



Peace Airshed Zone Association

Ambient Air Monitoring Network Summary

**Continuous Ambient Air Quality Monitoring Program
Annual Report
2013**

Operations and Reporting
FOCUS
AIR QUALITY MONITORING

Peace Airshed Zone Association 2013 Annual Ambient Air Monitoring Report

Table of Contents

	Page
1. Peace Airshed Zone Association Cover Letter	
Figure 1. Locations of the Continuous Air Monitoring Stations	1
Figure 2. Locations of the Passive Air Monitoring Stations	2
2. Henry Pirker - Summary & Frequency Tables	
Table 1. Key Parameters – Continuous Monitoring Data	4
Table 2. Sulphur Dioxide (SO ₂)	5
Table 3. Nitrogen Dioxide (NO ₂)	5
Table 4. Ozone (O ₃)	6
Table 5. Carbon Monoxide (CO)	6
Table 6. Total Hydrocarbons (THC)	7
Table 7. Total Reduced Sulphur (TRS)	7
Table 8. Particulate Matter (PM _{2.5})	8
Table 9. Wind Speed and Wind Direction	9
Figure 3. Henry Pirker - Wind Rose	10
3. Evergreen Park - Summary & Frequency Tables	
Table 10. Key Parameters – Continuous Monitoring Data	12
Table 11. Sulphur Dioxide (SO ₂)	13
Table 12. Total Reduced Sulphur (TRS)	13
Table 13. Particulate Matter (PM _{2.5})	14
Table 14. Wind Speed and Wind Direction	15
Figure 4. Evergreen Park - Wind Rose	16
4. Smoky Heights - Summary & Frequency Tables	
Table 15. Key Parameters – Continuous Monitoring Data	18
Table 16. Sulphur Dioxide (SO ₂)	19
Table 17. Total Reduced Sulphur (TRS)	19
Table 18. Particulate Matter (PM _{2.5})	20
Table 19. Wind Speed and Wind Direction	21
Figure 5. Evergreen Park - Wind Rose	22
5. Beaverlodge - Summary & Frequency Tables	
Table 20. Key Parameters – Continuous Monitoring Data	24
Table 21. Sulphur Dioxide (SO ₂)	25
Table 22. Nitrogen Dioxide (NO ₂)	25
Table 23. Ozone (O ₃)	26
Table 24. Particulate Matter (PM _{2.5})	26
Table 25. Wind Speed and Wind Direction	27
Figure 6. Beaverlodge - Wind Rose	28

6.	Valleyview - Summary & Frequency Tables	
	Table 26. Key Parameters – Continuous Monitoring Data	30
	Table 27. Sulphur Dioxide (SO ₂)	31
	Table 28. Hydrogen Sulphide (H ₂ S)	31
	Table 29. Wind Speed and Wind Direction	32
	Figure 7. Valleyview - Wind Rose	33
7.	Falher - Summary & Frequency Tables	
	Table 30. Key Parameters – Continuous Monitoring Data	35
	Table 31. Sulphur Dioxide (SO ₂)	36
	Table 32. Hydrogen Sulphide (H ₂ S)	36
	Table 33. Wind Speed and Wind Direction	37
	Figure 8. Falher - Wind Rose	38
8.	Portable Sunset House - Summary & Frequency Tables	
	Table 34. Key Parameters – Continuous Monitoring Data	40
	Table 35. Sulphur Dioxide (SO ₂)	41
	Table 36. Nitrogen Dioxide (NO ₂)	41
	Table 37. Ozone (O ₃)	42
	Table 38. Total Reduced Sulphur (TRS)	42
	Table 39. Particulate Matter (PM _{2.5})	43
	Table 40. Wind Speed and Wind Direction	43
	Figure 9. Portable Sunset House - Wind Rose	44
9.	Portable Reno - Summary & Frequency Tables	
	Table 41. Key Parameters – Continuous Monitoring Data	46
	Table 42. Sulphur Dioxide (SO ₂)	47
	Table 43. Nitrogen Dioxide (NO ₂)	47
	Table 44. Ozone (O ₃)	48
	Table 45. Total Reduced Sulphur (TRS)	48
	Table 46. Total Hydrocarbon (THC)	49
	Table 47. Particulate Matter (PM _{2.5})	49
	Table 48. Wind Speed and Wind Direction	50
	Figure 10. Portable Reno - Wind Rose	51
10.	Passive Monitoring Program	
	Table 49. SO ₂ Passive Summary	53
	Table 50. NO ₂ Passive Summary	54
	Table 51. O ₃ Passive Summary	55
	Table 52. H ₂ S Passive Summary	56
	Figure 11. SO ₂ Bubble Chart	57
	Figure 12. NO ₂ Bubble Chart	58
	Figure 13. O ₃ Bubble Chart	59
	Figure 14. H ₂ S Bubble Chart	60

March 14th, 2013

Alberta Environment
 11th Floor, Oxbridge Place
 9820-106 Street
 Edmonton Alberta T5K 2J6

RE: Peace Airshed Zone Association (PAZA) – 2013 Annual Ambient Air Monitoring Report

Please find enclosed for your review the Peace Airshed Zone Association (PAZA) 2013 Ambient Air Monitoring Network Annual Report.

This report is submitted by PAZA on behalf of the industrial member companies to satisfy the requirements of the following facility Operating Approvals:

Company	Facility	LSD	EPEA Approval Number
Advantage Oil & Gas Ltd.	Glacier	05-02-076-13-W6	262479-00-00
Alberta Power (2000) Ltd. (an ATCO company)	Sturgeon	SW-06-069-21-W5	10283-02-02
ATCO Power Canada	Poplar Hill	11-19-073-08-W6	67774-01-01
ATCO Power Canada	Valleyview	SW-06-069-21-W5	147709-01-01
AltaGas Ltd.	Pouce Coupe	03-03-081-13-W6	247673-00-00
	Ante Creek	02-26-068-25-W5	266694-00-00
	Gordondale	16-31-78-11-W6M	287474-00-00
Apache Canada Ltd.	House Mountain	01-08-070-10-W5	10137-02-02
Barrick Energy Inc.	Sturgeon/Valleyview	02-02-069-22-W5	1633-02-00
Birchcliff Energy Ltd.	Pouce Coupe	03-22-078-12-W6	252529-00-00
Canadian Natural Resources Limited	Bonanza	11-25-081-11-W6	00000029-01-00

Company	Facility	LSD	EPEA Approval Number
	Progress/Gordondale	01-01-077-10-W6	00010036-02-00
	Gold Creek	13-26-067-05-W6	00010446-02-00
	Teepee Creek	SE-2-074-04-W6	00001635-02-00
Canfor Forest Products	Grande Prairie	SW-23-071-06-W6	152645-01-00
Centrica (Direct Energy)	Progress	07-22-078-09-W6	00011428-02-00
Conocophillips Canada Energy Partnership	Wembley	06-19-073-08-W6	00000212-01-00
Devon Canada	NW Belloy (Dunvegan)	16-36-079-03-W6	00009810-02-00
	Eaglesham (South)	02-14-077-25-W5	00047669-01-00
	North Normanville	03-36-079-23-W5	00047455-01-00
	West Culp	05-34-078-25-W6	00136284-00-00
	Cecil	08-15-084-08-W6	00010032-02-00
Encana Corporation	Sexsmith	04-08-075-07-W6	00010002-01-00
Enerplus Resources	Pouce Coupe	SW-06-069-21-W5	1464-02-03
Grande Prairie Generation Inc.	Northern Prairie Power Project	04-19-073-08-W6	00238762-00-00
Long Run Exploration	Eaglesham	01-25-076-01-W6	00241532-00-00
	Kakut	14-12-075-03-W6	00248469-00-00
	Donnelly	06-01-077-21-W5	00000087-02-00
	Puskwaskau	03-26-074-01-W6	00017524-01-00
Longview Oil Corp.	Sunset House	06-22-070-20-W5	138884-01-00
Penn West Petroleum Ltd.	Tangent	13-29-080-23-W5	00001746-02-00

Company	Facility	LSD	EPEA Approval Number
	Pouce Coupe	16-07-078-11-W6	00000614-01-00
Petrus Resources	Rycroft	08-25-077-06-W6	11351-02-00
	Spirit River	08-34-077-06-W6	11096-02-00
Spectra Energy Midstream Corporation	Fourth Creek	16-11-082-09-W6	00000263-01-00
	Gordondale	11-26-079-09-W6	00011495-01-01
	Pouce Coupe/Bonanza	3-23-080-13-W6	00070203-01-01
TAQA North Ltd.	Valhalla	13-21-076-09-W6	00017620-01-00
Veresen Energy	Hythe Brainard	11-18-074-12-W6	00010910-02-00
Weyerhaeuser Canada	Grande Prairie Pulp and Wood Plant	01-14-070-05-W6	00000113-02-00

The PAZA network consists of seven continuous air monitoring stations including Henry Pirker (Grande Prairie), Evergreen Park, Smoky Heights, Beaverlodge, Valleyview, Falher and a portable station. In 2013, the Falher station was added to the network. As well, the portable station was located in Sunset House and will be referred to as the Sunset House-Portable in this report and operated until October 30th, 2013. It was relocated to the Reno area and began operation in November 2013.

There were no 1-hour, 24-hour or annual averages of sulphur dioxide, nitrogen dioxide, ozone, or carbon monoxide above the Alberta Ambient Air Quality Objectives (AAAQO).

There were eleven (11) 1-hr averages of hydrogen sulphide above the AAAQO of 10 ppb and two (2) 24-hr averages above the AAAQO of 3 ppb.

There were eleven (11) 1-hr averages of PM_{2.5} above the Alberta Ambient Air Quality Guideline (AAAQG) of 80 µg/m³ and one (1) 24-hr average above the AAAQO of 30 µg/m³.

	Date	Time (Hour Ending)	Location	Recorded Concentration ($\mu\text{g}/\text{m}^3$)
One (1) 1-hr average $\text{PM}_{2.5}$	4-Jan	0:00	Smoky Heights	84.9
One (1) 1-hr average $\text{PM}_{2.5}$	10-Jan	0:00	Smoky Heights	83.8
One (1) 1-hr average $\text{PM}_{2.5}$	6-May	20:00	Evergreen Park	158.9
One (1) 1-hr average $\text{PM}_{2.5}$	12-May	11:00	Beaverlodge	84.2
One (1) 1-hr average $\text{PM}_{2.5}$	12-May	12:00	Beaverlodge	146.5
One (1) 1-hr average $\text{PM}_{2.5}$	18-Jun	8:00	Smoky Heights	90
One (1) 1-hr average $\text{PM}_{2.5}$	19-Jun	10:00	Smoky Heights	108.9
One (1) 1-hr average $\text{PM}_{2.5}$	12-Sep	21:00	Smoky Heights	121.8
One (1) 1-hr average $\text{PM}_{2.5}$	25-Oct	18:00	Smoky Heights	129.4
One (1) 1-hr average $\text{PM}_{2.5}$	7-Nov	5:00	Smoky Heights	94
One (1) 1-hr average $\text{PM}_{2.5}$	7-Nov	6:00	Smoky Heights	107.8

	Date	Time (Hour Ending)	Location	Recorded Concentration (ppb)
One (1) 1-hr average H_2S	12-Jan	13:00	Valleyview	14.3
One (1) 1-hr average H_2S	12-Jan	14:00	Valleyview	18.4
One (1) 1-hr average H_2S	12-Jan	15:00	Valleyview	17.4
One (1) 1-hr average H_2S	12-Jan	16:00	Valleyview	16.6
One (1) 1-hr average H_2S	12-Jan	17:00	Valleyview	14.7
One (1) 1-hr average H_2S	12-Jan	18:00	Valleyview	14.2
One (1) 1-hr average H_2S	12-Jan	19:00	Valleyview	12.1
One (1) 1-hr average H_2S	8-May	5:00	Falher	22.8
One (1) 1-hr average H_2S	17-May	1:00	Falher	24.1
One (1) 1-hr average H_2S	17-May	2:00	Falher	23.5
One (1) 1-hr average H_2S	17-May	5:00	Falher	25.3

	Date	Location	Recorded Concentration ($\mu\text{g}/\text{m}^3$)
One (1) 24-hr average $\text{PM}_{2.5}$	7-Nov	Beaverlodge	36.3
One (1) 24-hr average H_2S	12-Jan	Valleyview	7.1
One (1) 24-hr average H_2S	17-May	Falher	4.5

The passive monitoring network consists of forty-six (46) sampling locations. The parameters measured at each site are sulphur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃) and/or hydrogen sulphide (H₂S). There were no exceedences of the AAAQO for sulphur dioxide, nitrogen dioxide, ozone, or hydrogen sulphide.

Figure 1 shows the location of the continuous monitoring sites, and Figure 2 shows the location of the passive monitoring sites.

Additional information about PAZA, including its membership, objectives and details on the monitoring network are included on the web at <http://www.PAZA.ca/>.

We trust that the report satisfies your requirements and if you have any questions or concerns please contact Patrick Andersen, PAZA Program Manager 780.833.4343 or 403.505.1041

Sincerely,

On Behalf of the Peace Airshed Zone Association,



Shelly Pruden, C. Tech
Environmental Coordinator
City of Grande Prairie



Greg Pippus, MSc., EP.
Environmental Leader
Weyerhaeuser - Grande Prairie Operations



Jeff Cooper, C.Tech.
AQM Operations Manager

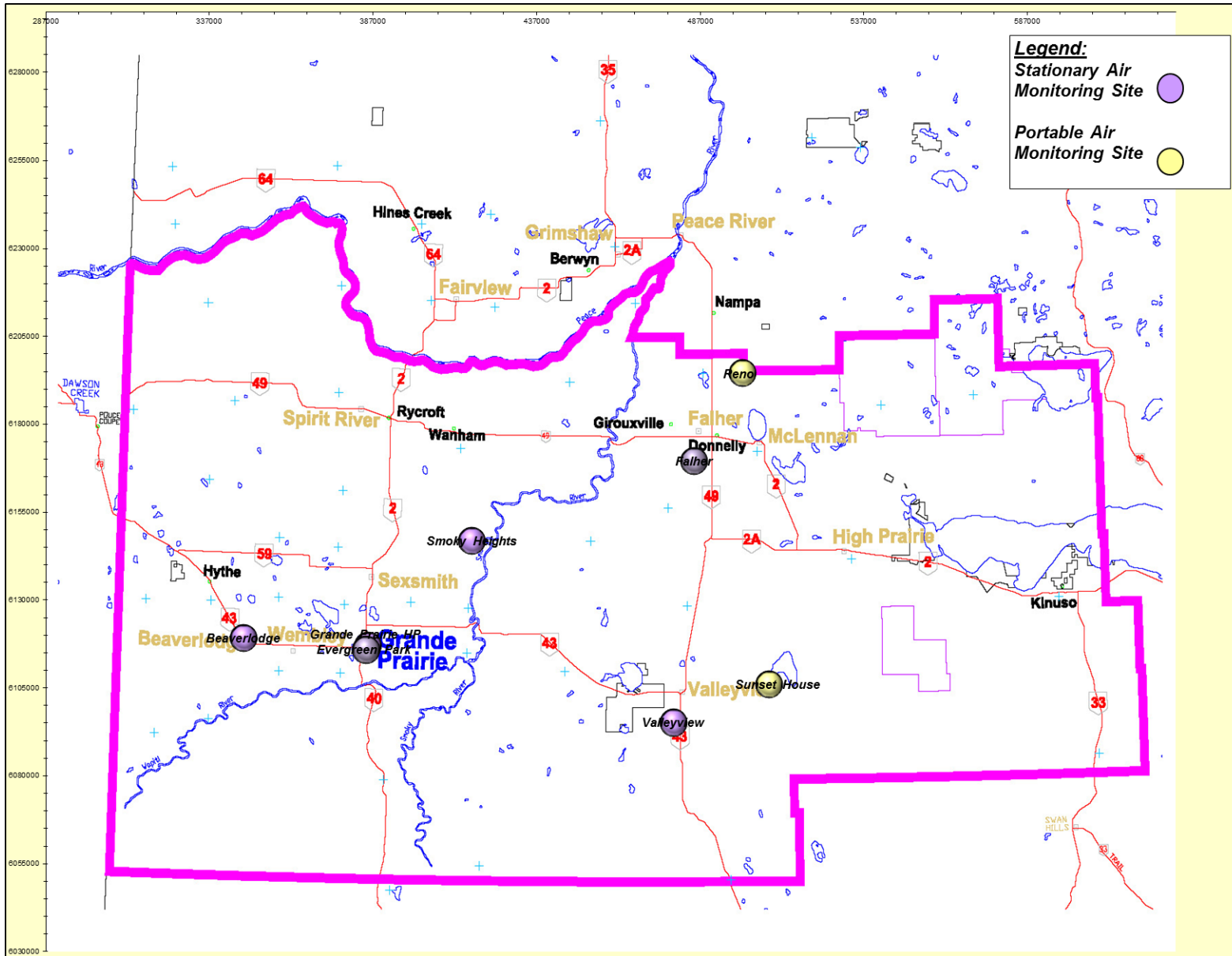


Figure 1. Peace Airshed Zone Association – Continuous Air Monitoring Network

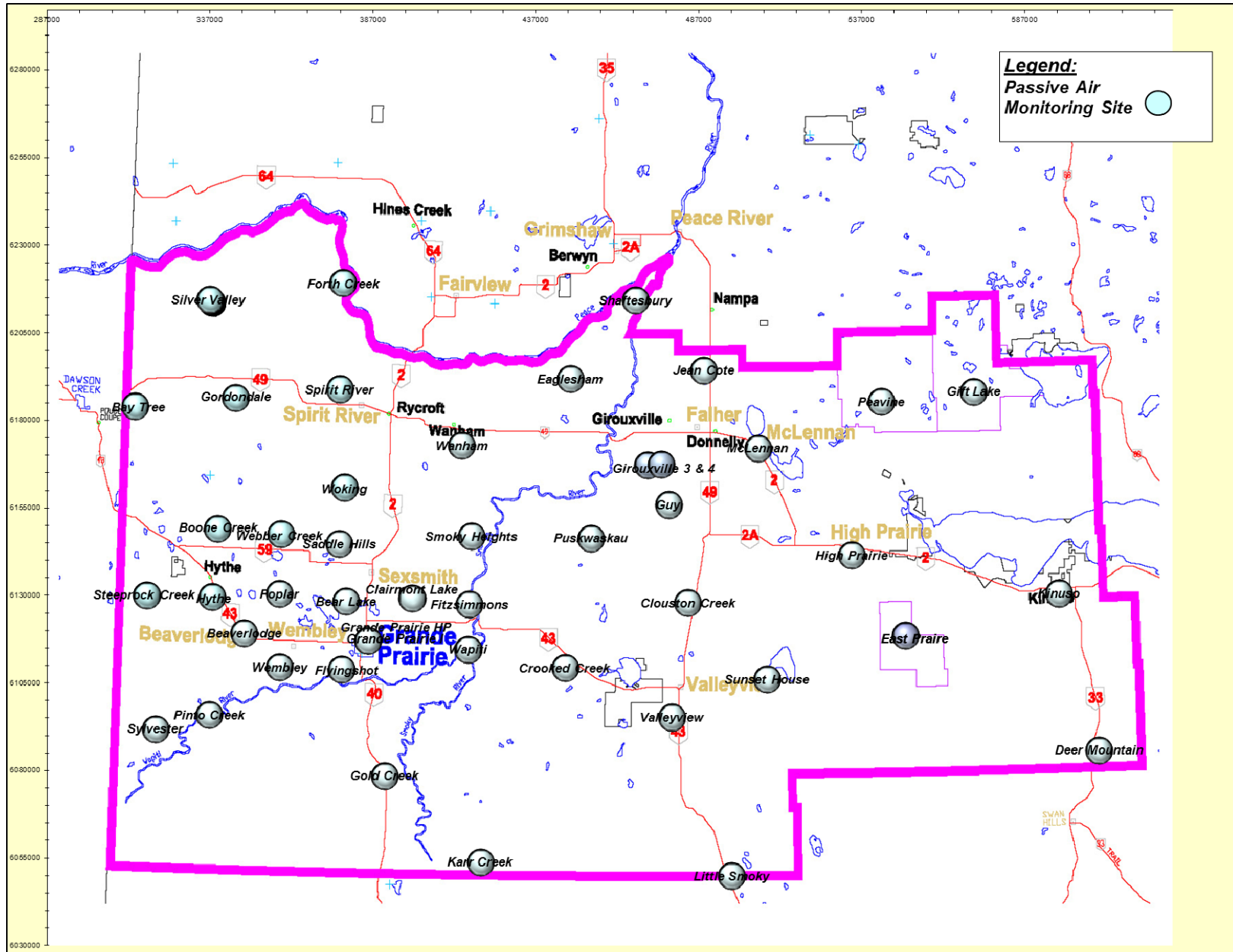


Figure 2. Peace Airshed Zone Association – Passive Air Monitoring Network

PAZA

HENRY PIRKER

CONTINUOUS AMBIENT AIR MONITORING STATION

2013

ANNUAL SUMMARY TABLES

Table 1. Henry Pirker - Key Parameters – Continuous Monitoring Data – 2013 Summary

