



# **Peace Airshed Zone Association**

## **Ambient Air Monitoring Network Summary**

**Continuous Ambient Air Quality Monitoring Program  
Annual Report  
2017**

**Operations**



# Peace Airshed Zone Association 2017 Annual Ambient Air Monitoring Report

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March 10<sup>th</sup>, 2018

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

**RE: Peace Airshed Zone Association (PAZA) – 2017 Annual Ambient Air Monitoring Report**

Please find enclosed for your review the Peace Airshed Zone Association (PAZA) 2017 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
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
	Progress/Gordondale	01-01-077-10-W6	00010036-02-00

<b>Company</b>	<b>Facility</b>	<b>LSD</b>	<b>EPEA Approval Number</b>
	Gold Creek	13-26-067-05-W6	00010446-02-00
	Teepee Creek	SE-2-074-04-W6	00001635-02-00
	Sturgeon/Valleyview	02-02-069-22-W5	1633-02-00
Canfor Forest Products	Grande Prairie	SW-23-071-06-W6	152645-01-00
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
Exshaw Oil Corporation	Spirit River	03-10-077-07-W6	344521-00-00
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
Suncor Energy Inc.	Progress	07-22-078-09-W6	00011428-02-00
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, Donnelly and a portable station. The portable station was located near the community of Rycroft and will be referred to as the Rycroft-Portable station in this report.

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 six (6) 1-hr averages and one (1) 24-hour average hydrogen sulphide above the AAAQO of 10 ppb and 3 ppb, respectively.

There were ninety-one (91) 1-hr averages and nineteen (19) 24-hour average of PM<sub>2.5</sub> above the Alberta Ambient Air Quality Guidelines (AAAQG) of 80 µg/m<sup>3</sup> and 30 µg/m<sup>3</sup>, respectively.

	Date	Time (Hour Ending)	Location	Recorded Concentration ( $\mu\text{g}/\text{m}^3$ )
One (1) 1-hr average PM <sub>2.5</sub>	2-Jan	4:00	Smoky Heights	156
One (1) 1-hr average PM <sub>2.5</sub>	5-Jan	7:00	Beaverlodge	105
One (1) 1-hr average PM <sub>2.5</sub>	15-Feb	0:00	Smoky Heights	177
One (1) 1-hr average PM <sub>2.5</sub>	6-Mar	0:00	Smoky Heights	81
One (1) 1-hr average PM <sub>2.5</sub>	21-Mar	0:00	Smoky Heights	197
One (1) 1-hr average PM <sub>2.5</sub>	22-Mar	1:00	Smoky Heights	91
One (1) 1-hr average PM <sub>2.5</sub>	19-Jul	7:00	Beaverlodge	93
One (1) 1-hr average PM <sub>2.5</sub>	19-Jul	8:00	Beaverlodge	96
One (1) 1-hr average PM <sub>2.5</sub>	19-Jul	9:00	Beaverlodge	86
One (1) 1-hr average PM <sub>2.5</sub>	19-Jul	10:00	Evergreen Park	90
One (1) 1-hr average PM <sub>2.5</sub>	19-Jul	11:00	Evergreen Park	89
One (1) 1-hr average PM <sub>2.5</sub>	19-Jul	6:00	Henry Pirker	101
One (1) 1-hr average PM <sub>2.5</sub>	19-Jul	7:00	Henry Pirker	97
One (1) 1-hr average PM <sub>2.5</sub>	19-Jul	8:00	Henry Pirker	87
One (1) 1-hr average PM <sub>2.5</sub>	19-Jul	9:00	Henry Pirker	98
One (1) 1-hr average PM <sub>2.5</sub>	19-Jul	10:00	Henry Pirker	99
One (1) 1-hr average PM <sub>2.5</sub>	19-Jul	10:00	Smoky Heights	91
One (1) 1-hr average PM <sub>2.5</sub>	19-Jul	11:00	Smoky Heights	93
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	7:00	Henry Pirker	86
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	8:00	Henry Pirker	297
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	9:00	Henry Pirker	448
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	10:00	Henry Pirker	448
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	11:00	Henry Pirker	395
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	12:00	Henry Pirker	370
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	13:00	Henry Pirker	417
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	14:00	Henry Pirker	373
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	15:00	Henry Pirker	314
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	16:00	Henry Pirker	188
One (1) 1-hr average PM <sub>2.5</sub>	18-Aug	8:00	Henry Pirker	98
One (1) 1-hr average PM <sub>2.5</sub>	18-Aug	9:00	Henry Pirker	102
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	8:00	Evergreen Park	89
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	9:00	Evergreen Park	394
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	10:00	Evergreen Park	346
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	11:00	Evergreen Park	189

	Date	Time (Hour Ending)	Location	Recorded Concentration ( $\mu\text{g}/\text{m}^3$ )
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	12:00	Evergreen Park	152
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	13:00	Evergreen Park	155
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	14:00	Evergreen Park	130
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	15:00	Evergreen Park	108
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	16:00	Evergreen Park	89
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	9:00	Portable Rycroft	311
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	10:00	Portable Rycroft	267
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	11:00	Portable Rycroft	224
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	12:00	Portable Rycroft	136
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	15:00	Portable Rycroft	137
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	16:00	Portable Rycroft	158
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	17:00	Portable Rycroft	131
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	18:00	Portable Rycroft	106
One (1) 1-hr average PM <sub>2.5</sub>	18-Aug	1:00	Portable Rycroft	105
One (1) 1-hr average PM <sub>2.5</sub>	18-Aug	2:00	Portable Rycroft	104
One (1) 1-hr average PM <sub>2.5</sub>	18-Aug	3:00	Portable Rycroft	96
One (1) 1-hr average PM <sub>2.5</sub>	18-Aug	4:00	Portable Rycroft	84
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	6:00	Beaverlodge	416
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	7:00	Beaverlodge	661
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	8:00	Beaverlodge	784
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	9:00	Beaverlodge	728
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	10:00	Beaverlodge	495
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	11:00	Beaverlodge	401
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	12:00	Beaverlodge	363
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	13:00	Beaverlodge	332
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	14:00	Beaverlodge	272
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	15:00	Beaverlodge	192
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	16:00	Beaverlodge	97



	Date	Time (Hour Ending)	Location	Recorded Concentration ( $\mu\text{g}/\text{m}^3$ )
One (1) 1-hr average PM <sub>2.5</sub>	18-Aug	4:00	Beaverlodge	87
One (1) 1-hr average PM <sub>2.5</sub>	18-Aug	5:00	Beaverlodge	84
One (1) 1-hr average PM <sub>2.5</sub>	18-Aug	6:00	Beaverlodge	87
One (1) 1-hr average PM <sub>2.5</sub>	18-Aug	7:00	Beaverlodge	82
One (1) 1-hr average PM <sub>2.5</sub>	30-Aug	15:00	Beaverlodge	107
One (1) 1-hr average PM <sub>2.5</sub>	30-Aug	16:00	Beaverlodge	115
One (1) 1-hr average PM <sub>2.5</sub>	30-Aug	17:00	Beaverlodge	103
One (1) 1-hr average PM <sub>2.5</sub>	30-Aug	18:00	Beaverlodge	90
One (1) 1-hr average PM <sub>2.5</sub>	10-Aug	1:00	Smoky Heights	91
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	10:00	Smoky Heights	683
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	11:00	Smoky Heights	788
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	12:00	Smoky Heights	391
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	13:00	Smoky Heights	300
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	14:00	Smoky Heights	224
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	15:00	Smoky Heights	321
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	16:00	Smoky Heights	294
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	17:00	Smoky Heights	290
One (1) 1-hr average PM <sub>2.5</sub>	13-Aug	18:00	Smoky Heights	174
One (1) 1-hr average PM <sub>2.5</sub>	18-Aug	9:00	Smoky Heights	90
One (1) 1-hr average PM <sub>2.5</sub>	7-Sep	16:00	Beaverlodge	94
One (1) 1-hr average PM <sub>2.5</sub>	7-Sep	17:00	Beaverlodge	92
One (1) 1-hr average PM <sub>2.5</sub>	7-Sep	22:00	Henry Pirker	82
One (1) 1-hr average PM <sub>2.5</sub>	7-Sep	23:00	Henry Pirker	93
One (1) 1-hr average PM <sub>2.5</sub>	8-Sep	0:00	Henry Pirker	87
One (1) 1-hr average PM <sub>2.5</sub>	6-Nov	0:00	Evergreen Park	129
One (1) 1-hr average PM <sub>2.5</sub>	7-Nov	18:00	Evergreen Park	99
One (1) 1-hr average PM <sub>2.5</sub>	8-Nov	0:00	Evergreen Park	110
One (1) 1-hr average PM <sub>2.5</sub>	7-Nov	9:00	Smoky Heights	123
One (1) 1-hr average PM <sub>2.5</sub>	21-Nov	1:00	Smoky Heights	95

	Date	Time (Hour Ending)	Location	Recorded Concentration (ppb)
One (1) 1-hr average H <sub>2</sub> S	15-Mar	23:00	Valleyview	37
One (1) 1-hr average H <sub>2</sub> S	16-Mar	0:00	Valleyview	12
One (1) 1-hr average H <sub>2</sub> S	16-Mar	2:00	Valleyview	15
One (1) 1-hr average H <sub>2</sub> S	16-Mar	3:00	Valleyview	30
One (1) 1-hr average H <sub>2</sub> S	24-Mar	9:00	Valleyview	11
One (1) 1-hr average H <sub>2</sub> S	15-Jul	2:00	Valleyview	13

	Date	Location	Recorded Concentration (µg/m <sup>3</sup> )
One (1) 24-hr average PM <sub>2.5</sub>	19-Jul	Beaverlodge	37.6
One (1) 24-hr average PM <sub>2.5</sub>	19-Jul	Evergreen Park	37.4
One (1) 24-hr average PM <sub>2.5</sub>	19-Jul	Henry Pirker	49.6
One (1) 24-hr average PM <sub>2.5</sub>	13-Aug	Henry Pirker	148.2
One (1) 24-hr average PM <sub>2.5</sub>	13-Aug	Evergreen Park	75.1
One (1) 24-hr average PM <sub>2.5</sub>	13-Aug	Portable Rycroft	72.2
One (1) 24-hr average PM <sub>2.5</sub>	18-Aug	Portable Rycroft	30.8
One (1) 24-hr average PM <sub>2.5</sub>	13-Aug	Beaverlodge	204.8
One (1) 24-hr average PM <sub>2.5</sub>	30-Aug	Beaverlodge	34.6
One (1) 24-hr average PM <sub>2.5</sub>	13-Aug	Smoky Heights	173.3
One (1) 24-hr average PM <sub>2.5</sub>	7-Sep	Beaverlodge	46.7
One (1) 24-hr average PM <sub>2.5</sub>	7-Sep	Henry Pirker	46.0
One (1) 24-hr average PM <sub>2.5</sub>	7-Sep	Evergreen Park	32.1
One (1) 24-hr average PM <sub>2.5</sub>	7-Sep	Smoky Heights	30.2
One (1) 24-hr average PM <sub>2.5</sub>	9-Nov	Smoky Heights	34.9
One (1) 24-hr average PM <sub>2.5</sub>	9-Nov	Beaverlodge	36.5
One (1) 24-hr average PM <sub>2.5</sub>	22-Nov	Beaverlodge	34.6
One (1) 24-hr average PM <sub>2.5</sub>	9-Nov	Henry Pirker	37.1
One (1) 24-hr average PM <sub>2.5</sub>	22-Nov	Henry Pirker	32.5
	Date	Location	Recorded Concentration (ppb)
One (1) 24-hr average H <sub>2</sub> S	7-Oct	Valleyview	4.1

The passive monitoring network was restructured in February 2017 as per recommendation from our network assessment performed in 2013 to consist of twenty-six (26) sampling locations. The parameters measured at each site are sulphur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>) and/or hydrogen sulphide (H<sub>2</sub>S). 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,



