



# **Palliser Airshed Society**

## **Ambient Air Monitoring Network Summary**

**January 2004**

Prepared By:

**FOCUS**  
AIR QUALITY MONITORING



February 23, 2004

Alberta Environment  
Enforcement and Monitoring Division  
11<sup>th</sup> Floor, Oxbridge Place  
9820 - 106<sup>th</sup> Street  
Edmonton, Alberta, T5K 2J6

**Attention: Director of Monitoring and Evaluation**

**RE: Palliser Airshed Society (PAS) Ambient Air Monitoring Report – January 2004**

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Enclosed is the first PAS Ambient Air Monitoring Report which starts in the month of **January 2004**. Site locations of the passive monitors and the continuous monitoring site are outlined in Appendix A.

### **Continuous Monitoring**

Included in this report is a summary of the sampling equipment, monthly summary tables, detailed hourly average reports and multipoint calibration reports of all instruments recently installed in Medicine Hat.

The measured ambient air quality was within the Provincial and Federal guidelines in Medicine Hat. Operational time of all compliance instruments was above 95%. There were no significant events leading to emergency response for the month of January. The following is a summary of the monthly averages found during this month of sampling:

- Monthly average concentrations of NO<sub>2</sub> was 9.5 ppb
- Monthly average concentrations for O<sub>3</sub> was 21.4 ppb
- Monthly average concentrations for THC was 2.3 ppm
- Monthly average concentrations for PM<sub>2.5</sub> was 2.1 µg/m<sup>3</sup>

A calibration audit was performed at the Medicine Hat station by Alberta Environment personnel on February 12, 2004. A formal audit report has not yet been received, however, the indication at the time of the audit was that all parameters passed and that there were no problems with the station.

### **Passive Monitoring**

There were two months of passive data collected at the six sites. In the month of December 2003 there were two passive filters (NO<sub>2</sub> and O<sub>3</sub>) broken at site one (Hospital). In addition, there was one SO<sub>2</sub> passive broken at site four (Redcliff), however, there was a duplicate sample run at site four. For the month of December, 2003 the following results were found:



- Monthly average concentrations for SO<sub>2</sub> passives ranged from 0.3 ppb to 0.5 ppb
- Monthly average concentrations for NO<sub>2</sub> passives ranged from 4.9 ppb to 11.8 ppb
- Monthly average concentrations for O<sub>3</sub> passives ranged from 13.6 ppb to 23.8 ppb

In the month of January 2004 there was one SO<sub>2</sub> passive broken at site five (Southridge), however, there was a duplicate run at site five as well. For the month of January, 2004 the following results were found:

- Monthly average concentrations for SO<sub>2</sub> passives ranged from 0.5 ppb to 0.9 ppb
- Monthly average concentrations for NO<sub>2</sub> passives ranged from 5.8 ppb to 9.0 ppb
- Monthly average concentrations for O<sub>3</sub> passives ranged from 22.6 ppb to 32.5 ppb

If you have any questions, please contact the Focus office at 466-6555.

Sincerely,

Kevin McCullum, M.Sc., P.Eng.  
AQM Environmental Engineering Specialist

Attachments

cc PAS Board  
Mr. Bob Scotten



April 23, 2004

## January 2004 Monthly Overall Summary Report

Ambient Air Quality Data

Jan-2004		PAS - AMBIENT AIR QUALITY DATA					Maximum Recorded Values					Operational Time (%)
							1-hr			24-hr		
Pollutant (units)	Limits		Station	Monthly Average	Exceedance		Conc (units)	Day	hour	Conc (units)	Day	
	1-hr	24-hr			1-hr	24-hr						
O <sub>3</sub> (ppb)	82	-	Medicine Hat	21.4	0	0	39.6	21-Jan	5:00 5:59	32.0	28-Jan	96.5%
NO (ppb)	-	-	Medicine Hat	6.4	0	0	100.8	19-Jan	9:00 9:59	19.8	8-Jan	96.5%
NO <sub>2</sub> (ppb)	210	110	Medicine Hat	9.5	0	0	43.5	6-Jan	17:00 17:59	20.9	8-Jan	96.5%
NO <sub>x</sub> (ppb)	-	-	Medicine Hat	16.0	0	0	122.5	6-Jan	17:00 17:59	41.8	8-Jan	96.5%
THC (ppm)	-	-	Medicine Hat	2.3	0	0	4.3	6-Jan	20:00 20:59	2.9	8-Jan	96.1%
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	-	30.0	Medicine Hat	2.1	0	0	13.9	1-Jan	9:00 9:59	8.3	1-Jan	96.5%
RH (%)	-	-	Medicine Hat	70.7	-	-	93.0	23-Jan	8:00 8:59	82.2	16-Jan	96.5%
TEMP (Deg C)	-	-	Medicine Hat	-10.8	-	-	8.1	22-Jan	19:00 19:59	4.6	15-Jan	96.5%
Solar Rad (W/m <sup>2</sup> )	-	-	Medicine Hat	51.5	-	-	402.0	10-Jan	12:00 12:59	64.9	30-Jan	96.5%
WSPD (km/hr)	-	-	Medicine Hat	10.9	-	-	37.6	13-Jan	6:00 6:59	17.5	10-Jan	96.5%
WDIR (Deg)	-	-	Medicine Hat	267.7	-	-	-	-	-	-	-	96.5%

Note: exceedances of PM<sub>2.5</sub> is based on the 24-hr Canada-wide Standards for PM<sub>2.5</sub>.



April 23, 2004

# Continuous Monitoring

## Ambient Air Compliance Network

### PAS - Medicine Hat Station

#### INSTRUMENTATION SUMMARY

Parameter	Make	Model	Units	Operational Issues
Ozone	Teledyne - API	400E	ppb	new analyzer - no issues calibrating
Nitrogen Dioxide	Teledyne - API	200E	ppb	new analyzer - no issues calibrating
Total Hydrocarbons	Bendix	400A	ppm	used analyzer - calibrated fine, this unit will be replaced when the new one is received. This unit is currently on loan from AENV.
PM 2.5	R&P TEOM	1400ab	ug/m3	used analyzer - This unit was donated by Environment Canada. Some noise is evident, which is typical with units of this vintage.
Wind Speed	Met One	010C	KPH	new sensor - no issues
Wind Direction	Met One	020C	Deg	new sensor - no issues
Ambient Temperature	Met One	083D	DegC	new sensor - no issues
Relative Humidity	Met One	083D	%	new sensor - no issues
Solar Radiation	Met One	096-1	W/m2	new sensor - no issues
DACS	Titan Logix	AP1000	N/A	some communications problems were experienced in the early part of the month which was the cause of some data loss on Jan 9, 12 & 13. This problem has been rectified, and communications are functioning.



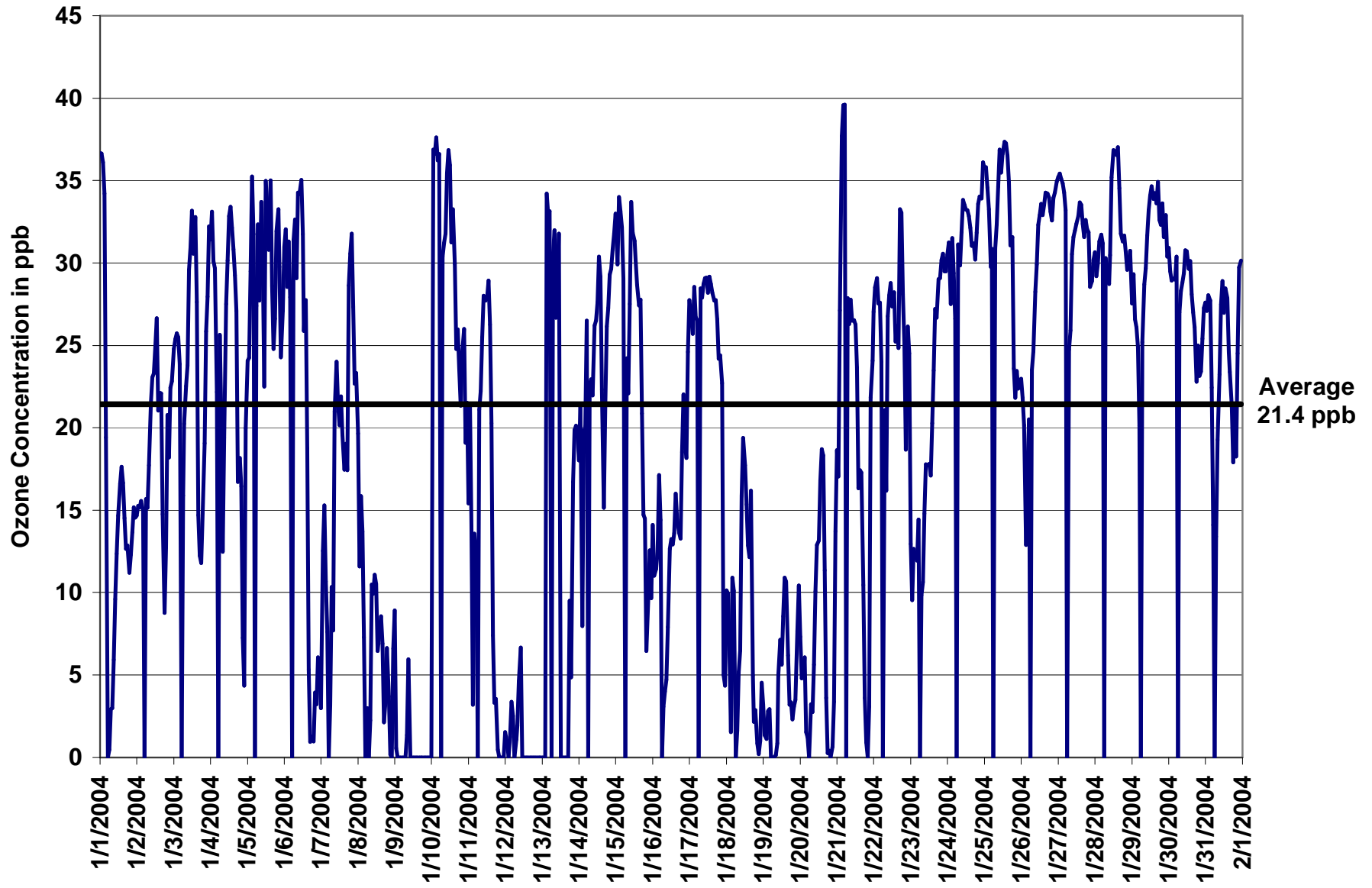


Figure 1. PAS - Medicine Hat O<sub>3</sub> Monthly Trend





Station: Medicine Hat

Station Owner: Pallisar Airshed Society

**Parameter :** Nitrogen Oxide (NO)

**Guideline Limit:** Alberta Environment:

1-hr	na	ppm	24-hr	na	ppm
1-hr	na	ppb	24-hr	na	ppb

**Sampling Dates:** January 1, 2004 to January 31, 2004

**Summary**

Number of 1-hr Exceedances:	0				
Number of 24-hr Exceedances:	0				
Maximum 1-hr Average:	100.8	ppb	19-Jan	9:00 9:59	
Maximum 24-hr Average:	19.8	ppb	8-Jan		

AIC Time:	31 hrs		Operational Time:	676 hrs	
Calibration Time:	11 hrs		AMD Operational Uptime:	96.5%	
Percentile	99	95	75	50	25
	59.7	26.4	6.4	2.8	1.0
Average	6.4 ppb				
Geomean	- ppb				

**Status Characters**

C	Calibration	A	AIC - Zero / Span Check
S	Instrument out of Service	R	Alarm
*	< 75% valid data	X	Filter Exchange
N	Excessive Instrument Drift	M	Equipment Maintenance
F	DACS Off-Line		
E	Exceedance		

**Day** Mountain Standard Time

Hour Start	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-hr	Daily
Hour End	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	Average	Maximum
1-Jan-04	0.5	0.3	0.2	0.7	1.8	A	6.9	5.7	8.0	16.0	12.5	13.3	8.3	6.4	4.4	3.4	2.8	2.7	2.9	2.7	2.1	2.3	1.6	1.3	4.6	16.0
2-Jan-04	2.0	1.1	1.5	2.0	1.3	A	2.9	4.7	3.5	3.6	4.9	4.8	5.1	2.9	7.4	6.0	4.5	6.6	6.8	4.1	2.0	2.4	1.7	1.9	3.6	7.4
3-Jan-04	1.3	1.6	1.0	0.7	0.3	A	1.6	2.2	2.6	4.3	3.6	4.1	3.6	6.1	4.5	4.2	11.5	15.0	10.5	3.5	4.5	5.3	2.8	0.4	4.1	15.0
4-Jan-04	0.3	2.2	1.5	0.6	0.5	A	0.7	2.1	18.6	13.3	9.0	7.8	7.7	6.9	6.0	4.3	2.5	5.2	7.3	3.7	4.3	15.1	21.3	3.9	6.3	21.3
5-Jan-04	1.6	11.1	7.6	0.9	0.8	A	1.5	1.9	3.7	3.0	7.2	28.5	5.7	6.2	7.8	2.9	3.0	3.6	1.7	1.3	1.1	1.6	1.5	3.4	4.7	28.5
6-Jan-04	1.6	2.8	7.5	3.0	3.7	A	2.7	3.6	6.9	2.8	5.3	6.2	10.9	18.0	10.3	13.3	27.7	78.7	45.2	74.1	26.8	9.5	16.7	5.6	16.6	78.7
7-Jan-04	36.0	0.7	2.6	3.4	3.8	A	9.9	8.9	17.7	6.4	6.8	10.5	18.9	13.9	12.5	7.8	2.9	1.9	0.0	0.1	0.0	0.0	0.4	0.5	7.2	36.0
8-Jan-04	0.3	1.1	11.3	0.4	1.0	A	3.7	22.1	40.1	18.9	37.9	49.0	54.7	68.5	38.8	17.9	8.9	11.5	10.0	4.1	9.1	22.5	21.1	2.8	19.8	68.5
9-Jan-04	0.0	2.3	7.4	6.7	7.9	A	18.2	25.5	32.9	25.6	C	C	C	C	M	M	M	M	C	C	C	C	C	C	*	32.9
10-Jan-04	C	4.8	3.8	3.3	3.3	3.2	A	6.0	3.4	4.3	3.8	5.1	5.3	11.2	5.5	4.8	5.3	3.2	2.9	3.1	2.8	2.1	3.2	4.1	4.3	11.2
11-Jan-04	10.9	1.3	10.9	12.7	1.4	2.2	A	0.4	4.2	2.4	4.2	4.3	3.3	3.2	3.8	4.9	9.2	13.2	27.3	83.5	60.2	35.5	27.2	35.7	15.7	83.5
12-Jan-04	45.1	8.1	18.0	33.6	5.4	6.2	A	21.9	37.2	46.1	59.5	F	F	F	F	F	F	F	F	F	F	F	F	F	*	59.5
13-Jan-04	F	F	F	0.1	2.8	1.3	A	1.8	1.3	5.9	1.9	1.8	F	F	F	F	F	F	38.2	52.5	6.4	4.5	8.6	0.4	5.2	52.5
14-Jan-04	5.0	0.5	7.3	2.1	4.4	1.1	A	1.5	2.0	2.6	1.9	7.1	3.2	5.4	3.4	5.7	3.6	1.2	4.3	0.7	0.5	0.4	0.6	1.3	2.9	7.3
15-Jan-04	1.0	5.2	0.1	0.6	0.1	3.2	A	5.2	2.4	2.1	1.6	1.9	2.4	3.3	3.8	2.4	2.2	7.0	1.9	6.2	12.5	5.4	2.7	1.8	3.3	12.5
16-Jan-04	0.9	16.3	0.5	10.5	0.7	0.9	A	9.3	27.0	14.5	16.3	12.0	10.4	9.0	6.8	3.4	2.2	1.3	1.6	0.7	0.6	1.1	0.9	0.2	6.4	27.0
17-Jan-04	0.1	0.0	0.0	0.0	0.0	0.0	A	0.0	0.0	0.0	0.1	1.1	1.2	0.7	0.8	0.5	0.0	0.0	0.0	0.0	0.3	0.0	11.2	14.4	1.3	14.4
18-Jan-04	4.0	4.2	2.9	12.5	4.1	3.0	A	8.6	7.2	16.9	9.5	5.2	6.7	12.7	11.1	10.4	3.4	4.7	14.9	5.3	8.8	20.6	20.2	2.3	8.7	20.6
19-Jan-04	3.1	7.2	7.7	4.1	3.0	18.0	A	46.9	88.4	100.8	20.7	17.3	23.8	12.6	11.4	6.8	8.8	11.8	14.4	16.6	5.8	4.4	4.5	1.8	19.1	100.8
20-Jan-04	1.1	0.9	12.5	4.0	12.2	6.2	A	10.7	12.7	10.2	7.2	8.0	6.8	4.8	8.6	4.4	7.2	10.3	30.9	34.0	58.5	15.8	6.4	2.4	12.0	58.5
21-Jan-04	0.7	0.9	0.0	0.1	0.2	0.1	A	0.7	1.2	0.5	0.8	1.4	1.3	3.1	7.4	4.4	1.3	3.3	12.7	25.6	17.1	26.3	3.7	0.3	4.9	26.3
22-Jan-04	0.3	3.4	3.0	4.4	0.2	0.6	A	2.6	4.6	1.3	1.7	2.2	2.1	1.7	2.4	2.9	2.0	0.8	1.1	4.0	1.1	6.9	0.7	0.1	2.2	6.9
23-Jan-04	1.3	1.6	1.5	0.7	0.9	1.0	A	1.5	5.3	1.1	1.7	2.3	2.2	1.5	0.9	1.5	0.7	0.2	0.0	0.1	0.1	0.2	0.0	0.0	1.1	5.3
24-Jan-04	0.1	0.0	0.1	0.0	0.0	0.0	A	0.0	0.0	0.3	0.6	1.1	1.3	1.7	1.7	1.4	1.1	0.5	0.4	0.3	0.2	0.4	0.4	0.2	0.5	1.7
25-Jan-04	0.0	0.3	1.0	1.5	1.3	1.4	A	1.3	1.1	1.6	1.8	7.8	5.2	2.7	2.6	2.1	1.3	1.1	1.2	1.5	1.7	1.0	0.9	0.7	1.8	7.8
26-Jan-04	0.7	0.8	7.5	2.5	2.2	1.4	A	2.5	5.4	3.6	5.3	3.7	3.7	3.8	6.3	3.6	1.9	0.6	0.9	0.9	1.5	2.5	2.1	1.1	2.8	7.5
27-Jan-04	0.9	0.9	0.7	1.1	1.5	1.5	A	3.6	5.0	3.9	4.6	4.9	5.6	4.1	3.4	3.2	1.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	2.1	5.6
28-Jan-04	0.0	0.0	0.0	0.0	0.0	0.0	A	0.0	0.8	2.6	4.0	1.7	1.2	1.8	2.5	2.3	4.4	4.4	3.8	2.4	1.4	1.9	1.3	0.5	1.6	4.4
29-Jan-04	0.5	0.9	0.4	0.0	0.0	0.0	A	0.0	0.1	1.7	2.2	1.8	2.1	1.9	3.1	2.7	1.2	0.0	0.0	0.0	0.2	0.2	0.7	0.1	0.9	3.1
30-Jan-04	0.2	0.4	0.7	0.3	0.0	0.0	A	0.7	1.1	2.9	5.6	6.6	4.9	5.0	4.4	4.5	3.1	2.1	2.0	1.3	1.3	1.4	0.7	0.4	2.2	6.6
31-Jan-04	0.2	0.4	0.4	0.4	0.8	2.0	A	2.6	3.7	6.7	5.5	6.2	8.5	6.6	6.6	6.0	4.4	2.3	3.4	1.5	2.4	1.2	0.6	0.4	3.2	8.5
Hourly Avg	4.1	2.7	4.0	3.6	2.1	*	*	6.6	11.2	10.5	8.3	7.9	7.7	8.1	6.7	4.9	4.6	6.9	8.5	11.5	8.1	6.6	5.6	3.0		
Hourly Max	45.1	16.3	18.0	33.6	12.2	18.0	18.2	46.9	88.4	100.8	59.5	49.0	54.7	68.5	38.8	17.9	27.7	78.7	45.2	83.5	60.2	35.5	27.2	35.7		