Parameter	Monitoring Station	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO	
			24-hr	Date	1-hr	Date		24-hr	1-hr
Sulphur Dioxide SO₂ measured in ppb	Henry Pirker	0.24	1.87	Jan 28	7.15	Sep 18 08:00	99.7	0	0
Nitrogen Dioxide NO₂ measured in ppb	Henry Pirker	9.96	44.42	Jan 25	59.19	Jan 03 18:00	99.5	0	0
Ozone O₃ measured in ppb	Henry Pirker	23.8	47.85	Apr 08	64.41	May 11 16:00	98.8	0	0
Carbon Monoxide CO measured in ppm	Henry Pirker	0.20	0.76	Jan 25	2.01	Jan 26 23:00	99.4	-	0
Total Hydrocarbons THC measured in ppm	Henry Pirker	2.00	2.60	Dec 19	4.00	Aug 05 00:00	94.7	-	-
Total Reduced Sulphur TRS measured in ppb	Henry Pirker	0.40	2.44	Jan 27	14.63	Jul 22 01:00	99.7	-	-
Particulate Matter PM_{2.5} measured in µg/m³	Henry Pirker	6.34	23.14	Nov 20	54.29	May 23 04:00	96.4	0	0

Table 2. Sulphur Dioxide (SO₂) – Henry Pirker 2013 Summary and Frequency Distribution

Henry Pirker		SO ₂ (ppb)										2013			
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340
January	682	0.53	1.87	Jan 28	4.89	Jan 28 11:00	96.4	0	0	100.00	0.00	0.00	0.00	0.00	0.00
February	637	0.28	1.17	Feb 17	6.72	Feb 17 13:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	706	0.42	1.22	Mar 20	2.32	Mar 07 20:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	684	0.35	1.08	Apr 15	4.97	Apr 27 20:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	706	0.10	0.38	May 08	1.50	May 08 18:00	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	684	0.05	0.19	Jun 13	2.19	Jun 13 13:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	708	0.06	0.28	Jul 10	1.67	Jul 09 20:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	707	0.06	0.28	Aug 02	1.44	Aug 02 14:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	684	0.16	1.31	Sep 18	7.15	Sep 18 08:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	702	0.10	0.31	Oct 19	1.15	Oct 30 09:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	684	0.32	1.16	Nov 19	4.98	Nov 19 16:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	707	0.49	1.25	Dec 14	5.10	Dec 16 08:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	8291	0.24	1.87	Jan 28	7.15	Sep 18 08:00	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00

Table 3. Nitrogen Dioxide (NO₂) – Henry Pirker 2013 Summary and Frequency Distribution

Henry Pirker		NO ₂ (ppb)										2013			
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 25	25 - 50	50 - 110	110 - 210	>210	
January	677	20.91	44.42	Jan 25	59.19	Jan 03 18:00	96.0	0	0	60.71	35.30	3.99	0.00	0.00	
February	636	15.23	31.12	Feb 07	57.75	Feb 08 10:00	99.9	0	0	80.50	18.71	0.79	0.00	0.00	
March	704	14.00	23.78	Mar 25	55.22	Mar 29 22:00	100.0	0	0	83.66	16.05	0.28	0.00	0.00	
April	681	6.08	15.96	Apr 09	41.44	Apr 09 21:00	100.0	0	0	97.80	2.20	0.00	0.00	0.00	
May	704	4.53	7.89	May 26	26.09	May 01 06:00	99.7	0	0	99.72	0.28	0.00	0.00	0.00	
June	682	3.91	7.57	Jun 17	17.77	Jun 22 23:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	
July	706	3.64	8.37	Jul 17	18.72	Jul 17 23:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	
August	705	4.45	6.87	Aug 28	20.33	Aug 15 08:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	
September	682	6.54	10.60	Sep 20	31.18	Sep 20 21:00	100.0	0	0	99.27	0.73	0.00	0.00	0.00	
October	694	9.26	21.29	Oct 30	41.27	Oct 30 09:00	99.1	0	0	95.24	4.76	0.00	0.00	0.00	
November	683	16.23	31.48	Nov 26	54.99	Nov 29 10:00	100.0	0	0	75.70	24.16	0.15	0.00	0.00	
December	706	15.45	37.83	Dec 19	55.61	Dec 19 13:00	100.0	0	0	76.20	23.09	0.71	0.00	0.00	
Annual	8260	9.96	44.42	Jan 25	59.19	Jan 03 18:00	99.5	0	0	89.18	10.34	0.48	0.00	0.00	

Table 4. Ozone (O₃) – Henry Pirker 2013 Summary and Frequency Distribution

Henry Pirker O ₃ (ppb) 2013															
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 2	2 - 10	10 - 20	20 - 40	40 - 82	>82
January	678	17.92	37.67	Jan 15	41.69	Jan 18 06:00	95.7	0	0	17.85	18.73	13.13	48.23	2.06	0.00
February	639	25.64	38.85	Feb 11	44.87	Feb 13 16:00	99.9	0	0	5.32	10.49	16.12	57.28	10.80	0.00
March	570	29.58	41.86	Mar 31	60.86	Mar 29 18:00	89.9	0	0	2.46	7.19	11.23	59.30	19.82	0.00
April	684	37.21	47.85	Apr 08	55.95	Apr 22 16:00	100.0	0	0	0.00	0.73	3.65	51.02	44.59	0.00
May	707	33.80	46.16	May 13	64.41	May 11 16:00	99.7	0	0	0.14	5.23	9.62	51.06	33.95	0.00
June	685	26.45	33.67	Jun 22	52.08	Jun 23 13:00	100.0	0	0	0.00	5.40	18.83	67.74	8.03	0.00
July	709	22.16	30.67	Jul 01	51.94	Jul 01 12:00	100.0	0	0	0.28	9.45	27.79	59.10	3.39	0.00
August	707	21.93	31.29	Aug 03	56.05	Aug 14 16:00	99.9	0	0	0.57	12.87	30.13	51.91	4.53	0.00
September	685	19.70	27.25	Sep 09	51.52	Sep 15 16:00	100.0	0	0	5.11	19.12	26.28	46.86	2.63	0.00
October	704	17.39	28.64	Oct 31	40.08	Oct 19 15:00	99.6	0	0	11.08	17.05	24.29	47.44	0.14	0.00
November	686	14.88	27.08	Nov 01	40.11	Nov 24 05:00	100.0	0	0	10.79	27.99	29.59	31.34	0.29	0.00
December	708	20.03	37.19	Dec 24	41.06	Dec 25 13:00	100.0	0	0	5.08	19.35	19.21	55.79	0.56	0.00
Annual	8162	23.79	47.85	Apr 08	64.41	May 11 16:00	98.8	0	0	4.89	12.89	19.33	52.14	10.74	0.00

Table 5. Carbon Monoxide (CO) – Henry Pirker 2013 Summary and Frequency Distribution

Henry Pirker CO (ppm) 2013															
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 0.1	0.1 - 1.0	1.0 - 2.5	2.5 - 5.0	5.0 - 13.0	> 13.0
January	683	0.32	0.76	Jan 25	2.01	Jan 26 23:00	96.4	0	0	0.15	96.93	2.93	0.00	0.00	0.00
February	638	0.28	0.52	Feb 07	1.87	Feb 08 09:00	99.9	0	0	0.00	99.69	0.31	0.00	0.00	0.00
March	704	0.23	0.31	Mar 28	0.71	Mar 29 22:00	99.5	0	0	2.70	97.30	0.00	0.00	0.00	0.00
April	683	0.19	0.25	Apr 17	0.60	Apr 17 08:00	100.0	0	0	3.22	96.78	0.00	0.00	0.00	0.00
May	706	0.19	0.24	May 29	0.37	May 12 01:00	99.7	0	0	0.00	100.00	0.00	0.00	0.00	0.00
June	665	0.18	0.23	Jun 22	0.49	Jun 22 23:00	97.8	0	0	0.00	100.00	0.00	0.00	0.00	0.00
July	706	0.16	0.27	Jul 07	0.43	Jul 17 14:00	100.0	0	0	15.86	84.14	0.00	0.00	0.00	0.00
August	707	0.15	0.22	Aug 10	0.47	Aug 04 22:00	99.9	0	0	22.07	77.93	0.00	0.00	0.00	0.00
September	684	0.12	0.21	Sep 03	0.56	Sep 23 08:00	100.0	0	0	41.81	58.19	0.00	0.00	0.00	0.00
October	706	0.14	0.33	Oct 30	1.27	Oct 30 09:00	100.0	0	0	31.59	68.27	0.14	0.00	0.00	0.00
November	686	0.24	0.46	Nov 26	1.13	Nov 29 10:00	100.0	0	0	3.50	96.36	0.15	0.00	0.00	0.00
December	708	0.22	0.47	Dec 19	1.03	Dec 04 09:00	100.0	0	0	7.34	92.51	0.14	0.00	0.00	0.00
Annual	8276	0.20	0.76	Jan 25	2.01	Jan 26 23:00	99.4	0	0	10.81	88.88	0.30	0.00	0.00	0.00

Table 6. Total Hydrocarbons (THC) – Henry Pirker 2013 Summary and Frequency Distribution

Henry Pirker															THC (ppm)		2013	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	*AAAQO		Number of Readings in Concentration Range								
								24-Hr	1-Hr	0 - 1.5	1.5 - 2.0	2.0 - 2.5	2.5 - 5.0	5.0 - 10.0	>10.0			
January	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
February	411	2.08	2.44	Feb 10	3.03	Feb 10 05:00	64.4	0	0	0.00	37.96	58.39	3.65	0.00	0.00			
March	703	2.06	2.34	Mar 08	2.81	Mar 12 02:00	99.5	0	0	0.00	47.23	50.92	1.85	0.00	0.00			
April	685	1.95	2.06	Apr 22	2.70	Apr 28 00:00	100.0	0	0	0.00	83.36	16.06	0.58	0.00	0.00			
May	701	1.94	2.01	May 26	2.93	May 04 04:00	99.6	0	0	0.57	82.45	16.69	0.29	0.00	0.00			
June	615	1.95	2.05	Jun 30	3.21	Jun 17 04:00	90.0	0	0	0.00	85.85	13.17	0.98	0.00	0.00			
July	708	1.99	2.22	Jul 17	3.08	Jul 22 01:00	100.0	0	0	0.00	72.18	25.28	2.54	0.00	0.00			
August	654	2.02	2.27	Aug 05	4.00	Aug 05 00:00	93.2	0	0	0.00	63.61	32.11	4.28	0.00	0.00			
September	685	1.99	2.23	Sep 12	3.71	Sep 10 22:00	100.0	0	0	0.00	71.82	24.82	3.36	0.00	0.00			
October	681	1.94	2.23	Oct 29	3.44	Oct 29 07:00	96.6	0	0	0.00	80.62	17.77	1.62	0.00	0.00			
November	685	2.06	2.46	Nov 11	3.18	Nov 27 02:00	100.0	0	0	0.00	51.53	44.09	4.38	0.00	0.00			
December	695	2.05	2.60	Dec 19	2.86	Dec 19 13:00	98.7	0	0	0.00	54.53	39.71	5.76	0.00	0.00			
Annual	7223	2.00	2.60	Dec 19	4.00	Aug 05 00:00	94.7	0	0	0.06	67.35	29.96	2.63	0.00	0.00			

*No Alberta Environment Objectives or Guidelines for THC

Table 7. Total Reduced Sulphur (TRS) – Henry Pirker 2013 Summary and Frequency Distribution

Henry Pirker															TRS (ppb)		2013	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	*AAAQO		Number of Readings in Concentration Range								
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10			
January	682	0.58	2.44	Jan 27	6.04	Jan 27 05:00	96.4	0	0	89.15	8.50	1.91	0.44	0.00	0.00			
February	639	0.37	0.92	Feb 07	1.60	Feb 07 23:00	99.9	0	0	97.03	2.97	0.00	0.00	0.00	0.00			
March	707	0.31	0.45	Mar 30	0.89	Mar 28 09:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00			
April	684	0.14	0.25	Apr 29	2.86	Apr 29 04:00	100.0	0	0	99.85	0.00	0.15	0.00	0.00	0.00			
May	706	0.30	0.81	May 21	1.67	May 21 07:00	99.7	0	0	99.01	0.99	0.00	0.00	0.00	0.00			
June	684	0.33	0.49	Jun 17	1.99	Jun 01 02:00	100.0	0	0	98.83	1.17	0.00	0.00	0.00	0.00			
July	707	0.51	2.03	Jul 22	14.63	Jul 22 01:00	100.0	0	1	93.92	4.67	0.99	0.14	0.14	0.14			
August	706	0.42	0.57	Aug 05	2.13	Aug 09 06:00	99.9	0	0	98.44	1.56	0.00	0.00	0.00	0.00			
September	685	0.40	0.63	Sep 11	1.50	Sep 19 09:00	100.0	0	0	98.98	1.02	0.00	0.00	0.00	0.00			
October	707	0.41	0.66	Oct 25	3.08	Oct 13 10:00	100.0	0	0	98.59	1.27	0.14	0.00	0.00	0.00			
November	685	0.56	0.93	Nov 30	7.89	Nov 16 15:00	100.0	0	0	93.28	6.57	0.00	0.00	0.15	0.00			
December	704	0.50	0.86	Dec 19	1.79	Dec 14 20:00	100.0	0	0	96.16	3.84	0.00	0.00	0.00	0.00			
Annual	8296	0.40	2.44	Jan 27	14.63	Jul 22 01:00	99.7	0	1	96.95	2.70	0.27	0.05	0.02	0.01			

*No Alberta Environment Objectives or Guidelines for TRS

Table 8. Particulate Matter (PM_{2.5}) – Henry Pirker 2013 Summary and Frequency Distribution

Henry Pirker		PM _{2.5} (µg/m ³)										2013			
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30
January	717	6.57	15.18	Jan 05	37.57	Jan 05 19:00	96.4	0	0	18.83	40.31	23.29	11.99	4.32	1.26
February	671	5.23	21.03	Feb 07	32.57	Feb 07 21:00	99.9	0	0	29.21	44.11	16.10	6.71	3.58	0.30
March	743	6.91	17.96	Mar 08	46.72	Mar 09 00:00	99.9	0	0	5.38	50.87	27.59	11.31	4.44	0.40
April	718	3.92	5.83	Apr 23	18.98	Apr 23 22:00	100.0	0	0	12.81	75.21	11.14	0.42	0.42	0.00
May	742	5.82	14.24	May 23	54.29	May 23 04:00	99.7	0	0	18.73	42.86	28.44	6.87	2.70	0.40
June	450	5.90	12.42	Jun 25	31.42	Jun 22 23:00	62.5	0	0	22.44	41.11	23.33	8.67	4.22	0.22
July	744	6.74	22.57	Jul 07	41.39	Jul 08 01:00	100.0	0	0	16.26	44.49	22.04	10.62	5.38	1.21
August	743	7.08	13.56	Aug 10	30.89	Aug 11 00:00	99.9	0	0	0.27	47.38	35.40	15.75	0.94	0.27
September	717	6.73	16.64	Sep 12	29.36	Sep 08 01:00	100.0	0	0	14.23	45.19	20.64	14.09	5.86	0.00
October	744	5.03	11.57	Oct 30	32.87	Oct 30 09:00	100.0	0	0	24.06	47.45	20.97	5.51	1.75	0.27
November	720	10.14	23.14	Nov 20	38.47	Nov 26 20:00	100.0	0	0	4.72	30.97	27.22	18.61	17.36	1.11
December	728	5.74	16.05	Dec 19	43.32	Dec 19 22:00	97.9	0	0	18.13	48.90	20.47	8.38	3.98	0.14
Annual	8437	6.34	23.14	Nov 20	54.29	May 23 04:00	96.4	0	0	15.09	46.76	23.14	9.97	4.58	0.47

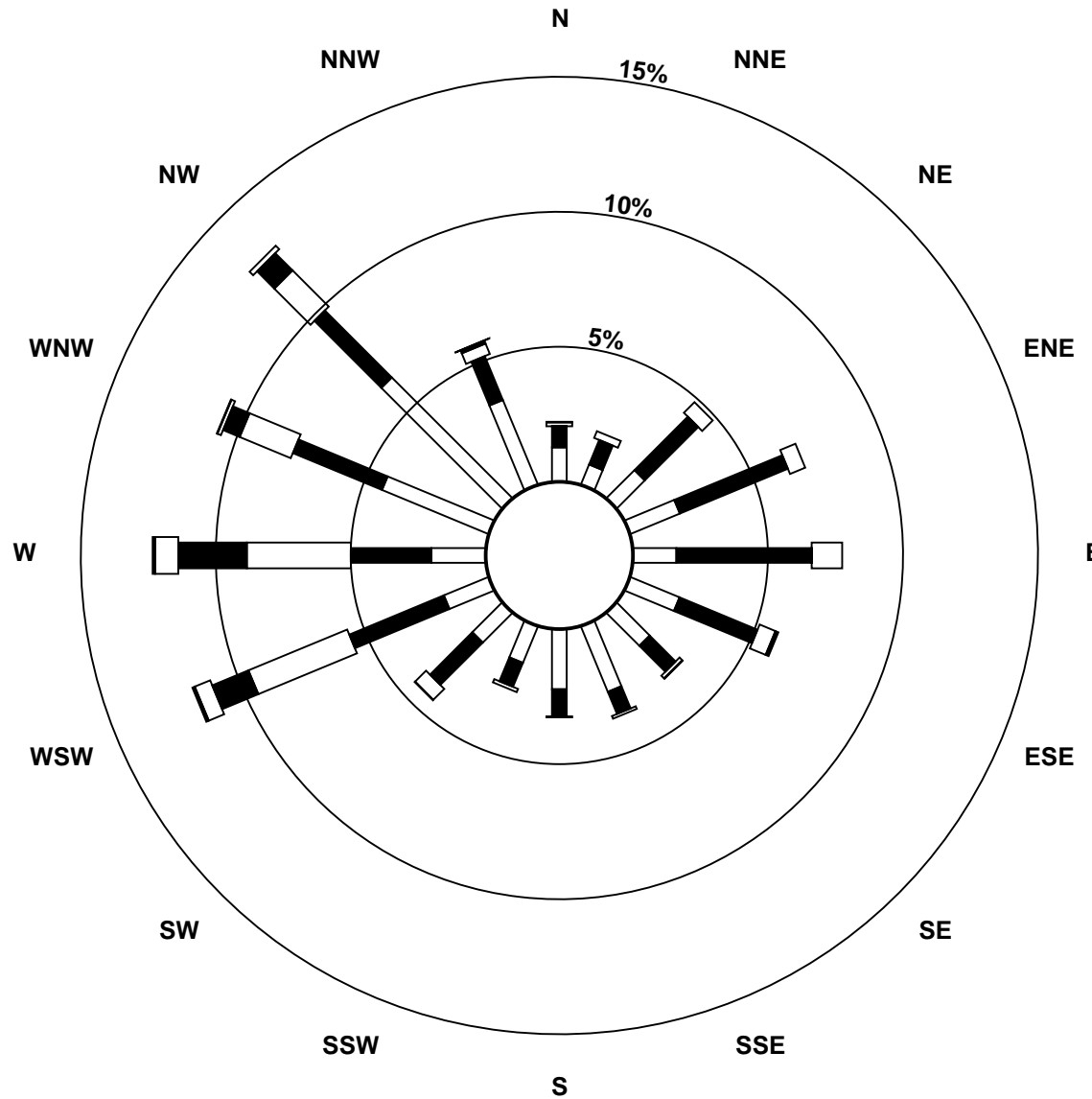
Table 9. Wind Speed and Wind Direction Frequency Distribution – Henry Pirker 2013 Summary