Patrick Andersen, B.Sc.  
Program Manager

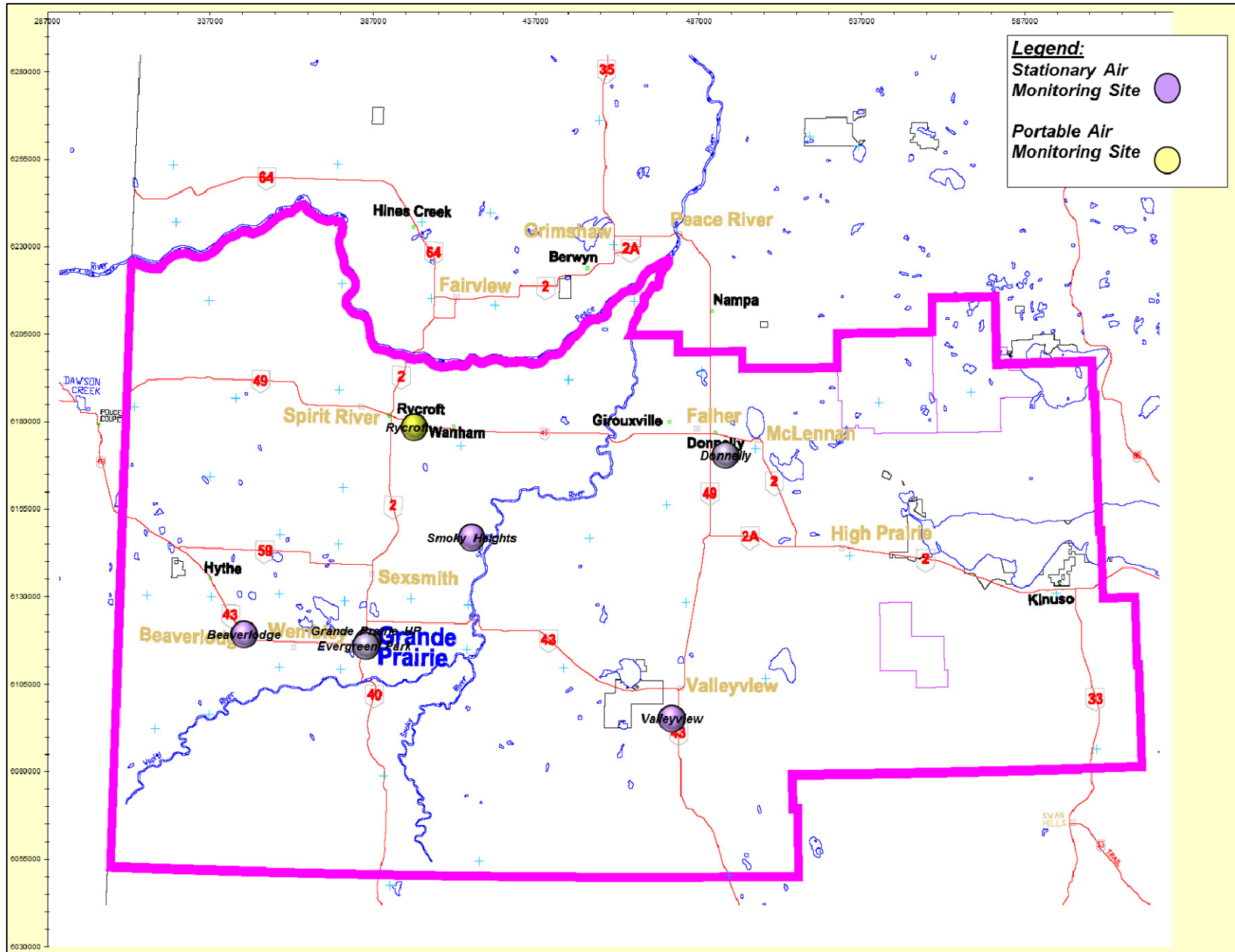


Figure 1. Peace Airshed Zone Association – Continuous Air Monitoring Network

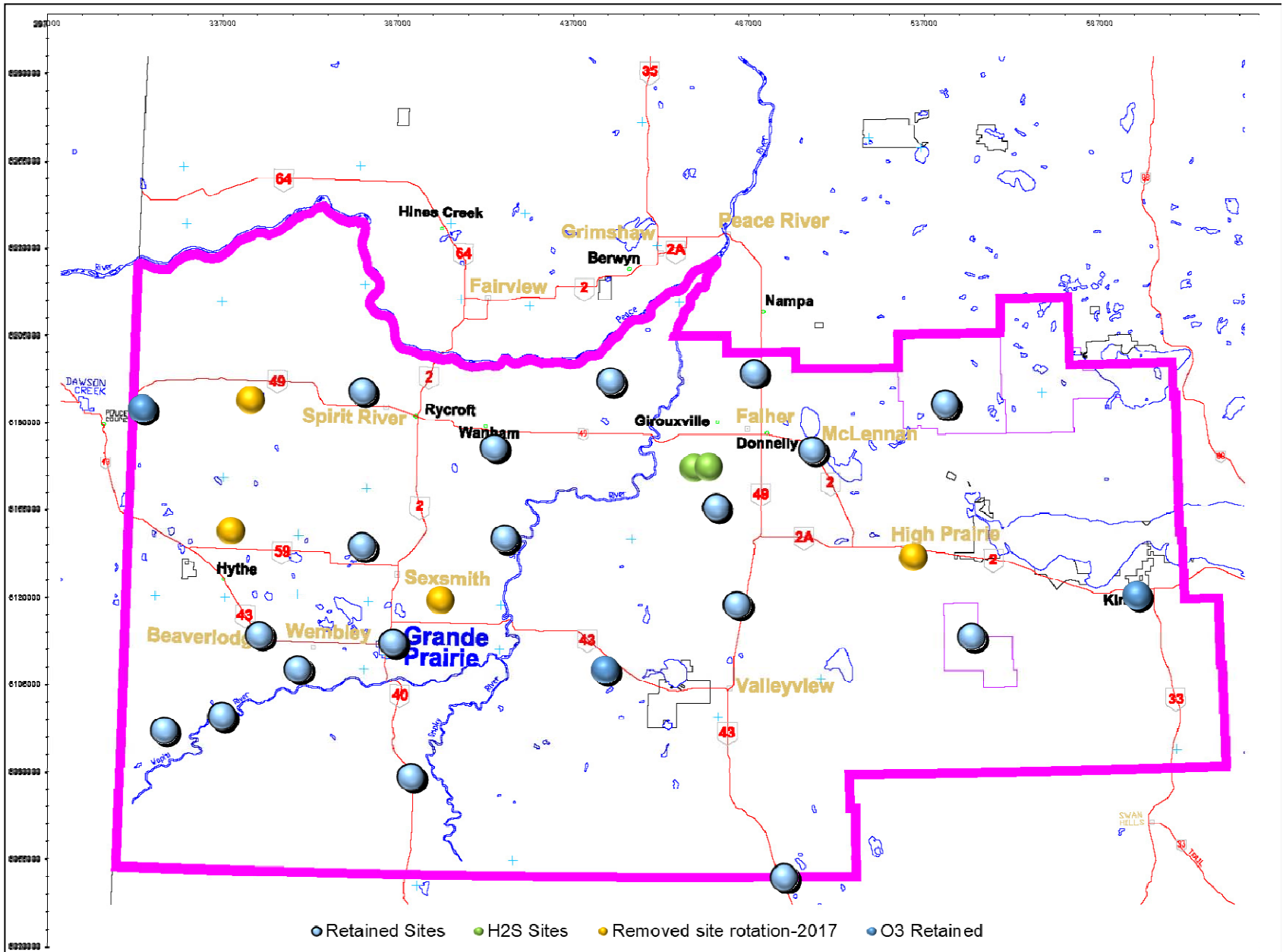


Figure 2. Peace Airshed Zone Association – Passive Air Monitoring Network

**PAZA**

**HENRY PIRKER**

**CONTINUOUS AMBIENT AIR MONITORING STATION**

**2017**

**ANNUAL SUMMARY TABLES**

**Table 1. Henry Pirker - Key Parameters – Continuous Monitoring Data – 2017 Summary**

Parameter	Monitoring Station	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO	
			24-hr	Date	1-hr	Date		24-hr	1-hr
<b>Sulphur Dioxide SO<sub>2</sub> measured in ppb</b>	Henry Pirker	0.25	2.64	Dec 31	11.69	Jun 17 07:00	100.0	0	0
<b>Nitrogen Dioxide NO<sub>2</sub> measured in ppb</b>	Henry Pirker	9.61	40.82	Nov 28	62.27	Dec 07 20:00	100.0	-	0
<b>Ozone O<sub>3</sub> measured in ppb</b>	Henry Pirker	24.06	48.23	Jun 08	71.81	Sep 06 16:00	100.0	-	0
<b>Carbon Monoxide CO measured in ppm</b>	Henry Pirker	0.21	0.70	Jan 12	1.77	Jan 12 11:00	99.9	-	0
<b>Total Hydrocarbons THC measured in ppm</b>	Henry Pirker	2.00	2.50	Jan 25	5.36	Dec 22 08:00	97.2	-	-
<b>Total Reduced Sulphur TRS measured in ppb</b>	Henry Pirker	0.22	0.83	Jan 18	2.73	Jan 18 11:00	100.0	-	-
<b>Particulate Matter PM<sub>2.5</sub> measured in µg/m<sup>3</sup></b>	Henry Pirker	6.69	148.23	Aug 13	448.36	Aug 13 09:00	99.9	5	22

**Table 2. Sulphur Dioxide (SO<sub>2</sub>) – Henry Pirker 2017 Summary and Frequency Distribution**

Henry Pirker		SO <sub>2</sub> (ppb)										2017			
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	0.23	0.91	Jan 06	3.83	Jan 06 19:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
February	640	0.31	0.81	Feb 20	3.93	Feb 08 13:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	707	0.37	1.00	Mar 12	3.12	Mar 07 23:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	684	0.10	0.26	Apr 15	3.20	Apr 09 10:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	708	0.19	1.27	May 26	7.07	May 26 08:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	684	0.23	1.73	Jun 17	11.69	Jun 17 07:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	709	0.16	0.63	Jul 01	4.25	Jul 29 12:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	706	0.22	1.23	Aug 25	6.90	Aug 25 22:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	687	0.17	0.42	Sep 13	2.94	Sep 04 12:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	708	0.18	0.72	Oct 15	3.63	Oct 15 07:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	685	0.40	1.04	Nov 27	3.22	Nov 27 15:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	709	0.46	2.64	Dec 31	8.18	Dec 31 20:00	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
<b>Annual</b>	<b>8335</b>	<b>0.25</b>	<b>2.64</b>	<b>Dec 31</b>	<b>11.69</b>	<b>Jun 17 07:00</b>	<b>100.0</b>	<b>0</b>	<b>0</b>	<b>100.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**Table 3. Nitrogen Dioxide (NO<sub>2</sub>) – Henry Pirker 2017 Summary and Frequency Distribution**

Henry Pirker		NO <sub>2</sub> (ppb)										2017			
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	15.45	30.99	Jan 18	52.02	Jan 18 11:00	100.0	0	0	77.48	22.24	0.28	0.00	0.00	
February	639	16.69	31.17	Feb 14	51.07	Feb 08 20:00	100.0	0	0	71.67	28.17	0.16	0.00	0.00	
March	703	11.96	23.40	Mar 13	46.04	Mar 23 23:00	100.0	0	0	86.63	13.37	0.00	0.00	0.00	
April	683	5.04	10.25	Apr 25	33.63	Apr 25 02:00	100.0	0	0	98.54	1.46	0.00	0.00	0.00	
May	703	3.64	9.36	May 03	26.70	May 03 08:00	100.0	0	0	99.86	0.14	0.00	0.00	0.00	
June	683	4.40	7.79	Jun 06	21.51	Jun 06 01:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	
July	707	4.57	9.35	Jul 20	18.41	Jul 20 02:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	
August	703	4.92	8.87	Aug 30	20.55	Aug 21 05:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	
September	686	6.81	12.95	Sep 07	25.43	Sep 05 23:00	100.0	0	0	99.85	0.15	0.00	0.00	0.00	
October	707	7.89	17.27	Oct 19	33.29	Oct 04 20:00	100.0	0	0	97.17	2.83	0.00	0.00	0.00	
November	684	16.76	40.82	Nov 28	53.32	Nov 28 02:00	100.0	0	0	71.49	28.07	0.44	0.00	0.00	
December	707	17.22	37.72	Dec 02	62.27	Dec 07 20:00	99.7	0	0	70.58	28.57	0.85	0.00	0.00	
<b>Annual</b>	<b>8311</b>	<b>9.61</b>	<b>40.82</b>	<b>Nov 28</b>	<b>62.27</b>	<b>Dec 07 20:00</b>	<b>100.0</b>	<b>0</b>	<b>0</b>	<b>89.44</b>	<b>10.42</b>	<b>0.14</b>	<b>0.00</b>	<b>0.00</b>	