Station: Medicine Hat

Station Owner: Pallisar Airshed Society

Parameter : Nitrogen Dioxide (NO<sub>2</sub>)

Table with 4 columns: 1-hr 0.21 ppm, 24-hr 0.11 ppm, 1-hr 210 ppb, 24-hr 110 ppb

Sampling Dates: January 1, 2004 to January 31, 2004

Summary

Summary table with 4 columns: Number of 1-hr Exceedances: 0, Number of 24-hr Exceedances: 0, Maximum 1-hr Average: 43.5 ppb, Maximum 24-hr Average: 20.9 ppb

Status Characters

Legend for status characters: C Calibration, S Instrument out of Service, \* < 75% valid data, N Excessive Instrument Drift, F DACS Off-Line, E Exceedance, A AIC - Zero / Span Check, R Alarm, X Filter Exchange, M Equipment Maintenance

AIC Time: 31 hrs, Operational Time: 676 hrs, Calibration Time: 11 hrs, AMD Operational Uptime: 96.5%, Percentile table

Main data table with columns: Day, Hour Start/End, Hourly concentrations (0:00 to 23:00), 24-hour Average, Daily Maximum

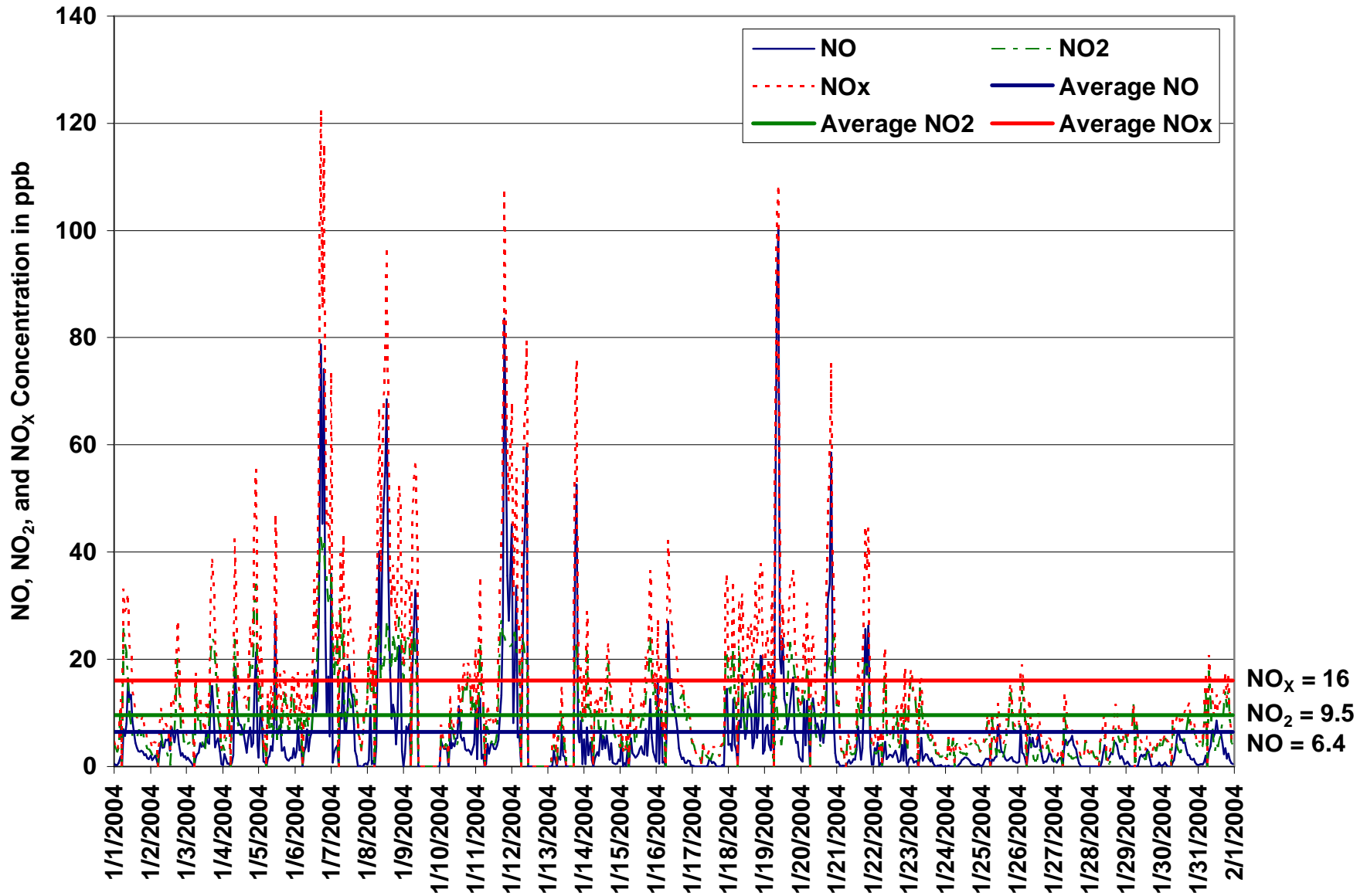


Figure 2. PAS – Medicine Hat NO, NO<sub>2</sub>, NO<sub>x</sub> Monthly Trends

Station: Medicine Hat

Station Owner: Pallisar Airshed Society

Parameter: Total Hydrocarbons (THC)

Guideline Limit: Alberta Environment:

1-hr	na	ppm	24-hr	na	ppm
1-hr	na	ppb	24-hr	na	ppb

Sampling Dates: January 1, 2004 to January 31, 2004

Summary

Number of 1-hr Exceedances:	0				
Number of 24-hr Exceedances:	0				
Maximum 1-hr Average:	4.3	ppm	6-Jan	20:00	20:59
Maximum 24-hr Average:	2.9	ppm	8-Jan		

AIC Time:	31 hrs		Operational Time:	673 hrs					
Calibration Time:	11 hrs		AMD Operational Uptime:	96.1%					
Percentile	99	95	75	50	25	5	1	Average	Geomean
	3.4	2.9	2.4	2.2	2.1	2.0	1.9	2.3 ppm	- ppm

Status Characters

C	Calibration	A	AIC - Zero / Span Check
S	Instrument out of Service	R	Alarm
*	< 75% valid data	X	Filter Exchange
N	Excessive Instrument Drift	M	Equipment Maintenance
F	DACS Off-Line		
E	Exceedance		

Day Mountain Standard Time

Day	Hour Start	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-hr Average	Daily Maximum
Hour End	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59			
1-Jan-04	2.0	2.0	2.0	2.0	2.3	3.0	2.9	2.7	2.8	2.8	3.1	A	2.7	2.7	2.6	2.5	2.4	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.3	2.5	3.1
2-Jan-04	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	A	M	2.3	2.3	2.4	2.5	2.5	2.4	2.3	2.3	2.2	2.2	2.3	2.5
3-Jan-04	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.3	2.2	2.2	A	2.2	2.2	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.1	2.2	2.2	2.4
4-Jan-04	2.1	2.1	2.1	2.1	2.2	2.3	2.3	2.3	2.4	A	2.3	2.3	2.3	2.2	2.3	2.2	2.3	2.3	2.4	2.5	2.4	2.5	2.5	2.4	2.3	2.3	2.5
5-Jan-04	2.3	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	1.8	A	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.1	2.2	2.3
6-Jan-04	2.1	2.1	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	3.7	A	2.2	2.3	2.9	2.5	2.6	2.9	2.9	3.1	4.3	3.5	4.3	3.1	2.7	4.3	
7-Jan-04	2.7	2.5	2.9	2.7	2.7	2.8	2.8	2.6	2.6	2.5	A	2.5	2.6	2.6	2.7	2.7	2.7	2.6	2.5	2.5	2.4	2.4	2.5	2.4	2.6	2.9	
8-Jan-04	2.5	2.4	2.5	2.6	2.6	2.8	2.9	3.1	3.4	3.0	A	2.9	3.0	3.0	3.3	3.1	2.8	3.0	3.1	2.9	2.8	3.0	3.0	3.0	2.9	3.4	
9-Jan-04	2.7	2.9	3.0	3.2	3.3	A	3.4	3.5	3.4	3.2	C	C	C	C	M	M	M	C	C	C	C	C	C	C	*	3.5	
10-Jan-04	C	2.2	2.1	2.1	2.1	2.1	M	2.1	2.1	2.1	A	2.0	2.0	2.0	2.1	2.2	2.3	2.3	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.3	
11-Jan-04	2.2	2.2	2.2	2.3	2.2	2.2	2.1	2.1	2.1	A	2.1	2.1	2.1	2.2	2.2	2.4	2.5	2.6	2.6	3.0	2.9	2.9	2.8	2.8	2.4	3.0	
12-Jan-04	2.6	2.4	2.5	2.7	2.4	2.4	2.5	2.5	2.5	2.5	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	*	2.7
13-Jan-04	F	F	F	2.0	2.0	2.0	2.0	1.9	1.9	1.9	A	2.0	F	F	F	F	F	F	F	2.4	2.5	2.2	2.1	2.1	2.2	*	2.5
14-Jan-04	2.1	2.1	2.3	2.1	2.1	2.1	2.1	2.1	2.0	2.1	A	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.3
15-Jan-04	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	1.6	A	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.2	2.2	2.1	2.2	2.0	2.2	2.2
16-Jan-04	2.1	2.1	2.3	2.3	2.1	2.1	2.2	2.2	2.2	2.3	A	2.6	2.6	2.6	2.5	2.6	2.6	2.6	2.6	2.6	2.4	2.3	2.3	2.4	2.3	2.4	2.6
17-Jan-04	2.2	2.3	2.3	2.2	2.3	2.3	2.2	2.3	2.3	A	2.3	2.3	2.3	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.3	2.4
18-Jan-04	2.4	2.4	2.6	2.6	2.6	2.6	2.8	2.8	2.6	A	A	2.4	2.5	2.3	2.5	2.4	2.1	2.4	2.5	2.5	2.5	2.9	3.0	2.6	2.5	3.0	
19-Jan-04	2.6	2.7	2.7	2.6	2.5	2.6	2.7	2.6	2.8	2.8	A	2.5	2.6	2.6	2.6	2.5	2.4	2.5	2.5	2.5	2.7	2.6	2.4	2.4	2.6	2.8	
20-Jan-04	2.4	2.5	2.4	2.4	2.5	2.4	2.4	2.3	2.3	A	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.4	2.6	2.7	2.7	2.7	2.6	2.4	2.7	
21-Jan-04	2.5	2.5	2.3	2.1	2.1	2.1	2.2	2.2	2.2	2.3	A	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.1	2.1	2.3	2.5	
22-Jan-04	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.0	A	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.1
23-Jan-04	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.4	2.1	A	2.5	2.4	2.5	2.4	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.5
24-Jan-04	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	A	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
25-Jan-04	2.0	2.1	2.0	2.0	2.1	2.1	2.0	2.1	2.1	2.7	A	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.4	2.3	2.3	2.2	2.2	2.7
26-Jan-04	2.2	2.2	2.3	2.3	2.3	2.3	2.2	2.2	2.3	2.2	A	2.3	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3
27-Jan-04	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.2	A	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.2	2.4	2.4
28-Jan-04	2.2	2.2	2.2	2.2	2.1	2.2	2.4	2.3	2.2	2.3	2.3	3.9	A	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	3.9
29-Jan-04	2.2	2.3	2.3	2.2	2.2	2.3	2.4	2.2	2.2	1.8	A	2.5	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.1	2.2	2.1	2.2	2.1	2.2	2.5
30-Jan-04	2.3	2.2	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.1	A	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3
31-Jan-04	2.1	2.1	2.1	2.2	2.2	2.3	2.3	2.3	2.3	2.3	1.7	A	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.3
Hourly Avg	2.3	2.2	2.3	2.3	2.3	2.3	2.4	2.3	2.3	2.3	*	*	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.3	2.3	2.3
Hourly Max	2.7	2.9	3.0	3.2	3.3	3.0	3.4	3.5	3.4	3.2	3.7	3.9	3.0	3.0	3.3	3.1	2.8	3.0	3.1	3.1	4.3	3.5	4.3	3.1	2.2	3.1	3.1