Henry Pirker								2013
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	190	1.28	0.78	0.14	0.02	0.00	0.00	2.22
NNE	176	0.81	0.98	0.27	0.00	0.00	0.00	2.06
NE	412	1.48	2.80	0.55	0.00	0.00	0.00	4.82
ENE	592	1.99	4.33	0.61	0.00	0.00	0.00	6.93
E	662	1.60	5.01	1.14	0.00	0.00	0.00	7.75
ESE	500	1.98	3.13	0.63	0.12	0.00	0.00	5.85
SE	278	1.73	1.36	0.14	0.02	0.00	0.00	3.25
SSE	309	2.62	0.89	0.11	0.00	0.00	0.00	3.62
S	279	2.22	1.01	0.04	0.00	0.00	0.00	3.27
SSW	218	1.46	0.96	0.13	0.00	0.00	0.00	2.55
SW	374	1.56	2.22	0.57	0.02	0.00	0.00	4.38
WSW	1000	1.79	3.79	3.96	1.45	0.62	0.09	11.71
WSW	1054	2.01	2.99	3.85	2.54	0.85	0.09	12.34
WNW	916	4.27	3.57	2.05	0.67	0.14	0.02	10.72
NW	1095	6.32	3.51	1.90	0.90	0.19	0.00	12.82
NNW	487	3.39	1.76	0.42	0.12	0.01	0.00	5.70
Totals	8542	36.53	39.09	16.49	5.87	1.81	0.21	100

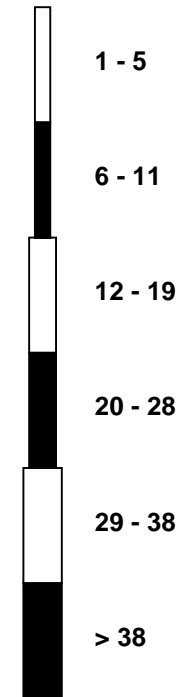
Wind Rose

Wind Speed (WS) (km/h)

Henry Pirker - 2013



Wind Speed Classes (km/h)



PAZA
EVERGREEN PARK
CONTINUOUS AMBIENT AIR MONITORING STATION

2013
ANNUAL SUMMARY TABLES

Table 10. Evergreen Park - Key Parameters – Continuous Monitoring Data – 2013 Summary

Parameter	Monitoring Station	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO	
			24-hr	Date	1-hr	Date		24-hr	1-hr
Sulphur Dioxide SO₂ measured in ppb	Evergreen Park	0.19	1.36	Dec 05	7.79	Dec 16 11:00	99.4	0	0
Total Reduced Sulphur TRS measured in ppb	Evergreen Park	0.32	2.39	Jan 27	4.94	Jan 27 13:00	100.0	-	-
Particulate Matter PM_{2.5} measured in µg/m³	Evergreen Park	3.78	18.84	Jul 07	158.87	May 06 20:00	99.1	0	1

Table 11. Sulphur Dioxide (SO₂) – Evergreen Park 2013 Summary and Frequency Distribution

Evergreen Park		SO ₂ (ppb)										2013			
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340
January	708	0.27	0.84	Jan 28	2.76	Jan 28 11:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
February	641	0.14	0.52	Feb 17	2.37	Feb 17 12:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	707	0.26	0.71	Mar 20	1.51	Mar 03 13:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	685	0.16	0.36	Apr 08	3.41	Apr 27 20:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	655	0.18	0.89	May 08	1.39	May 08 10:00	93.3	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	684	0.09	0.32	Jun 13	2.04	Jun 13 12:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	709	0.13	0.34	Jul 10	1.39	Jul 10 10:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	703	0.16	1.25	Aug 09	6.15	Aug 09 12:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	684	0.15	0.35	Sep 27	3.82	Sep 07 11:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	707	0.08	0.19	Oct 19	0.98	Oct 19 11:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	686	0.23	1.00	Nov 19	3.61	Nov 19 17:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	708	0.43	1.36	Dec 05	7.79	Dec 16 11:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	8277	0.19	1.36	Dec 05	7.79	Dec 16 11:00	99.4	0	0	100.00	0.00	0.00	0.00	0.00	0.00

Table 12. Total Reduced Sulphur (TRS) – Evergreen Park 2013 Summary and Frequency Distribution

Evergreen Park		TRS (ppb)										2013			
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	*AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10
January	708	0.54	2.39	Jan 27	4.94	Jan 27 13:00	100.0	0	0	90.96	7.06	1.98	0.00	0.00	0.00
February	639	0.32	0.72	Feb 07	1.38	Feb 07 10:00	100.0	0	0	99.22	0.78	0.00	0.00	0.00	0.00
March	707	0.31	0.52	Mar 26	1.30	Mar 26 07:00	100.0	0	0	99.43	0.57	0.00	0.00	0.00	0.00
April	685	0.26	0.40	Apr 15	0.79	Apr 19 07:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	707	0.30	0.79	May 21	1.52	May 21 08:00	100.0	0	0	98.87	1.13	0.00	0.00	0.00	0.00
June	685	0.27	0.41	Jun 26	1.78	Jun 01 01:00	100.0	0	0	99.42	0.58	0.00	0.00	0.00	0.00
July	707	0.30	0.47	Jul 26	1.65	Jul 26 07:00	100.0	0	0	98.73	1.27	0.00	0.00	0.00	0.00
August	704	0.29	0.41	Aug 14	1.14	Aug 06 09:00	99.9	0	0	99.86	0.14	0.00	0.00	0.00	0.00
September	684	0.26	0.39	Sep 06	1.28	Sep 19 09:00	100.0	0	0	99.85	0.15	0.00	0.00	0.00	0.00
October	707	0.24	0.60	Oct 25	1.32	Oct 25 08:00	100.0	0	0	99.72	0.28	0.00	0.00	0.00	0.00
November	686	0.37	0.78	Nov 30	1.71	Nov 30 20:00	100.0	0	0	96.50	3.50	0.00	0.00	0.00	0.00
December	707	0.39	1.03	Dec 19	2.48	Dec 15 01:00	100.0	0	0	94.77	5.23	0.00	0.00	0.00	0.00
Annual	8326	0.32	2.39	Jan 27	4.94	Jan 27 13:00	100.0	0	0	98.08	1.75	0.17	0.00	0.00	0.00

*No Alberta Environment Objectives or Guidelines for TRS

Table 13. Particulate Matter (PM_{2.5}) – Evergreen Park 2013 Summary and Frequency Distribution

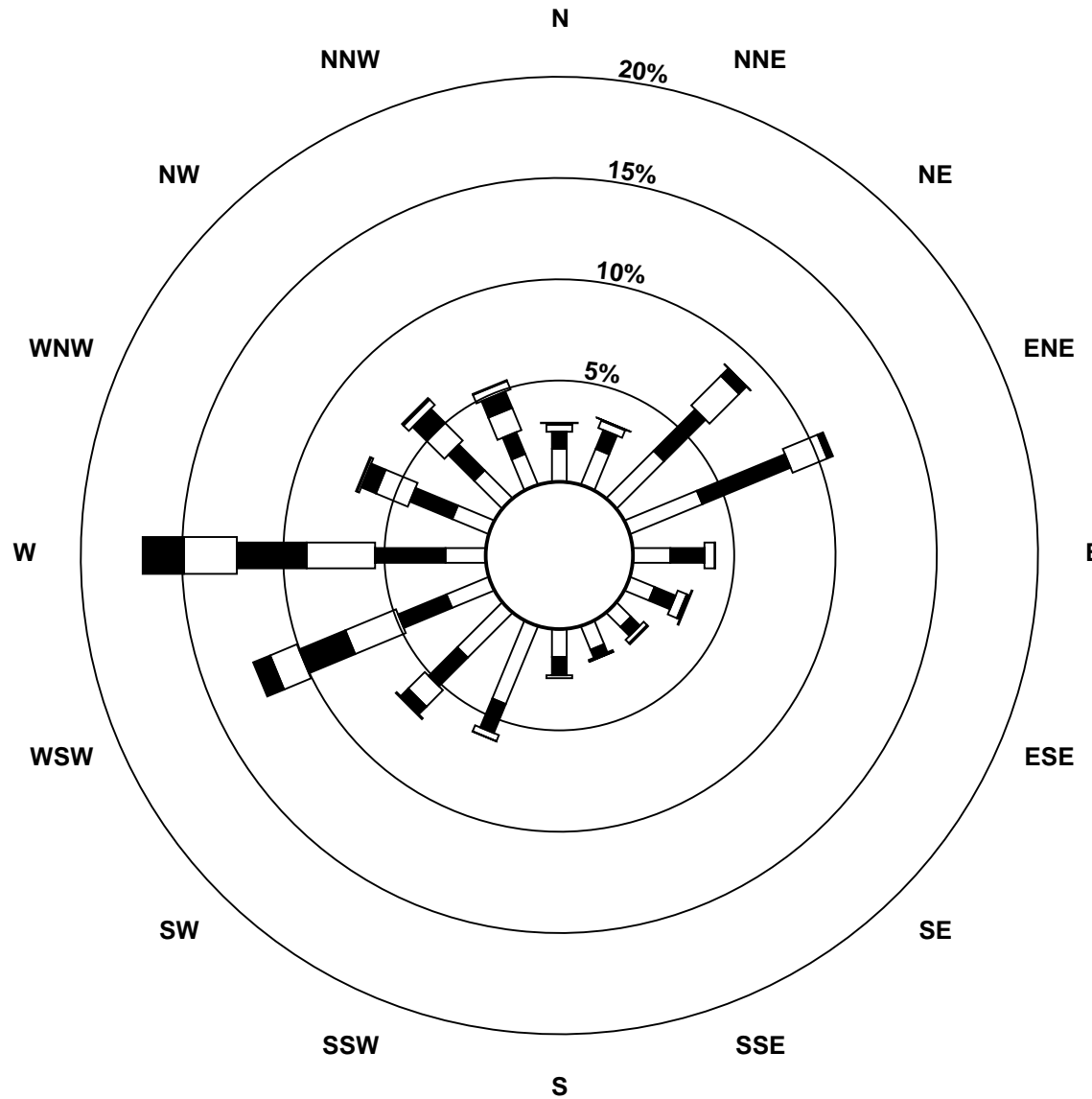
Evergreen Park		PM _{2.5} (µg/m ³)										2013			
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30
January	729	2.86	10.39	Jan 24	19.81	Jan 24 17:00	98.0	0	0	52.26	31.14	13.99	2.19	0.41	0.00
February	670	2.53	13.64	Feb 07	22.27	Feb 07 11:00	99.7	0	0	65.37	21.04	7.46	4.33	1.79	0.00
March	734	3.69	8.57	Mar 08	27.61	Mar 23 07:00	98.9	0	0	38.56	41.01	16.76	3.41	0.27	0.00
April	709	2.06	5.85	Apr 25	37.51	Apr 26 11:00	98.5	0	0	57.97	38.08	2.54	0.71	0.56	0.14
May	744	4.84	18.33	May 06	158.87	May 06 20:00	100.0	0	1	31.59	42.61	18.41	3.90	2.69	0.81
June	719	3.54	7.95	Jun 23	38.00	Jun 15 19:00	99.9	0	0	44.37	38.11	11.27	4.87	0.97	0.42
July	736	5.43	18.84	Jul 07	43.87	Jul 08 09:00	98.9	0	0	41.58	27.17	15.35	8.29	6.39	1.22
August	713	4.65	12.32	Aug 20	57.96	Aug 20 10:00	96.8	0	0	36.04	37.87	16.97	6.03	2.24	0.84
September	712	4.24	12.12	Sep 15	33.98	Sep 15 11:00	98.9	0	0	44.52	30.34	16.15	5.48	3.23	0.28
October	740	3.36	7.64	Oct 18	35.54	Oct 18 17:00	100.0	0	0	52.03	31.22	11.08	3.24	2.16	0.27
November	719	5.56	14.28	Nov 03	33.72	Nov 01 16:00	99.9	0	0	31.43	31.02	22.39	10.71	4.17	0.28
December	742	2.53	11.12	Dec 19	22.27	Dec 19 20:00	99.7	0	0	57.55	33.02	6.20	1.89	1.35	0.00
Annual	8667	3.78	18.84	Jul 07	158.87	May 06 20:00	99.1	0	1	46.02	33.52	13.30	4.60	2.20	0.36

Table 14. Wind Speed and Wind Direction Frequency Distribution – Evergreen Park 2013 Summary

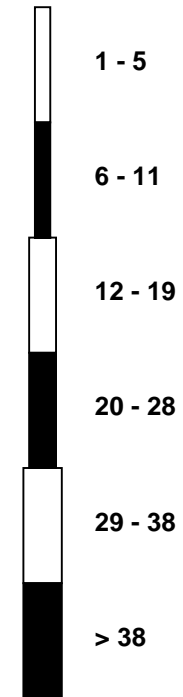
Evergreen Park								2013
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	236	1.63	0.84	0.35	0.07	0.02	0.00	2.92
NNE	272	1.92	1.00	0.40	0.04	0.01	0.00	3.36
NE	712	3.31	2.89	2.07	0.52	0.01	0.00	8.81
ENE	867	3.86	4.71	1.86	0.30	0.00	0.00	10.72
E	328	1.84	1.68	0.51	0.02	0.00	0.00	4.06
ESE	251	1.30	1.13	0.48	0.15	0.05	0.00	3.10
SE	156	1.00	0.62	0.23	0.07	0.00	0.00	1.93
SSE	144	1.25	0.43	0.09	0.01	0.00	0.00	1.78
S	196	1.37	0.90	0.15	0.00	0.00	0.00	2.42
SSW	488	4.16	1.55	0.32	0.01	0.00	0.00	6.04
SW	556	3.13	2.00	1.15	0.53	0.06	0.00	6.88
WSW	999	2.25	2.58	2.71	2.47	1.43	0.90	12.35
WSW	1370	1.99	3.48	3.38	3.45	2.61	2.04	16.94
WNW	555	1.94	2.26	1.71	0.78	0.11	0.06	6.86
NW	522	1.95	1.81	1.22	0.99	0.37	0.11	6.46
NNW	434	1.64	1.16	1.19	0.88	0.45	0.05	5.37
Totals	8086	34.55	29.05	17.80	10.30	5.13	3.17	100

Wind Rose

Wind Speed (WS) (km/h)
Evergreen Park - 2013



Wind Speed Classes (km/h)



PAZA

SMOKY HEIGHTS

CONTINUOUS AMBIENT AIR MONITORING STATION

2013

ANNUAL SUMMARY TABLES

Table 15. Smoky Heights - Key Parameters – Continuous Monitoring Data – 2013 Summary

Parameter	Monitoring Station	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO	
			24-hr	Date	1-hr	Date		24-hr	1-hr
Sulphur Dioxide SO₂ measured in ppb	Smoky Heights	0.39	3.22	Feb 01	11.29	Feb 01 14:00	99.9	0	0
Total Reduced Sulphur TRS measured in ppb	Smoky Heights	0.10	2.31	Jan 27	6.90	Jan 27 06:00	99.9	-	-
Particulate Matter PM_{2.5} measured in µg/m³	Smoky Heights	4.05	19.83	Jul 07	129.42	Oct 25 18:00	99.2	0	6

Table 16. Sulphur Dioxide (SO₂) – Smoky Heights 2013 Summary and Frequency Distribution

Smoky Heights		SO ₂ (ppb)						2013							
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340
January	709	0.63	2.33	Jan 01	7.85	Jan 01 06:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
February	640	0.69	3.22	Feb 01	11.29	Feb 01 14:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	707	0.72	1.83	Mar 28	10.12	Mar 05 18:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	686	0.39	1.19	Apr 24	6.15	Apr 25 05:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	706	0.14	0.50	May 20	2.03	May 19 07:00	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	684	0.11	0.88	Jun 28	3.46	Jun 26 04:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	710	0.13	0.79	Jul 03	5.16	Jul 03 06:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	707	0.15	0.71	Aug 30	6.68	Aug 21 08:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	685	0.28	2.06	Sep 30	5.46	Sep 30 18:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	703	0.47	1.53	Oct 11	8.00	Oct 11 06:00	99.6	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	686	0.46	1.40	Nov 16	3.73	Nov 05 21:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	707	0.57	1.75	Dec 23	6.87	Dec 24 00:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	8330	0.39	3.22	Feb 01	11.29	Feb 01 14:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00

Table 17. Total Reduced Sulphur (TRS) – Smoky Heights 2013 Summary and Frequency Distribution

Smoky Heights		TRS (ppb)						2013							
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	*AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10
January	699	0.26	2.31	Jan 27	6.90	Jan 27 06:00	99.1	0	0	95.57	2.43	1.29	0.72	0.00	0.00
February	639	0.06	0.33	Feb 07	0.62	Feb 22 02:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	705	0.02	0.08	Mar 08	0.67	Mar 02 18:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	686	0.02	0.09	Apr 19	0.25	Apr 19 20:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	706	0.09	0.46	May 21	1.23	May 21 06:00	99.7	0	0	99.58	0.42	0.00	0.00	0.00	0.00
June	684	0.05	0.24	Jun 30	0.66	Jun 30 01:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	707	0.08	0.16	Jul 22	0.68	Jul 22 02:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	706	0.10	0.24	Aug 29	0.53	Aug 04 05:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	683	0.10	0.34	Sep 30	0.72	Sep 30 17:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	702	0.05	0.16	Oct 29	0.27	Oct 29 04:00	99.6	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	686	0.14	0.39	Nov 26	0.74	Nov 22 19:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	709	0.18	0.42	Dec 07	1.51	Dec 25 18:00	100.0	0	0	99.86	0.14	0.00	0.00	0.00	0.00
Annual	8312	0.10	2.31	Jan 27	6.90	Jan 27 06:00	99.9	0	0	99.58	0.25	0.11	0.06	0.00	0.00

*No Alberta Environment Objectives or Guidelines for TRS

Table 18. Particulate Matter (PM_{2.5}) – Smoky Heights 2013 Summary and Frequency Distribution