**Table 4. Ozone (O<sub>3</sub>) – Henry Pirker 2017 Summary and Frequency Distribution**

Henry Pirker O <sub>3</sub> (ppb) 2017															
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	707	20.31	37.95	Jan 30	42.31	Jan 15 02:00	100.0	0	0	14.14	14.00	15.70	53.75	2.40	0.00
February	640	21.40	41.46	Feb 11	45.12	Feb 12 17:00	100.0	0	0	10.31	16.25	17.34	47.50	8.59	0.00
March	708	28.10	36.95	Mar 30	48.43	Mar 23 16:00	100.0	0	0	4.24	6.92	9.89	69.92	9.04	0.00
April	686	32.07	39.81	Apr 03	50.01	Apr 04 17:00	100.0	0	0	1.17	3.06	7.00	70.26	18.51	0.00
May	708	32.70	47.36	May 10	64.03	May 30 13:00	100.0	0	0	0.00	1.27	14.83	55.37	28.53	0.00
June	687	28.33	48.23	Jun 08	60.62	Jun 08 17:00	100.0	0	0	1.02	6.11	14.70	63.61	14.56	0.00
July	708	24.98	37.38	Jul 07	55.04	Jul 07 23:00	100.0	0	0	0.28	5.65	26.98	58.05	9.04	0.00
August	708	23.04	32.42	Aug 31	56.96	Aug 10 13:00	100.0	0	0	0.71	12.85	26.27	53.25	6.92	0.00
September	686	20.07	35.49	Sep 30	71.81	Sep 06 16:00	100.0	0	0	4.96	19.39	26.24	44.17	5.25	0.00
October	709	21.11	34.97	Oct 06	41.05	Oct 06 14:00	100.0	0	0	7.19	11.14	20.59	60.51	0.56	0.00
November	686	15.61	28.82	Nov 02	37.30	Nov 25 06:00	100.0	0	0	16.62	18.08	26.24	39.07	0.00	0.00
December	707	21.05	34.86	Dec 23	40.03	Dec 07 13:00	99.7	0	0	17.11	10.75	10.75	61.10	0.28	0.00
<b>Annual</b>	<b>8340</b>	<b>24.06</b>	<b>48.23</b>	<b>Jun 08</b>	<b>71.81</b>	<b>Sep 06 16:00</b>	<b>100.0</b>	<b>0</b>	<b>0</b>	<b>6.48</b>	<b>10.46</b>	<b>18.04</b>	<b>56.38</b>	<b>8.64</b>	<b>0.00</b>

**Table 5. Carbon Monoxide (CO) – Henry Pirker 2017 Summary and Frequency Distribution**

Henry Pirker CO (ppm) 2017															
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	708	0.27	0.59	Jan 18	2.17	Jan 18 11:00	100.0	0	0	0.28	99.15	0.56	0.00	0.00	0.00
February	638	0.26	0.50	Feb 14	1.14	Feb 14 20:00	100.0	0	0	0.00	99.84	0.16	0.00	0.00	0.00
March	707	0.25	0.38	Mar 28	1.19	Mar 29 08:00	100.0	0	0	0.00	99.72	0.28	0.00	0.00	0.00
April	686	0.20	0.26	Apr 05	0.65	Apr 10 07:00	100.0	0	0	0.00	100.00	0.00	0.00	0.00	0.00
May	706	0.16	0.21	May 03	0.38	May 03 08:00	100.0	0	0	0.28	99.72	0.00	0.00	0.00	0.00
June	686	0.14	0.16	Jun 07	0.37	Jul 01 00:00	100.0	0	0	0.15	99.85	0.00	0.00	0.00	0.00
July	709	0.17	0.37	Jul 19	0.60	Jul 19 10:00	100.0	0	0	3.95	96.05	0.00	0.00	0.00	0.00
August	708	0.18	0.93	Aug 13	3.35	Aug 13 09:00	100.0	0	0	3.67	95.20	0.85	0.28	0.00	0.00
September	684	0.20	0.38	Sep 07	0.98	Sep 27 22:00	100.0	0	0	0.00	100.00	0.00	0.00	0.00	0.00
October	710	0.19	0.30	Oct 04	1.03	Oct 04 21:00	100.0	0	0	0.00	99.86	0.14	0.00	0.00	0.00
November	684	0.29	0.72	Nov 28	1.59	Nov 27 23:00	100.0	0	0	0.00	98.39	1.61	0.00	0.00	0.00
December	706	0.28	0.63	Dec 02	1.94	Dec 10 00:00	99.7	0	0	0.57	97.45	1.98	0.00	0.00	0.00
<b>Annual</b>	<b>8354</b>	<b>0.21</b>	<b>0.70</b>	<b>Jan 12</b>	<b>1.77</b>	<b>Jan 12 11:00</b>	<b>99.9</b>	<b>0</b>	<b>0</b>	<b>1.70</b>	<b>97.94</b>	<b>0.36</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**Table 6. Total Hydrocarbons (THC) – Henry Pirker 2017 Summary and Frequency Distribution**

Henry Pirker															THC (ppm)		2017	
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	695	2.10	2.50	Jan 25	2.96	Jan 03 21:00	98.5	0	0	0.00	31.94	63.45	4.60	0.00	0.00			
February	617	2.10	2.38	Feb 14	4.01	Feb 25 07:00	96.4	0	0	0.00	36.14	61.43	2.43	0.00	0.00			
March	706	2.10	2.28	Mar 31	3.55	Mar 31 10:00	100.0	0	0	0.00	15.44	83.00	1.56	0.00	0.00			
April	653	2.05	2.36	Apr 01	4.14	Apr 01 07:00	95.1	0	0	0.00	30.47	67.53	1.99	0.00	0.00			
May	578	1.98	2.11	May 03	2.71	May 08 06:00	82.3	0	0	0.00	73.70	25.78	0.52	0.00	0.00			
June	650	2.17	2.29	Jun 19	2.74	Jun 05 01:00	94.9	0	0	0.00	0.00	97.38	2.62	0.00	0.00			
July	706	1.99	2.23	Jul 01	2.86	Jul 26 04:00	99.7	0	0	0.00	62.04	36.26	1.70	0.00	0.00			
August	706	1.89	2.19	Aug 03	3.63	Aug 03 01:00	100.0	0	0	0.00	85.55	12.89	1.56	0.00	0.00			
September	685	1.90	2.24	Sep 07	4.19	Sep 08 03:00	100.0	0	0	0.00	77.23	20.88	1.90	0.00	0.00			
October	708	1.94	2.23	Oct 30	3.93	Oct 29 23:00	100.0	0	0	0.00	82.20	15.40	2.40	0.00	0.00			
November	685	1.95	2.46	Nov 06	3.64	Nov 06 04:00	100.0	0	0	0.00	68.18	30.36	1.46	0.00	0.00			
December	705	1.83	2.16	Dec 02	5.36	Dec 22 08:00	99.6	0	0	0.00	83.12	16.31	0.43	0.14	0.00			
<b>Annual</b>	<b>8094</b>	<b>2.00</b>	<b>2.50</b>	<b>Jan 25</b>	<b>5.36</b>	<b>Dec 22 08:00</b>	<b>97.2</b>	<b>0</b>	<b>0</b>	<b>0.00</b>	<b>53.83</b>	<b>44.22</b>	<b>1.93</b>	<b>0.01</b>	<b>0.00</b>			

\*No Alberta Environment Objectives or Guidelines for THC

**Table 7. Total Reduced Sulphur (TRS) – Henry Pirker 2017 Summary and Frequency Distribution**

Henry Pirker															TRS (ppb)		2017	
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	0.33	0.83	Jan 18	2.73	Jan 18 11:00	100.0	0	0	98.31	1.55	0.14	0.00	0.00	0.00			
February	639	0.36	0.69	Feb 14	1.17	Feb 14 20:00	100.0	0	0	99.37	0.63	0.00	0.00	0.00	0.00			
March	699	0.31	0.52	Mar 13	1.38	Mar 30 20:00	99.9	0	0	99.86	0.14	0.00	0.00	0.00	0.00			
April	685	0.16	0.29	Apr 05	0.77	Apr 27 03:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00			
May	708	0.22	0.36	May 31	0.78	May 08 08:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00			
June	684	0.15	0.30	Jun 01	0.74	Jun 19 07:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00			
July	704	0.11	0.32	Jul 31	0.98	Jul 31 09:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00			
August	708	0.16	0.36	Aug 07	0.73	Aug 08 00:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00			
September	686	0.20	0.37	Sep 07	1.54	Sep 07 01:00	100.0	0	0	99.13	0.87	0.00	0.00	0.00	0.00			
October	708	0.14	0.30	Oct 04	1.78	Oct 24 03:00	100.0	0	0	99.72	0.28	0.00	0.00	0.00	0.00			
November	685	0.28	0.76	Nov 28	1.28	Nov 28 18:00	100.0	0	0	99.12	0.88	0.00	0.00	0.00	0.00			
December	707	0.18	0.41	Dec 02	1.10	Dec 10 00:00	99.7	0	0	99.86	0.14	0.00	0.00	0.00	0.00			
<b>Annual</b>	<b>8321</b>	<b>0.22</b>	<b>0.83</b>	<b>Jan 18</b>	<b>2.73</b>	<b>Jan 18 11:00</b>	<b>100.0</b>	<b>0</b>	<b>0</b>	<b>99.61</b>	<b>0.37</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>			

\*No Alberta Environment Objectives or Guidelines for TRS

**Table 8. Particulate Matter (PM<sub>2.5</sub>) – Henry Pirker 2017 Summary and Frequency Distribution**

Henry Pirker		PM <sub>2.5</sub> (µg/m <sup>3</sup> )										2017			
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	744	6.74	24.29	Jan 24	42.42	Jan 12 01:00	100.0	0	0	27.15	37.63	15.19	8.47	10.75	0.81
February	672	5.34	11.44	Feb 14	51.96	Feb 06 19:00	100.0	0	0	21.88	47.02	21.88	6.70	1.93	0.60
March	742	4.60	8.34	Mar 28	26.18	Mar 05 02:00	100.0	0	0	10.92	70.08	13.75	4.58	0.67	0.00
April	720	3.13	6.52	Apr 28	28.97	Apr 26 07:00	100.0	0	0	29.86	63.47	5.00	1.53	0.14	0.00
May	729	4.49	17.33	May 30	53.08	May 30 10:00	98.9	0	0	33.33	44.03	15.50	4.94	1.51	0.69
June	716	5.70	30.27	Jun 03	153.76	Jun 03 08:00	100.0	0	2	25.70	40.36	27.51	3.35	1.96	1.12
July	744	10.83	49.61	Jul 19	100.79	Jul 19 06:00	100.0	1	5	21.64	24.46	17.88	14.92	15.46	5.65
August	744	12.24	148.23	Aug 13	448.36	Aug 13 09:00	100.0	1	12	20.97	33.60	22.45	13.98	4.97	4.03
September	720	7.76	46.00	Sep 07	92.52	Sep 07 23:00	100.0	1	3	22.64	37.36	22.22	8.47	6.11	3.19
October	740	4.13	15.74	Oct 04	53.95	Oct 04 23:00	100.0	0	0	32.16	50.68	10.68	4.86	1.08	0.54
November	720	10.30	37.10	Nov 09	61.56	Nov 22 02:00	100.0	2	0	20.42	23.33	22.64	14.58	13.47	5.56
December	742	5.05	14.61	Dec 02	30.53	Dec 02 20:00	99.7	0	0	32.48	40.16	14.15	9.03	4.04	0.13
<b>Annual</b>	<b>8733</b>	<b>6.693</b>	<b>148.23</b>	<b>Aug 13</b>	<b>448.365</b>	<b>Aug 13 09:00</b>	<b>99.9</b>	<b>5</b>	<b>22</b>	<b>24.93</b>	<b>42.68</b>	<b>17.40</b>	<b>7.95</b>	<b>5.17</b>	<b>1.86</b>