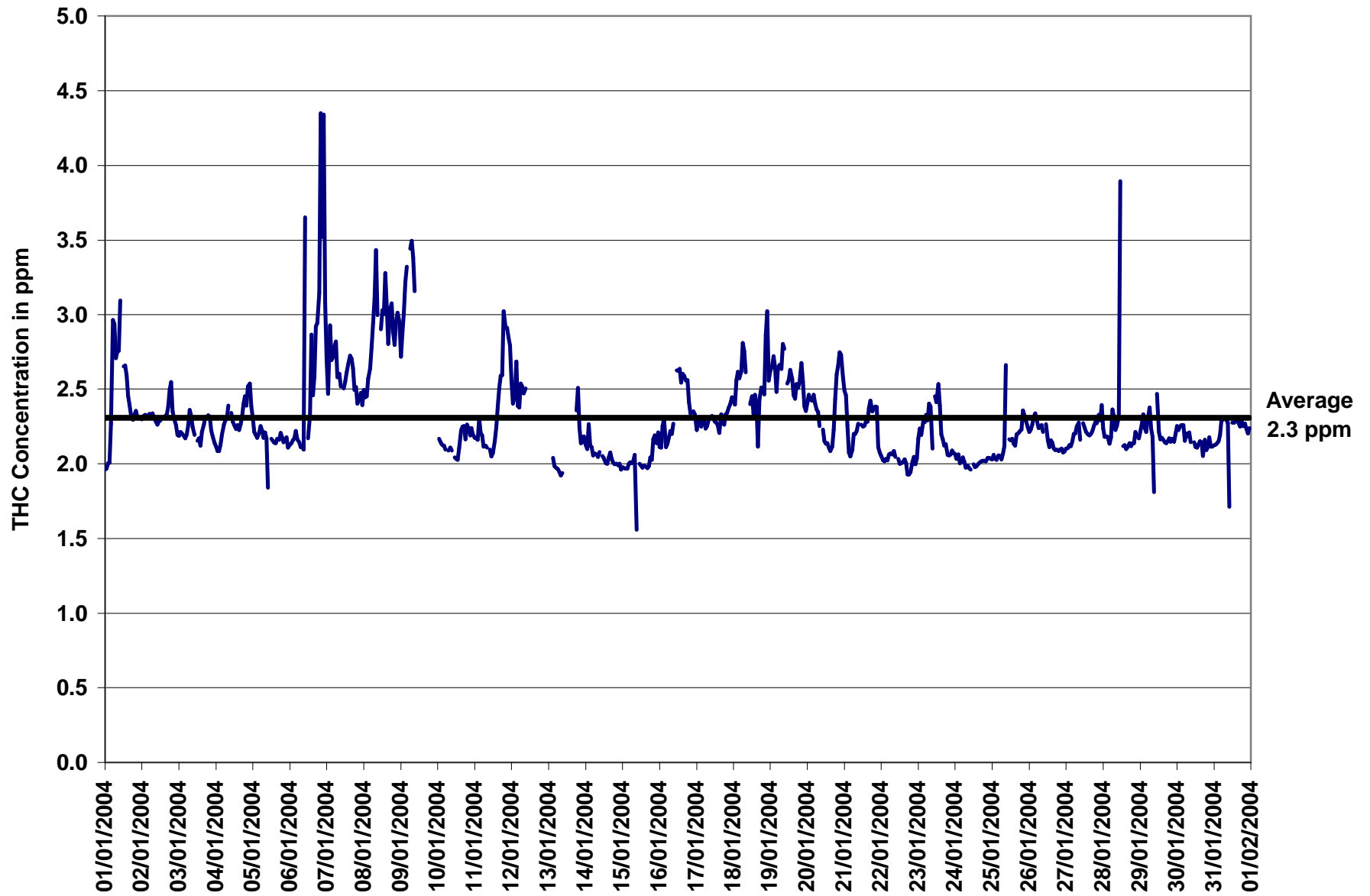


Figure 3. PAS – Medicine Hat THC Monthly Trends

Station: Medicine Hat

Station Owner: Pallisar Airshed Society

Parameter : Particulate Matter (PM<sub>2.5</sub>)

Guideline Limit:	Canada Wide Standard	1-hr	na	$\mu\text{g}/\text{m}^3$	24-hr	30	$\mu\text{g}/\text{m}^3$
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Sampling Dates: January 1, 2004 to January 31, 2004

Summary

Number of 1-hr Exceedances:	0						
Number of 24-hr Exceedances:	0						
Maximum 1-hr Average:	13.9	$\mu\text{g}/\text{m}^3$	1-Jan	9:00	9:59		
Maximum 24-hr Average:	8.3	$\mu\text{g}/\text{m}^3$	1-Jan				

AIC Time:	0 hrs						Operational Time:	717 hrs	
Calibration Time:	0 hrs						AMD Operational Uptime:	96.4%	
Percentile	99	95	75	50	25	5	1	Average	Geomean
	11.5	6.6	3.0	1.5	0.3	0.0	0.0	2.1 $\mu\text{g}/\text{m}^3$	- $\mu\text{g}/\text{m}^3$

Status Characters

C	Calibration	A	AIC - Zero / Span Check
S	Instrument out of Service	R	Alarm
*	< 75% valid data	X	Filter Exchange
N	Excessive Instrument Drift	M	Equipment Maintenance
F	DACS Off-Line		
E	Exceedance		

Day Mountain Standard Time

Day	Hour Start	Hour End	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-hr Average	Daily Maximum
1-Jan-04	0:00	0:59	0.0	0.4	0.5	0.4	4.0	11.8	10.0	12.7	13.0	13.9	11.1	13.3	11.2	9.8	10.3	10.3	10.2	8.6	9.9	10.2	9.6	6.4	5.3	5.2	8.3	13.9
2-Jan-04	0:00	0:59	5.5	8.8	6.7	6.3	6.6	6.4	6.9	6.2	3.6	2.9	1.1	0.5	0.8	1.3	1.4	1.5	0.3	1.8	2.6	3.2	1.8	2.9	2.7	0.9	3.4	8.8
3-Jan-04	0:00	0:59	1.1	1.0	1.3	0.6	0.4	1.5	2.5	2.7	3.0	5.3	1.4	0.7	0.0	1.0	0.7	0.5	2.3	2.4	3.0	3.0	2.8	1.3	0.9	0.0	1.6	5.3
4-Jan-04	0:00	0:59	0.0	0.4	1.7	0.6	1.7	2.9	2.8	3.8	5.4	7.1	3.9	1.1	1.8	2.8	1.6	0.3	0.0	0.4	1.5	1.9	2.0	2.8	4.7	1.6	2.2	7.1
5-Jan-04	0:00	0:59	1.8	0.8	0.0	0.0	0.0	0.2	2.1	1.1	2.5	0.0	0.0	0.9	0.3	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.0	0.5	2.5
6-Jan-04	0:00	0:59	0.0	0.0	1.1	0.0	0.4	0.0	0.2	0.0	0.0	0.3	0.0	0.0	0.5	0.1	0.4	0.1	1.3	5.5	5.3	6.2	1.7	2.5	1.1	5.3	1.3	6.2
7-Jan-04	0:00	0:59	8.5	0.9	0.0	0.0	0.0	0.7	0.0	0.3	3.4	1.0	0.0	0.7	0.6	0.0	1.2	0.5	0.0	0.0	1.4	1.1	0.6	1.3	1.7	1.4	1.0	8.5
8-Jan-04	0:00	0:59	2.4	4.1	0.8	0.7	1.2	1.4	0.6	3.8	6.4	2.1	5.3	5.5	6.9	9.2	6.6	1.0	0.0	1.3	0.8	0.7	2.3	5.8	4.6	1.9	3.1	9.2
9-Jan-04	0:00	0:59	2.9	3.7	2.7	1.8	0.8	1.9	3.2	4.9	5.9	6.7	12.7	11.6	8.8	M	M	M	M	1.4	0.0	0.0	0.0	0.0	0.0	0.0	4.0	12.7
10-Jan-04	0:00	0:59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.2	2.5	3.8	3.1	2.1	0.8	2.4	2.5	0.0	1.0	0.0	0.9	3.8
11-Jan-04	0:00	0:59	0.1	0.0	1.3	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	2.0	2.7	3.0	4.6	4.1	6.3	5.4	2.9	2.6	1.8	1.6	6.3
12-Jan-04	0:00	0:59	3.1	0.4	0.9	2.2	0.1	0.0	1.4	1.5	4.6	6.8	5.2	F	F	F	F	F	F	F	F	F	F	F	F	F	*	6.8
13-Jan-04	0:00	0:59	F	F	F	0.0	0.0	0.0	0.0	2.4	1.5	2.9	1.0	0.7	F	F	F	F	F	F	1.9	3.8	1.1	0.0	0.2	0.0	*	3.8
14-Jan-04	0:00	0:59	0.0	0.0	0.2	0.0	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.8	0.8	1.4	0.3	0.1	0.0	0.2	0.0	0.0	0.1	0.2	1.4
15-Jan-04	0:00	0:59	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.0	0.0	0.2	0.7	0.0	0.9	1.0	1.7	1.7	3.2	3.0	2.3	2.7	0.8	3.2
16-Jan-04	0:00	0:59	1.7	1.6	3.6	2.3	1.6	1.9	2.2	3.0	3.5	5.2	5.2	3.6	2.5	2.5	4.2	4.7	4.3	3.5	2.4	2.6	2.1	2.4	3.2	0.0	2.9	5.2
17-Jan-04	0:00	0:59	0.2	1.3	1.9	0.4	2.4	2.5	1.1	0.8	1.1	1.5	0.1	0.4	0.0	0.0	0.0	0.0	0.1	0.4	0.7	0.2	1.0	2.5	1.2	0.8	2.5	5.9
18-Jan-04	0:00	0:59	0.7	0.4	0.1	0.9	0.6	0.7	0.6	0.8	2.1	5.9	1.9	1.2	1.6	2.0	2.7	3.9	0.5	1.5	3.2	1.3	4.4	4.1	3.0	1.0	1.9	5.9
19-Jan-04	0:00	0:59	1.4	1.9	1.6	1.1	1.5	3.4	2.9	5.1	8.3	12.2	7.8	8.6	8.5	6.1	5.6	4.0	4.7	4.8	4.0	3.5	4.1	2.7	1.8	1.3	4.5	12.2
20-Jan-04	0:00	0:59	0.9	1.7	3.7	3.9	1.8	1.5	2.4	2.6	3.4	2.7	1.5	0.5	0.0	0.8	1.3	1.7	1.2	2.6	3.2	4.8	4.6	4.9	3.1	2.7	2.4	4.9
21-Jan-04	0:00	0:59	2.8	2.1	0.0	N	0.0	0.0	0.0	1.6	2.2	1.8	3.2	1.6	2.7	2.3	3.7	3.2	2.7	3.0	2.7	5.2	5.1	5.9	0.6	0.0	2.3	5.9
22-Jan-04	0:00	0:59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.6	1.6	1.0	1.4	0.0	1.4	0.0	0.3	1.6	4.3
23-Jan-04	0:00	0:59	2.2	2.0	1.6	1.7	2.5	3.4	2.0	2.5	4.3	3.6	3.1	1.5	0.3	1.9	2.3	2.6	1.7	2.0	3.0	1.7	0.4	1.1	1.9	3.3	2.2	4.3
24-Jan-04	0:00	0:59	2.0	2.2	4.6	3.8	3.0	4.0	2.5	2.5	2.7	1.2	1.8	1.4	2.2	1.7	2.0	2.4	2.4	3.6	4.2	2.0	1.6	1.6	1.7	1.3	2.4	4.6
25-Jan-04	0:00	0:59	1.0	0.3	0.1	2.0	1.4	0.8	1.5	1.6	2.2	2.1	1.5	1.1	1.0	0.6	0.8	1.4	1.3	1.1	1.2	2.4	2.9	4.1	3.5	3.4	1.6	4.1
26-Jan-04	0:00	0:59	3.6	2.6	2.6	2.4	3.3	3.3	3.9	4.1	2.6	2.5	3.0	1.3	1.3	0.6	1.0	0.6	0.3	1.0	0.0	0.8	0.0	0.0	0.4	0.8	1.7	4.1
27-Jan-04	0:00	0:59	0.4	0.8	0.5	0.6	1.6	1.8	1.9	2.2	4.1	2.1	1.8	1.3	0.3	0.0	0.0	0.3	0.1	0.7	0.3	1.2	0.8	1.5	0.1	0.1	1.0	4.1
28-Jan-04	0:00	0:59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.4	2.3	1.7	2.6	2.4	2.4	1.4	1.5	2.7	2.5	1.6	1.0	2.7
29-Jan-04	0:00	0:59	0.5	0.6	0.0	1.0	1.2	0.8	2.5	1.0	0.0	1.8	0.6	0.0	0.0	1.4	0.7	3.8	0.3	1.0	2.1	0.5	0.6	2.8	0.0	0.8	1.0	3.8
30-Jan-04	0:00	0:59	1.1	0.6	0.5	0.1	0.3	0.0	0.0	0.0	0.9	2.7	4.0	2.0	2.8	5.0	4.3	5.9	5.9	6.1	5.1	5.3	6.9	6.9	5.1	5.6	3.2	6.9
31-Jan-04	0:00	0:59	5.3	4.3	3.9	2.1	3.0	5.5	4.6	5.9	6.4	4.3	4.1	3.0	3.8	3.6	3.8	4.1	4.1	3.3	4.0	3.1	4.5	3.4	3.3	2.8	4.0	6.4
Hourly Avg			1.6	1.5	1.4	1.2	1.3	1.8	1.9	2.4	3.0	3.2	2.6	2.1	2.1	2.3	2.3	2.2	2.0	2.3	2.4	2.6	2.5	2.5	2.0	1.6		
Hourly Max			8.5	8.8	6.7	6.3	6.6	11.8	10.0	12.7	13.0	13.9	12.7	13.3	11.2	10.4	10.3	10.3	10.2	8.6	9.9	10.2	9.6	6.9	5.3	5.6		

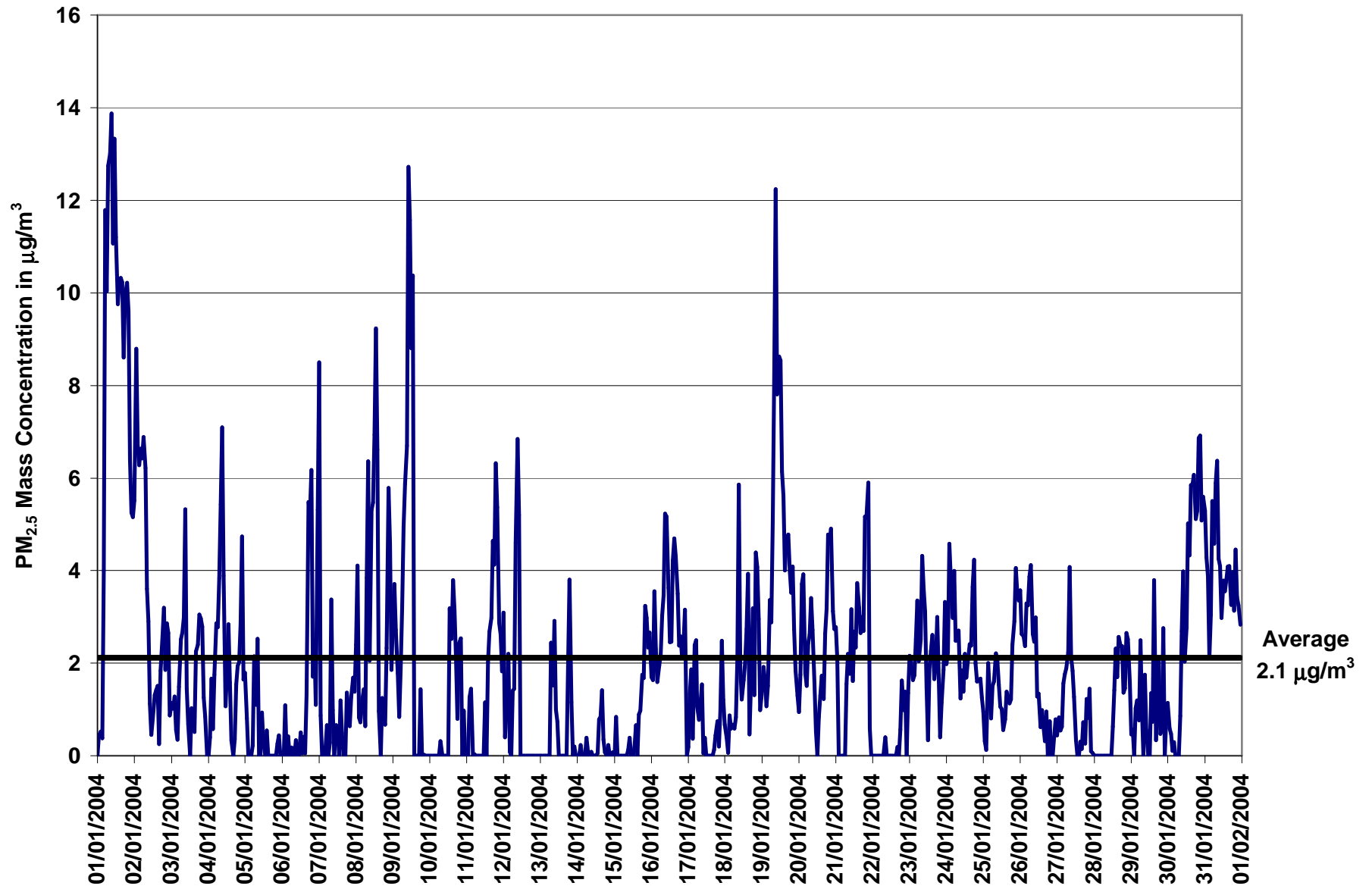


Figure 4. PAS – Medicine Hat PM<sub>2.5</sub> Monthly Trends

Station: Medicine Hat

Station Owner: Pallisar Airshed Society

**Parameter :** Relative Humidity (%)

Guideline Limit:

