31	51	24	98	3.2	153
1993	52	85	27	108	5.8	225
1994	55	90	21	64	1.8	133
1995	46	75	19	51	2.2	79

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	11	31	66
Feb	18	46	85
Mar	12	65	127
Apr	19	28	68
May	20	24	55
Jun	18	28	64
Jul	19	20	42
Aug	15	24	93
Sep	14	25	52
Oct	18	40	135
Nov	14	26	57
Dec	9	30	65

Month	Number of Samples	Mean Conc. (µg/m <sup>3</sup> )	Maximum Conc. (µg/m <sup>3</sup> )
Jan	29	25	78
Feb	23	39	108
Mar	20	36	64
Apr	24	21	45
May	24	18	59
Jun	25	12	26
Jul	21	24	98
Aug	30	21	49
Sep	31	22	42
Oct	30	23	130
Nov	23	23	47
Dec	20	23	55