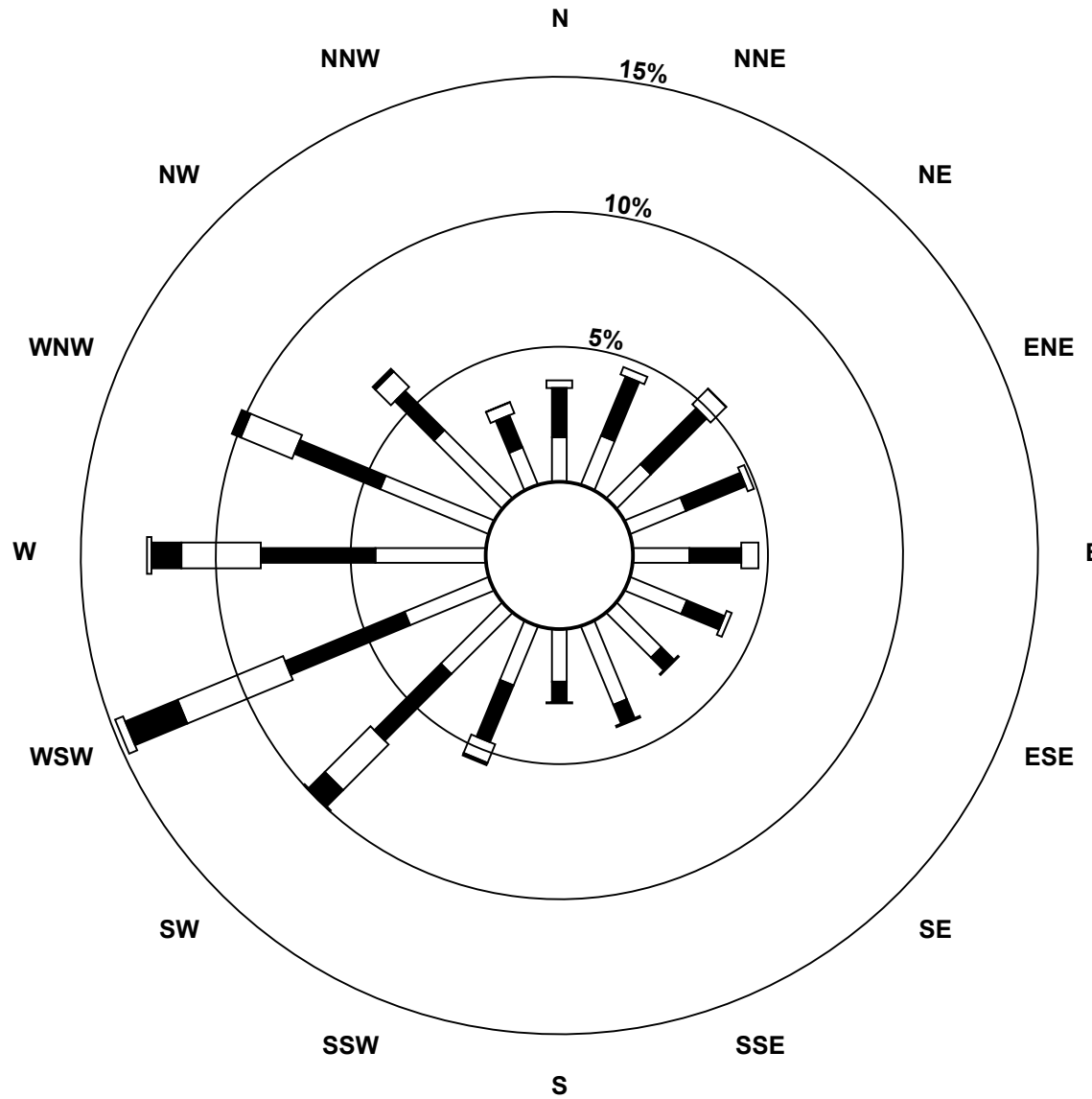
**Table 9. Wind Speed and Wind Direction Frequency Distribution – Henry Pirker 2017 Summary**

<b>Henry Pirker</b>								<b>2017</b>
<b>Direction</b>	<b># of Readings</b>	<b>% of wind speed (km/hr)</b>						<b>Totals</b>
		<b>0 - 5</b>	<b>6 - 11</b>	<b>12 - 19</b>	<b>20 - 28</b>	<b>29 - 38</b>	<b>&gt; 38</b>	
<b>N</b>	319	1.65	1.83	0.28	0.00	0.00	0.00	3.76
<b>NNE</b>	393	1.97	2.37	0.29	0.00	0.00	0.00	4.63
<b>NE</b>	470	1.79	2.92	0.81	0.01	0.00	0.00	5.54
<b>ENE</b>	414	2.24	2.39	0.25	0.00	0.00	0.00	4.88
<b>E</b>	394	2.09	1.92	0.64	0.00	0.00	0.00	4.64
<b>ESE</b>	338	2.27	1.51	0.20	0.00	0.00	0.00	3.98
<b>SE</b>	259	2.35	0.66	0.05	0.00	0.00	0.00	3.05
<b>SSE</b>	336	3.15	0.75	0.06	0.00	0.00	0.00	3.96
<b>S</b>	233	1.94	0.77	0.04	0.00	0.00	0.00	2.75
<b>SSW</b>	465	2.37	2.27	0.74	0.09	0.00	0.00	5.48
<b>SW</b>	846	3.21	3.49	2.39	0.85	0.04	0.00	9.97
<b>WSW</b>	1256	3.37	4.78	4.23	2.10	0.32	0.00	14.80
<b>WSW</b>	1065	4.09	4.24	2.95	1.11	0.16	0.00	12.55
<b>WNW</b>	866	4.35	3.44	2.06	0.35	0.00	0.00	10.21
<b>NW</b>	558	3.57	2.05	0.81	0.14	0.00	0.00	6.58
<b>NNW</b>	274	1.50	1.28	0.44	0.01	0.00	0.00	3.23
<b>Totals</b>	<b>8486</b>	<b>41.89</b>	<b>36.68</b>	<b>16.24</b>	<b>4.67</b>	<b>0.52</b>	<b>0.00</b>	<b>100</b>

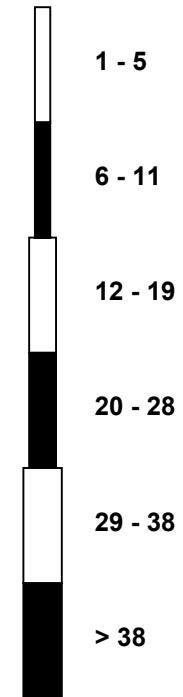
**Wind Rose**

**Wind Speed (WS) (km/h)**

**Henry Pirker - 2017**



**Wind Speed Classes (km/h)**



**PAZA**  
**EVERGREEN PARK**  
**CONTINUOUS AMBIENT AIR MONITORING STATION**

**2017**  
**ANNUAL SUMMARY TABLES**

**Table 10. Evergreen Park - Key Parameters – Continuous Monitoring Data – 2017 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 SO <sub>2</sub> measured in ppb	Evergreen Park	0.20	1.58	Jul 29	12.34	Jul 29 09:00	100.0	0	0
Total Reduced Sulphur TRS measured in ppb	Evergreen Park	0.29	0.96	Nov 22	3.35	Oct 22 21:00	99.7	-	-
Particulate Matter PM <sub>2.5</sub> measured in µg/m <sup>3</sup>	Evergreen Park	4.47	75.07	Aug 13	393.95	Aug 13 09:00	99.5	3	14

**Table 11. Sulphur Dioxide (SO<sub>2</sub>) – Evergreen Park 2017 Summary and Frequency Distribution**

Evergreen Park		SO <sub>2</sub> (ppb)										2017			
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	0.25	0.77	Jan 06	4.90	Jan 16 00:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
February	640	0.33	1.00	Feb 12	9.40	Feb 12 12:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	705	0.24	0.73	Mar 12	1.82	Mar 25 12:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	686	0.09	0.23	Apr 05	0.91	Apr 21 16:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	708	0.14	0.52	May 30	2.77	May 13 13:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	683	0.19	0.87	Jun 13	5.96	Jun 18 00:00	99.6	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	709	0.22	1.58	Jul 29	12.34	Jul 29 09:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	708	0.19	0.65	Aug 08	4.65	Aug 01 16:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	689	0.15	0.53	Sep 04	8.14	Sep 04 12:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	709	0.14	0.53	Oct 30	5.65	Oct 30 14:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	684	0.25	0.74	Nov 27	3.98	Nov 27 14:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	710	0.22	1.31	Dec 31	11.68	Dec 31 16:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
<b>Annual</b>	<b>8340</b>	<b>0.20</b>	<b>1.58</b>	<b>Jul 29</b>	<b>12.34</b>	<b>Jul 29 09:00</b>	<b>100.0</b>	<b>0</b>	<b>0</b>	<b>100.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**Table 12. Total Reduced Sulphur (TRS) – Evergreen Park 2017 Summary and Frequency Distribution**

Evergreen Park		TRS (ppb)										2017			
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	0.39	0.74	Jan 19	2.55	Jan 14 17:00	100.0	0	0	98.31	1.55	0.14	0.00	0.00	0.00
February	641	0.39	0.59	Feb 06	1.12	Feb 15 02:00	100.0	0	0	99.69	0.31	0.00	0.00	0.00	0.00
March	706	0.36	0.59	Mar 28	2.19	Mar 28 10:00	100.0	0	0	99.29	0.71	0.00	0.00	0.00	0.00
April	685	0.33	0.47	Apr 01	0.61	Apr 11 11:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	707	0.36	0.49	May 31	0.77	May 31 04:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	660	0.28	0.53	Jun 06	1.44	Jun 06 08:00	96.3	0	0	99.55	0.45	0.00	0.00	0.00	0.00
July	709	0.22	0.42	Jul 26	2.67	Jul 01 02:00	100.0	0	0	99.29	0.56	0.14	0.00	0.00	0.00
August	708	0.23	0.42	Aug 13	1.27	Aug 02 08:00	100.0	0	0	99.72	0.28	0.00	0.00	0.00	0.00
September	688	0.19	0.38	Sep 15	1.87	Sep 15 09:00	99.9	0	0	99.42	0.58	0.00	0.00	0.00	0.00
October	708	0.20	0.52	Oct 22	3.35	Oct 22 21:00	100.0	0	0	99.72	0.14	0.14	0.00	0.00	0.00
November	684	0.27	0.96	Nov 22	2.61	Nov 22 05:00	100.0	0	0	98.39	1.02	0.58	0.00	0.00	0.00
December	710	0.25	0.46	Dec 31	2.01	Dec 02 15:00	100.0	0	0	99.86	0.14	0.00	0.00	0.00	0.00
<b>Annual</b>	<b>8314</b>	<b>0.29</b>	<b>0.96</b>	<b>Nov 22</b>	<b>3.35</b>	<b>Oct 22 21:00</b>	<b>99.7</b>	<b>0</b>	<b>0</b>	<b>99.44</b>	<b>0.48</b>	<b>0.08</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