**Sampling Dates:** January 1, 2004 to January 31, 2004

**Summary**

Number of 1-hr Exceedances:	0			
Number of 24-hr Exceedances:	0			
Maximum 1-hr Average:	93.0	%	23-Jan	8:00 8:59
Maximum 24-hr Average:	82.2	%	16-Jan	

AIC Time:	0 hrs		Operational Time:	718 hrs					
Calibration Time:	0 hrs		AMD Operational Uptime:	96.5%					
Percentile	99	95	75	50	25	5	1	Average	Geomean
	87.5	85.3	77.4	71.0	64.5	55.0	47.5	70.7 %	- %

**Status Characters**

C	Calibration	A	AIC - Zero / Span Check
S	Instrument out of Service	R	Alarm
*	< 75% valid data	X	Filter Exchange
N	Excessive Instrument Drift	M	Equipment Maintenance
F	DACS Off-Line		
E	Exceedance		

**Day Mountain Standard Time**

Hour Start	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-hr Average	Daily Maximum
Hour End	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59		
1-Jan-04	66.0	64.7	68.4	67.5	69.8	74.3	77.0	78.6	77.4	75.2	69.9	66.9	65.8	67.4	69.6	71.0	72.3	71.9	72.5	73.5	75.1	74.9	75.9	75.5	71.7	78.6
2-Jan-04	75.5	75.2	75.2	75.5	75.7	75.7	75.7	75.7	75.5	74.1	72.4	71.7	69.6	68.8	69.8	71.4	72.9	73.7	72.8	72.0	71.7	71.7	71.9	71.3	73.1	75.7
3-Jan-04	71.2	71.2	71.3	71.3	71.1	71.7	71.7	70.3	69.7	69.3	68.5	67.3	66.1	63.7	62.5	63.2	64.7	64.6	64.5	64.9	63.6	63.7	63.3	62.7	67.2	71.7
4-Jan-04	63.1	61.4	60.4	62.0	63.6	63.9	64.5	66.1	67.2	65.7	60.8	60.0	56.5	53.9	52.9	51.6	59.5	61.2	63.5	66.1	67.6	68.5	68.6	67.7	62.4	68.6
5-Jan-04	69.2	65.0	61.9	61.6	64.2	64.7	64.7	67.2	68.1	58.9	54.7	52.1	48.7	47.4	47.8	48.4	53.6	55.0	56.6	55.0	54.9	55.9	54.4	52.6	57.6	69.2
6-Jan-04	54.5	55.4	55.8	56.3	56.1	56.0	55.5	51.9	50.3	44.6	42.1	41.1	38.2	37.2	38.8	45.2	50.8	58.6	58.9	62.3	58.7	56.9	63.0	65.4	52.2	65.4
7-Jan-04	65.7	67.3	68.3	68.2	69.7	70.2	68.9	68.3	66.8	61.7	58.6	56.3	54.6	53.9	59.1	64.6	68.2	71.1	70.9	70.8	72.8	73.6	73.9	74.5	66.6	74.5
8-Jan-04	74.2	75.3	75.7	74.9	76.1	77.8	78.0	78.4	75.3	67.6	60.1	53.9	49.8	52.9	63.1	65.7	70.7	73.5	73.9	75.0	77.1	78.3	79.4	80.0	71.1	80.0
9-Jan-04	81.3	78.4	78.1	77.8	76.1	77.5	78.3	78.8	76.5	70.7	60.7	57.3	55.7	49.8	M	M	M	M	75.5	78.0	80.4	78.2	77.1	76.2	73.1	81.3
10-Jan-04	73.9	72.3	73.5	72.5	72.9	70.6	71.2	71.2	70.3	66.4	64.2	65.4	66.0	64.6	60.8	67.3	75.8	79.3	81.1	80.5	77.9	82.3	84.2	82.4	72.8	84.2
11-Jan-04	81.0	80.0	79.9	80.0	80.3	80.3	78.5	77.8	77.5	74.0	66.4	66.5	64.7	57.7	62.0	65.2	74.0	77.8	81.2	86.3	85.8	86.4	87.5	87.9	76.6	87.9
12-Jan-04	86.8	86.2	88.3	87.5	84.5	85.3	85.8	84.7	82.2	74.3	69.1	F	F	F	F	F	F	F	F	F	F	F	F	F	*	88.3
13-Jan-04	F	F	F	66.8	64.7	63.3	63.0	68.0	70.4	60.6	61.2	56.4	F	F	F	F	F	F	76.5	79.3	74.4	75.1	74.8	79.8	*	79.8
14-Jan-04	80.7	79.3	83.0	80.7	80.3	77.5	76.4	76.3	75.4	75.8	71.1	70.1	70.0	65.6	66.9	70.8	73.4	74.4	72.0	72.0	69.5	72.8	71.7	71.6	74.0	83.0
15-Jan-04	74.0	75.2	72.4	73.5	76.1	75.4	72.7	73.9	76.0	69.3	62.0	65.3	68.9	71.3	71.6	69.8	70.7	75.8	75.5	73.4	77.9	80.3	79.6	83.0	73.5	83.0
16-Jan-04	83.1	83.9	84.9	84.9	84.3	85.2	86.6	85.9	84.3	82.3	77.1	73.6	75.6	78.7	79.9	80.6	81.3	83.4	83.2	82.1	80.9	84.1	85.4	80.3	82.2	86.6
17-Jan-04	77.7	76.1	77.4	73.5	75.4	74.8	73.7	69.7	70.6	68.4	67.1	65.7	66.3	64.8	67.0	70.4	73.2	73.2	73.8	76.0	77.0	79.8	82.8	84.6	73.3	84.6
18-Jan-04	85.5	86.0	86.8	87.4	85.7	85.8	86.2	86.6	83.7	77.6	75.0	75.8	74.0	67.8	71.3	74.9	76.4	78.5	80.6	82.3	81.9	82.0	82.3	83.0	80.7	87.4
19-Jan-04	84.1	85.5	85.9	87.1	86.2	86.2	86.1	86.0	85.2	84.4	80.2	77.6	73.8	71.1	66.6	66.8	69.3	72.7	74.5	75.8	82.2	83.1	82.4	83.7	79.9	87.1
20-Jan-04	83.9	84.8	84.6	82.4	84.2	86.1	84.7	84.2	84.5	83.6	81.1	79.2	77.7	71.9	67.3	68.5	73.8	81.3	83.4	81.6	86.8	84.4	83.1	81.8	81.0	86.8
21-Jan-04	82.7	83.1	78.9	71.1	65.2	68.5	73.2	76.5	77.4	76.8	76.5	75.2	72.5	68.7	69.4	72.9	75.6	77.2	78.7	79.5	80.6	80.3	71.2	73.0	75.2	83.1
22-Jan-04	70.5	68.1	69.4	70.5	72.0	73.9	70.5	69.9	70.3	65.9	64.3	60.6	63.6	60.0	59.7	62.4	63.5	55.5	51.6	51.8	62.2	63.7	61.3	65.4	64.4	73.9
23-Jan-04	71.2	74.4	70.4	73.7	77.2	79.9	84.5	89.3	93.0	92.7	90.3	88.4	87.3	84.8	82.8	81.6	80.7	79.8	79.7	79.7	78.7	77.8	78.5	79.3	81.5	93.0
24-Jan-04	81.4	82.1	82.7	82.8	82.5	81.9	80.4	79.8	81.5	80.9	79.7	78.6	77.6	77.2	75.5	75.4	75.7	75.6	75.8	75.5	75.7	75.4	75.5	75.1	78.5	82.8
25-Jan-04	75.6	75.3	75.5	75.8	75.4	75.5	75.4	75.1	74.3	72.8	70.9	68.7	67.0	64.6	62.4	64.1	66.7	69.4	70.3	70.4	70.1	69.9	70.3	69.7	71.0	75.8
26-Jan-04	69.3	69.8	69.9	70.1	69.0	67.9	66.4	65.9	65.5	62.6	60.5	58.4	57.7	57.8	58.9	59.5	61.2	61.7	62.3	62.0	62.1	62.3	61.3	61.3	63.5	70.1
27-Jan-04	61.7	60.7	60.9	59.5	60.1	61.8	60.9	60.8	60.4	58.7	57.3	55.8	54.3	54.7	54.4	55.2	56.8	57.9	58.7	58.9	59.3	60.2	60.8	61.1	58.8	61.8
28-Jan-04	60.3	59.2	59.1	59.5	59.4	60.6	62.4	62.4	63.8	64.0	63.9	64.2	63.1	62.6	63.0	63.0	65.1	66.6	67.1	66.2	65.9	65.5	65.0	64.2	63.2	67.1
29-Jan-04	65.3	64.9	64.3	64.8	64.9	65.2	65.4	64.6	63.6	62.3	61.4	63.2	64.7	64.3	64.0	65.2	66.2	66.7	66.5	67.4	66.9	66.7	67.3	69.5	65.2	69.5
30-Jan-04	71.8	73.4	74.1	73.9	72.7	71.2	71.6	71.4	70.5	68.4	64.1	62.0	62.8	66.3	69.5	72.4	75.1	74.5	73.2	71.0	69.0	68.3	66.9	69.9	70.2	75.1
31-Jan-04	69.1	69.0	69.5	68.3	68.3	67.9	66.2	63.5	61.7	59.9	58.2	56.2	58.2	59.6	59.2	62.4	64.5	69.5	70.3	70.0	70.0	70.9	70.3	70.3	65.5	70.9
Hourly Avg	73.7	73.4	73.6	72.9	73.0	73.4	73.4	73.5	73.2	70.0	66.8	65.1	64.5	63.1	64.1	66.1	69.0	70.7	71.5	72.0	72.6	73.1	73.0	73.4		
Hourly Max	86.8	86.2	88.3	87.5	86.2	86.6	89.3	93.0	92.7	90.3	88.4	87.3	84.8	82.8	81.6	81.3	83.4	83.4	86.3	86.8	86.4	87.5	87.9			