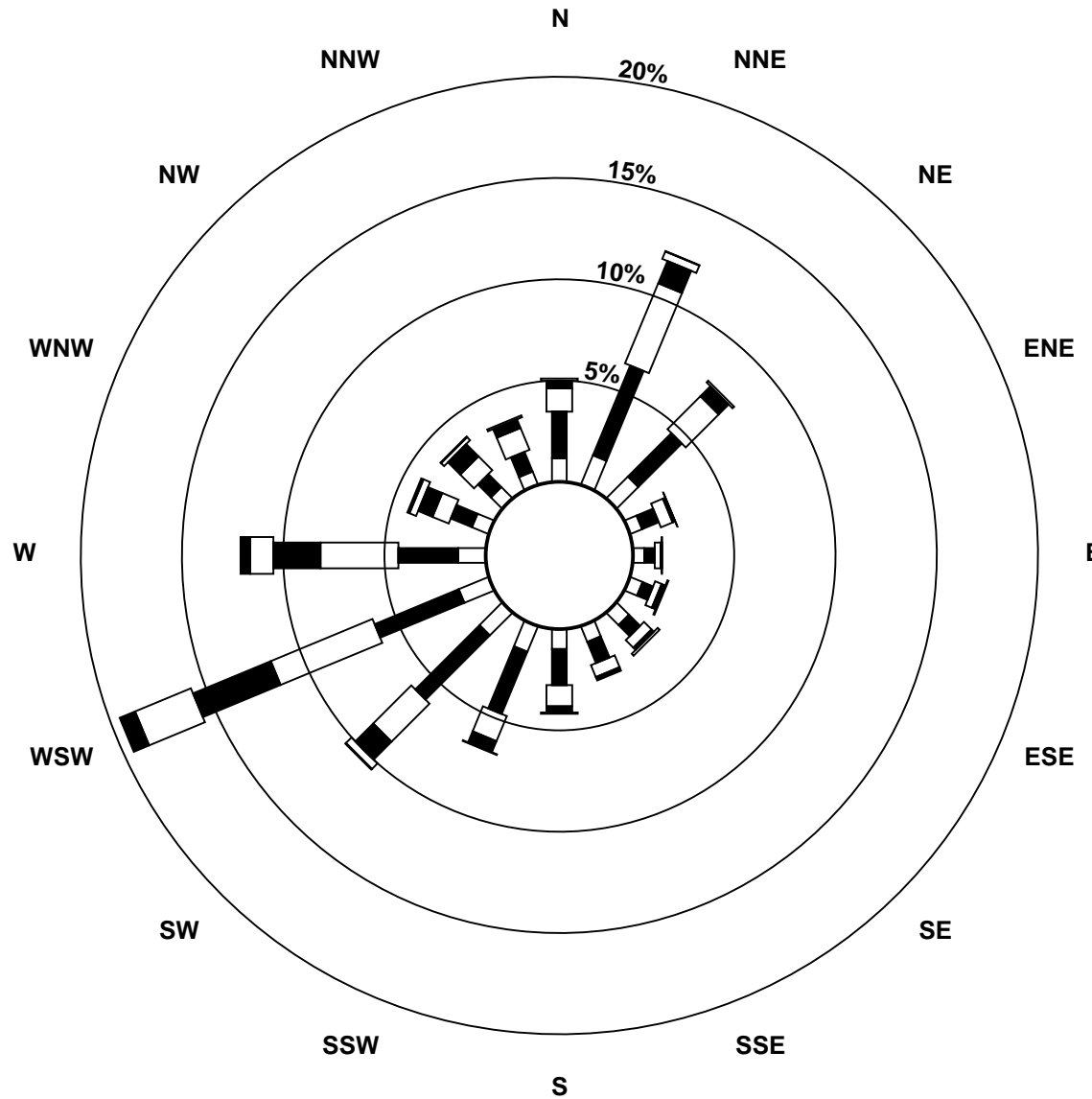
Smoky Heights		PM _{2.5} (µg/m ³)										2013			
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30
January	741	2.85	6.55	Jan 31	84.95	Jan 04 00:00	99.6	0	2	54.93	33.47	8.64	1.75	0.81	0.40
February	670	3.11	10.19	Feb 02	54.77	Feb 27 01:00	99.7	0	0	64.78	20.30	8.96	2.84	1.49	1.64
March	741	4.15	8.32	Mar 29	55.45	Mar 06 00:00	99.6	0	0	44.40	38.06	8.77	4.32	3.64	0.81
April	718	2.52	9.24	Apr 06	31.36	Apr 14 22:00	100.0	0	0	54.18	40.11	2.65	1.81	1.11	0.14
May	740	4.07	8.95	May 05	35.30	May 05 22:00	99.5	0	0	30.68	49.19	15.68	3.24	0.81	0.41
June	697	4.70	15.20	Jun 21	108.93	Jun 19 10:00	96.8	0	2	42.04	39.89	11.05	2.73	2.30	2.01
July	735	4.79	19.83	Jul 07	45.44	Jul 18 20:00	98.8	0	0	41.90	29.25	17.01	6.53	5.03	0.27
August	725	4.25	9.95	Aug 08	32.50	Aug 08 03:00	97.5	0	0	33.52	42.90	18.48	2.48	2.21	0.41
September	719	5.04	19.63	Sep 12	121.84	Sep 12 21:00	99.9	0	1	39.22	35.19	14.88	5.98	3.48	1.25
October	737	4.16	18.29	Oct 25	129.42	Oct 25 18:00	99.6	0	1	44.91	37.45	11.67	1.90	2.44	1.63
November	719	6.44	16.04	Nov 21	47.79	Nov 21 19:00	99.9	0	0	26.43	29.35	25.31	13.77	4.59	0.56
December	743	2.56	7.43	Dec 20	24.54	Dec 11 11:00	99.9	0	0	56.93	32.03	7.67	2.56	0.81	0.00
Annual	8685	4.05	19.83	Jul 07	129.42	Oct 25 18:00	99.2	0	6	44.50	35.65	12.52	4.16	2.39	0.79

Table 19. Wind Speed and Wind Direction Frequency Distribution – Smoky Heights 2013 Summary

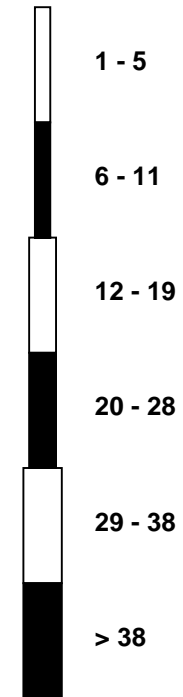
Smoky Heights								2013
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	442	1.17	2.30	1.15	0.37	0.12	0.00	5.10
NNE	1062	1.57	4.80	4.28	1.19	0.39	0.02	12.26
NE	664	1.51	3.04	2.31	0.69	0.12	0.00	7.66
ENE	199	0.63	0.89	0.63	0.13	0.01	0.00	2.30
E	124	0.55	0.52	0.29	0.06	0.01	0.00	1.43
ESE	158	0.66	0.57	0.35	0.20	0.06	0.00	1.82
SE	213	0.85	0.78	0.52	0.16	0.14	0.00	2.46
SSE	241	0.83	1.13	0.63	0.18	0.00	0.00	2.78
S	362	0.98	1.78	1.05	0.30	0.07	0.00	4.18
SSW	576	1.36	3.32	1.34	0.59	0.03	0.00	6.65
SW	902	1.58	4.49	2.65	1.25	0.39	0.05	10.41
WSW	1689	1.59	4.50	5.44	4.15	2.99	0.82	19.49
WSW	1049	1.36	2.95	3.84	2.33	1.14	0.47	12.11
WNW	357	0.89	1.13	0.87	0.76	0.36	0.12	4.12
NW	326	0.78	0.90	0.97	0.85	0.21	0.05	3.76
NNW	301	0.70	1.05	1.17	0.46	0.09	0.00	3.47
Totals	8665	17.03	34.15	27.49	13.68	6.13	1.52	100

Wind Rose

Wind Speed (WS) (km/h)
Smoky Heights - 2013



Wind Speed Classes (km/h)



PAZA
BEAVERLODGE
CONTINUOUS AMBIENT AIR MONITORING STATION

2013
ANNUAL SUMMARY TABLES

Table 20. Beaverlodge - Key Parameters – Continuous Monitoring Data – 2013 Summary

Parameter	Monitoring Station	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO	
			24-hr	Date	1-hr	Date		24-hr	1-hr
Sulphur Dioxide SO₂ measured in ppb	Beaverlodge	0.29	6.24	Jan 26	26.34	Jan 26 04:00	100.0	0	0
Nitrogen Dioxide NO₂ measured in ppb	Beaverlodge	3.39	16.95	Feb 07	33.49	Jan 05 19:00	99.8	0	0
Ozone O₃ measured in ppb	Beaverlodge	31.01	57.37	Mar 29	62.06	Apr 08 18:00	99.8	0	0
Particulate Matter PM_{2.5} measured in µg/m³	Beaverlodge	7.94	36.34	Nov 07	146.54	May 12 12:00	97.8	1	4

Table 21. Sulphur Dioxide (SO₂) – Beaverlodge 2013 Summary and Frequency Distribution

Beaverlodge SO ₂ (ppb) 2013															
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340
January	710	0.77	6.24	Jan 26	26.34	Jan 26 04:00	100.0	0	0	99.44	0.56	0.00	0.00	0.00	0.00
February	640	0.22	0.66	Feb 07	2.04	Feb 20 15:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	710	0.52	1.29	Mar 20	4.53	Mar 16 19:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	687	0.31	1.04	Apr 08	3.44	Apr 08 23:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	710	0.14	0.36	May 09	1.89	May 27 12:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	687	0.13	0.43	Jun 25	2.23	Jun 22 09:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	709	0.11	0.40	Jul 10	1.87	Jul 10 14:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	708	0.13	0.57	Aug 09	2.36	Aug 03 00:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	686	0.17	0.54	Sep 16	2.61	Sep 02 13:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	707	0.15	0.57	Oct 25	3.38	Oct 25 01:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	687	0.34	1.36	Nov 22	4.16	Nov 21 22:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	710	0.45	1.44	Dec 14	6.90	Dec 14 06:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	8351	0.29	6.24	Jan 26	26.34	Jan 26 04:00	100.0	0	0	99.95	0.05	0.00	0.00	0.00	0.00

Table 22. Nitrogen Dioxide (NO₂) – Beaverlodge 2013 Summary and Frequency Distribution

Beaverlodge NO ₂ (ppb) 2013														
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range				
								24-Hr	1-Hr	0 - 25	25 - 50	50 - 110	110 - 210	>210
January	706	5.39	14.50	Jan 05	33.49	Jan 05 19:00	100.0	0	0	99.15	0.85	0.00	0.00	0.00
February	638	3.86	16.95	Feb 07	23.42	Feb 07 19:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
March	707	4.37	7.66	Mar 25	25.19	Mar 28 06:00	99.9	0	0	99.86	0.14	0.00	0.00	0.00
April	684	1.91	5.28	Apr 09	11.38	Apr 04 07:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
May	703	2.17	4.10	May 12	12.81	May 20 06:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
June	684	1.98	3.21	Jun 18	12.21	Jun 17 02:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
July	701	1.91	3.61	Jul 16	14.43	Jul 16 06:00	99.3	0	0	100.00	0.00	0.00	0.00	0.00
August	704	2.17	3.22	Aug 26	11.87	Aug 26 06:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00
September	682	2.64	3.97	Sep 15	10.91	Sep 15 07:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00
October	693	2.78	6.70	Oct 18	25.16	Oct 18 09:00	98.7	0	0	99.86	0.14	0.00	0.00	0.00
November	685	5.55	14.77	Nov 25	26.25	Nov 20 18:00	100.0	0	0	99.56	0.44	0.00	0.00	0.00
December	707	5.88	15.93	Dec 22	31.99	Dec 11 01:00	100.0	0	0	98.44	1.56	0.00	0.00	0.00
Annual	8294	3.39	16.95	Feb 07	33.49	Jan 05 19:00	99.8	0	0	99.73	0.27	0.00	0.00	0.00

Table 23. Ozone (O₃) – Beaverlodge 2013 Summary and Frequency Distribution

Beaverlodge O ₃ (ppb) 2013															
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 2	2 - 10	10 - 20	20 - 40	40 - 82	>82
January	710	31.49	42.00	Jan 15	48.59	Jan 03 06:00	100.0	0	0	0.00	2.25	9.44	72.25	16.06	0.00
February	641	37.03	44.17	Feb 11	47.81	Feb 28 17:00	100.0	0	0	0.00	0.47	4.37	47.58	47.58	0.00
March	692	42.02	57.37	Mar 29	62.04	Mar 25 16:00	98.0	0	0	0.00	0.00	0.72	38.15	61.13	0.00
April	686	43.19	55.29	Apr 08	62.06	Apr 08 18:00	100.0	0	0	0.00	0.00	1.17	31.63	67.20	0.00
May	705	36.46	45.93	May 13	57.82	May 05 15:00	100.0	0	0	0.00	1.70	6.24	51.06	40.99	0.00
June	685	29.63	38.64	Jun 22	53.07	Jun 22 16:00	100.0	0	0	0.00	1.31	12.70	74.31	11.68	0.00
July	708	24.88	36.54	Jul 17	53.85	Jul 17 17:00	100.0	0	0	0.00	2.82	23.31	70.48	3.39	0.00
August	705	25.29	32.19	Aug 02	47.65	Aug 02 14:00	99.7	0	0	0.00	5.39	23.26	66.10	5.25	0.00
September	687	23.73	30.56	Sep 04	45.60	Sep 15 19:00	100.0	0	0	0.15	7.42	27.37	63.76	1.31	0.00
October	708	25.22	34.37	Oct 26	43.20	Oct 19 15:00	100.0	0	0	0.00	5.79	21.05	72.32	0.85	0.00
November	686	25.85	40.01	Nov 29	45.33	Nov 23 14:00	100.0	0	0	0.00	5.83	21.28	67.35	5.54	0.00
December	709	28.15	42.05	Dec 24	43.98	Dec 25 03:00	100.0	0	0	0.00	4.37	11.99	77.01	6.63	0.00
Annual	8322	31.01	57.37	Mar 29	62.06	Apr 08 18:00	99.8	0	0	0.01	3.14	13.64	61.18	22.03	0.00

Table 24. Particulate Matter (PM_{2.5}) – Beaverlodge 2013 Summary and Frequency Distribution

Beaverlodge PM _{2.5} (µg/m ³) 2013															
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30
January	741	4.96	10.62	Jan 31	17.36	Jan 31 17:00	99.6	0	0	7.96	65.32	21.73	4.86	0.13	0.00
February	670	5.81	14.99	Feb 07	22.28	Feb 06 19:00	99.7	0	0	2.99	69.10	17.91	7.61	2.39	0.00
March	743	6.78	11.77	Mar 08	22.58	Mar 06 10:00	99.9	0	0	2.42	42.53	45.76	7.81	1.48	0.00
April	718	5.86	8.78	Apr 09	13.37	Apr 09 15:00	100.0	0	0	0.56	59.19	38.58	1.67	0.00	0.00
May	740	7.18	16.69	May 12	146.54	May 12 12:00	99.5	0	2	7.57	33.92	48.11	9.32	0.81	0.27
June	716	1.57	4.50	Jun 25	10.21	Jun 22 10:00	99.4	0	0	66.48	28.77	4.75	0.00	0.00	0.00
July	649	6.87	15.61	Jul 18	21.03	Jul 19 08:00	87.2	0	0	25.27	19.72	36.52	13.56	4.93	0.00
August	735	8.53	15.33	Aug 09	20.43	Aug 09 10:00	98.8	0	0	5.99	21.22	45.03	25.17	2.59	0.00
September	702	7.12	14.47	Sep 28	18.97	Sep 28 20:00	97.9	0	0	15.95	27.64	32.48	22.93	1.00	0.00
October	693	13.76	17.91	Oct 14	55.74	Oct 10 08:00	93.2	0	0	7.50	6.64	15.30	47.19	19.48	3.90
November	715	18.39	36.34	Nov 07	107.81	Nov 07 06:00	99.3	1	2	2.80	4.20	7.41	23.50	59.02	3.08
December	743	8.48	13.85	Dec 22	33.41	Dec 06 09:00	99.9	0	0	8.61	17.36	48.86	21.94	2.96	0.27
Annual	8565	7.94	36.34	Nov 07	146.54	May 12 12:00	97.8	1	4	12.72	33.02	30.43	15.39	7.82	0.62

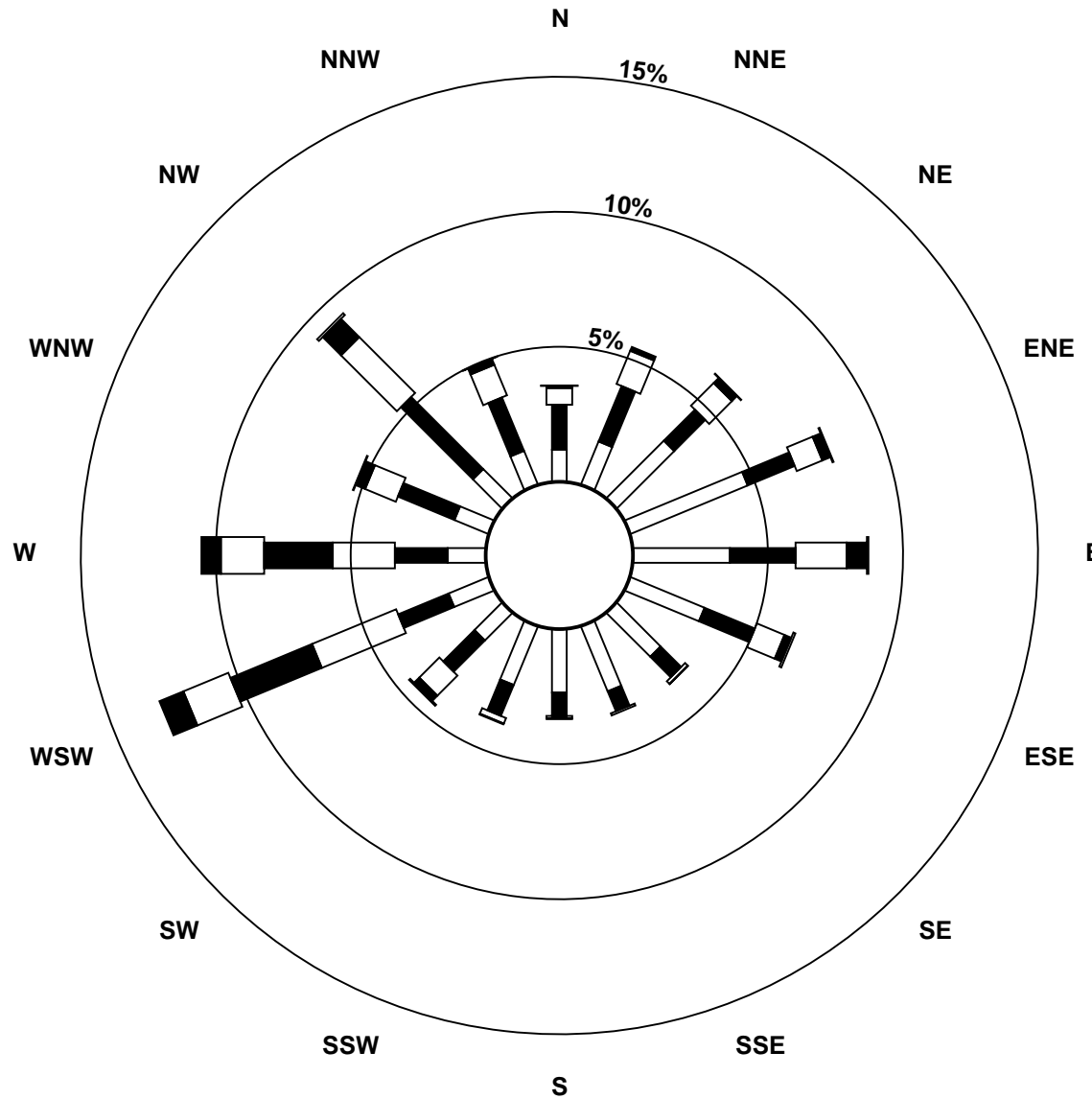
Table 25. Wind Speed and Wind Direction Frequency Distribution – Beaverlodge 2013 Summary

Beaverlodge								2013
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	305	1.19	1.66	0.62	0.08	0.01	0.00	3.57
NNE	465	1.73	2.22	1.33	0.15	0.00	0.00	5.44
NE	523	3.02	1.62	1.19	0.26	0.02	0.00	6.11
ENE	683	4.71	1.88	1.03	0.32	0.05	0.00	7.98
E	746	3.59	2.43	1.89	0.75	0.06	0.00	8.72
ESE	552	2.98	2.01	1.11	0.27	0.08	0.00	6.45
SE	302	2.30	1.08	0.14	0.01	0.00	0.00	3.53
SSE	298	2.61	0.79	0.08	0.00	0.00	0.00	3.48
S	284	2.35	0.87	0.09	0.01	0.00	0.00	3.32
SSW	329	2.35	1.24	0.22	0.04	0.00	0.00	3.85
SW	382	1.45	1.64	1.05	0.27	0.06	0.00	4.47
WSW	1114	1.60	2.02	3.37	3.27	1.80	0.96	13.02
WSW	901	1.41	1.95	2.30	2.54	1.60	0.72	10.53
WNW	451	1.37	2.27	1.23	0.37	0.04	0.00	5.27
NW	794	1.53	3.78	2.92	0.96	0.09	0.00	9.28
NNW	425	1.36	2.14	1.23	0.23	0.01	0.00	4.97
Totals	8554	35.55	29.60	19.82	9.53	3.82	1.68	100