\*No Alberta Environment Objectives or Guidelines for TRS



**Table 13. Particulate Matter (PM<sub>2.5</sub>) – Evergreen Park 2017 Summary and Frequency Distribution**

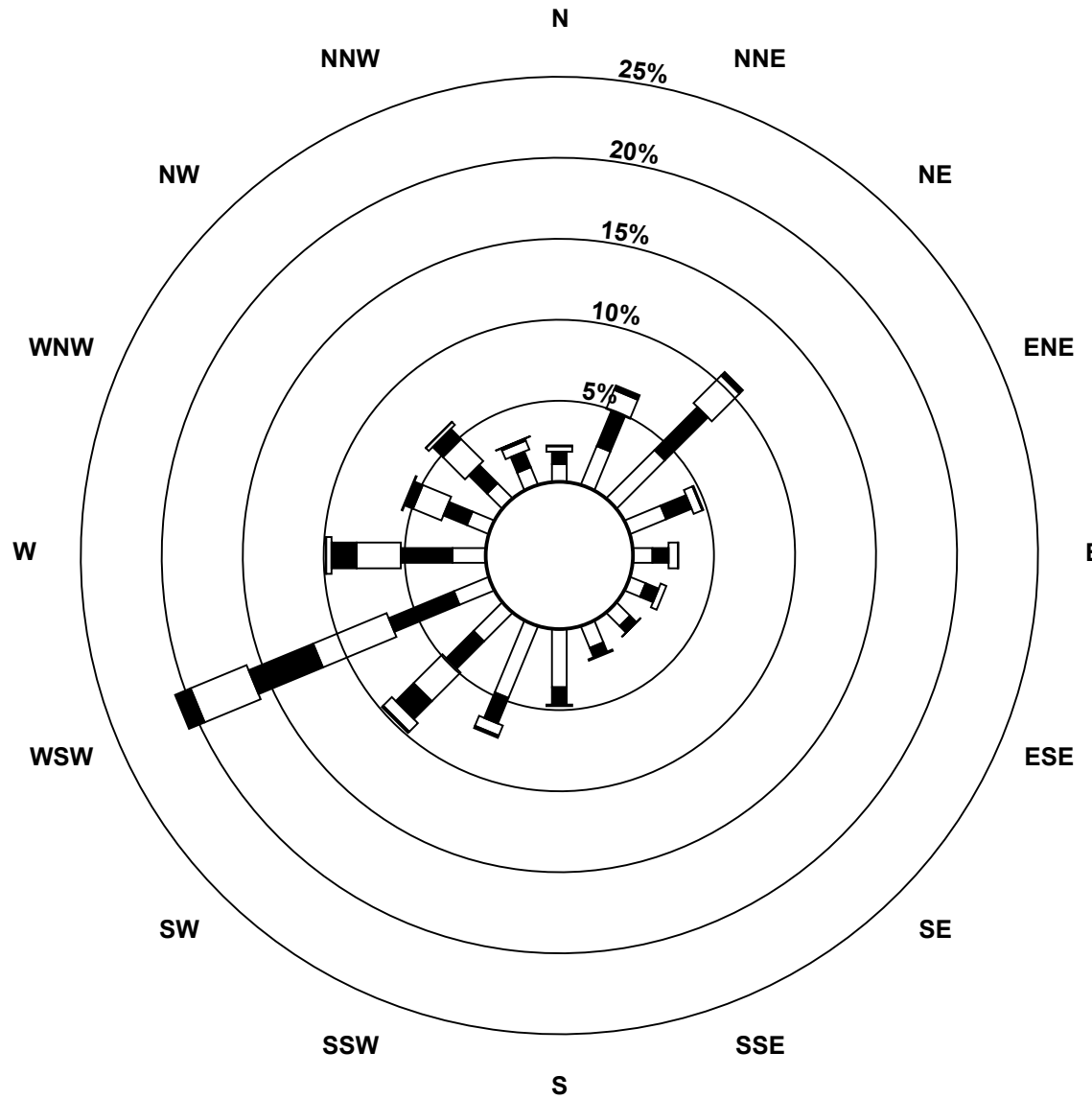
Evergreen Park		PM <sub>2.5</sub> (µg/m <sup>3</sup> )										2017				
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range						
								24-Hr	1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30	
January	743	3.97	18.89	Jan 24	27.21	Jan 24 13:00	99.9	0	0	50.07	27.73	11.57	6.59	4.04	0.00	
February	670	2.98	7.35	Feb 10	17.41	Feb 10 20:00	99.7	0	0	46.57	38.36	12.69	2.24	0.15	0.00	
March	737	2.51	5.99	Mar 13	18.33	Mar 13 15:00	100.0	0	0	42.61	51.83	5.02	0.41	0.14	0.00	
April	717	1.87	4.90	Apr 05	16.31	Apr 05 21:00	99.6	0	0	66.81	29.01	3.77	0.42	0.00	0.00	
May	743	3.44	11.01	May 30	47.35	Jun 01 00:00	99.9	0	0	41.86	43.88	11.17	1.88	0.94	0.27	
June	714	3.28	5.81	Jun 08	21.05	Jun 01 01:00	99.2	0	0	36.55	49.72	12.18	1.26	0.28	0.00	
July	741	9.15	37.44	Jul 19	89.66	Jul 19 10:00	99.6	1	2	23.35	26.45	18.22	16.06	12.28	3.64	
August	738	7.72	75.07	Aug 13	393.95	Aug 13 09:00	99.6	1	9	32.38	35.91	18.43	5.28	5.42	2.57	
September	702	5.31	32.05	Sep 07	64.26	Sep 08 00:00	97.5	1	0	37.61	36.75	12.11	7.69	3.70	2.14	
October	733	3.07	7.95	Oct 05	35.60	Oct 09 11:00	99.1	0	0	52.93	31.51	10.78	3.41	0.95	0.41	
November	720	7.42	22.30	Nov 09	129.45	Nov 06 00:00	100.0	0	3	30.56	27.78	21.11	9.86	7.92	2.78	
December	741	2.90	9.39	Dec 01	35.02	Dec 01 04:00	99.6	0	0	55.33	31.31	10.66	1.35	0.94	0.40	
<b>Annual</b>	<b>8699</b>	<b>4.470</b>	<b>75.07</b>	<b>Aug 13</b>	<b>393.949</b>	<b>Aug 13 09:00</b>	<b>99.5</b>	<b>3</b>	<b>14</b>	<b>43.05</b>	<b>35.85</b>	<b>12.31</b>	<b>4.70</b>	<b>3.06</b>	<b>1.02</b>	

**Table 14. Wind Speed and Wind Direction Frequency Distribution – Evergreen Park 2017 Summary**

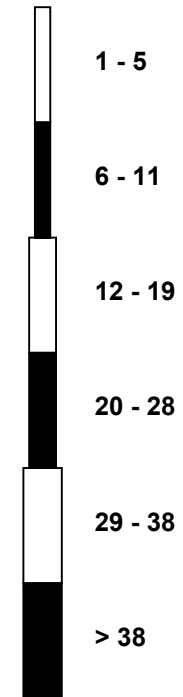
Evergreen Park								2017
Direction	# of Readings	% of wind speed (km/hr)						Totals
		0 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	177	1.09	0.76	0.33	0.06	0.00	0.00	2.25
NNE	510	2.58	2.34	1.26	0.31	0.00	0.00	6.49
NE	839	4.21	3.75	2.41	0.31	0.00	0.00	10.68
ENE	373	2.41	1.69	0.57	0.08	0.00	0.00	4.75
E	220	1.20	0.99	0.59	0.03	0.00	0.00	2.80
ESE	179	1.03	0.87	0.38	0.00	0.00	0.00	2.28
SE	136	1.17	0.55	0.01	0.00	0.00	0.00	1.73
SSE	169	1.44	0.62	0.09	0.00	0.00	0.00	2.15
S	373	3.59	1.07	0.09	0.00	0.00	0.00	4.75
SSW	574	4.79	1.71	0.66	0.15	0.00	0.00	7.31
SW	771	2.49	2.38	2.51	1.57	0.75	0.11	9.81
WSW	1624	2.32	4.35	4.91	4.30	3.74	1.04	20.67
WSW	775	2.05	3.19	2.72	1.55	0.33	0.01	9.86
WNW	434	1.45	1.57	1.90	0.55	0.06	0.00	5.52
NW	471	1.31	1.59	1.93	0.88	0.25	0.03	5.99
NNW	232	1.17	1.04	0.59	0.13	0.03	0.00	2.95
<b>Totals</b>	<b>7857</b>	<b>34.30</b>	<b>28.48</b>	<b>20.95</b>	<b>9.90</b>	<b>5.17</b>	<b>1.20</b>	<b>100</b>

**Wind Rose**

**Wind Speed (WS) (km/h)**  
**Evergreen Park - 2017**



**Wind Speed Classes (km/h)**



**PAZA**

**SMOKY HEIGHTS**

**CONTINUOUS AMBIENT AIR MONITORING STATION**

**2017**

**ANNUAL SUMMARY TABLES**

**Table 15. Smoky Heights - Key Parameters – Continuous Monitoring Data – 2017 Summary**

Parameter	Monitoring Station	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO	
			24-hr	Date	1-hr	Date		24-hr	1-hr
<b>Sulphur Dioxide SO<sub>2</sub> measured in ppb</b>	Smoky Heights	0.36	6.79	Nov 16	54.99	Nov 16 17:00	99.7	0	0
<b>Total Reduced Sulphur TRS measured in ppb</b>	Smoky Heights	0.23	0.73	Dec 31	2.34	Aug 08 07:00	99.4	-	-
<b>Particulate Matter PM<sub>2.5</sub> measured in µg/m<sup>3</sup></b>	Smoky Heights	5.61	173.34	Aug 13	787.59	Aug 13 11:00	99.2	2	20

**Table 16. Sulphur Dioxide (SO<sub>2</sub>) – Smoky Heights 2017 Summary and Frequency Distribution**

Smoky Heights		SO <sub>2</sub> (ppb)										2017			
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	706	0.30	0.77	Jan 11	4.85	Jan 28 00:00	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
February	637	0.35	1.13	Feb 10	7.13	Feb 10 23:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	709	0.41	1.49	Mar 13	5.86	Mar 13 16:00	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	682	0.17	0.95	Apr 03	8.64	Apr 03 11:00	99.4	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	697	0.21	0.54	May 01	3.08	May 02 04:00	98.4	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	683	0.26	1.01	Jun 20	11.23	Jun 20 23:00	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	709	0.29	0.84	Jul 28	6.32	Jul 28 08:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	707	0.26	0.72	Aug 25	4.53	Aug 15 09:00	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	687	0.25	0.64	Sep 26	3.51	Sep 27 02:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	709	0.28	1.23	Oct 10	15.48	Oct 10 01:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	685	0.69	6.79	Nov 16	54.99	Nov 16 17:00	100.0	0	0	99.56	0.44	0.00	0.00	0.00	0.00
December	709	0.88	2.77	Dec 31	10.85	Dec 31 23:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
<b>Annual</b>	<b>8320</b>	<b>0.36</b>	<b>6.79</b>	<b>Nov 16</b>	<b>54.99</b>	<b>Nov 16 17:00</b>	<b>99.7</b>	<b>0</b>	<b>0</b>	<b>99.96</b>	<b>0.04</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**Table 17. Total Reduced Sulphur (TRS) – Smoky Heights 2017 Summary and Frequency Distribution**

Smoky Heights		TRS (ppb)										2017			
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	705	0.23	0.38	Jan 03	0.66	Jan 02 00:00	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
February	635	0.27	0.50	Feb 07	0.81	Feb 07 10:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	707	0.23	0.38	Mar 13	1.03	Mar 19 05:00	99.7	0	0	99.86	0.14	0.00	0.00	0.00	0.00
April	681	0.11	0.24	Apr 19	0.32	Apr 19 07:00	99.4	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	694	0.20	0.31	May 21	0.84	May 22 05:00	98.4	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	681	0.18	0.29	Jun 01	0.67	Jun 19 04:00	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	708	0.20	0.51	Jul 26	1.07	Jul 21 05:00	100.0	0	0	99.58	0.42	0.00	0.00	0.00	0.00
August	706	0.19	0.40	Aug 08	2.34	Aug 08 07:00	99.7	0	0	99.29	0.71	0.00	0.00	0.00	0.00
September	659	0.09	0.42	Sep 29	1.88	Sep 04 05:00	96.3	0	0	99.85	0.15	0.00	0.00	0.00	0.00
October	709	0.35	0.57	Oct 04	1.58	Oct 04 01:00	100.0	0	0	99.29	0.71	0.00	0.00	0.00	0.00
November	685	0.36	0.44	Nov 09	0.98	Nov 28 16:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	709	0.38	0.73	Dec 31	1.15	Dec 31 13:00	100.0	0	0	99.44	0.56	0.00	0.00	0.00	0.00
<b>Annual</b>	<b>8279</b>	<b>0.23</b>	<b>0.73</b>	<b>Dec 31</b>	<b>2.34</b>	<b>Aug 08 07:00</b>	<b>99.4</b>	<b>0</b>	<b>0</b>	<b>99.78</b>	<b>0.22</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