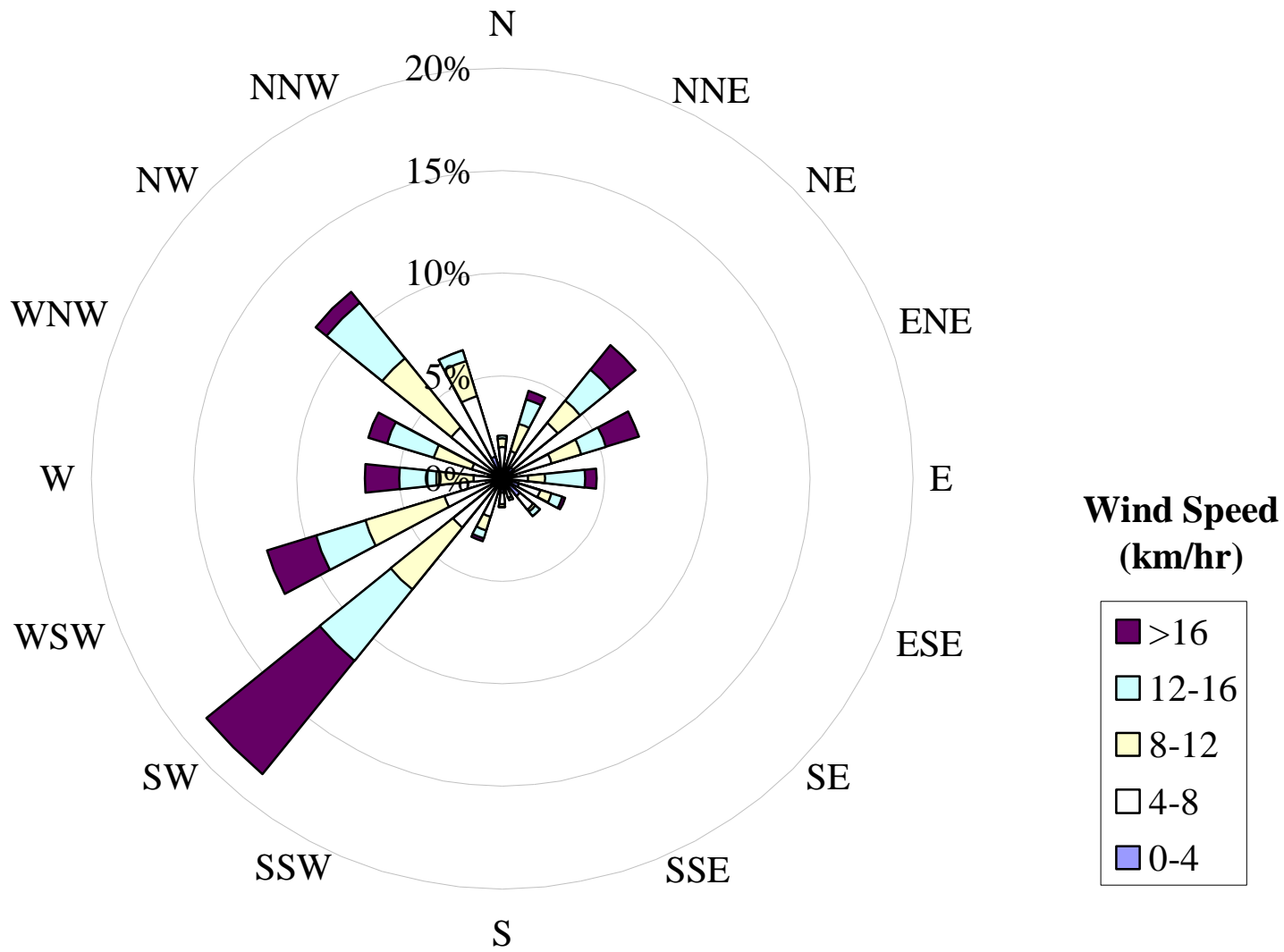






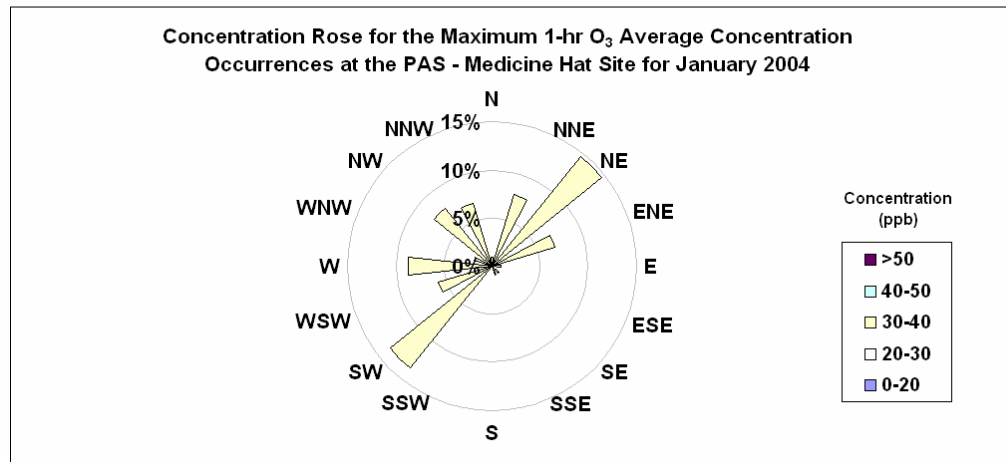
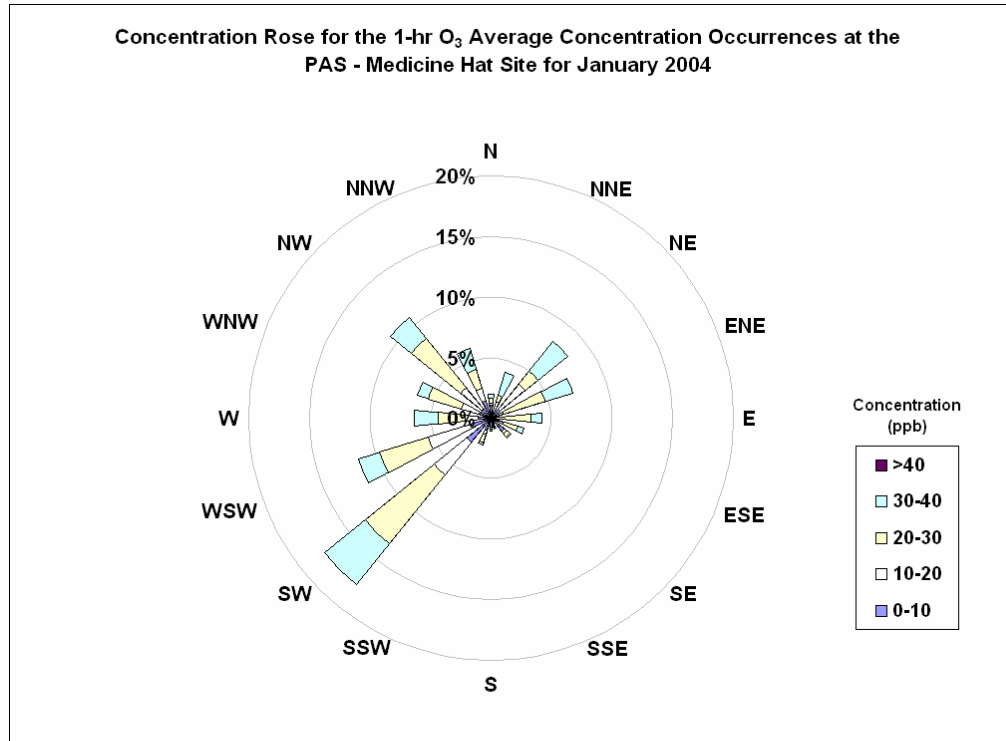


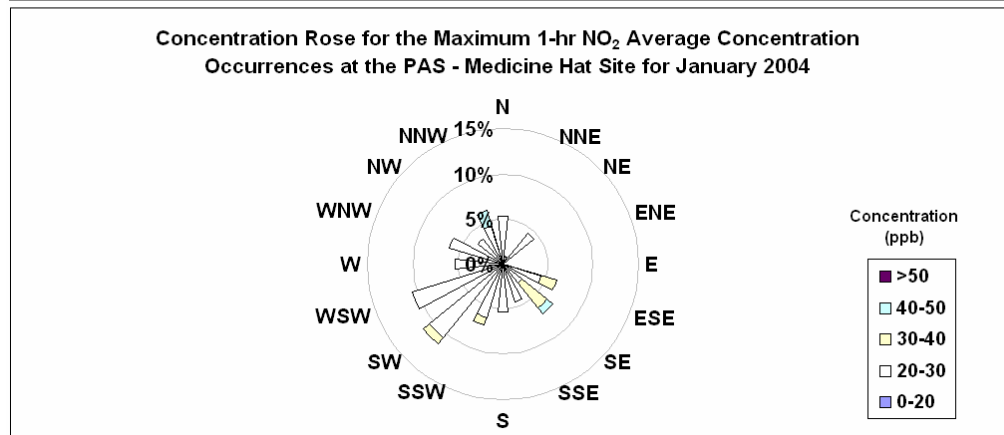
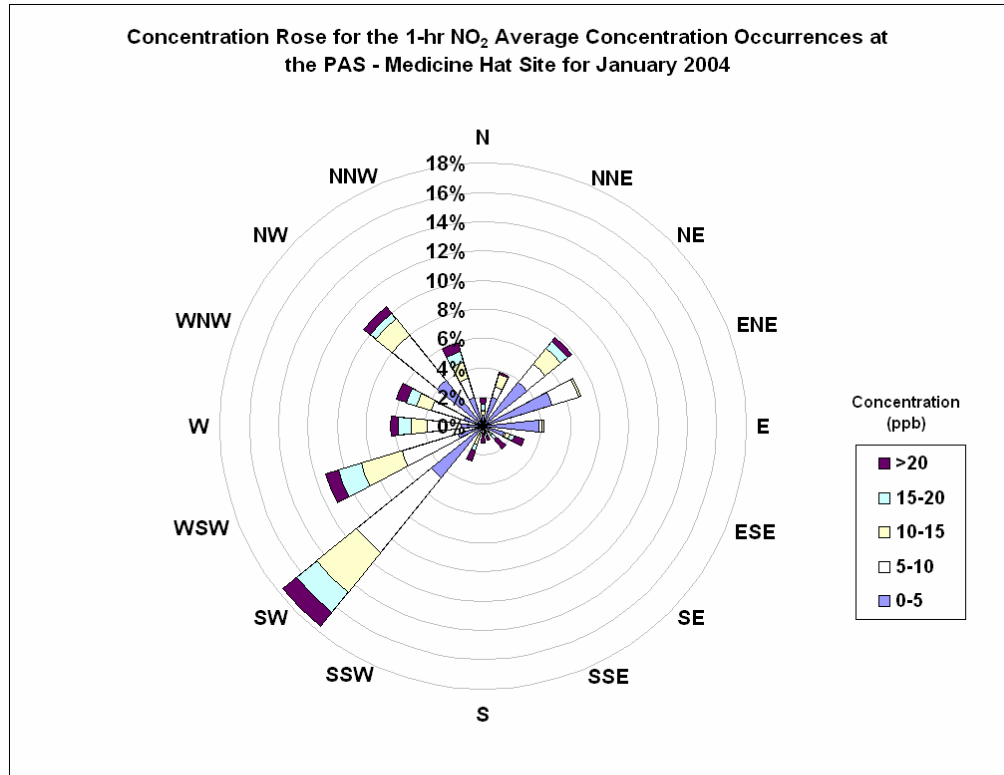
### Wind Rose for January 2004



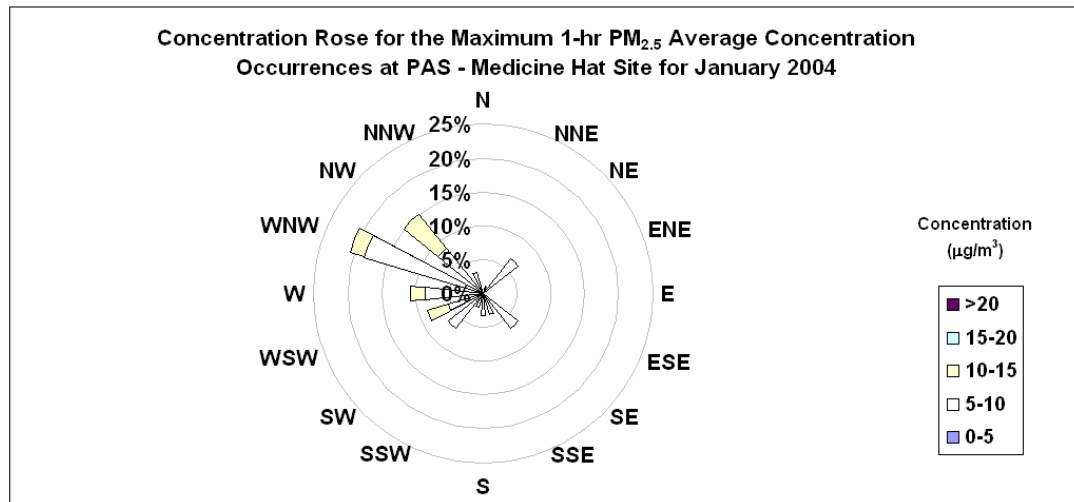
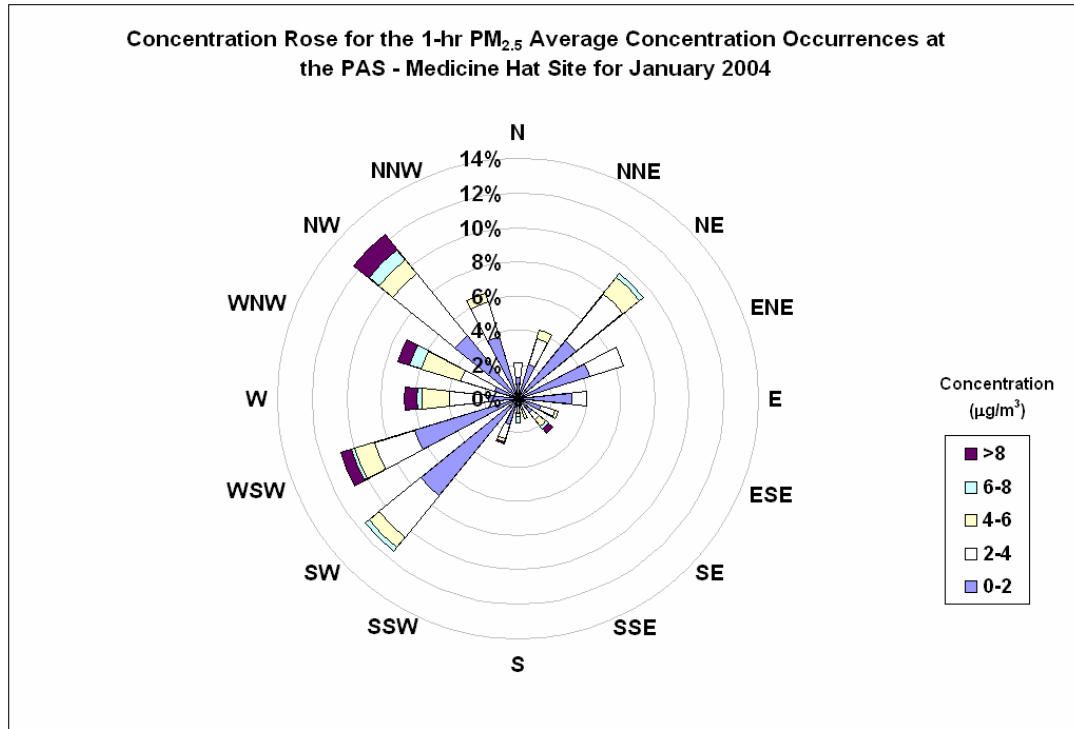
## **Monthly Summary Concentration Roses January 2004**

O<sub>3</sub> Concentration Rose  
NO<sub>2</sub> Concentration Rose  
PM<sub>2.5</sub> Concentration Rose