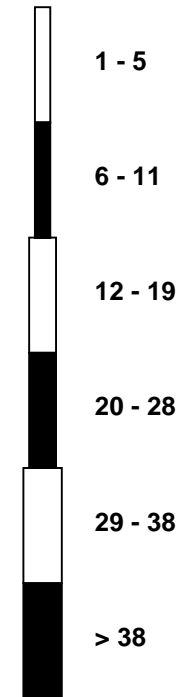
Wind Rose

Wind Speed (WS) (km/h)

Beaverlodge - 2013



Wind Speed Classes (km/h)



PAZA
Valleyview
CONTINUOUS AMBIENT AIR MONITORING STATION

2013
ANNUAL SUMMARY TABLES

Table 26. Valleyview - Key Parameters – Continuous Monitoring Data – 2013 Summary

Parameter	Monitoring Station	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO	
			24-hr	Date	1-hr	Date		24-hr	1-hr
Sulphur Dioxide SO₂ measured in ppb	Valleyview	0.64	4.15	Dec 16	41.87	Aug 16 22:00	99.7	0	0
Hydrogen Sulphide H₂S measured in ppb	Valleyview	0.34	7.10	Jan 12	20.71	Jan 12 14:00	100.0	1	7

Table 27. Sulphur Dioxide (SO₂) – Valleyview 2013 Summary and Frequency Distribution

Valleyview		SO ₂ (ppb)										2013			
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340
January	709	0.62	3.01	Jan 18	12.47	Jan 01 13:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
February	640	0.56	2.31	Feb 11	10.56	Feb 10 23:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	707	0.65	2.02	Mar 10	18.88	Mar 25 14:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	686	0.57	2.43	Apr 26	11.33	Apr 25 08:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	699	1.16	3.76	May 02	15.11	May 14 03:00	99.6	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	663	0.45	1.37	Jun 08	10.10	Jun 08 07:00	96.8	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	709	0.63	1.89	Jul 27	12.81	Jul 03 07:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	706	0.58	2.46	Aug 16	41.87	Aug 16 22:00	99.9	0	0	99.86	0.14	0.00	0.00	0.00	0.00
September	685	0.58	2.08	Sep 17	10.55	Sep 16 15:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	705	0.72	3.20	Oct 31	13.67	Oct 31 22:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	687	0.40	3.62	Nov 14	11.07	Nov 14 09:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	709	0.74	4.15	Dec 16	12.71	Dec 15 17:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	8305	0.64	4.15	Dec 16	41.87	Aug 16 22:00	99.7	0	0	99.99	0.01	0.00	0.00	0.00	0.00

Table 28. Hydrogen Sulphide (H₂S) – Valleyview 2013 Summary and Frequency Distribution

Valleyview		H ₂ S (ppb)										2013			
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10
January	707	0.58	7.10	Jan 12	20.71	Jan 12 14:00	100.0	1	7	90.52	5.37	1.98	0.71	0.42	0.99
February	640	0.18	0.58	Feb 06	6.28	Feb 06 11:00	100.0	0	0	97.19	2.50	0.16	0.16	0.00	0.00
March	707	0.06	0.46	Mar 11	4.21	Mar 10 11:00	100.0	0	0	99.43	0.28	0.28	0.00	0.00	0.00
April	686	0.11	0.36	Apr 02	2.69	Apr 02 23:00	100.0	0	0	99.42	0.44	0.15	0.00	0.00	0.00
May	704	0.90	1.26	May 28	1.92	May 21 23:00	99.6	0	0	55.68	44.32	0.00	0.00	0.00	0.00
June	683	0.90	1.16	Jun 06	2.16	Jun 06 06:00	100.0	0	0	71.45	28.55	0.00	0.00	0.00	0.00
July	708	0.56	0.80	Jul 06	1.46	Jul 01 03:00	100.0	0	0	97.74	2.26	0.00	0.00	0.00	0.00
August	706	0.14	0.49	Aug 02	0.97	Aug 02 03:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	682	0.05	0.13	Sep 09	3.84	Sep 12 22:00	100.0	0	0	99.41	0.44	0.15	0.00	0.00	0.00
October	708	0.20	0.51	Oct 31	2.06	Oct 31 11:00	100.0	0	0	98.73	1.27	0.00	0.00	0.00	0.00
November	685	0.20	0.46	Nov 14	4.15	Nov 14 14:00	100.0	0	0	98.25	1.46	0.29	0.00	0.00	0.00
December	708	0.19	0.38	Dec 19	1.95	Dec 01 21:00	100.0	0	0	99.29	0.71	0.00	0.00	0.00	0.00
Annual	8324	0.34	7.10	Jan 12	20.71	Jan 12 14:00	100.0	1	7	92.24	7.32	0.25	0.07	0.04	0.08

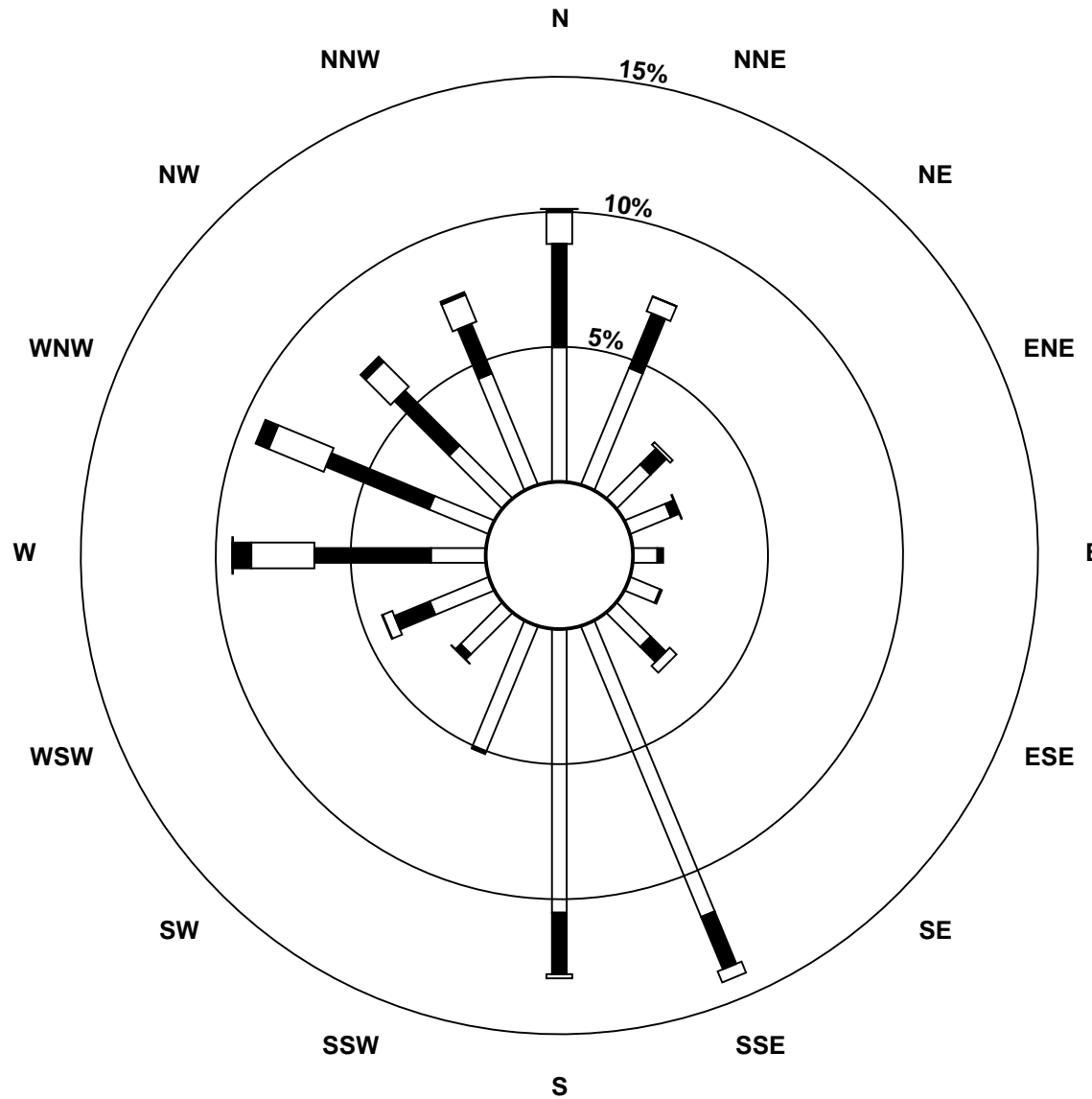
Table 29. Wind Speed and Wind Direction Frequency Distribution – Valleyview 2013 Summary

Valleyview								2013
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	707	4.98	3.83	1.17	0.11	0.01	0.00	10.11
NNE	522	4.68	2.19	0.59	0.01	0.00	0.00	7.47
NE	191	1.77	0.83	0.13	0.00	0.00	0.00	2.73
ENE	139	1.63	0.33	0.03	0.00	0.00	0.00	1.99
E	78	0.90	0.21	0.00	0.00	0.00	0.00	1.12
ESE	89	1.20	0.07	0.00	0.00	0.00	0.00	1.27
SE	205	1.79	0.79	0.36	0.00	0.00	0.00	2.93
SSE	992	11.64	2.10	0.44	0.00	0.00	0.00	14.19
S	904	10.50	2.27	0.16	0.00	0.00	0.00	12.93
SSW	358	5.02	0.10	0.00	0.00	0.00	0.00	5.12
SW	172	2.17	0.27	0.01	0.00	0.00	0.00	2.46
WSW	293	2.36	1.42	0.39	0.03	0.00	0.00	4.19
WSW	656	2.03	4.32	2.33	0.69	0.01	0.00	9.38
WNW	647	2.39	4.13	2.22	0.51	0.00	0.00	9.25
NW	504	2.77	2.86	1.32	0.26	0.00	0.00	7.21
NNW	534	4.46	1.99	1.07	0.11	0.00	0.00	7.64
Totals	6991	60.31	27.72	10.21	1.73	0.03	0.00	100

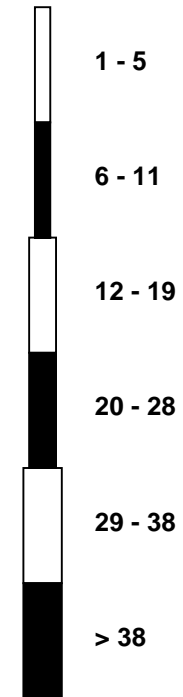
Wind Rose

Wind Speed (WS) (km/h)

Valleyview - 2013



Wind Speed Classes (km/h)



PAZA
Falher
CONTINUOUS AMBIENT AIR MONITORING STATION
2013
ANNUAL SUMMARY TABLES

Table 30. Falher - Key Parameters – Continuous Monitoring Data – 2013 Summary

Parameter	Monitoring Station	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO	
			24-hr	Date	1-hr	Date		24-hr	1-hr
Sulphur Dioxide SO₂ measured in ppb	Falher	0.19	1.28	Mar 26	6.77	Mar 05 14:00	99.9	0	0
Hydrogen Sulphide H₂S measured in ppb	Falher	0.21	4.47	May 17	25.07	May 17 05:00	99.9	1	4

Table 31. Sulphur Dioxide (SO₂) – Falher 2013 Summary and Frequency Distribution

Falher		SO ₂ (ppb)										2013			
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340
January	709	0.29	0.73	Jan 12	3.81	Jan 30 18:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
February	640	0.29	0.91	Feb 01	4.04	Feb 01 04:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	708	0.44	1.28	Mar 26	6.77	Mar 05 14:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	686	0.21	0.71	Apr 16	1.72	Apr 17 16:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	709	0.16	0.52	May 11	1.82	May 04 21:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	685	0.10	0.36	Jun 22	1.37	Jun 23 09:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	709	0.10	0.28	Jul 04	1.18	Jul 18 22:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	708	0.12	0.38	Aug 10	1.19	Aug 08 19:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	683	0.12	0.23	Sep 11	0.77	Sep 21 12:00	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	706	0.11	0.41	Oct 26	1.86	Oct 25 12:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	681	0.11	0.29	Nov 23	1.80	Nov 04 17:00	99.3	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	709	0.20	0.44	Dec 07	0.81	Jan 01 00:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	8333	0.19	1.28	Mar 26	6.77	Mar 05 14:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00

Table 32. Hydrogen Sulphide (H₂S) – Falher 2013 Summary and Frequency Distribution

Falher		H ₂ S (ppb)										2013			
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10
January	707	0.23	1.85	Jan 14	6.62	Jan 14 06:00	100.0	0	0	96.61	1.98	0.71	0.71	0.00	0.00
February	639	0.16	0.36	Feb 25	0.93	Feb 08 10:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	708	0.12	0.35	Mar 02	1.24	Mar 16 14:00	100.0	0	0	99.86	0.14	0.00	0.00	0.00	0.00
April	686	0.11	0.99	Apr 05	2.28	Apr 05 09:00	100.0	0	0	97.96	2.04	0.00	0.00	0.00	0.00
May	709	0.41	4.47	May 17	25.07	May 17 05:00	100.0	1	4	94.92	3.10	0.71	0.14	0.56	0.56
June	685	0.21	0.49	Jun 25	2.92	Jun 25 07:00	100.0	0	0	97.23	2.63	0.15	0.00	0.00	0.00
July	709	0.24	0.71	Jul 01	3.48	Jul 01 06:00	100.0	0	0	97.60	2.12	0.28	0.00	0.00	0.00
August	708	0.27	0.64	Aug 01	2.54	Aug 08 08:00	99.9	0	0	95.48	4.38	0.14	0.00	0.00	0.00
September	682	0.32	0.67	Sep 16	3.42	Sep 10 23:00	99.7	0	0	94.13	5.13	0.73	0.00	0.00	0.00
October	704	0.21	1.33	Oct 03	5.24	Oct 03 02:00	100.0	0	0	97.87	1.42	0.57	0.14	0.00	0.00
November	680	0.11	0.30	Nov 04	0.79	Nov 04 02:00	99.3	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	709	0.17	0.36	Dec 24	0.75	Dec 16 22:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	8326	0.21	4.47	May 17	25.07	May 17 05:00	99.9	1	4	97.62	1.92	0.28	0.08	0.05	0.05

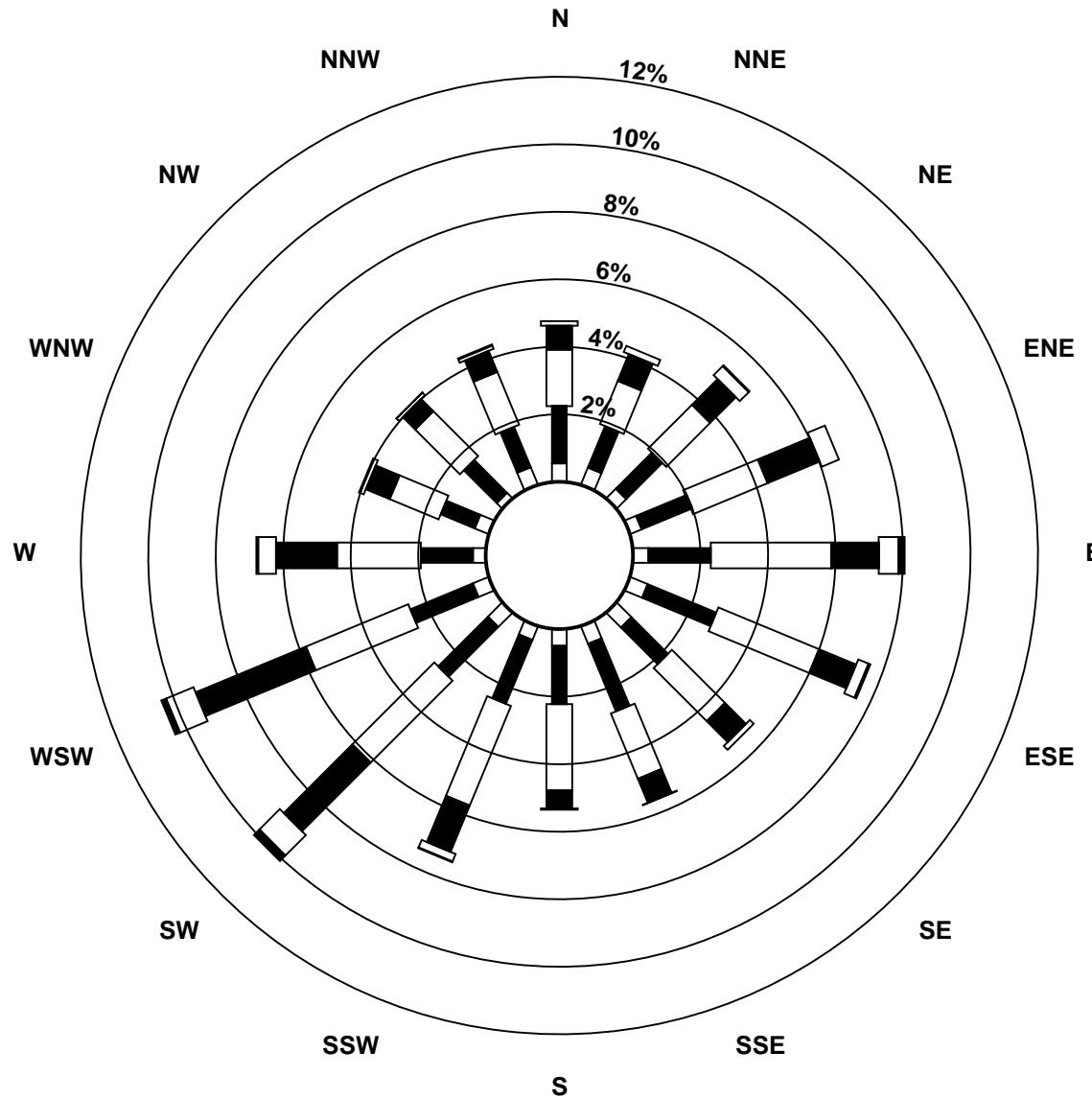
Table 33. Wind Speed and Wind Direction Frequency Distribution – Falher 2013 Summary

Falher		2013						
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	416	0.55	1.69	1.67	0.71	0.14	0.00	4.76
NNE	377	0.55	1.33	1.39	0.86	0.19	0.00	4.32
NE	458	0.40	1.51	1.84	1.08	0.38	0.03	5.24
ENE	573	0.37	1.58	2.39	1.67	0.55	0.00	6.56
E	703	0.46	1.84	3.57	1.41	0.58	0.18	8.05
ESE	661	0.56	2.20	3.23	1.19	0.33	0.06	7.57
SE	473	0.62	1.53	2.22	0.88	0.16	0.00	5.41
SSE	489	0.56	2.16	2.09	0.77	0.01	0.00	5.60
S	467	0.49	1.73	2.55	0.54	0.03	0.00	5.35
SSW	649	0.43	2.05	3.19	1.49	0.24	0.02	7.43
SW	880	0.60	2.08	3.43	2.87	0.86	0.23	10.07
WSW	905	0.50	2.00	3.29	3.54	0.88	0.15	10.36
WSW	594	0.38	1.55	2.48	1.81	0.53	0.06	6.80
WNW	351	0.45	1.09	1.57	0.77	0.11	0.03	4.02
NW	359	0.23	1.37	1.88	0.52	0.10	0.01	4.11
NNW	381	0.56	1.29	1.69	0.68	0.10	0.03	4.36
Totals	8736	7.70	27.01	38.50	20.76	5.21	0.81	100

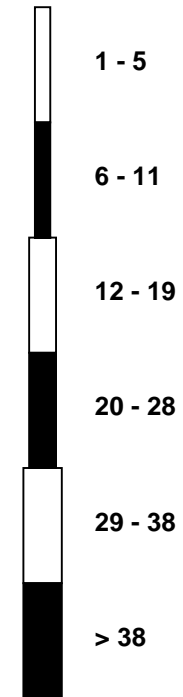
Wind Rose

Wind Speed (WS) (km/h)

Falher - 2013



Wind Speed Classes (km/h)



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**Sunset House-Portable
CONTINUOUS AMBIENT AIR MONITORING STATION**