\*No Alberta Environment Objectives or Guidelines for TRS

**Table 18. Particulate Matter (PM<sub>2.5</sub>) – Smoky Heights 2017 Summary and Frequency Distribution**

Smoky Heights		PM <sub>2.5</sub> (µg/m <sup>3</sup> )										2017			
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	742	4.52	19.13	Jan 24	155.60	Jan 02 04:00	99.7	0	1	50.00	25.20	12.94	7.01	3.77	1.08
February	672	3.93	10.81	Feb 15	177.15	Feb 16 00:00	100.0	0	1	41.37	41.22	12.20	3.72	1.19	0.30
March	738	4.20	11.23	Mar 20	197.00	Mar 21 00:00	99.7	0	3	45.53	36.99	11.11	3.79	1.49	1.08
April	716	3.14	12.67	Apr 21	40.98	Apr 19 21:00	99.4	0	0	42.60	47.77	6.56	1.68	1.12	0.28
May	732	5.39	16.72	May 19	76.98	May 18 05:00	98.4	0	0	24.59	50.41	16.26	4.78	2.19	1.78
June	718	5.63	16.33	Jun 05	73.05	Jun 05 21:00	99.7	0	0	11.42	57.52	23.82	4.18	2.37	0.70
July	718	9.05	19.99	Jul 12	93.12	Jul 19 11:00	97.2	0	2	17.55	34.96	19.92	12.40	11.56	3.62
August	728	11.06	173.34	Aug 13	787.59	Aug 13 11:00	97.9	1	11	26.92	36.40	23.21	6.59	3.16	3.71
September	712	5.27	30.22	Sep 07	74.57	Sep 07 23:00	98.9	0	0	39.33	35.25	15.87	4.92	1.97	2.67
October	737	2.90	10.73	Oct 03	60.03	Oct 03 21:00	99.7	0	0	57.80	28.77	10.72	1.49	0.41	0.81
November	720	8.43	34.85	Nov 09	123.18	Nov 07 09:00	100.0	1	2	28.61	24.58	22.78	11.67	7.36	5.00
December	740	3.77	8.06	Dec 11	49.83	Dec 30 00:00	99.5	0	0	45.95	35.00	13.24	3.65	1.35	0.81
<b>Annual</b>	<b>8673</b>	<b>5.609</b>	<b>173.34</b>	<b>Aug 13</b>	<b>787.589</b>	<b>Aug 13 11:00</b>	<b>99.2</b>	<b>2</b>	<b>20</b>	<b>35.97</b>	<b>37.84</b>	<b>15.72</b>	<b>5.49</b>	<b>3.16</b>	<b>1.82</b>

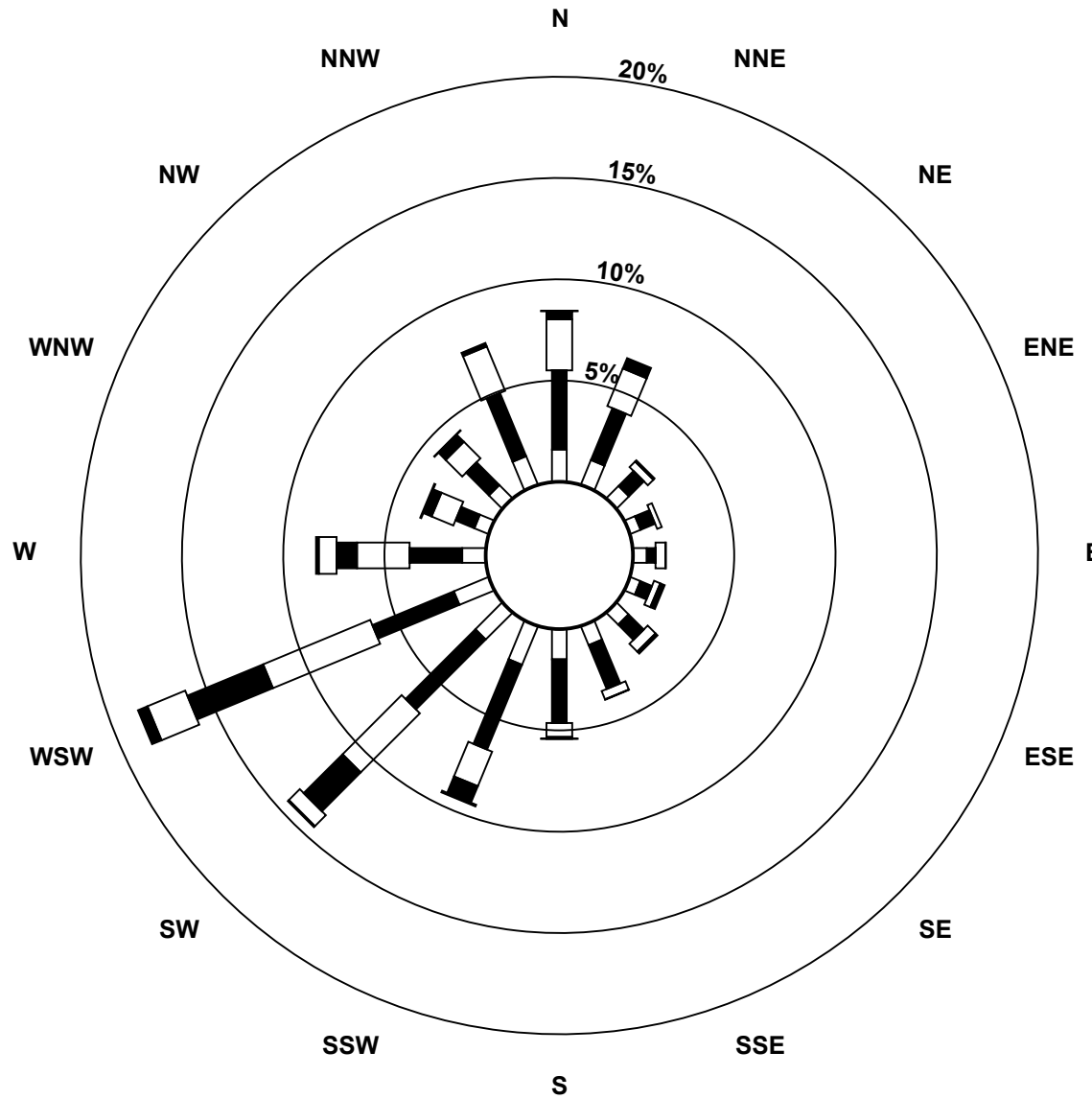
**Table 19. Wind Speed and Wind Direction Frequency Distribution – Smoky Heights 2017 Summary**

<b>Smoky Heights</b>								<b>2017</b>
<b>Direction</b>	<b># of Readings</b>	<b>% of wind speed (km/hr)</b>						<b>Totals</b>
		<b>0 - 5</b>	<b>6 - 11</b>	<b>12 - 19</b>	<b>20 - 28</b>	<b>29 - 38</b>	<b>&gt; 38</b>	
<b>N</b>	731	1.59	3.91	2.52	0.40	0.01	0.00	8.44
<b>NNE</b>	576	1.32	2.77	2.01	0.55	0.00	0.00	6.65
<b>NE</b>	206	0.85	1.05	0.38	0.09	0.00	0.00	2.38
<b>ENE</b>	136	0.55	0.77	0.24	0.00	0.00	0.00	1.57
<b>E</b>	141	0.68	0.43	0.48	0.03	0.00	0.00	1.63
<b>ESE</b>	150	0.54	0.62	0.32	0.24	0.00	0.00	1.73
<b>SE</b>	223	0.83	1.06	0.54	0.14	0.00	0.00	2.57
<b>SSE</b>	330	1.00	2.34	0.44	0.02	0.00	0.00	3.81
<b>S</b>	469	1.49	3.14	0.69	0.08	0.01	0.00	5.41
<b>SSW</b>	814	2.05	4.53	1.85	0.88	0.09	0.00	9.40
<b>SW</b>	1249	1.87	4.87	4.13	2.71	0.76	0.07	14.42
<b>WSW</b>	1604	1.86	4.35	5.73	4.05	2.02	0.51	18.52
<b>WSW</b>	726	1.17	2.60	2.60	1.00	0.88	0.14	8.38
<b>WNW</b>	297	0.76	1.00	1.17	0.44	0.06	0.00	3.43
<b>NW</b>	364	0.92	1.59	1.15	0.50	0.03	0.00	4.20
<b>NNW</b>	646	1.52	3.38	2.37	0.18	0.00	0.00	7.46
<b>Totals</b>	<b>8662</b>	<b>19.03</b>	<b>38.43</b>	<b>26.62</b>	<b>11.34</b>	<b>3.87</b>	<b>0.72</b>	<b>100</b>

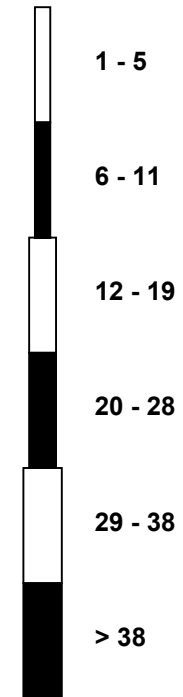


**Wind Rose**

**Wind Speed (WS) (km/h)**  
**Smoky Heights - 2017**



**Wind Speed Classes (km/h)**



**PAZA**  
**BEAVERLODGE**  
**CONTINUOUS AMBIENT AIR MONITORING STATION**

**2017**  
**ANNUAL SUMMARY TABLES**

**Table 20. Beaverlodge - Key Parameters – Continuous Monitoring Data – 2017 Summary**

Parameter	Monitoring Station	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO	
			24-hr	Date	1-hr	Date		24-hr	1-hr
<b>Sulphur Dioxide SO<sub>2</sub> measured in ppb</b>	Beaverlodge	0.29	3.28	Mar 06	9.72	Mar 06 13:00	99.8	0	0
<b>Nitrogen Dioxide NO<sub>2</sub> measured in ppb</b>	Beaverlodge	3.36	21.92	Nov 22	35.64	Nov 22 21:00	99.8	0	0
<b>Ozone O<sub>3</sub> measured in ppb</b>	Beaverlodge	29.94	50.24	May 10	63.44	May 10 18:00	99.9	0	0
<b>Particulate Matter PM<sub>2.5</sub> measured in µg/m<sup>3</sup></b>	Beaverlodge	6.05	204.76	Aug 13	783.96	Aug 13 08:00	99.3	6	25

**Table 21. Sulphur Dioxide (SO<sub>2</sub>) – Beaverlodge 2017 Summary and Frequency Distribution**

Beaverlodge SO <sub>2</sub> (ppb)											2017					
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	0.24	0.93	Jan 19	6.84	Jan 19 02:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00	
February	638	0.36	1.68	Feb 01	7.46	Feb 01 11:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00	
March	711	0.63	3.28	Mar 06	9.72	Mar 06 13:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00	
April	684	0.19	0.76	Apr 19	3.16	Apr 19 19:00	99.6	0	0	100.00	0.00	0.00	0.00	0.00	0.00	
May	704	0.20	1.47	May 30	4.24	May 30 03:00	99.2	0	0	100.00	0.00	0.00	0.00	0.00	0.00	
June	687	0.18	0.77	Jun 08	1.73	Jun 19 10:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00	
July	704	0.41	1.68	Jul 09	4.85	Jul 09 06:00	99.1	0	0	100.00	0.00	0.00	0.00	0.00	0.00	
August	710	0.38	2.19	Aug 13	8.34	Aug 13 08:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00	
September	687	0.21	0.78	Sep 07	2.85	Sep 17 13:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00	
October	710	0.07	0.24	Oct 04	0.65	Oct 04 19:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00	
November	688	0.36	1.70	Nov 22	3.67	Nov 22 13:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00	
December	710	0.23	1.25	Dec 30	3.30	Dec 19 12:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00	
<b>Annual</b>	<b>8343</b>	<b>0.29</b>	<b>3.28</b>	<b>Mar 06</b>	<b>9.72</b>	<b>Mar 06 13:00</b>	<b>99.8</b>	<b>0</b>	<b>0</b>	<b>100.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	