# Passive Monitoring

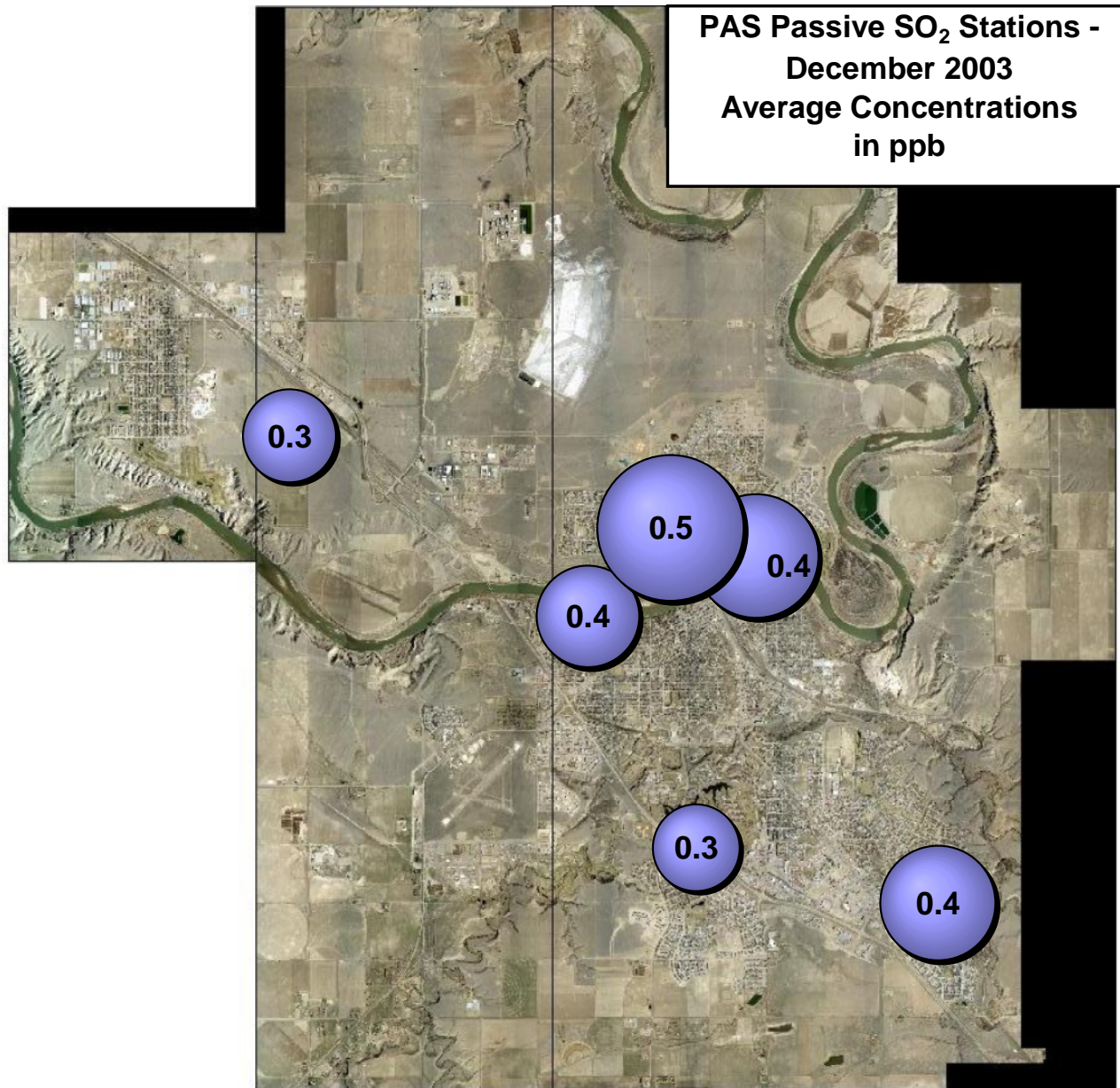
## Ambient Air Compliance Network

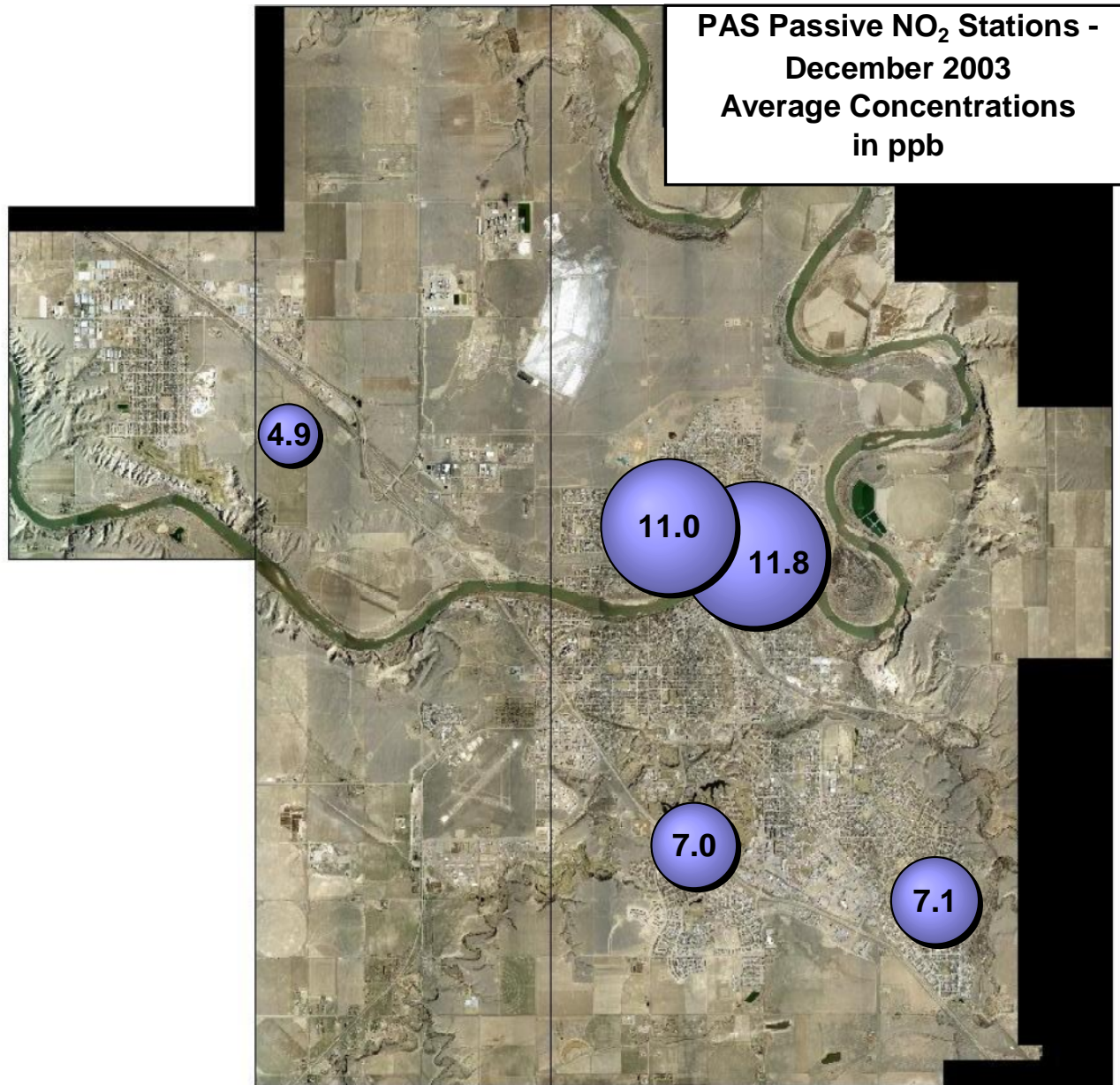
### Pallisar Airshed Society - PAS Passive Stations for December 2003

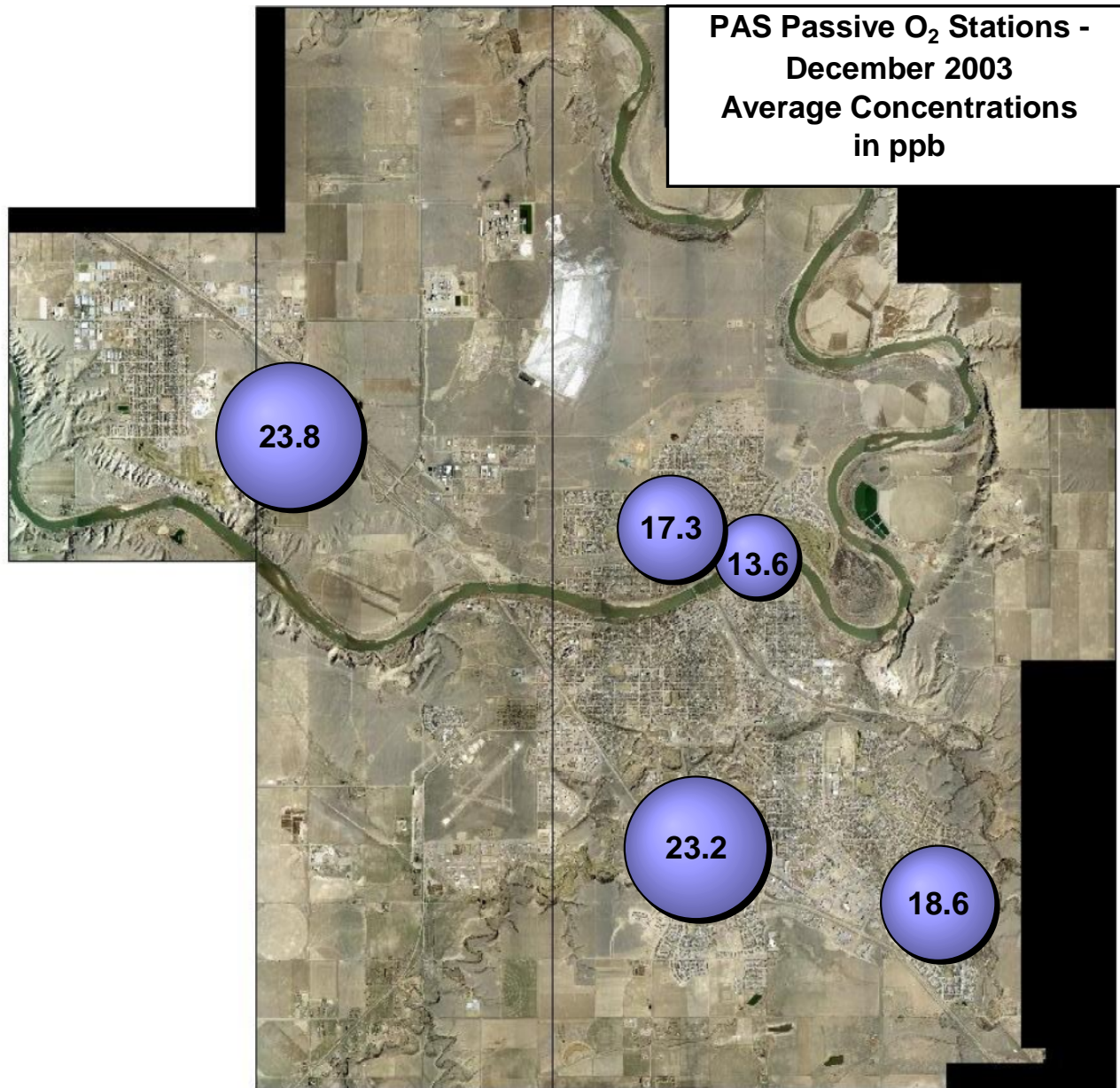
PAS

Station Number	Station Name	SO2 ppb	O3 ppb	NO2 ppb	Easting	Northing	Elevation
<b>Duplicates</b>							
4a	Redcliff	0.3	24.9	4.8			
4b			22.7	5.0			
1	Hospital	0.4			521648	5542721	698
2	Ball Park	0.4	13.6	11.8	524019	5543686	660
3	Monitoring Station	0.5	17.3	11.0	522812	5544133	714
4	Redcliff	0.3	23.8	4.9	517448	5545608	725
5	Southridge	0.3	23.2	7.0	523172	5539016	721
6	Christian School Park	0.4	18.6	7.1	526577	5538133	709

Stats:							
<b>Mean</b>		0.4	19.3	8.4			
<b>Standard Deviation</b>		0.1	4.3	2.9			
<b>Minimum</b>		0.3			5	<b>Southridge</b>	
<b>Maximum</b>		0.5			3	<b>Monitoring Station</b>	
<b>Minimum</b>			13.6		2	<b>Ball Park</b>	
<b>Maximum</b>			23.8		4	<b>Redcliff</b>	
<b>Minimum</b>				4.9	4	<b>Redcliff</b>	
<b>Maximum</b>				11.8	2	<b>Ball Park</b>	







### Pallisar Airshed Society - PAS Passive Stations for January 2004

**PAS**

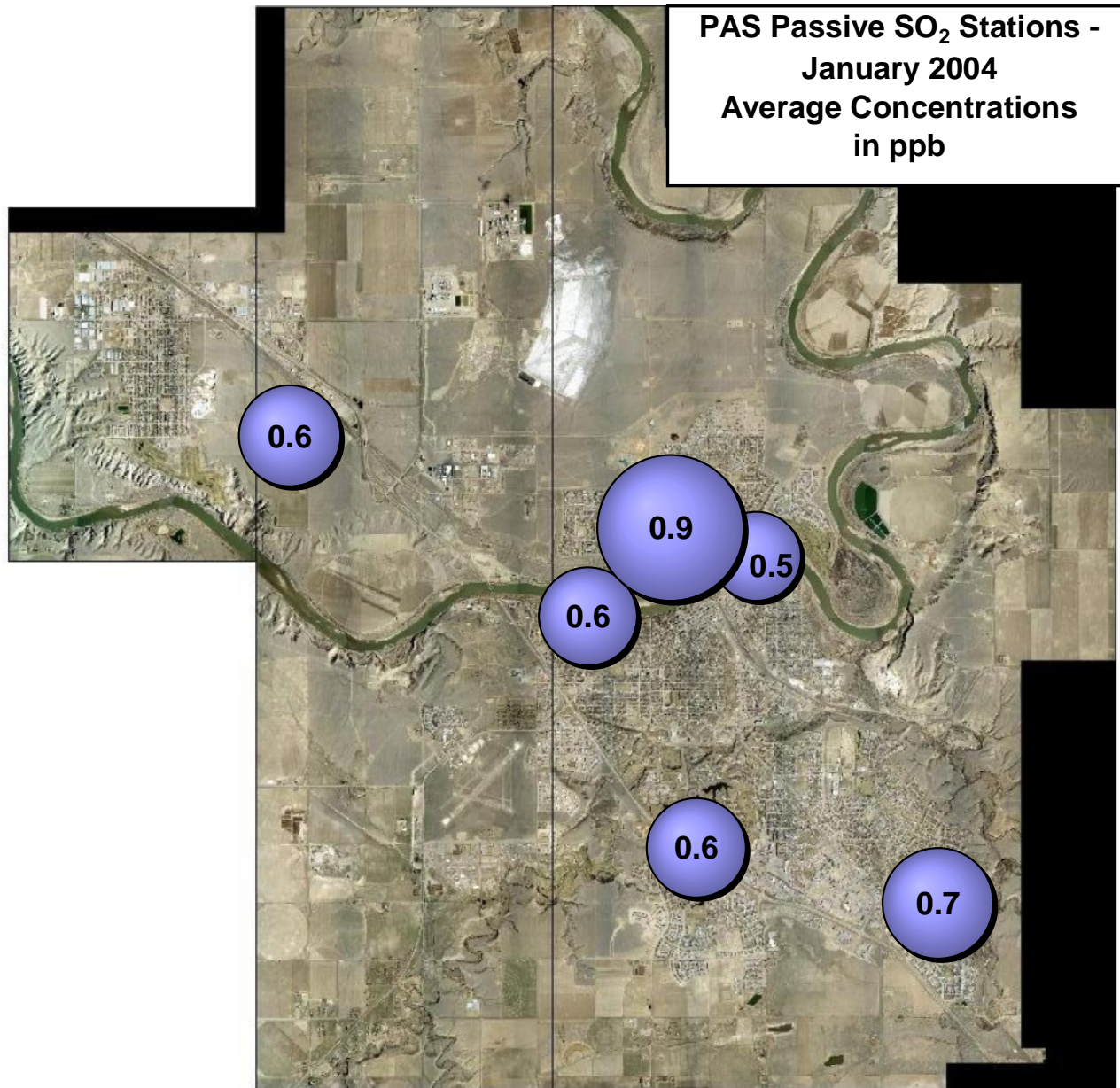
Station Number	Station Name	SO2 ppb	O3 ppb	NO2 ppb	Easting	Northing	Location	Elevation
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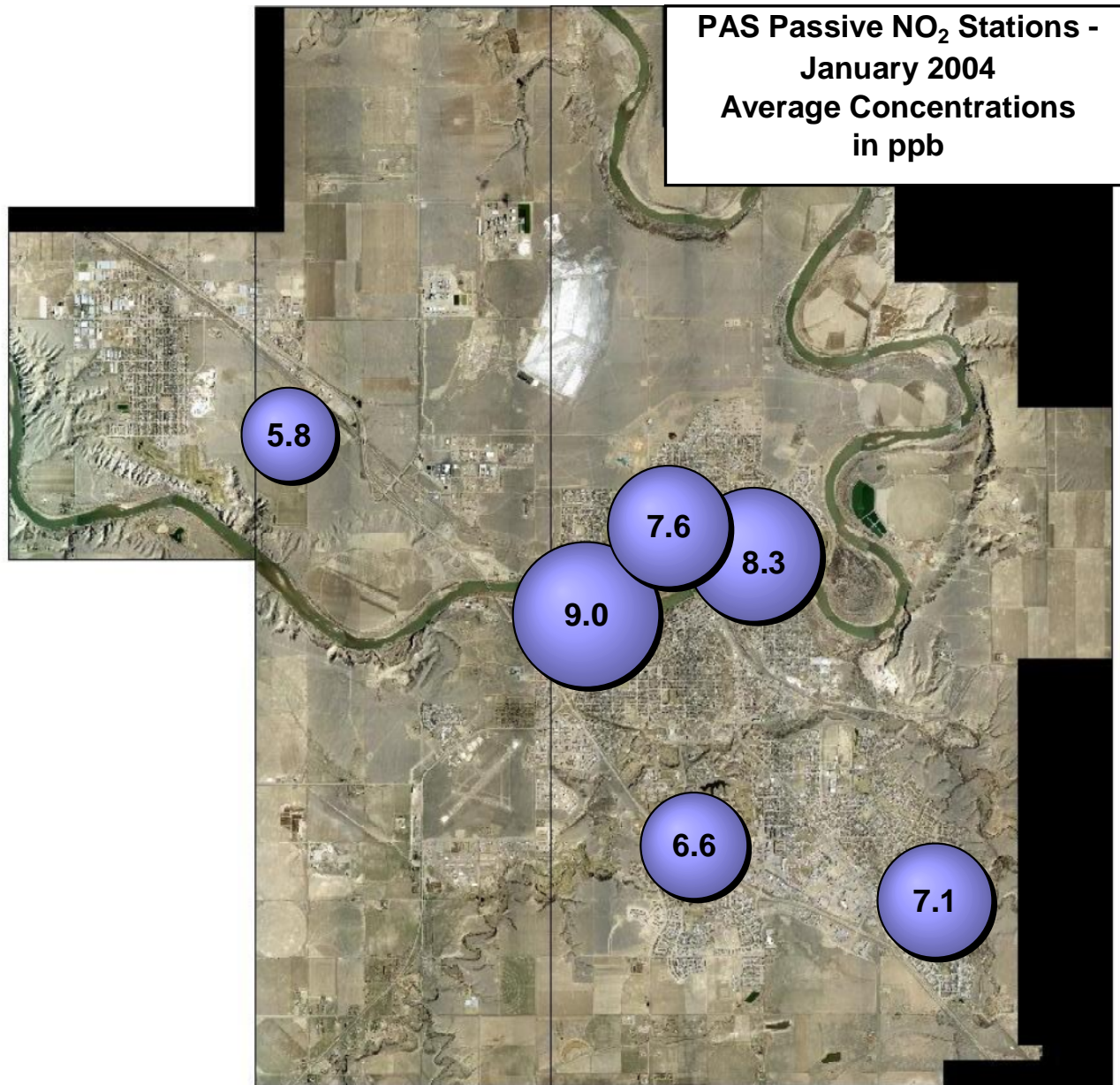
**Duplicates**