**2013
ANNUAL SUMMARY TABLES**

Table 34. Sunset House-Portable - Key Parameters – Continuous Monitoring Data – 2013 Summary

Parameter	Monitoring Station	Annual Average	24-hr	Maximum Values		Operational Time (%)	Readings above AAAQO		
				Date	1-hr		Date	24-hr	1-hr
Sulphur Dioxide SO₂ measured in ppb	Sunset House-Portable	0.24	1.50	Mar 05	11.33	Oct 07 02:00	99.6	0	0
Nitrogen Dioxide NO₂ measured in ppb	Sunset House-Portable	1.24	5.76	Feb 07	17.62	Oct 07 02:00	98.5	0	0
Ozone O₃ measured in ppb	Sunset House-Portable	33.16	60.44	Mar 30	66.81	Mar 29 19:00	91.8	0	0
Total Reduced Sulphur TRS measured in ppb	Sunset House-Portable	0.28	2.72	Jan 12	9.55	Jan 12 14:00	99.6	-	-
Particulate Matter PM_{2.5} measured in µg/m³	Sunset House-Portable	2.76	12.62	Sep 15	36.12	Sep 15 18:00	96.0	0	0

Table 35. Sulphur Dioxide (SO₂) – Sunset House-Portable 2013 Summary and Frequency Distribution

Sunset House Portable SO ₂ (ppb)														2013	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340
January	709	0.39	0.68	Jan 24	1.95	Jan 05 18:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
February	637	0.34	0.60	Feb 07	1.57	Feb 07 16:00	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	707	0.48	1.50	Mar 05	5.91	Mar 23 10:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	686	0.24	0.80	Apr 01	4.00	Apr 12 18:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	706	0.13	0.55	May 11	1.44	May 08 07:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	684	0.06	0.23	Jun 04	1.45	Jun 04 07:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	706	0.14	1.00	Jul 25	6.38	Jul 25 10:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	707	0.13	0.39	Aug 28	1.91	Aug 02 08:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	682	0.25	0.73	Sep 03	3.42	Sep 11 11:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	629	0.26	1.30	Oct 07	11.33	Oct 07 02:00	96.2	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
December	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Annual	6853	0.24	1.50	Mar 05	11.33	Oct 07 02:00	99.6	0	0	100.00	0.00	0.00	0.00	0.00	0.00

Table 36. Nitrogen Dioxide (NO₂) – Sunset House-Portable 2013 Summary and Frequency Distribution

Sunset House Portable NO ₂ (ppb)														2013
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range				
								24-Hr	1-Hr	0 - 25	25 - 50	50 - 110	110 - 210	>210
January	706	2.25	4.98	Jan 31	10.71	Jan 31 22:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
February	636	1.96	5.76	Feb 07	13.65	Feb 07 21:00	99.7	0	0	100.00	0.00	0.00	0.00	0.00
March	704	1.43	2.94	Mar 26	6.10	Mar 26 08:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
April	685	1.01	2.29	Apr 09	5.05	Apr 12 18:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
May	705	0.93	1.59	May 11	2.46	May 08 07:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
June	680	0.70	1.09	Jun 05	2.46	Jun 03 01:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
July	702	0.73	1.29	Jul 25	4.74	Jul 25 09:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
August	705	0.94	1.60	Aug 09	3.30	Aug 09 19:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00
September	682	1.15	2.22	Sep 15	5.35	Sep 04 03:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
October	550	1.30	3.39	Oct 07	17.62	Oct 07 02:00	85.2	0	0	100.00	0.00	0.00	0.00	0.00
November	-	-	-	-	-	-	-	-	-	-	-	-	-	-
December	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Annual	6755	1.24	5.76	Feb 07	17.62	Oct 07 02:00	98.5	0	0	100.00	0.00	0.00	0.00	0.00

Table 37. Ozone (O₃) – Sunset House-Portable 2013 Summary and Frequency Distribution

Sunset House Portable O ₃ (ppb) 2013															
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	*AAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 2	2 - 10	10 - 20	20 - 40	40 - 82	>82
January	708	34.42	42.90	Jan 15	46.11	Jan 15 18:00	100.0	0	0	0.00	0.00	0.71	78.81	20.48	0.00
February	501	39.59	46.00	Feb 28	50.06	Feb 28 17:00	78.3	0	0	0.00	0.00	0.40	43.91	55.69	0.00
March	706	44.87	60.44	Mar 30	66.81	Mar 29 19:00	100.0	0	0	0.00	0.00	0.00	23.23	76.77	0.00
April	685	44.83	55.21	Apr 01	61.85	Apr 01 23:00	100.0	0	0	0.00	0.00	0.00	24.67	75.33	0.00
May	684	40.07	48.94	May 18	63.51	May 21 20:00	96.8	0	0	0.00	0.44	2.63	43.86	53.07	0.00
June	683	28.65	36.40	Jun 23	44.47	Jun 29 04:00	100.0	0	0	0.00	0.59	12.30	81.84	5.27	0.00
July	585	22.68	38.26	Jul 01	55.39	Jul 01 22:00	82.1	0	0	1.54	7.18	31.28	57.78	2.22	0.00
August	532	24.03	31.82	Aug 14	42.72	Aug 14 18:00	75.5	0	0	0.00	1.88	28.95	68.23	0.94	0.00
September	685	26.02	37.39	Sep 20	49.69	Sep 12 01:00	100.0	0	0	0.00	4.38	19.42	70.51	5.69	0.00
October	560	26.46	34.06	Oct 14	40.11	Oct 22 14:00	85.2	0	0	0.00	3.04	14.11	82.68	0.18	0.00
November	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
December	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Annual	6329	33.16	60.44	Mar 30	66.81	Mar 29 19:00	91.8	0	0	0.15	1.75	10.98	57.55	29.56	0.00

Table 38. Total Reduced Sulphur (TRS) – Sunset House-Portable 2013 Summary and Frequency Distribution

Sunset House Portable TRS (ppb) 2013															
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	*AAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10
January	710	0.45	2.72	Jan 12	9.55	Jan 12 14:00	100.0	0	0	93.66	3.80	1.69	0.56	0.28	0.00
February	638	0.25	0.38	Feb 06	1.31	Feb 12 18:00	99.7	0	0	99.84	0.16	0.00	0.00	0.00	0.00
March	707	0.24	0.34	Mar 16	0.50	Mar 20 10:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	686	0.26	0.34	Apr 06	0.42	Apr 06 16:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	707	0.32	0.55	May 21	1.05	May 22 01:00	100.0	0	0	99.58	0.42	0.00	0.00	0.00	0.00
June	685	0.29	0.45	Jun 15	0.59	Jun 21 19:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	708	0.29	0.80	Jul 15	1.58	Jul 15 22:00	100.0	0	0	98.02	1.98	0.00	0.00	0.00	0.00
August	707	0.26	0.41	Aug 19	0.55	Aug 11 04:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	686	0.27	0.45	Sep 11	0.67	Sep 11 15:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	633	0.20	0.55	Oct 06	0.84	Oct 16 07:00	96.2	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
December	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Annual	6867	0.28	2.72	Jan 12	9.55	Jan 12 14:00	99.6	0	0	99.11	0.64	0.17	0.06	0.03	0.00

*No Alberta Environment Objectives or Guidelines for TRS

Table 39. Particulate Matter (PM_{2.5}) – Sunset House-Portable 2013 Summary and Frequency Distribution

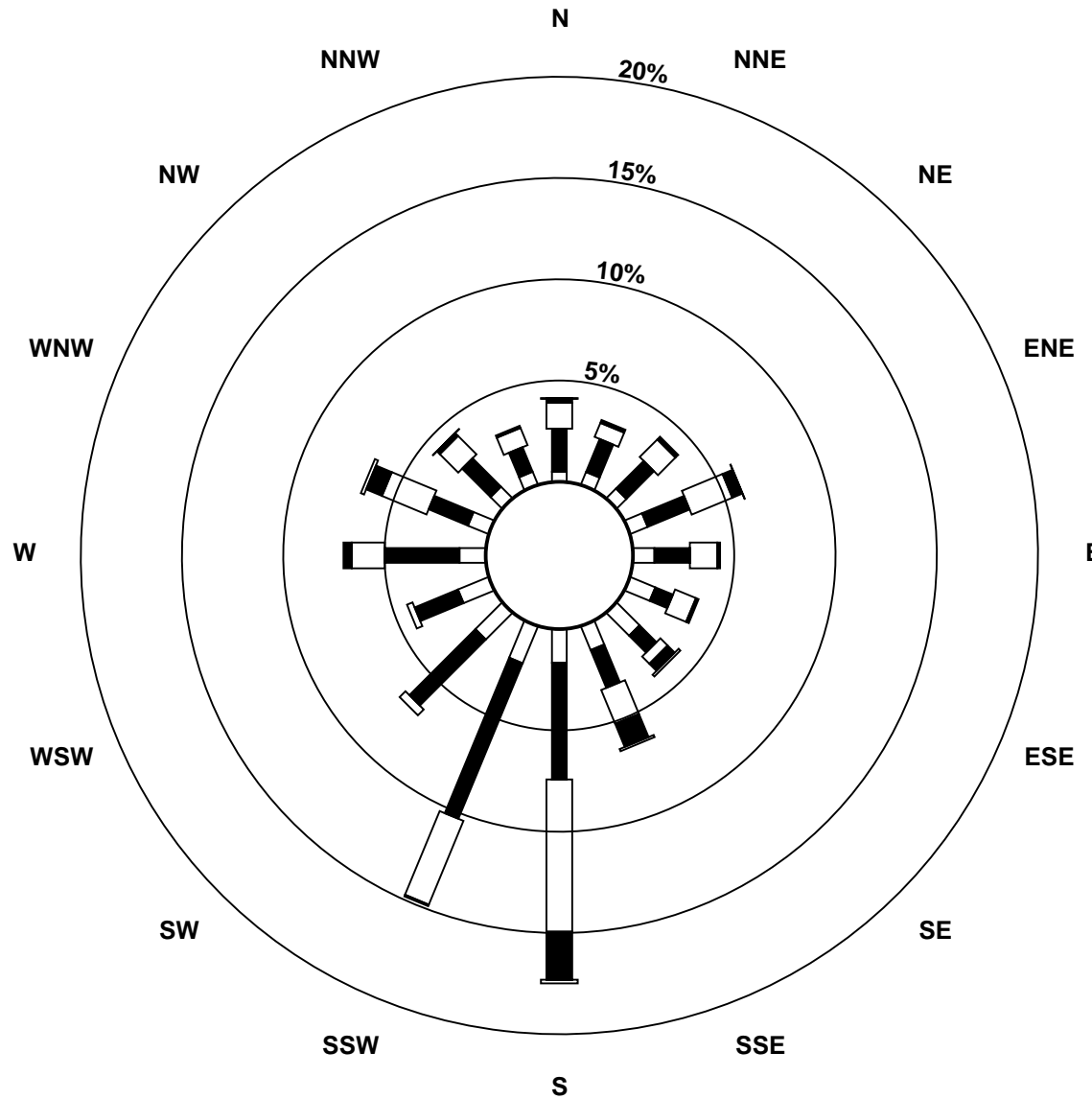
Sunset House Portable											PM _{2.5} (µg/m ³)						2013	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range								
								24-Hr	1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30			
January	720	1.49	5.21	Jan 24	21.41	Jan 11 00:00	97.0	0	0	71.94	23.47	4.31	0.14	0.14	0.00			
February	668	1.52	4.80	Feb 06	14.40	Feb 12 19:00	99.4	0	0	70.81	23.95	4.94	0.30	0.00	0.00			
March	744	2.24	6.85	Mar 06	13.20	Mar 12 18:00	100.0	0	0	54.97	38.98	5.38	0.67	0.00	0.00			
April	714	1.83	3.48	Apr 02	11.63	Apr 17 20:00	99.6	0	0	63.31	33.89	2.52	0.28	0.00	0.00			
May	744	3.50	7.03	May 23	21.57	May 24 18:00	100.0	0	0	41.53	37.50	17.61	2.82	0.54	0.00			
June	718	2.80	7.11	Jun 21	21.92	Jun 18 20:00	99.7	0	0	54.87	29.11	12.12	3.48	0.42	0.00			
July	689	4.79	10.90	Jul 08	27.96	Jul 08 20:00	92.6	0	0	41.36	27.72	16.84	10.01	4.06	0.00			
August	693	4.58	10.44	Aug 13	24.97	Aug 13 18:00	93.2	0	0	38.10	28.14	24.24	8.66	0.87	0.00			
September	675	3.10	12.62	Sep 15	36.12	Sep 15 18:00	93.8	0	0	53.63	28.44	13.78	2.37	1.63	0.15			
October	581	1.74	5.22	Oct 21	18.81	Oct 14 23:00	84.7	0	0	67.13	25.82	6.20	0.69	0.17	0.00			
November	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
December	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Annual	6946	2.76	12.62	Sep 15	36.12	Sep 15 18:00	96.0	0	0	55.77	29.70	10.79	2.94	0.78	0.02			

Table 40. Wind Speed and Wind Direction Frequency Distribution – Sunset House-Portable 2013 Summary

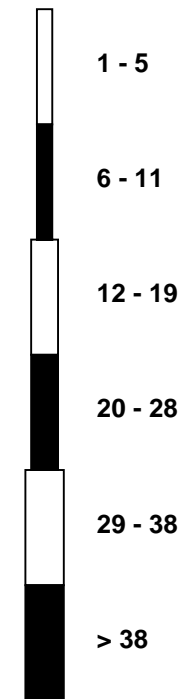
Sunset House Portable									2013
Direction	# of Readings	% of wind speed (km/hr)						Totals	
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38		
N	293	0.49	2.13	1.28	0.20	0.03	0.00	4.13	
NNE	237	0.68	1.76	0.75	0.16	0.00	0.00	3.34	
NE	285	0.68	1.93	1.23	0.18	0.00	0.00	4.02	
ENE	418	0.93	2.24	2.17	0.54	0.01	0.00	5.90	
E	305	1.06	1.75	1.35	0.14	0.00	0.00	4.30	
ESE	251	1.34	0.95	1.11	0.14	0.00	0.00	3.54	
SE	277	1.59	1.18	0.51	0.49	0.13	0.00	3.91	
SSE	457	1.27	2.02	1.81	1.24	0.11	0.00	6.45	
S	1240	1.66	5.76	7.52	2.37	0.18	0.00	17.49	
SSW	1052	1.97	8.31	4.47	0.08	0.00	0.00	14.84	
SW	488	1.86	4.61	0.41	0.00	0.00	0.00	6.88	
WSW	301	1.64	2.31	0.30	0.00	0.00	0.00	4.25	
WSW	498	1.30	3.68	1.64	0.41	0.00	0.00	7.02	
WNW	468	1.10	2.10	2.38	0.85	0.17	0.00	6.60	
NW	304	0.80	1.99	1.28	0.20	0.01	0.00	4.29	
NNW	215	0.69	1.31	0.92	0.11	0.00	0.00	3.03	
Totals	7089	19.07	44.04	29.13	7.11	0.65	0.00	100	

Wind Rose

Wind Speed (WS) (km/h)
Sunset House - 2013



Wind Speed Classes (km/h)



PAZA

Reno-Portable

CONTINUOUS AMBIENT AIR MONITORING STATION

2013

ANNUAL SUMMARY TABLES

Table 41. Reno-Portable - Key Parameters – Continuous Monitoring Data – 2013 Summary

Parameter	Monitoring Station	Annual Average	24-hr	Maximum Values		Operational Time (%)	Readings above AAAQO		
				Date	1-hr		Date	24-hr	1-hr
Sulphur Dioxide SO₂ measured in ppb	Reno-Portable	0.26	1.64	Nov 01	5.06	Dec 22 04:00	99.7	0	0
Nitrogen Dioxide NO₂ measured in ppb	Reno-Portable	2.99	7.78	Dec 07	17.95	Nov 21 05:00	99.4	0	0
Ozone O₃ measured in ppb	Reno-Portable	26.75	38.52	Feb 07	43.64	Oct 07 02:00	99.6	0	0
Total Hydrocarbons THC measured in ppm	Reno-Portable	2.23	2.50	Dec 17	2.95	Dec 16 20:00	100.0	-	-
Total Reduced Sulphur TRS measured in ppb	Reno-Portable	0.24	0.38	Dec 07	0.82	Nov 27 06:00	99.4	-	-
Particulate Matter PM_{2.5} measured in µg/m³	Reno-Portable	3.82	15.55	Nov 21	64.97	Nov 21 08:00	99.0	0	0

Table 42. Sulphur Dioxide (SO₂) – Reno-Portable 2013 Summary and Frequency Distribution

Reno Portable		SO ₂ (ppb)										2013			
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 20	20 - 60	60 - 110	110 - 170	170 - 340	>340
January	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
June	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
July	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
August	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
September	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
October	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
November	676	0.30	1.64	Nov 01	3.43	Nov 01 05:00	99.3	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	707	0.23	0.79	Dec 07	5.06	Dec 22 04:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	1383	0.26	1.64	Nov 01	5.06	Dec 22 04:00	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00

Table 43. Nitrogen Dioxide (NO₂) – Reno-Portable 2013 Summary and Frequency Distribution

Reno Portable		NO ₂ (ppb)										2013			
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 25	25 - 50	50 - 110	110 - 210	>210	
January	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
June	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
July	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
August	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
September	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
October	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
November	673	3.39	7.25	Nov 21	17.95	Nov 21 05:00	98.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	706	2.58	7.78	Dec 07	13.52	Dec 04 17:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	1379	2.99	7.78	Dec 07	17.95	Nov 21 05:00	99.4	0	0	100.00	0.00	0.00	0.00	0.00	0.00

Table 44. Ozone (O₃) – Reno-Portable 2013 Summary and Frequency Distribution

Reno Portable O ₃ (ppb) 2013															
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 2	2 - 10	10 - 20	20 - 40	40 - 82	>82
January	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
June	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
July	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
August	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
September	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
October	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
November	679	24.86	38.52	Nov 24	43.64	Nov 23 18:00	99.2	0	0	0.15	1.33	22.24	74.08	2.21	0.00
December	708	28.64	38.38	Dec 25	43.48	Dec 24 12:00	100.0	0	0	0.00	0.00	5.37	91.95	2.68	0.00
Annual	1387	26.75	38.52	Feb 07	43.64	Oct 07 02:00	99.6	0	0	0.08	0.78	12.59	67.46	19.15	0.00

Table 45. Total Reduced Sulphur (TRS) – Reno-Portable 2013 Summary and Frequency Distribution

Reno Portable TRS (ppb) 2013															
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	*AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10
January	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
April	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
June	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
July	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
August	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
September	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
October	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
November	675	0.22	0.37	Nov 27	0.82	Nov 27 06:00	98.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	708	0.27	0.38	Dec 07	0.61	Dec 21 00:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
Annual	1383	0.24	0.38	Dec 07	0.82	Nov 27 06:00	99.4	0	0	100.00	0.00	0.00	0.00	0.00	0.00

*No Alberta Environment Objectives or Guidelines for TRS

Table 46. Total Hydrocarbon (THC) – Reno-Portable 2013 Summary and Frequency Distribution

Reno Portable															THC (ppm)		2013	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	*AAAQO		Number of Readings in Concentration Range								
								24-Hr	1-Hr	0 - 1.5	1.5 - 2.0	2.0 - 2.5	2.5 - 5.0	5.0 - 10.0	>10.0			
January	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
February	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
March	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
April	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
May	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
June	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
July	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
August	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
September	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
October	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
November	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
December	621	2.23	2.50	Dec 17	2.95	Dec 16 20:00	100.0	0	0	0.00	0.16	95.49	4.35	0.00	0.00			
Annual	621	2.23	2.50	Dec 17	2.95	Dec 16 20:00	100.0	0	0	0.00	0.16	95.49	4.35	0.00	0.00			

*No Alberta Environment Objectives or Guidelines for THC

Table 47. Particulate Matter (PM_{2.5}) – Reno-Portable 2013 Summary and Frequency Distribution