**Table 22. Nitrogen Dioxide (NO<sub>2</sub>) – Beaverlodge 2017 Summary and Frequency Distribution**

Beaverlodge NO <sub>2</sub> (ppb)											2017				
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	709	4.68	11.82	Jan 19	21.71	Jan 18 00:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	
February	635	5.34	15.19	Feb 06	33.08	Feb 06 08:00	100.0	0	0	99.37	0.63	0.00	0.00	0.00	
March	707	4.22	11.67	Mar 02	22.24	Mar 05 11:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	
April	679	1.83	5.32	Apr 05	11.83	Apr 20 02:00	99.4	0	0	100.00	0.00	0.00	0.00	0.00	
May	700	1.53	3.46	May 05	8.04	May 05 09:00	99.1	0	0	100.00	0.00	0.00	0.00	0.00	
June	685	2.06	3.65	Jun 25	10.15	Jun 07 08:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	
July	703	2.44	4.64	Jul 13	14.70	Jul 13 06:00	99.3	0	0	100.00	0.00	0.00	0.00	0.00	
August	708	2.69	6.03	Aug 12	14.06	Aug 13 07:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	
September	685	3.02	6.69	Sep 07	13.07	Sep 11 07:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	
October	707	2.38	4.80	Oct 18	14.83	Oct 13 02:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	
November	683	6.01	21.92	Nov 22	35.64	Nov 22 21:00	100.0	0	0	97.22	2.78	0.00	0.00	0.00	
December	708	4.14	17.63	Dec 31	28.38	Dec 31 08:00	100.0	0	0	99.58	0.42	0.00	0.00	0.00	
<b>Annual</b>	<b>8309</b>	<b>3.36</b>	<b>21.92</b>	<b>Nov 22</b>	<b>35.64</b>	<b>Nov 22 21:00</b>	<b>99.8</b>	<b>0</b>	<b>0</b>	<b>99.68</b>	<b>0.32</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	

**Table 23. Ozone (O<sub>3</sub>) – Beaverlodge 2017 Summary and Frequency Distribution**

Beaverlodge O <sub>3</sub> (ppb)											2017				
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	31.30	42.92	Jan 14	45.21	Jan 16 07:00	100.0	0	0	0.00	1.83	9.15	69.30	19.72	0.00
February	639	32.37	43.39	Feb 12	46.02	Feb 12 11:00	100.0	0	0	0.00	1.41	5.79	75.12	17.68	0.00
March	710	36.44	46.50	Mar 15	50.78	Mar 24 18:00	100.0	0	0	0.00	0.00	1.69	66.90	31.41	0.00
April	684	37.19	42.61	Apr 03	53.27	Apr 06 15:00	99.6	0	0	0.00	0.00	2.92	61.70	35.38	0.00
May	704	36.81	50.24	May 10	63.44	May 10 18:00	99.3	0	0	0.00	0.00	5.82	55.11	39.06	0.00
June	686	29.99	49.21	Jun 08	60.07	Jun 08 18:00	100.0	0	0	0.00	2.62	13.85	67.06	16.47	0.00
July	706	25.46	42.48	Jul 07	54.30	Jul 07 14:00	99.5	0	0	0.00	2.27	24.93	67.85	4.96	0.00
August	710	23.58	33.42	Aug 11	46.95	Aug 08 18:00	100.0	0	0	0.00	6.62	30.00	58.03	5.35	0.00
September	688	22.62	34.13	Sep 30	52.53	Sep 06 16:00	100.0	0	0	0.00	10.47	29.65	55.23	4.65	0.00
October	711	25.45	37.04	Oct 06	42.20	Oct 06 09:00	100.0	0	0	0.00	4.36	16.17	78.62	0.84	0.00
November	688	24.85	35.10	Nov 29	41.67	Nov 25 06:00	100.0	0	0	1.45	3.78	18.46	75.73	0.58	0.00
December	710	33.26	42.82	Dec 07	44.76	Dec 07 18:00	100.0	0	0	0.00	1.55	4.37	86.90	7.18	0.00
<b>Annual</b>	<b>8346</b>	<b>29.94</b>	<b>50.24</b>	<b>May 10</b>	<b>63.44</b>	<b>May 10 18:00</b>	<b>99.9</b>	<b>0</b>	<b>0</b>	<b>0.12</b>	<b>2.91</b>	<b>13.57</b>	<b>68.13</b>	<b>15.27</b>	<b>0.00</b>

**Table 24. Particulate Matter (PM<sub>2.5</sub>) – Beaverlodge 2017 Summary and Frequency Distribution**

Beaverlodge PM <sub>2.5</sub> (µg/m <sup>3</sup> )											2017				
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	5.98	23.58	Jan 23	104.95	Jan 05 07:00	99.6	0	1	31.44	36.03	17.54	7.96	5.94	1.08
February	672	5.74	14.95	Feb 06	32.50	Feb 06 09:00	100.0	0	0	20.68	47.92	16.67	8.63	5.80	0.30
March	701	6.13	15.14	Mar 16	55.80	Mar 20 11:00	94.4	0	0	34.09	38.66	12.41	5.56	5.85	3.42
April	717	2.47	6.03	Apr 05	13.16	Apr 05 18:00	99.6	0	0	47.42	46.86	5.30	0.42	0.00	0.00
May	739	3.51	15.67	May 30	26.11	May 31 13:00	99.3	0	0	47.09	36.27	11.91	3.52	1.22	0.00
June	718	4.40	13.78	Jun 08	59.13	Jun 08 09:00	100.0	0	0	16.43	61.56	19.50	2.23	0.14	0.14
July	740	9.73	37.60	Jul 19	95.80	Jul 19 08:00	99.5	1	3	19.19	32.70	16.49	11.76	15.00	4.86
August	744	14.39	204.76	Aug 13	783.96	Aug 13 08:00	100.0	2	19	21.64	33.33	24.19	12.90	3.23	4.70
September	720	6.36	46.74	Sep 07	93.65	Sep 07 16:00	100.0	1	2	21.67	49.72	18.75	3.47	4.17	2.22
October	736	2.62	7.85	Oct 04	20.10	Oct 07 03:00	99.6	0	0	57.34	28.26	11.96	2.17	0.27	0.00
November	720	7.94	36.48	Nov 09	59.10	Nov 09 13:00	100.0	2	0	29.58	26.39	22.92	10.97	4.44	5.69
December	740	3.35	7.86	Dec 31	36.81	Dec 20 08:00	99.5	0	0	37.70	51.22	8.51	2.03	0.41	0.14
<b>Annual</b>	<b>8688</b>	<b>6.051</b>	<b>204.76</b>	<b>Aug 13</b>	<b>783.961</b>	<b>Aug 13 08:00</b>	<b>99.3</b>	<b>6</b>	<b>25</b>	<b>32.02</b>	<b>40.74</b>	<b>15.51</b>	<b>5.97</b>	<b>3.87</b>	<b>1.88</b>

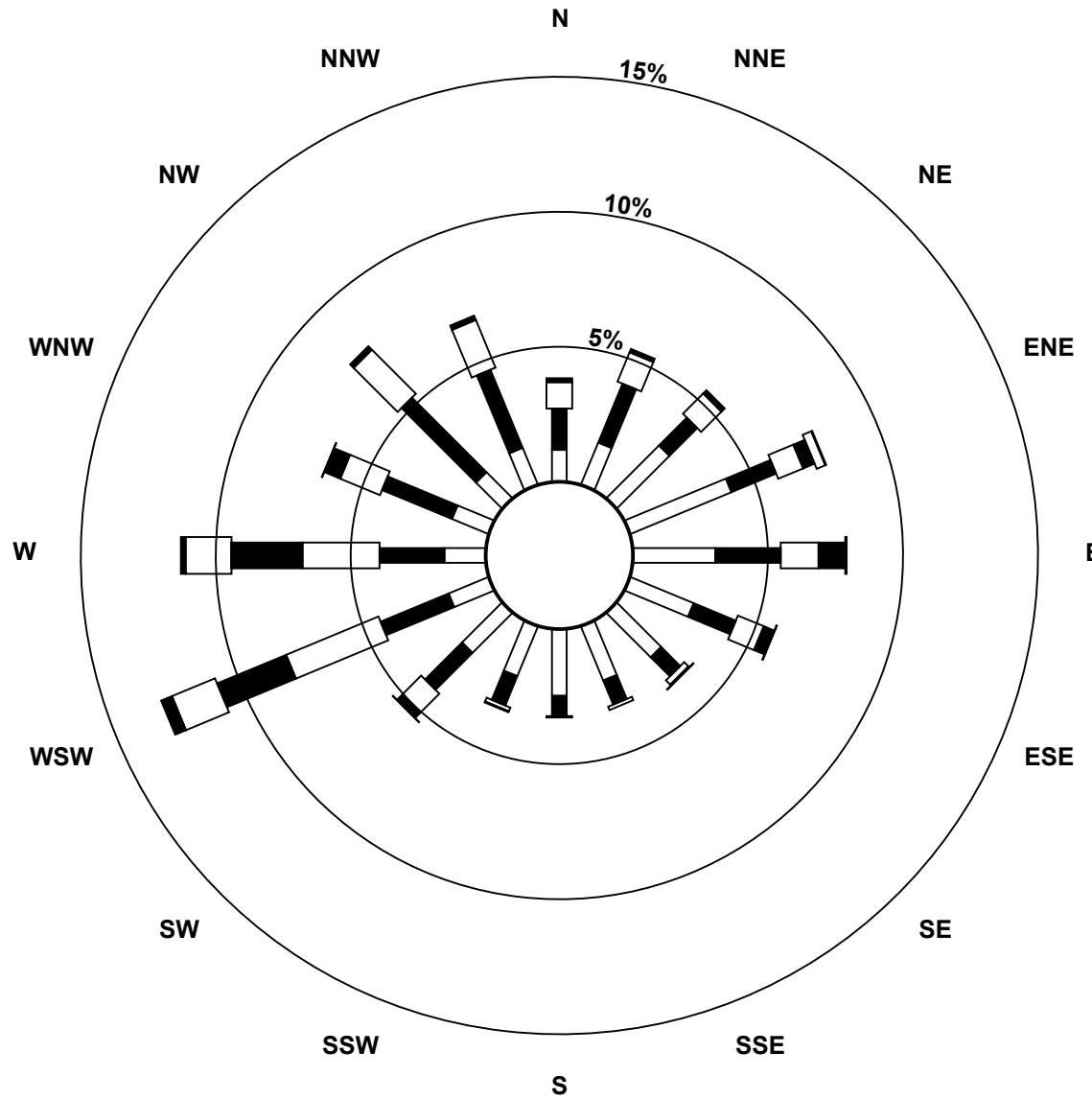
**Table 25. Wind Speed and Wind Direction Frequency Distribution – Beaverlodge 2017 Summary**