5a	Redcliff		29.5	6.7				
5b		0.6	31.6	6.5				

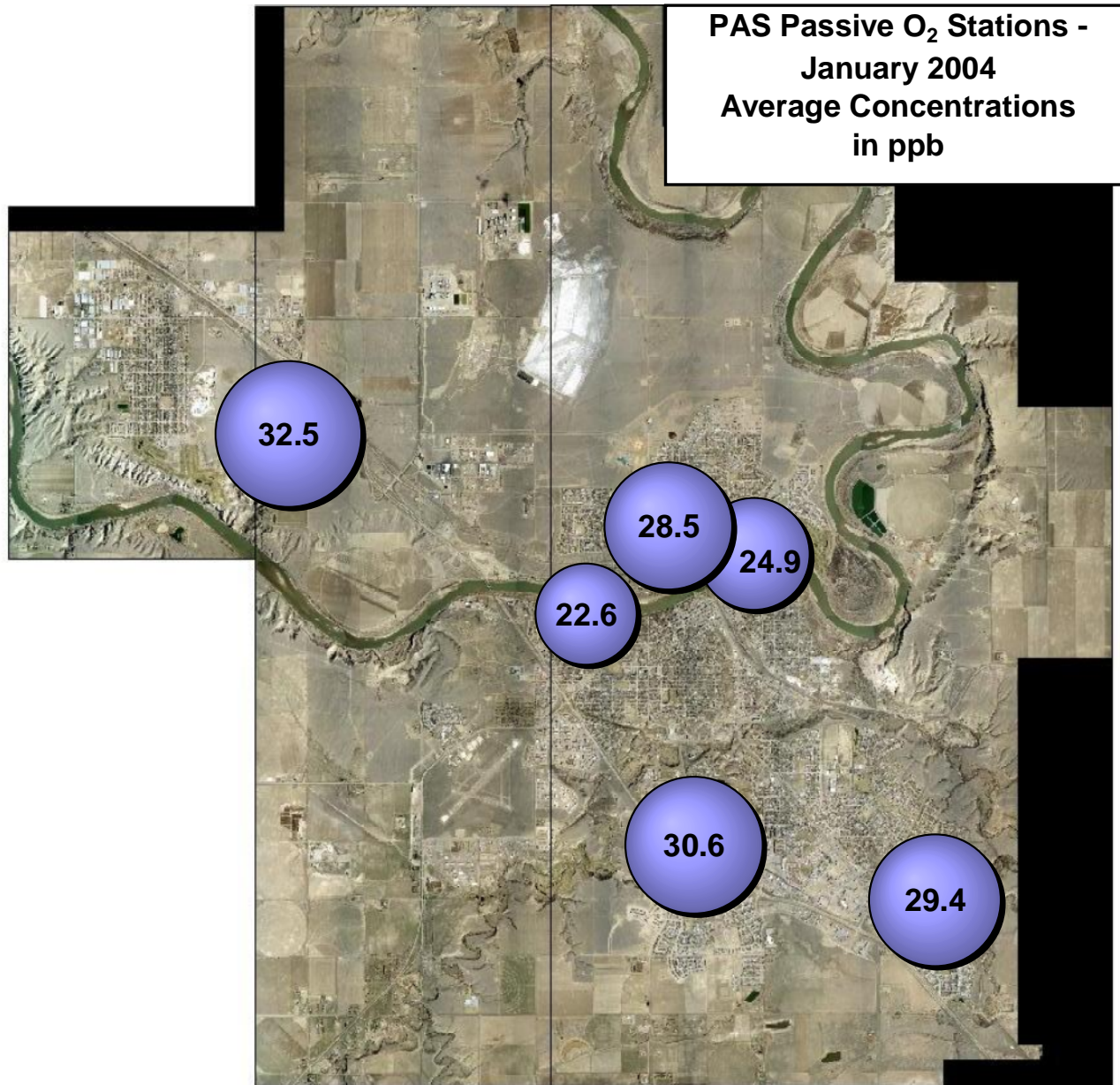
1	Hospital	0.6	22.6	9.0	521648	5542721		698
2	Ball Park	0.5	24.9	8.3	524019	5543686		660
3	Monitoring Station	0.9	28.5	7.6	522812	5544133		714
4	Redcliff	0.6	32.5	5.8	517448	5545608		725
5	Southridge	0.6	30.6	6.6	523172	5539016		721
6	Christian School Park	0.7	29.4	7.1	526577	5538133		709

<b>Stats:</b>								
	<b>Mean</b>	0.7	28.1	7.4				
	<b>Standard Deviation</b>	0.1	3.7	1.2				
	<b>Minimum</b>	0.5			2		<b>Ball Park</b>	
	<b>Maximum</b>	0.9			3		<b>Monitoring Station</b>	
	<b>Minimum</b>		22.6		1		<b>Hospital</b>	
	<b>Maximum</b>		32.5		4		<b>Redcliff</b>	
	<b>Minimum</b>			5.8	4		<b>Redcliff</b>	
	<b>Maximum</b>			9.0	1		<b>Hospital</b>	









April 23, 2004

# January 2004 - Calibration Report

**PAS - Medicine Hat Station**

**O<sub>3</sub>, NO<sub>x</sub>, NO, NO<sub>2</sub>, THC**

# Calibration Report



Parameter 03  
 Air Monitoring Network Palliser Airshed

### Station Information

Calibration Date	January 9, 2004	Previous Calibration	December 18, 2003
Station Number	1	Station Location	Crescent Heights
Reason:	<input checked="" type="checkbox"/> Routine	<input type="checkbox"/> Install	<input type="checkbox"/> Removal
			<input type="checkbox"/> Other:

Start Time (MST)	10:02	End Time (MST)	0:50
Barometric Pressure	0.920 mb	Station Temperature	20.5 Deg C
Calibrator	Enviroics 6100	Serial Number	3016
Cal Gas Concentratio	NA	Cal Gas Expiry Date	NA

DACS make	Focus AP1000	DACS serial No.	NA
DACS voltage range	0 - 1 volt	DACS channel #	5
	<u>Before</u>		<u>After</u>
DACS slope	0.050	DACS slope	0.050
DACS intercept	0.000	DACS intercept	0.000
Calculated slope	0.990962	Calculated slope	0.997306
Calculated intercept	4.596696	Calculated intercept	-0.095056

Analyzer make	API Model 400E	Analyzer serial #	331
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	before		after	
Concentration range	0 - 500	ppb	0 - 500	ppb
Background	-0.7	ppb	NA	ppb
coefficient	1.107		NA	
Lamp measure	4230.7	mV	4032.7	mV
Lamp Reference	4230.8	mV	4032.3	mV
Pressure	26.2	inches Hg	26.9	inches Hg
Sample Flow	696	ccm	665	ccm
Lamp temp	52	Deg C	52	Deg C

### Calibration Data

Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
4995	0.00	0.0	0.3	N/A
4995	0.00	400.0	401.4	0.9965
4995	0.00	200.0	200.1	0.9995
4995	0.00	100.0	100.5	0.9952
4995	0.00	0.0	-5.7	0.0000
4995	0.00	400.0	394.9	1.0128
Average Correction Factor:				0.9970

Calculated value of As Found Response: 401.578 ppm      Percent Change of As Found: 0.4%

	before calibration		after calibration	
Auto zero	-4.5	ppb	1.5	ppb
Auto span	430.5	ppb	426.2	ppb

Notes: Analyzer as found performed before DACS maintenance.  
 Analyzer was zero and span adjusted; DA calibration performed on analyzer to ensure DACS A/D conversion matches. All test functions normal.

Calibration Performed By: Kelly Baragar

## Calibration Summary



Air Quality Management

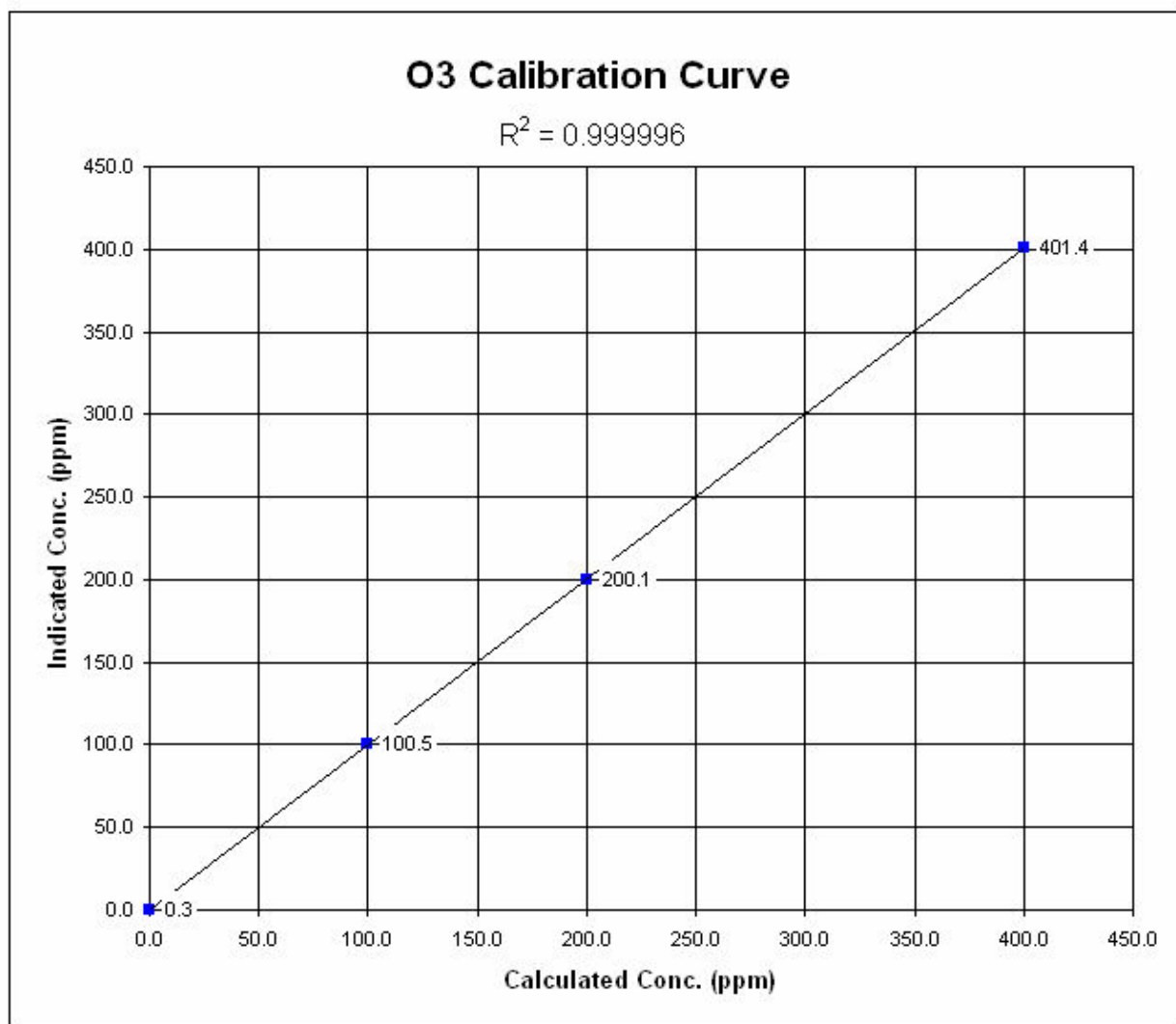
Parameter 03  
 Air Monitoring Network Palliser Airshed

### Station Information

Calibration Date	January 9, 2004	Previous Calibration	December 18, 2003
Station Number	1	Station Location	Crescent Heights
Start Time (MST)	10:02	End Time (MST)	0:50
Analyzer make/model	API Model 400E	Analyzer serial #	331

### Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
400.0	401.4	0.9965	Correlation Coefficient	0.999996
200.0	200.1	0.9995		
100.0	100.5	0.9952		
0.0	0.3	N/A		
			Slope	0.997306
			Intercept	-0.095056



**Calibration Report****FOCUS INTEC**

Air Quality Management

Parameter **NO<sub>x</sub>-NO-NO<sub>2</sub>**  
 Air Monitoring Network **Palliser Airshed**

**Station Information**

Calibration Date January 9, 2004 Previous Calibration December 18, 2003  
 Station Number 1 Station Location Crescent Heights

Reason:  Routine  Installation  Removal  Other: \_\_\_\_\_

Start Time (MST) 11:05 End Time (MST) 23:38  
 Barometric Pressure 0.920 mmHg Station Temperature 20.5 Deg C  
 Calibrator EnviroNics 6100 Serial Number 3016  
 NO Cal Gas Conc 49.8 ppm Cal Gas Expiry Date 17-Nov-04  
 NO<sub>x</sub> Cal Gas Conc 49.8 ppm Cal Gas Serial # ALM 05759

**DACS Information**

DACS make FOCUS AP1000 DACS serial No. N/A

	Parameter	NO <sub>2</sub>	NO <sub>x</sub>	NO
Before	DACS slope	0.050000	0.050000	0.050000
	DACS offset	0.000000	0.000000	0.000000
After	DACS slope	0.050000	0.050000	0.050000
	DACS offset	0.000000	0.000000	0.000000
Before	Data Slope	1.000161	0.982603	0.986648
	Data Offset	8.132189	7.050923	7.246356
After	Data Slope	1.005105	0.994627	0.990260
	Data Offset	-1.671251	-1.585834	1.683605
	Channel #	8	6	7
	Voltage Range	0 - 1 VDC	0 - 1 VDC	0 - 1 VDC

**Analyzer Information**

Analyzer make/model API Model 200E Analyzer serial # 219

Test Point	before		after	
Concentration range	0 - 500	ppb	0 - 500	ppb
NO background	-1.9	ppb	-1.9	mV
NO <sub>x</sub> background	0.5	ppb	0.5	mV
NO coefficient	1.134		1.338	
NO <sub>x</sub> coefficient	1.129		1.129	
Chamber Temp	50.2	Deg C	50.0	Deg C
Cooler Temp	6.8	Deg C	6.8	Deg C
Converter Temp	314.9	Deg C	315.2	Deg C
Perm Temp	40.1	Deg C	40.3	Deg C
Pressure	3.8	mm Hg	3.7	inches Hg
Sample Flow	455.0	ccm	455.0	ccm

Notes: Initial regulator contamination affected as found point. Purged all systems until a notable flat concentration response was received. Analyzer was D/A calibrated to match correct DACS input. Zero and span adjustments performed.