Reno Portable															PM _{2.5} (µg/m ³)		2013	
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range								
								24-Hr	1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30			
January	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
February	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
March	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
April	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
May	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
June	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
July	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
August	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
September	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
October	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
November	709	5.86	15.55	Nov 21	64.97	Nov 21 08:00	98.5	0	0	42.31	25.25	16.22	9.31	4.37	2.54			
December	740	1.78	8.23	Dec 05	14.80	Dec 05 20:00	99.5	0	0	69.19	25.95	3.65	1.22	0.00	0.00			
Annual	1449	3.82	15.55	Nov 21	64.97	Nov 21 08:00	99.0	0	0	55.75	25.60	9.94	5.27	2.19	1.27			

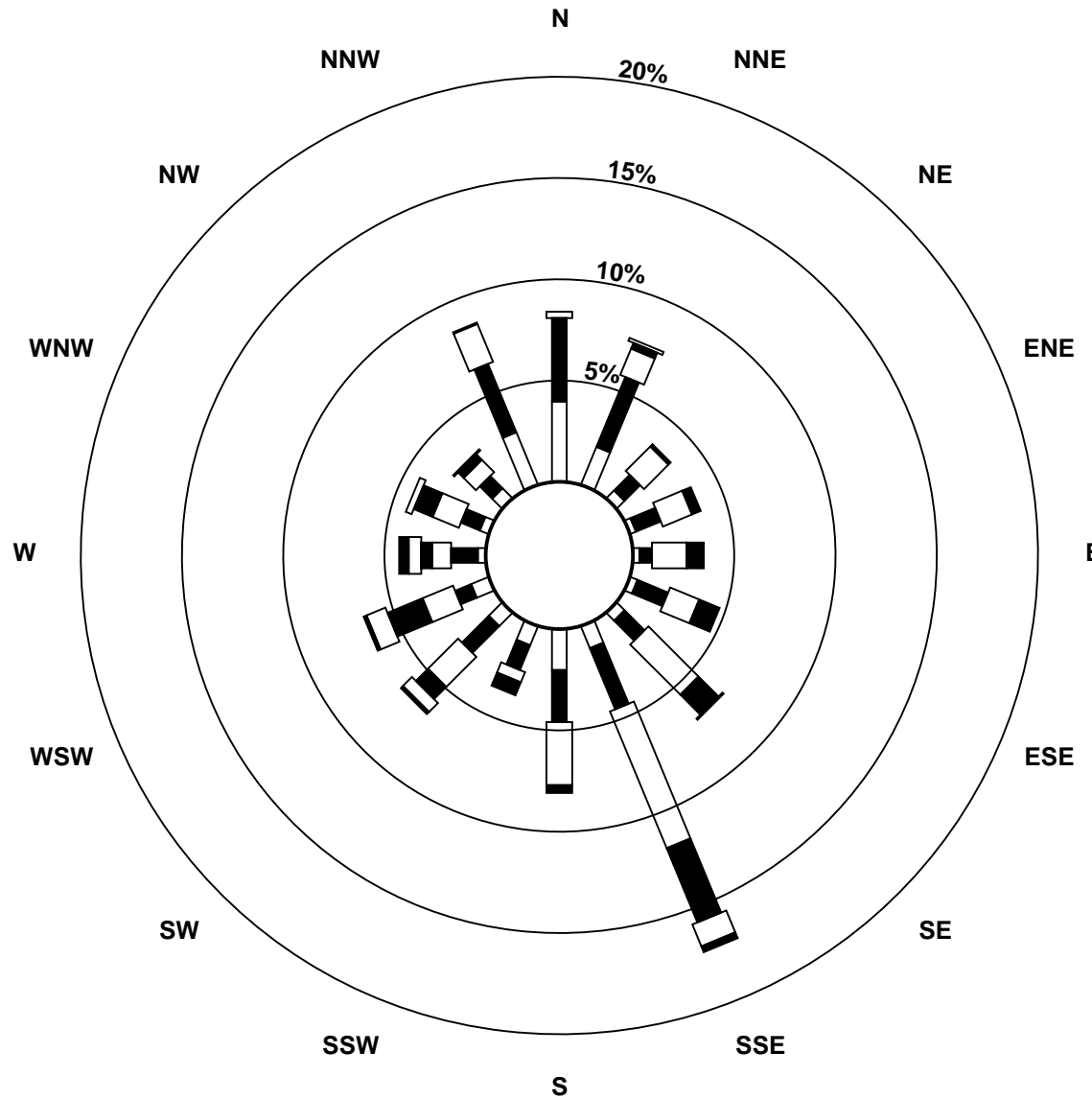
Table 48. Wind Speed and Wind Direction Frequency Distribution – Reno-Portable 2013 Summary

Reno Portable								2013
Direction	# of Readings	% of wind speed (km/hr)						Totals
		1 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	108	3.97	4.12	0.31	0.00	0.00	0.00	8.40
NNE	98	2.02	3.73	1.40	0.31	0.16	0.00	7.62
NE	45	0.54	1.09	1.71	0.16	0.00	0.00	3.50
ENE	47	0.31	1.32	1.56	0.47	0.00	0.00	3.65
E	45	0.31	0.62	1.71	0.86	0.00	0.00	3.50
ESE	60	0.39	1.63	1.56	1.09	0.00	0.00	4.67
SE	89	0.54	1.40	3.50	1.40	0.08	0.00	6.92
SSE	221	1.17	3.27	7.31	3.97	1.17	0.31	17.19
S	104	2.02	2.57	3.11	0.39	0.00	0.00	8.09
SSW	46	1.01	1.32	0.54	0.70	0.00	0.00	3.58
SW	84	0.93	1.87	2.10	0.86	0.62	0.16	6.53
WSW	83	0.93	0.86	1.63	1.87	1.01	0.16	6.45
WSW	55	0.39	1.32	0.93	0.54	0.62	0.47	4.28
WNW	54	0.47	1.01	1.40	1.01	0.31	0.00	4.20
NW	37	0.70	0.86	0.86	0.39	0.08	0.00	2.88
NNW	110	2.80	3.65	2.02	0.08	0.00	0.00	8.55
Totals	1286	18.51	30.64	31.65	14.07	4.04	1.09	100

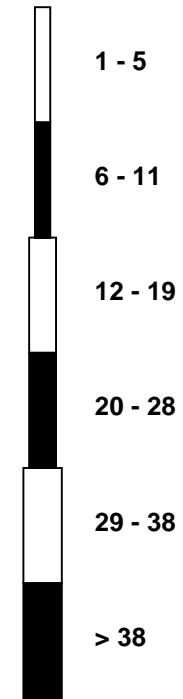
Wind Rose

Wind Speed (WS) (km/h)

Portable Reno - 2013



Wind Speed Classes (km/h)



PAZA

PASSIVE MONITORING

2013

ANNUAL SUMMARY TABLES

Table 49. SO₂ Passive - 2013 Summary

MONITORING SITE		Sulphur Dioxide Passive (parts per billion)												MAXIMUM VALUE	ANNUAL AVERAGE
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
1	Silver Valley	0.6	0.3	0.4	0.2	0.3	0.2	0.2	0.3	0.4	0.3	0.3	0.5	0.6	0.3
2	Bay Tree	0.4	0.2	0.4	0.4	0.2	0.1	0.1	0.9	0.1	0.1	0.2	0.4	0.9	0.3
3	Forth Creek	0.4	0.2	0.3	0.2	0.2	0.2	0.1	0.7	0.2	0.3	0.2	N/S	0.7	0.3
4	Gordondale	0.4	0.3	0.4	0.3	0.2	0.3	0.1	0.3	0.6	0.3	0.4	0.5	0.6	0.3
5	Boone Creek	0.4	0.2	0.3	0.5	0.2	0.2	0.2	0.3	0.1	0.2	0.2	0.4	0.5	0.3
7	Steepprock Creek	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.4	0.2	0.1	0.2	0.3	0.4	0.2
9	Spirit River	0.4	0.3	0.2	0.1	0.3	0.2	0.2	0.6	0.3	0.2	0.3	0.3	0.6	0.3
10	Woking	0.6	0.5	0.3	0.4	0.3	0.2	0.2	0.6	0.5	0.3	0.4	0.5	0.6	0.4
11	Webber Creek	0.6	0.4	0.4	0.2	0.3	0.2	0.1	0.5	0.4	0.3	0.4	0.6	0.6	0.4
12	Hythe	0.5	0.2	0.3	0.5	0.2	0.3	0.2	0.8	0.2	0.2	0.3	0.4	0.8	0.3
14	Sylvester	0.2	BDL	BDL	0.2	0.1	0.1	0.1	0.4	0.1	BDL	0.1	0.1	0.4	0.2
16	Beaverlodge	0.6	0.2	0.4	0.4	0.2	0.2	0.1	0.4	0.2	0.2	0.4	0.3	0.6	0.3
17	Poplar	0.7	0.3	0.6	0.2	0.2	0.2	0.1	0.6	0.3	0.2	0.4	0.6	0.7	0.4
18	Saddle Hills	0.8	0.5	0.4	0.4	0.2	0.1	0.3	0.3	0.3	0.2	0.4	0.8	0.3	0.3
19	Wanham	0.5	0.3	0.4	0.4	0.2	0.2	0.2	0.4	0.2	0.3	0.3	0.5	0.5	0.3
20	Shaftesbury	-	0.5	0.5	0.3	0.2	0.2	0.1	0.4	0.4	0.2	0.2	N/S	0.5	0.3
21	Eaglesham	0.5	0.3	0.4	0.3	0.3	0.4	0.5	1.4	0.2	0.1	0.1	0.3	1.4	0.4
23	Bear Lake	0.8	0.4	0.5	0.5	0.3	0.2	0.1	0.6	0.3	0.2	0.4	0.6	0.8	0.4
24	Wembley	0.3	0.1	0.4	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.5	0.5	0.2
25	Pinto Creek	0.3	0.2	0.2	0.4	0.2	0.1	0.1	0.3	0.1	0.1	0.1	0.2	0.4	0.2
26	Flyingshot	0.3	0.1	0.2	0.4	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.4	0.4	0.2
27	Grande Prairie I	0.4	0.2	0.4	0.2	0.1	0.2	0.2	0.4	0.2	0.2	0.4	0.5	0.5	0.3
28	Clairmont Lake	0.7	0.3	0.4	0.2	0.2	0.2	0.1	0.4	0.2	0.2	0.4	0.6	0.7	0.3
29	Smoky Heights	0.8	0.7	0.5	0.3	0.3	0.3	0.1	0.2	0.3	0.4	0.4	0.6	0.8	0.4
30	Fitzsimmons	0.4	0.2	0.2	0.1	0.2	0.1	0.1	1.4	0.2	0.2	0.2	0.3	1.4	0.3
32	Gold Creek	0.2	0.2	0.2	0.3	0.3	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.2
33	Wapiti	0.3	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.5	0.5	0.2
34	Puskwaskau	0.2	0.2	0.2	0.4	0.2	0.2	BDL	0.1	0.2	0.1	0.1	0.3	0.4	0.2
35	Jean Cote	-	0.5	0.4	0.4	0.2	0.2	0.2	0.4	0.4	0.2	0.2	N/S	0.5	0.3
36	Guy	0.3	0.3	0.4	0.3	0.2	0.3	0.1	0.2	0.2	0.2	0.2	0.3	0.4	0.3
37	Crooked Creek	0.6	0.1	0.2	0.4	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.3	0.6	0.2
38	Karr Creek	1.0	BDL	BDL	0.4	0.1	0.1	0.1	0.4	0.1	0.1	0.1	0.2	1.0	0.3
39	Clouston Creek	0.4	0.1	0.4	0.2	0.2	0.2	0.1	0.5	0.2	0.1	0.2	0.3	0.5	0.2
40	McLennan	-	0.5	0.3	0.4	0.3	0.3	0.3	0.5	0.4	0.3	0.3	0.5	0.5	0.4
41	Valleyview	0.5	0.1	0.5	0.3	0.1	0.1	0.2	0.5	0.2	0.1	0.2	0.5	0.5	0.3
42	Sunset House	0.4	0.3	0.4	0.6	0.2	0.2	0.1	0.4	0.2	0.2	0.2	0.4	0.6	0.3
43	High Prairie	0.2	0.2	0.3	0.4	0.2	0.1	0.1	1.2	0.2	0.1	0.1	0.3	1.2	0.3
44	Peavine	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.3	0.2
45	Gift Lake	0.2	0.1	0.1	0.4	0.1	0.1	0.1	0.7	0.1	0.1	0.2	0.3	0.7	0.2
46	Little Smoky	0.4	0.2	0.4	0.4	0.2	0.2	0.1	0.7	0.1	0.1	0.1	0.4	0.7	0.3
47	Kinuso	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.5	0.1	0.1	0.1	0.2	0.5	0.2
48	Deer Mountain	0.2	0.2	0.3	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.3	0.3	0.2
49	Grande Prairie HP	0.4	0.2	0.4	0.3	0.3	0.2	0.2	0.4	0.2	0.1	0.3	0.5	0.5	0.3
62	East Prairie	0.2	0.1	0.2	0.4	0.3	0.1	BDL	0.4	0.2	0.1	0.1	0.2	0.4	0.2
Average		0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.5	0.2	0.2	0.2	0.4		0.3
Peak		1.0	0.7	0.6	0.6	0.3	0.4	0.5	1.4	0.6	0.4	0.4	0.6	1.4	

BDL=Below Detection Limit (>0.02ppm); N/A=Sample not collected (damaged, missing, inaccessible, etc)

Table 50. NO₂ Passive - 2013 Summary

MONITORING SITE		Nitrogen Dioxide Passive (parts per billion)												MAXIMUM VALUE	ANNUAL AVERAGE
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
1	Silver Valley	1.6	0.4	BDL	BDL	0.4	0.5	0.4	0.8	0.6	1.0	1.3	1.0	1.6	0.8
2	Bay Tree	0.6	BDL	BDL	BDL	0.3	0.4	0.3	0.1	0.4	1.3	1.4	1.5	1.5	0.7
3	Forth Creek	0.8	BDL	BDL	BDL	BDL	0.3	BDL	0.4	0.6	0.7	0.9	N/S	0.9	0.6
4	Gordondale	1.7	BDL	0.1	0.2	0.3	0.4	0.2	0.6	1.4	1.0	1.5	1.0	1.7	0.8
5	Boone Creek	1.5	BDL	BDL	BDL	BDL	0.3	0.3	0.8	0.7	0.9	1.4	1.5	1.5	0.9
7	Steepprock Creek	0.5	BDL	BDL	0.9	0.1	0.4	0.1	0.4	0.8	2.8	1.0	1.0	2.8	0.8
9	Spirit River	0.9	0.3	0.5	0.2	0.7	1.6	0.3	0.4	0.5	0.8	2.0	1.5	2.0	0.8
10	Woking	0.8	BDL	0.1	0.2	0.4	0.8	0.4	0.4	0.5	0.8	0.9	1.0	1.0	0.6
11	Webber Creek	3.1	1.6	0.2	BDL	0.8	0.8	0.4	0.5	0.9	1.1	2.8	2.4	3.1	1.3
12	Hythe	1.7	0.4	0.2	0.1	0.7	0.6	0.2	0.8	0.6	1.0	3.3	1.9	3.3	1.0
14	Sylvester	0.5	BDL	BDL	BDL	0.4	0.3	0.3	0.4	0.5	0.6	1.6	1.5	1.6	0.7
16	Beaverlodge	2.0	0.8	0.9	0.1	0.6	0.7	0.6	0.9	1.1	1.5	2.8	2.8	2.8	1.2
17	Poplar	2.6	0.6	0.4	BDL	1.6	1.0	1.8	0.5	0.8	1.5	2.3	2.4	2.6	1.4
18	Saddle Hills	0.8	0.2	0.1	0.5	0.2	BDL	0.3	0.4	0.2	0.5	1.0	1.5	1.5	0.5
19	Wanham	0.8	BDL	BDL	BDL	BDL	0.7	0.5	0.2	0.5	0.8	1.1	1.5	1.5	0.8
20	Shaftesbury	-	0.2	2.1	BDL	0.5	0.3	0.5	0.3	0.5	0.7	1.0	N/S	2.1	0.7
21	Eaglesham	3.2	BDL	BDL	BDL	0.6	1.5	0.3	0.2	0.2	0.5	1.0	1.0	3.2	1.0
23	Bear Lake	3.0	0.6	0.3	BDL	2.0	1.1	0.7	0.5	0.9	2.4	3.6	3.0	3.6	1.7
24	Wembley	2.2	0.7	BDL	0.2	2.0	1.1	0.2	0.5	0.7	2.0	3.2	2.8	3.2	1.4
25	Pinto Creek	0.8	0.2	0.1	0.2	0.2	0.5	0.8	0.3	0.7	0.6	1.7	1.0	1.7	0.6
26	Flyingshot	3.3	1.3	0.6	BDL	0.7	0.4	0.5	0.5	0.7	1.2	2.9	3.7	3.7	1.5
27	Grande Prairie I	13.0	5.9	4.1	1.0	2.0	1.4	1.3	3.0	2.7	6.9	10.3	12.6	13.0	5.4
28	Clairmont Lake	2.1	0.6	0.2	0.1	0.6	0.4	0.2	0.5	1.0	1.5	2.0	2.4	2.4	1.0
29	Smoky Heights	2.8	0.8	0.3	0.3	0.4	0.5	0.1	0.4	0.5	2.1	2.4	2.0	2.8	1.1
30	Fitzsimmons	3.0	0.5	0.3	BDL	1.1	0.2	0.4	0.6	1.3	0.9	2.0	2.4	3.0	1.2
32	Gold Creek	6.0	1.2	0.5	BDL	0.6	0.4	1.0	1.1	1.6	1.3	3.3	3.6	6.0	1.9
33	Wapiti	2.2	0.5	0.4	BDL	0.5	0.2	0.5	0.5	0.7	1.3	2.2	1.9	2.2	1.0
34	Puskwaskau	0.5	0.1	BDL	BDL	0.2	N/S	BDL	BDL	0.1	0.8	0.6	1.0	1.0	0.5
35	Jean Cote	-	0.3	BDL	0.3	0.8	1.4	1.4	0.7	0.9	2.3	1.9	N/S	2.3	1.1
36	Guy	0.7	0.3	BDL	0.3	0.9	2.2	0.6	0.4	0.6	1.0	1.3	1.5	2.2	0.9
37	Crooked Creek	2.5	0.5	0.2	0.1	0.6	0.5	0.3	0.4	0.6	1.9	2.1	1.5	2.5	0.9
38	Karr Creek	1.2	0.5	BDL	4.2	0.3	0.1	0.6	0.5	0.5	0.8	0.9	1.3	4.2	1.0
39	Clouston Creek	1.1	0.3	BDL	3.9	0.6	0.5	0.6	0.5	0.8	2.9	1.7	1.5	3.9	1.3
40	McLennan	-	0.3	BDL	0.3	0.6	0.7	0.5	0.7	0.6	1.7	1.3	1.5	1.7	0.8
41	Valleyview	1.3	0.5	0.2	BDL	0.3	0.2	0.3	0.3	0.7	0.9	1.9	1.5	1.9	0.7
42	Sunset House	0.5	0.2	BDL	BDL	0.5	0.1	0.5	0.8	0.3	0.8	1.4	1.0	1.4	0.6
43	High Prairie	1.7	1.0	0.1	0.4	0.5	1.1	0.3	0.5	0.4	0.8	2.1	1.9	2.1	0.9
44	Peavine	0.7	BDL	BDL	BDL	BDL	0.2	BDL	0.2	0.5	0.5	0.6	1.0	1.0	0.5
45	Gift Lake	1.1	0.6	BDL	BDL	0.1	BDL	0.2	0.3	0.3	1.1	0.9	1.0	1.1	0.6
46	Little Smoky	5.0	2.3	1.1	BDL	0.4	0.3	0.6	0.9	5.0	2.5	4.0	3.3	5.0	2.3
47	Kinuso	1.2	0.4	BDL	BDL	BDL	BDL	BDL	BDL	0.2	0.4	1.1	1.5	1.5	0.8
48	Deer Mountain	0.9	0.3	BDL	BDL	0.2	0.5	0.2	0.3	0.3	0.9	0.8	0.8	0.9	0.5
49	Grande Prairie HP	16.8	7.8	4.1	0.1	1.8	1.4	1.2	1.7	2.9	6.5	9.4	8.3	16.8	5.2
62	East Prairie	0.8	BDL	BDL	BDL	0.3	0.1	0.4	0.2	0.2	0.3	0.6	0.6	0.8	0.4
Average		2.4	1.0	0.7	0.7	0.7	0.6	0.5	0.6	0.8	1.5	2.1	2.1		1.1
Peak		16.8	7.8	4.1	4.2	2.0	2.2	1.8	3.0	5.0	6.9	10.3	12.6	16.8	

BDL=Below Detection Limit (>0.03ppm); N/A=Sample not collected (damaged, missing, inaccessible, etc)

Table 51. O₃ Passive - 2013 Summary

MONITORING SITE		Ozone Passive (parts per billion)												MAXIMUM VALUE	ANNUAL AVERAGE
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
1	Silver Valley	39.3	56.1	41.4	42.4	29.9	22.2	21.6	14.9	16.7	17.1	28.4	30.8	56.1	30.1
2	Bay Tree	36.3	44.6	37.4	46.8	36.6	28.0	19.0	36.0	18.1	19.2	31.1	33.7	46.8	32.2
3	Forth Creek	43.8	43.6	46.3	40.2	41.2	28.1	23.1	24.9	17.8	21.6	28.3	N/S	46.3	32.6
4	Gordondale	37.8	48.8	48.8	47.2	38.0	26.9	22.0	21.2	24.5	24.0	30.0	42.5	48.8	34.3
5	Boone Creek	35.9	48.1	39.0	43.9	33.0	23.5	21.3	17.3	17.1	17.5	28.6	34.7	48.1	30.0
7	Steeprock Creek	39.9	48.2	39.8	44.2	38.2	25.9	40.1	25.3	18.8	21.9	31.7	37.8	48.2	34.3
9	Spirit River	38.9	41.4	40.0	36.4	32.9	27.3	21.5	16.6	18.8	19.6	28.2	37.1	41.4	29.9
10	Woking	41.3	41.2	51.5	45.5	34.1	25.5	21.1	17.1	19.2	22.0	29.7	37.7	51.5	32.2
11	Webber Creek	37.1	41.8	43.2	45.7	32.4	28.2	17.8	15.7	17.5	18.6	23.6	35.1	45.7	29.7
12	Hythe	37.0	43.8	44.1	47.0	31.8	21.7	20.5	16.9	17.2	19.3	29.2	38.0	47.0	30.5
14	Sylvester	33.5	37.8	35.9	49.6	27.2	24.4	17.8	12.1	13.9	21.8	23.6	31.3	49.6	27.4
16	Beaverlodge	39.5	38.5	43.4	44.0	38.2	35.4	29.0	26.0	21.4	24.3	29.5	N/S	44.0	33.6
17	Poplar	32.1	44.3	42.1	52.0	33.2	27.6	19.2	17.3	14.0	21.5	24.4	35.4	52.0	30.3
18	Saddle Hills	41.2	51.6	42.4	41.2	38.0	26.7	22.7	19.0	16.8	20.8	29.4	35.7	51.6	32.1
19	Wanham	41.0	51.4	42.8	44.6	37.6	28.2	31.2	21.0	21.7	21.6	26.9	36.8	51.4	33.7
20	Shaftesbury	-	33.8	43.5	46.8	-	26.7	19.7	20.0	22.4	26.1	24.7	N/S	46.8	29.3
21	Eaglesham	35.5	41.2	45.4	41.1	30.2	22.7	17.3	16.0	13.3	15.0	22.9	30.4	45.4	27.6
23	Bear Lake	38.6	48.1	47.1	42.7	33.9	26.2	20.9	17.5	18.6	15.5	27.8	34.9	48.1	31.0
24	Wembley	35.7	45.1	44.4	41.2	36.3	24.6	18.1	15.6	17.1	15.9	BDL	35.3	45.1	29.9
25	Pinto Creek	38.2	38.4	45.3	46.6	33.0	23.3	23.3	16.6	16.8	20.7	24.5	33.0	46.6	30.0
26	Flyingshot	29.6	39.8	39.8	42.1	33.8	23.4	21.2	15.0	13.7	20.9	25.0	30.6	42.1	27.9
27	Grande Prairie I	27.6	31.6	38.8	43.4	34.7	26.9	24.0	21.2	16.7	17.1	20.5	26.3	43.4	27.4
28	Clairmont Lake	42.5	50.1	47.4	36.6	36.6	27.4	21.5	18.7	21.0	23.1	28.1	35.5	50.1	32.4
29	Smoky Heights	36.5	46.1	49.1	46.9	39.9	33.4	28.0	28.3	23.6	22.9	26.8	48.8	49.1	35.9
30	Fitzsimmons	31.3	42.2	40.8	36.7	28.9	21.9	14.2	14.1	12.5	14.1	23.2	30.8	42.2	25.9
32	Gold Creek	23.9	35.4	36.2	37.0	29.3	18.8	14.5	10.9	11.6	13.4	21.8	26.2	37.0	23.2
33	Wapiti	33.2	46.7	43.5	41.7	32.7	28.0	21.6	16.8	15.4	22.0	26.5	32.1	46.7	30.0
34	Puskwaskau	33.0	43.1	43.8	43.3	29.9	17.9	14.5	15.1	14.2	18.7	24.5	29.2	43.8	27.3
35	Jean Cote	-	43.1	45.2	40.9	34.9	24.5	20.4	18.1	19.5	17.1	25.0	N/S	45.2	28.9
36	Guy	40.2	46.5	42.5	40.4	33.1	25.0	17.6	17.9	15.9	16.9	30.3	38.2	46.5	30.4
37	Crooked Creek	33.7	47.9	47.3	47.2	33.0	26.3	17.6	16.6	18.8	18.1	24.4	34.1	47.9	30.4
38	Karr Creek	26.2	38.6	40.3	50.0	29.1	20.8	17.1	16.9	11.0	12.4	19.2	25.4	50.0	25.6
39	Clouston Creek	38.8	43.0	41.4	46.3	34.1	23.5	22.1	14.4	17.0	19.9	26.9	33.7	46.3	30.1
40	McLennan	-	43.5	44.6	42.1	36.0	28.9	20.1	18.6	16.6	19.6	25.2	35.1	44.6	30.0
41	Valleyview	34.9	42.5	47.8	42.2	36.3	28.1	24.5	22.3	20.4	21.9	27.8	39.3	47.8	32.3
42	Sunset House	41.8	48.0	42.6	36.5	38.3	26.8	27.1	23.2	27.3	26.6	35.0	37.9	48.0	34.3
43	High Prairie	35.2	47.4	49.0	36.3	36.5	26.0	19.5	17.8	17.7	18.1	24.3	35.9	49.0	30.3
44	Peavine	32.9	46.6	41.0	43.6	34.2	21.3	18.3	16.1	15.7	18.4	25.6	27.8	46.6	28.5
45	Gift Lake	33.3	39.6	38.4	38.3	30.4	18.1	17.4	15.5	19.5	14.9	22.6	30.0	39.6	26.5
46	Little Smoky	26.9	35.4	38.0	40.8	37.7	30.0	16.0	13.3	12.5	14.1	20.5	29.9	40.8	26.3
47	Kinuso	30.8	40.7	37.6	36.0	32.1	16.7	15.3	14.8	9.4	15.2	22.9	31.8	40.7	25.3
48	Deer Mountain	31.7	44.2	40.7	39.1	31.0	21.3	19.0	14.7	16.6	21.6	24.4	32.3	44.2	28.0
49	Grande Prairie HP	23.9	29.6	41.3	45.7	36.1	29.4	20.9	26.3	19.6	17.3	21.5	23.9	45.7	28.0
62	East Prairie	32.8	41.4	39.2	38.7	31.6	19.9	18.4	17.1	16.9	17.1	23.4	28.2	41.4	27.1
Average		35.2	43.2	42.7	42.7	34.1	25.2	20.9	18.4	17.4	19.2	26.0	33.6		29.8
Peak		43.8	56.1	51.5	52.0	41.2	35.4	40.1	36.0	27.3	26.6	35.0	48.8	56.1	

BDL=Below Detection Limit (>0.01ppm); N/A=Sample not collected (damaged, missing, inaccessible, etc)

Table 52. H₂S Passive - 2013 Summary

MONITORING SITE		Ozone Passive (parts per billion)												MAXIMUM VALUE	ANNUAL AVERAGE
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
1	Gift Lake	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	BDL	BDL	0.1	0.2	0.1
2	Girouxville 3	-	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	BDL	0.3	0.2
3	Girouxville 4	-	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.3	0.2	0.3	0.3	0.2
Average		0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2		0.2
Peak		0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2

BDL=Below Detection Limit (>0.01ppm); N/A=Sample not collected (damaged, missing, inaccessible, etc)

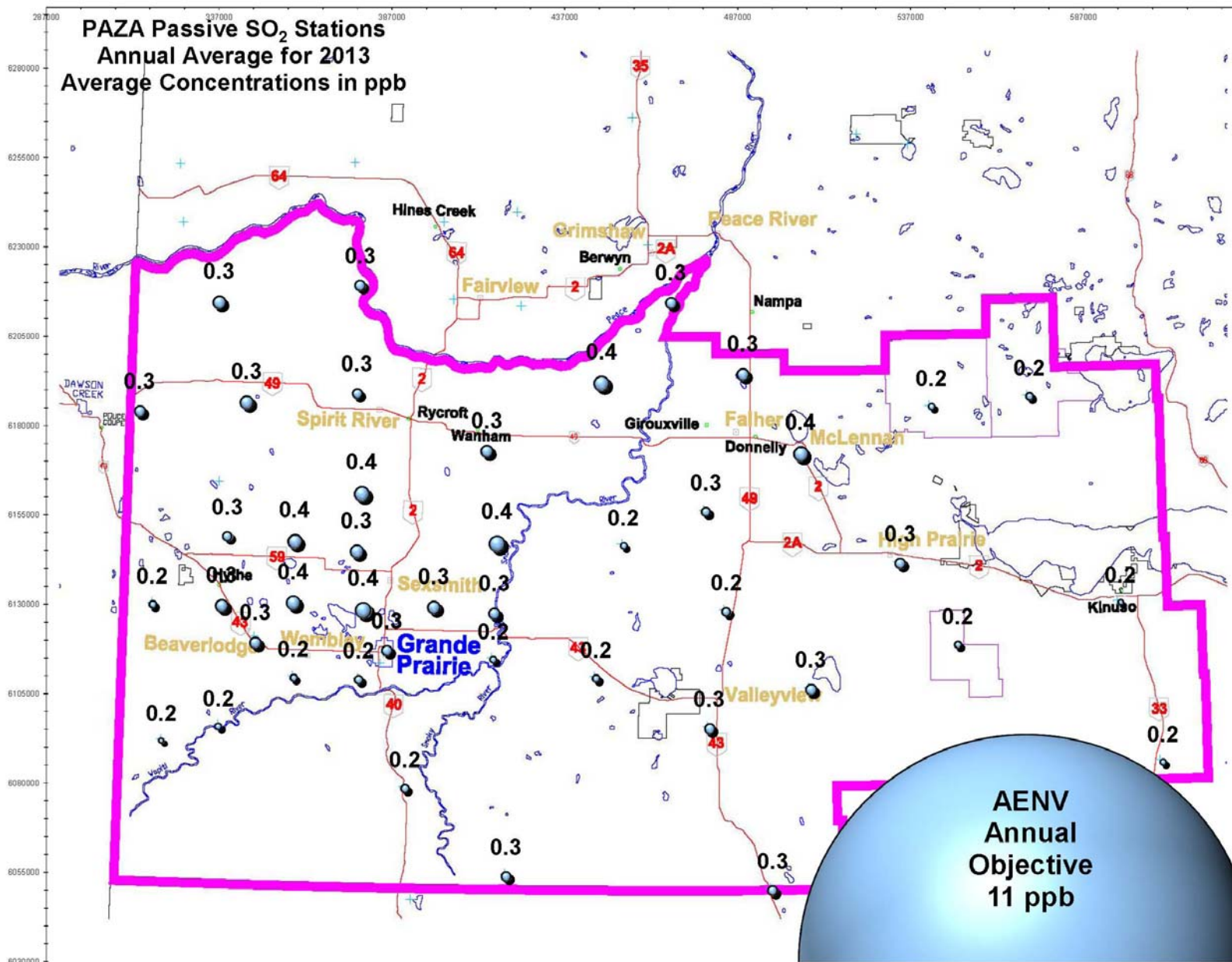


Figure 11. PAZA SO₂ Bubble Chart – 2013 Annual Average

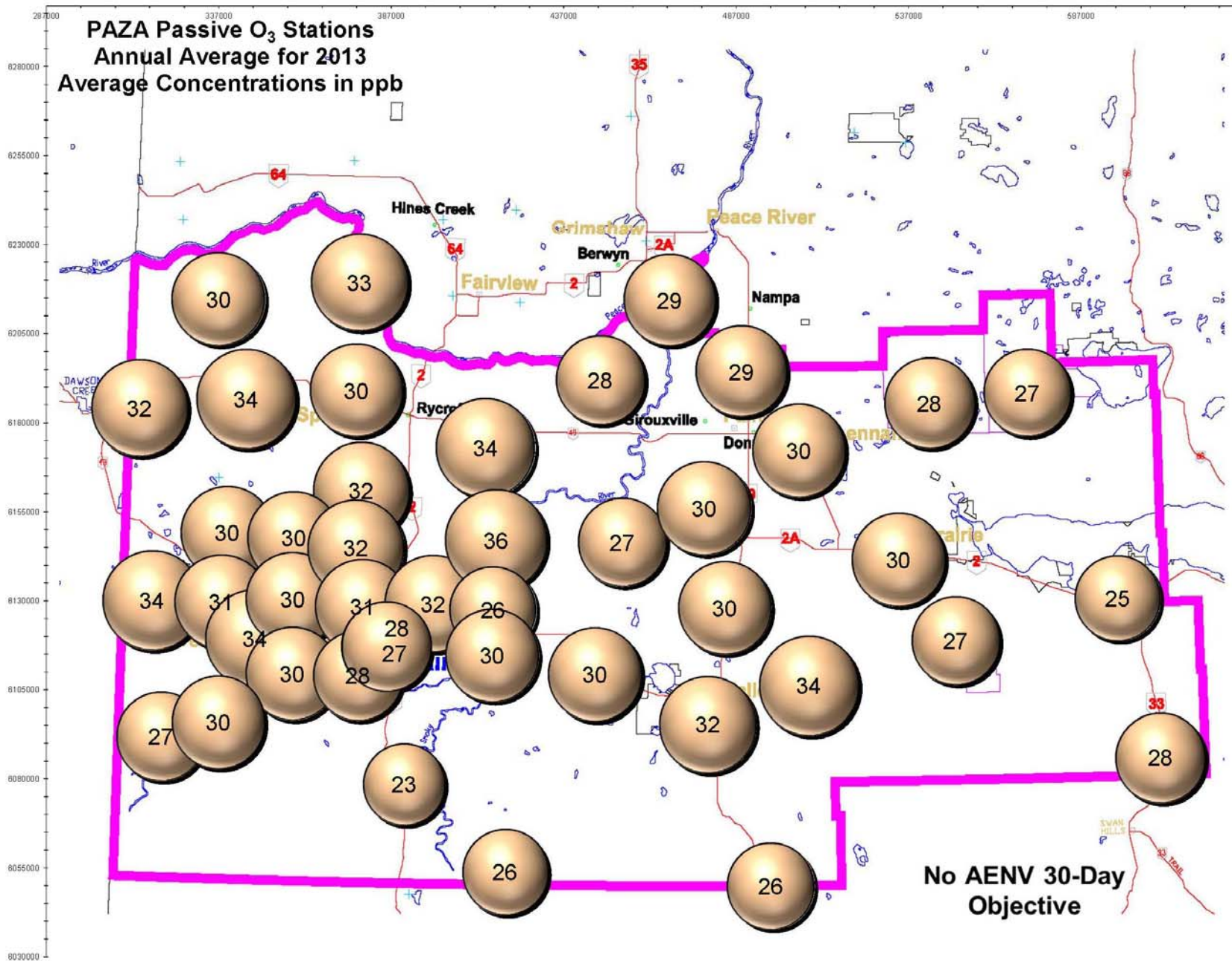


Figure 13. PAZA O₃ Bubble Chart – 2013 Annual Average

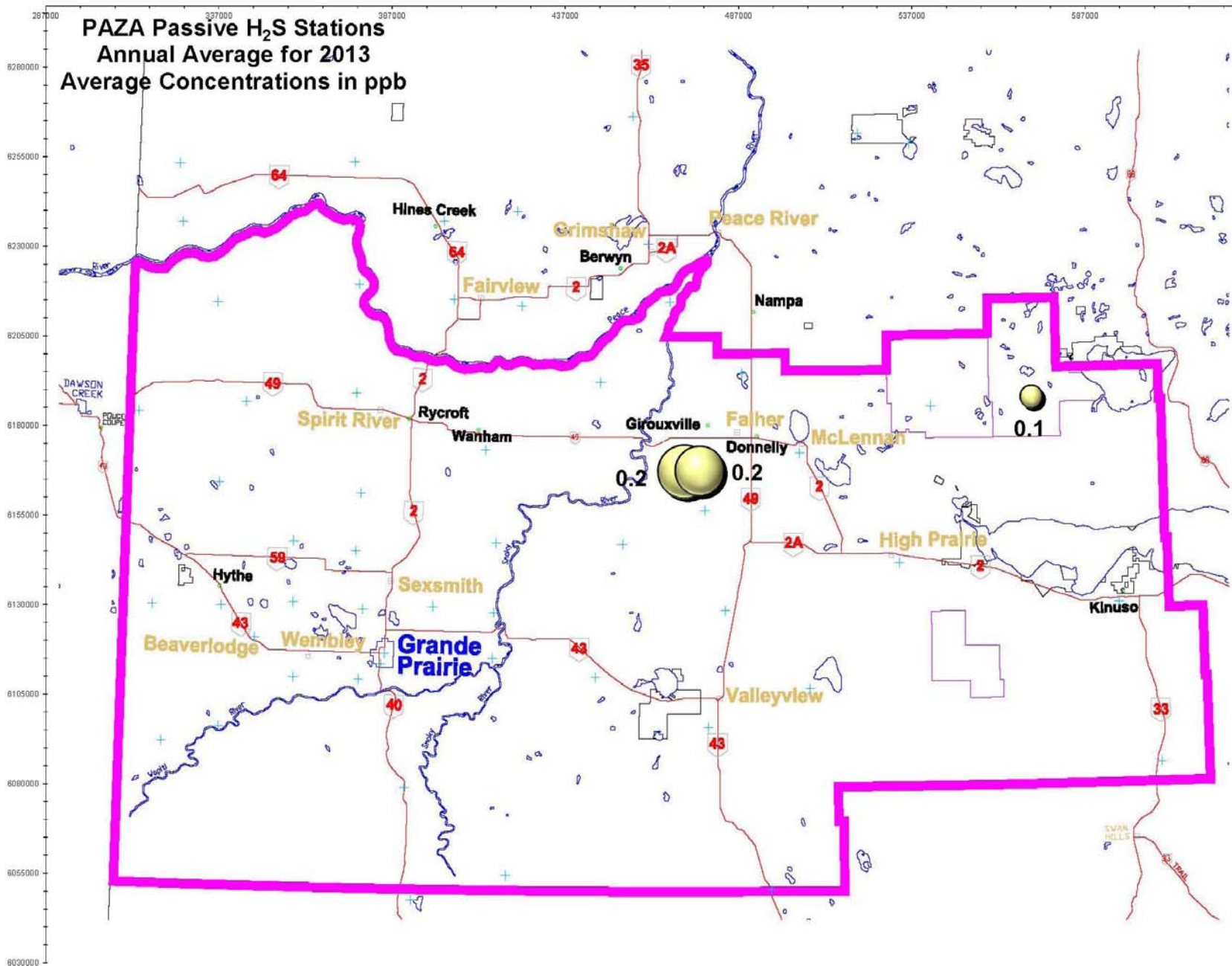


Figure 14. PAZA H₂S Bubble Chart – 2013 Annual Average