# Calibration Report



Parameter **NO<sub>x</sub>-NO-NO<sub>2</sub>**  
 Air Monitoring Network **Palliser Airshed**

## Station Information

Calibration Date: January 9, 2004 Station Location: Crescent Heights

### Calibration Data

	Dilution flow rate (ccm)	Source gas flow rate (ccm)	Calculated NO <sub>x</sub> conc (ppb)	Calculated NO conc (ppb)	Calculated NO <sub>2</sub> conc (ppb)	Indicated NO <sub>x</sub> conc (ppb)	Indicated NO conc (ppb)	Indicated NO <sub>2</sub> conc (ppb)	NO <sub>x</sub> Correction factor	NO Correction factor	
zero	4995	0.00	0.0	0.0	0.0	2.4	0.5	2.0	N/A	N/A	
1	4995	39.95	395.1	395.1	0.0	399.6	398.2	2.0	0.9888	0.9922	
2	4995	19.96	198.2	198.2	0.0	199.5	197.8	2.2	0.9936	1.0019	
3	4995	9.95	99.0	99.0	0.0	100.9	95.8	5.2	0.9808	1.0338	
AFZ	4995	0.00	0.0	0.0	0.0	-5.2	-8.3	-5.8	0.0000	0.0000	
AFS	4995	39.95	395.1	395.1	0.0	376.7	359.4	8.5	1.0489	1.0995	
									Average Correction Factor	0.9878	1.0093

As Found Concentrations NO<sub>x</sub>= 388.8 NO= 374.8 As Found Percent Change NO<sub>x</sub>= -1.6% NO= -5.1%

### GPT Calibration Data

Dilution Flow 4995 ccm Source Gas Flow 39.95 ccm

O3 Setpoint (ppb)	Calculated NO <sub>x</sub> conc (ppb)	Calculated NO conc (ppb)	Calculated NO <sub>2</sub> conc (ppb)	Indicated NO <sub>x</sub> conc (ppb)	Indicated NO conc (ppb)	Indicated NO <sub>2</sub> conc (ppb)	NO <sub>x</sub> Correction factor	NO Correction factor	NO <sub>2</sub> Correction factor	Converter Efficiency	
0	395.0	395.7	0.6	398.8	397.9	2.0	N/A	N/A	N/A	N/A	
100	395.1	80.5	316.2	396.1	79.6	316.5	0.9977	1.0114	0.9991	100.1%	
200	395.1	175.4	219.5	395.2	175.4	219.9	0.9999	0.9999	0.9979	100.2%	
300	395.1	278.6	115.3	395.3	279.7	115.9	0.9996	0.9963	0.9949	100.5%	
							Average Correction Factor	0.9991	1.0025	0.9973	100.3%

### AIC Data

Parameter	Previous calibration				Current calibration			
	NO <sub>x</sub>	NO <sub>2</sub>	NO		NO <sub>x</sub>	NO <sub>2</sub>	NO	
Auto zero	-6.4	-7.3	-7.3	ppb	2.7	0.7	2.0	ppb
Auto span	363.4	-1.0	355.6	ppb	385.4	378.2	7.5	ppb

Calibration Performed By: Kelly Baragar

## Calibration Summary



Parameter NO<sub>2</sub>  
 Air Monitoring Network Palliser Airshed

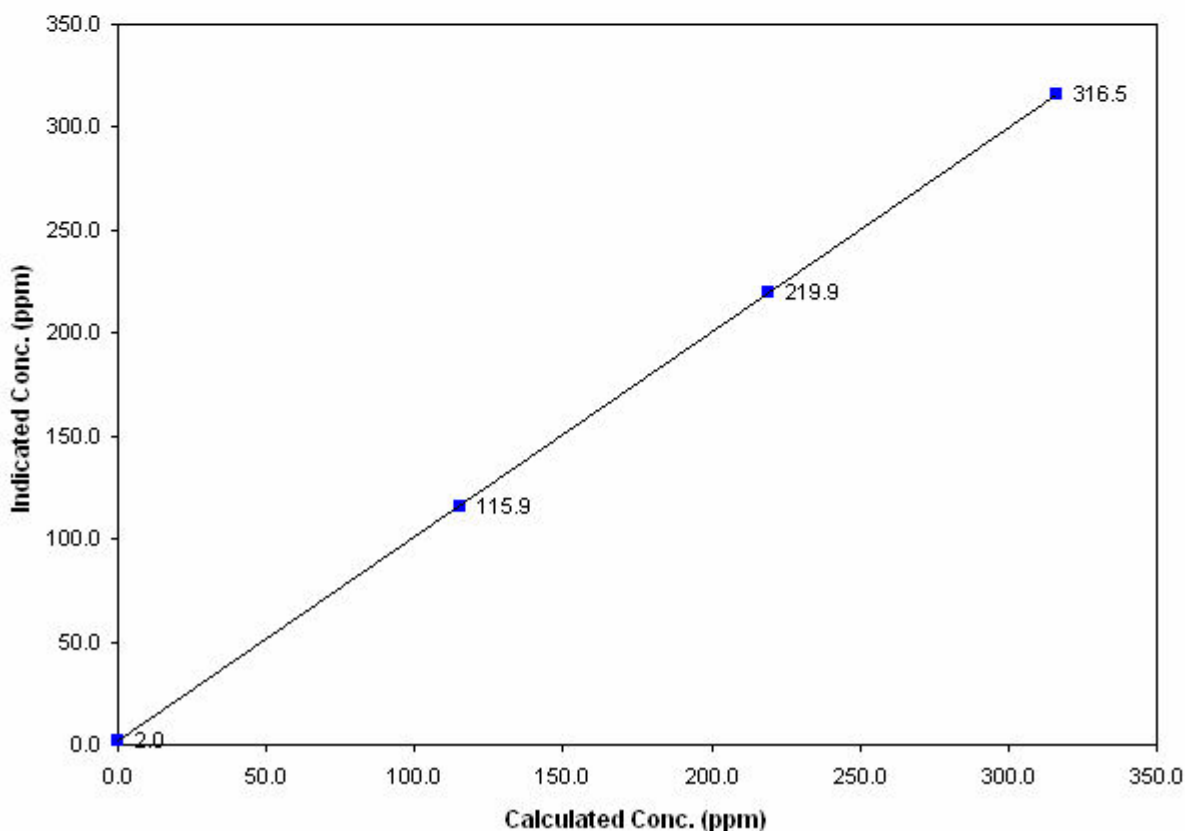
### Station Information

Calibration Date	January 9, 2004	Previous Calibration	December 18, 2003
Station Number	1	Station Location	Crescent Heights
Start Time (MST)	11:05	End Time (MST)	23:38
Analyzer make	API Model 200E	Analyzer serial #	219

### Calibration Data

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation			
0.0	2.0	0.0000				
115.3	115.9	0.9949	Correlation Coefficient:	0.999993		
219.5	219.9	0.9979				
316.2	316.5	0.9991			Slope	1.005105
					Intercept	-1.671251

## NO<sub>2</sub> Calibration Curve



## Calibration Summary



Air Quality Management

Parameter NO<sub>x</sub>  
 Air Monitoring Network Palliser Airshed

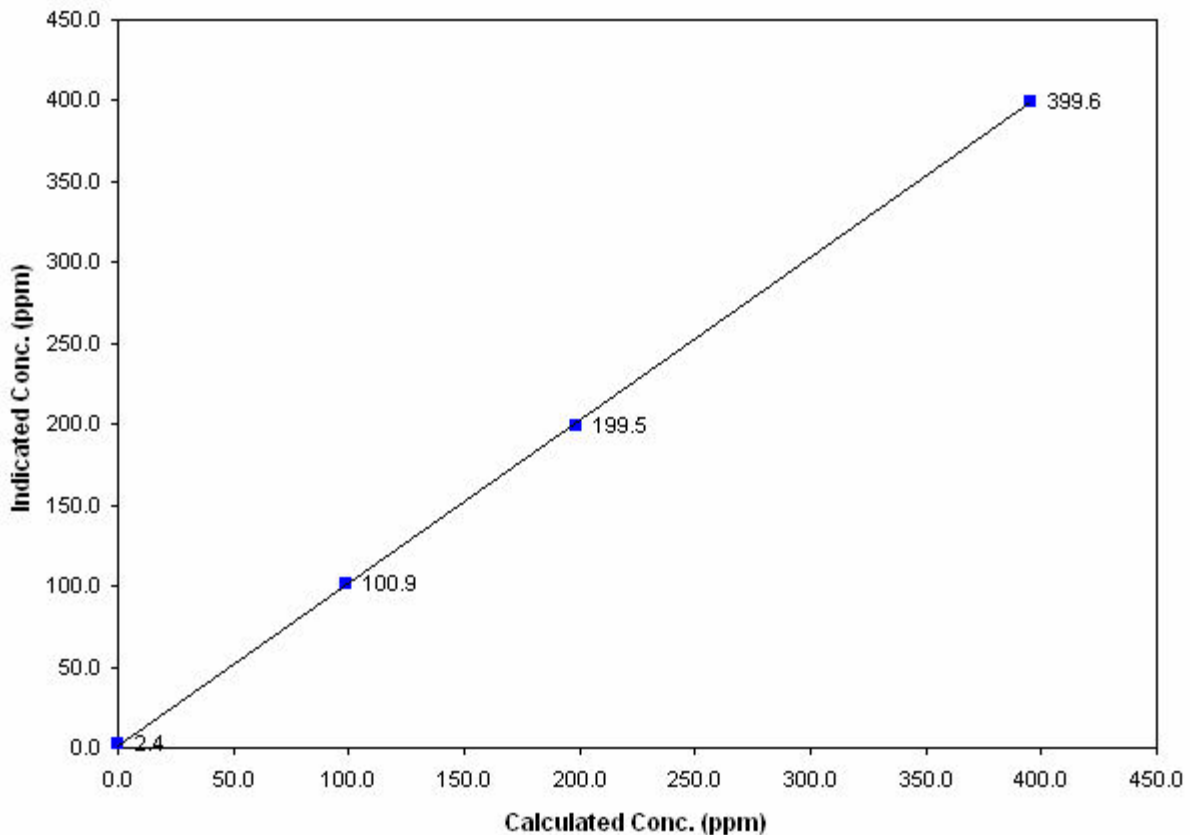
### Station Information

Calibration Date	January 9, 2004	Previous Calibration	December 18, 2003
Station Number	1	Station Location	Crescent Heights
Start Time (MST)	11:05	End Time (MST)	23:38
Analyzer make	API Model 200E	Analyzer serial #	219

### Calibration Data

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	2.4	0.0000		
395.1	399.6	0.9888	Correlation Coefficient	0.999962
198.2	199.5	0.9936		
99.0	100.9	0.9808	Slope	0.994627
			Intercept	-1.585834

## NOx Calibration Curve





## Calibration Summary



Parameter NO  
 Air Monitoring Network Palliser Airshed

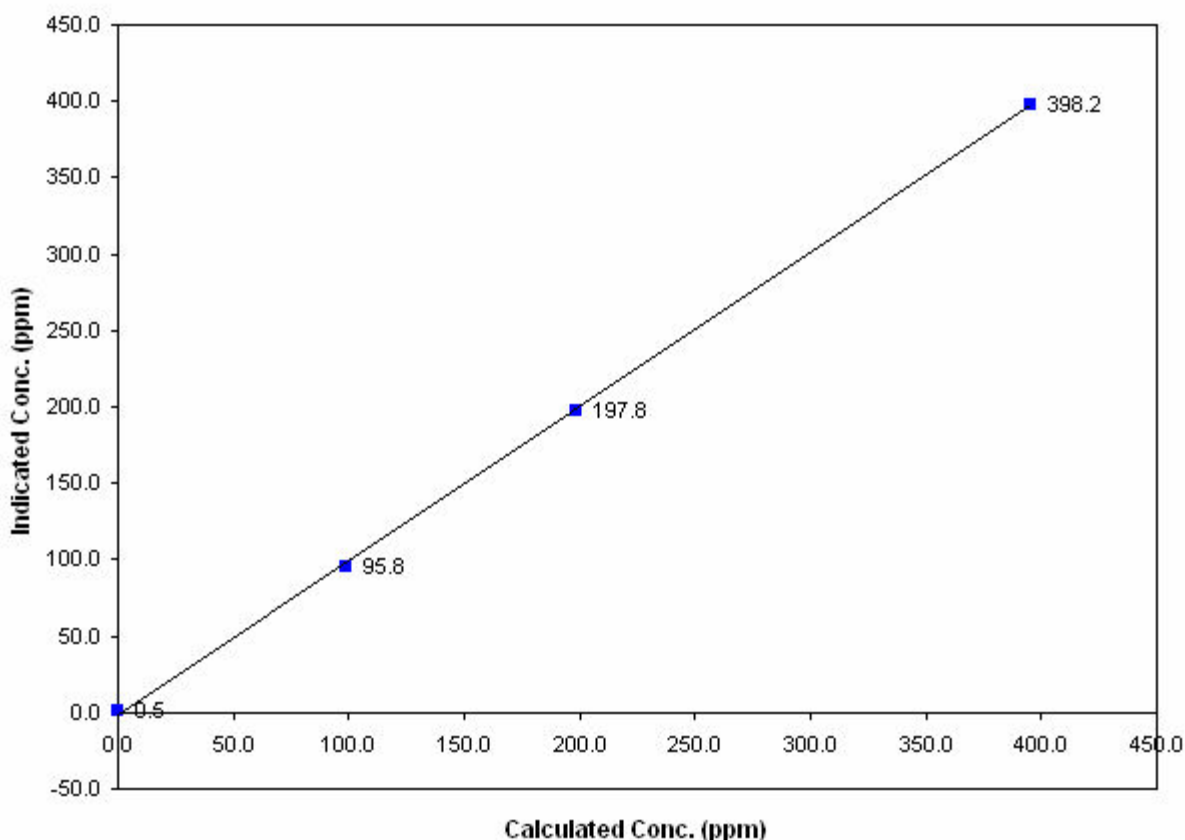
### Station Information

Calibration Date	January 9, 2004	Previous Calibration	December 18, 2003
Station Number	1	Station Location	Crescent Heights
Start Time (MST)	11:05	End Time (MST)	23:38
Analyzer make	API Model 200E	Analyzer serial #	219

### Calibration Data

Calculated conc (ppb) (Cc)	Indicated concentration (ppb) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.0	0.5	N/A		
99.0	95.8	1.0338	Correlation Coefficient:	0.999858
198.2	197.8	1.0019		
395.1	398.2	0.9922	Slope	0.990260
			Intercept	1.683605

## NO Calibration Curve



**Calibration Report**

Parameter THC  
 Air Monitoring Network Palliser Airshed

**Station Information**

Calibration Date	January 9, 2004	Previous Calibration	December 23, 2003
Station Number	1	Station Location	Crescent Heights
Reason:	<input checked="" type="checkbox"/> Routine	<input type="checkbox"/> Install	<input type="checkbox"/> Removal
			<input type="checkbox"/> Other:
Start Time (MST)	10:25	End Time (MST)	20:43
Barometric Pressure	0.920 mb	Station Temperature	20.5 Deg C
Calibrator	EnviroNics 6100	Serial Number	3016
Cal Gas Concentratio	700 ppm CH <sub>4</sub> / 299 ppm C <sub>3</sub> H <sub>8</sub>	Cal Gas Expiry Date	NA
Cal Gas CH <sub>4</sub> equiv	1522.25 ppm	Cal Gas Cylinder #	ALM 030358
DACS make	Focus AP1000	DACS serial No.	1
DACS voltage range	0 - 1 volt	DACS channel #	9
	<u>Before</u>		<u>After</u>
DACS slope	0.005000	DACS slope	0.005000
DACS intercept	0.000000	DACS intercept	0.000000
Calculated slope	0.998615	Calculated slope	1.002524
Calculated intercept	-0.075939	Calculated intercept	-0.143435
Analyzer make	Bendix Model 8201	Analyzer serial #	300437-2

	before		after	
Concentration range	0 - 50	ppm	0 - 50	ppm
THC zero pot	025		119	
THC span pot	603		650	

**Calibration Data**

Dilution air flow rate (cc/min)	Source gas flow rate (cc/min)	Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)
2997	0.00	0.000	-0.010	N/A
2997	79.93	39.544	39.524	1.0005
2997	39.96	20.030	20.213	0.9909
2997	9.97	5.047	5.303	0.9518
2997	0.00	0.000	-0.154	As Found Zero
2997	79.93	39.544	39.778	As Found Span
Average Correction Factor				0.9811

Calculated value of As Found Response: 39.801 ppm      Percent Change of As Found: -0.6

	before calibration		after calibration	
Auto zero	-0.073	ppm	0.093	ppm
Auto span	16.974	ppm	23.305	ppm

Notes: Response appears relatively close to expected values on As Found.  
 Attempted to replace DACS with operating output relay DACS unit, problems resulted in re-installati  
 of old DACS and analyzer recalibrated for January. Zero and span adjustments performed.  
 No other maintenance appears necessary.

Calibration Performed By: Kelly Baragar

## Calibration Summary



Air Quality Management

Parameter THC  
 Air Monitoring Network Palliser Airshed

### Station Information

Calibration Date	January 9, 2004	Previous Calibration	December 23, 2003
Station Number	1	Station Location	Crescent Heights
Start Time (MST)	10:25	End Time (MST)	20:43
Analyzer make/model	Bendix Model 8201	Analyzer serial #	300437-2

### Calibration Data

Calculated concentration (ppm) (Cc)	Indicated concentration (ppm) (Ic)	Correction factor (Cc/Ic)	Statistical Evaluation	
0.000	-0.010	N/A		
5.047	5.303	0.9518	Correlation Coefficient	0.999945
20.030	20.213	0.9909		
39.544	39.524	1.0005	Slope	1.002524
			Intercept	-0.143435