<b>Beaverlodge</b>								<b>2017</b>
<b>Direction</b>	<b># of Readings</b>	<b>% of wind speed (km/hr)</b>						<b>Totals</b>
		<b>0 - 5</b>	<b>6 - 11</b>	<b>12 - 19</b>	<b>20 - 28</b>	<b>29 - 38</b>	<b>&gt; 38</b>	
<b>N</b>	311	1.18	1.53	0.97	0.15	0.00	0.00	3.84
<b>NNE</b>	434	1.69	2.36	1.17	0.14	0.00	0.00	5.36
<b>NE</b>	442	2.76	1.46	1.06	0.17	0.00	0.00	5.45
<b>ENE</b>	623	4.06	1.79	1.00	0.46	0.35	0.04	7.69
<b>E</b>	641	3.05	2.42	1.41	0.99	0.05	0.00	7.91
<b>ESE</b>	463	2.54	1.69	1.04	0.42	0.02	0.00	5.71
<b>SE</b>	293	2.33	1.00	0.22	0.04	0.02	0.00	3.62
<b>SSE</b>	265	2.17	0.96	0.14	0.00	0.00	0.00	3.27
<b>S</b>	265	2.47	0.75	0.05	0.00	0.00	0.00	3.27
<b>SSW</b>	272	2.00	1.17	0.15	0.04	0.00	0.00	3.36
<b>SW</b>	431	2.10	1.94	1.01	0.26	0.01	0.00	5.32
<b>WSW</b>	1050	1.60	2.73	3.70	2.76	1.73	0.43	12.96
<b>WSW</b>	915	1.53	2.41	2.85	2.63	1.70	0.17	11.29
<b>WNW</b>	528	1.47	2.80	1.59	0.64	0.01	0.00	6.52
<b>NW</b>	629	1.37	3.90	2.31	0.19	0.00	0.00	7.76
<b>NNW</b>	542	1.48	3.12	1.91	0.17	0.00	0.00	6.69
<b>Totals</b>	<b>8104</b>	<b>33.81</b>	<b>32.02</b>	<b>20.58</b>	<b>9.04</b>	<b>3.90</b>	<b>0.64</b>	<b>100</b>

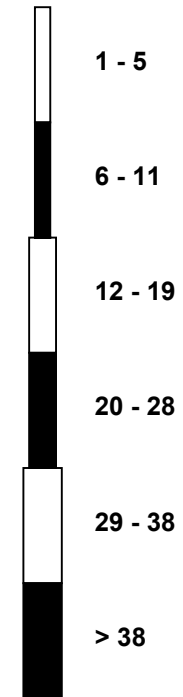
**Wind Rose**

**Wind Speed (WS) (km/h)**

**Beaverlodge - 2017**



**Wind Speed Classes (km/h)**



**PAZA**  
**VALLEYVIEW**  
**CONTINUOUS AMBIENT AIR MONITORING STATION**

**2017**  
**ANNUAL SUMMARY TABLES**



**Table 26. Valleyview - Key Parameters – Continuous Monitoring Data – 2017 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 SO <sub>2</sub> measured in ppb	Valleyview	0.69	4.82	Feb 11	46.24	Mar 22 12:00	99.9	0	0
Hydrogen Sulphide H <sub>2</sub> S measured in ppb	Valleyview	0.21	2.99	Mar 16	36.72	Mar 15 23:00	99.9	0	6

**Table 27. Sulphur Dioxide (SO<sub>2</sub>) – Valleyview 2017 Summary and Frequency Distribution**

Valleyview SO <sub>2</sub> (ppb) 2017															
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	0.70	3.70	Jan 11	23.85	Jan 26 23:00	100.0	0	0	99.86	0.14	0.00	0.00	0.00	0.00
February	637	0.96	4.82	Feb 11	23.71	Feb 07 16:00	100.0	0	0	99.69	0.31	0.00	0.00	0.00	0.00
March	710	0.68	3.53	Mar 22	46.24	Mar 22 12:00	100.0	0	0	99.72	0.28	0.00	0.00	0.00	0.00
April	686	0.54	3.50	Apr 02	22.09	Apr 20 10:00	100.0	0	0	99.85	0.15	0.00	0.00	0.00	0.00
May	707	0.41	1.29	May 21	7.66	May 07 09:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	684	0.97	4.62	Jun 17	15.70	Jun 21 04:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	704	0.74	3.43	Jul 17	18.58	Jul 21 21:00	99.7	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	708	0.81	3.47	Aug 19	11.32	Aug 26 18:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	685	0.57	2.84	Sep 30	12.43	Sep 11 23:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	710	0.58	2.55	Oct 06	13.91	Oct 23 04:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	681	0.34	1.43	Nov 16	11.59	Nov 24 05:00	99.4	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	708	0.99	4.52	Dec 22	16.01	Dec 26 16:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
<b>Annual</b>	<b>8329</b>	<b>0.69</b>	<b>4.82</b>	<b>Feb 11</b>	<b>46.24</b>	<b>Mar 22 12:00</b>	<b>99.9</b>	<b>0</b>	<b>0</b>	<b>99.93</b>	<b>0.07</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**Table 28. Hydrogen Sulphide (H<sub>2</sub>S) – Valleyview 2017 Summary and Frequency Distribution**

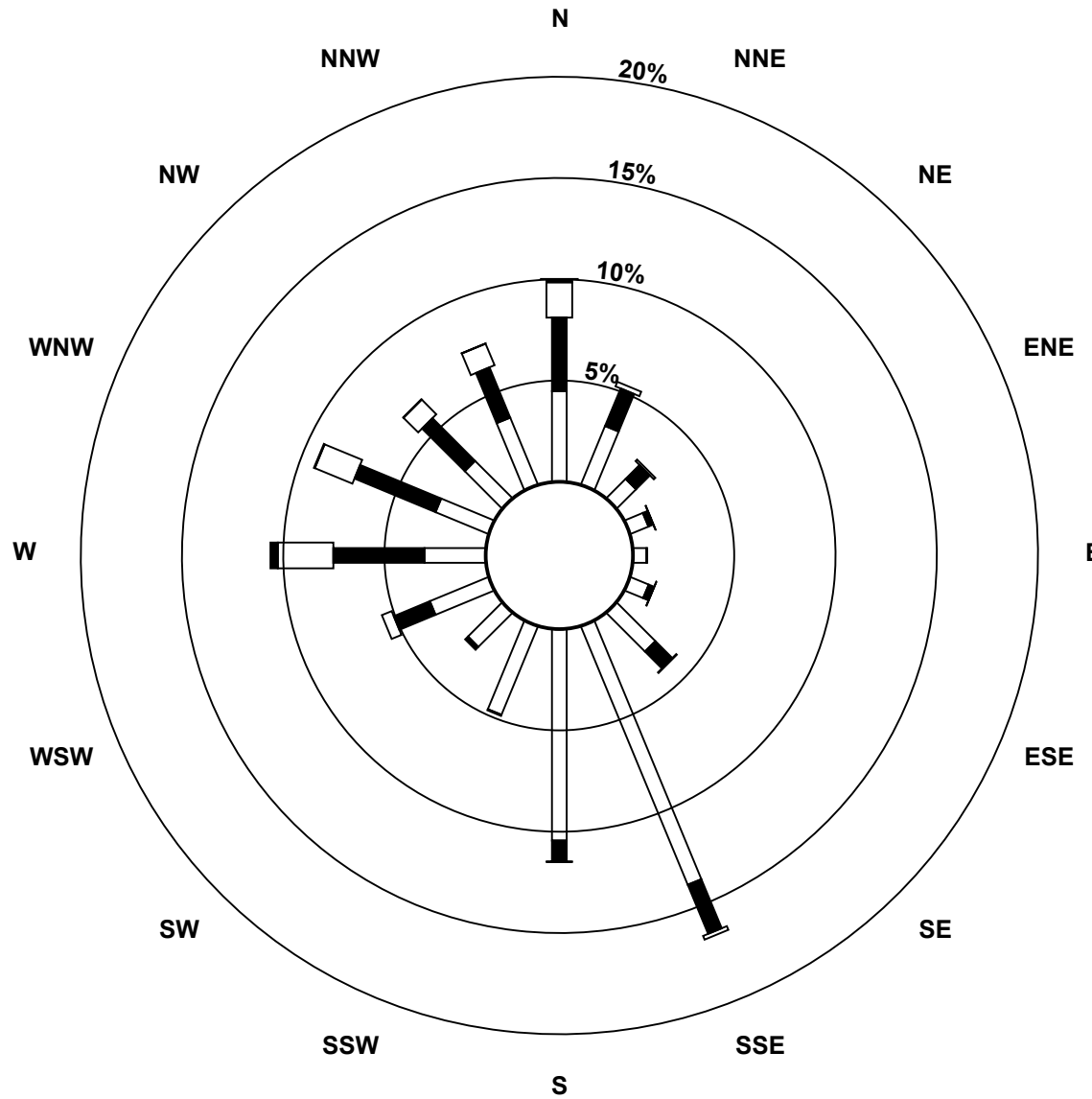
Valleyview H <sub>2</sub> S (ppb) 2017															
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 1	1 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	>10
January	707	0.21	0.96	Jan 24	6.24	Jan 24 17:00	100.0	0	0	95.76	3.11	0.57	0.57	0.00	0.00
February	636	0.28	2.04	Feb 16	10.07	Feb 16 02:00	100.0	0	0	94.18	4.09	1.42	0.00	0.16	0.16
March	706	0.51	2.99	Mar 16	36.72	Mar 15 23:00	100.0	0	5	93.34	3.40	1.70	0.57	0.28	0.71
April	686	0.14	0.30	Apr 03	1.15	Apr 21 13:00	100.0	0	0	99.85	0.15	0.00	0.00	0.00	0.00
May	708	0.21	0.61	May 28	4.74	May 28 00:00	100.0	0	0	98.59	0.99	0.42	0.00	0.00	0.00
June	681	0.22	0.45	Jun 01	3.30	Jun 14 04:00	100.0	0	0	98.38	1.47	0.15	0.00	0.00	0.00
July	705	0.17	0.76	Jul 15	12.85	Jul 15 02:00	99.7	0	1	99.86	0.00	0.00	0.00	0.00	0.14
August	706	0.17	0.41	Aug 09	2.55	Aug 11 03:00	100.0	0	0	99.43	0.42	0.14	0.00	0.00	0.00
September	685	0.12	0.32	Sep 26	0.78	Sep 07 21:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	709	0.14	0.34	Oct 17	3.43	Oct 17 19:00	100.0	0	0	99.15	0.71	0.14	0.00	0.00	0.00
November	680	0.15	0.39	Nov 10	1.66	Nov 10 21:00	99.4	0	0	99.56	0.44	0.00	0.00	0.00	0.00
December	708	0.25	0.71	Dec 30	6.80	Dec 29 23:00	100.0	0	0	97.32	1.98	0.56	0.14	0.00	0.00
<b>Annual</b>	<b>8317</b>	<b>0.215</b>	<b>2.99</b>	<b>Mar 16</b>	<b>36.724</b>	<b>Mar 15 23:00</b>	<b>99.9</b>	<b>0</b>	<b>6</b>	<b>97.95</b>	<b>1.40</b>	<b>0.43</b>	<b>0.11</b>	<b>0.04</b>	<b>0.08</b>

**Table 29. Wind Speed and Wind Direction Frequency Distribution – Valleyview 2017 Summary**

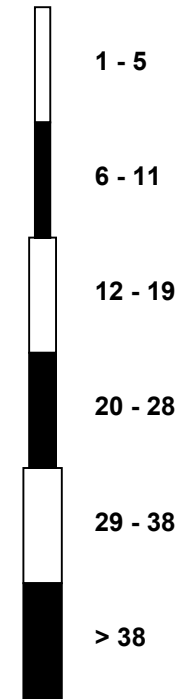
Valleyview								2017
Direction	# of Readings	% of wind speed (km/hr)						Totals
		0 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	668	4.48	3.63	1.74	0.15	0.00	0.01	10.02
NNE	359	3.13	2.01	0.24	0.00	0.00	0.00	5.38
NE	162	1.35	0.97	0.10	0.00	0.00	0.00	2.43
ENE	83	0.97	0.25	0.00	0.01	0.00	0.00	1.24
E	47	0.66	0.04	0.00	0.00	0.00	0.00	0.70
ESE	86	0.99	0.28	0.01	0.00	0.00	0.00	1.29
SE	262	2.70	1.18	0.04	0.00	0.00	0.00	3.93
SSE	1109	13.81	2.62	0.19	0.00	0.00	0.00	16.63
S	766	10.44	1.03	0.01	0.00	0.00	0.00	11.49
SSW	319	4.72	0.06	0.00	0.00	0.00	0.00	4.78
SW	172	2.38	0.19	0.00	0.00	0.00	0.00	2.58
WSW	373	3.13	1.93	0.52	0.00	0.00	0.00	5.59
WSW	709	3.03	4.50	2.74	0.36	0.00	0.00	10.63
WNW	615	2.83	4.33	2.01	0.04	0.00	0.00	9.22
NW	443	2.61	2.98	1.02	0.03	0.00	0.00	6.64
NNW	496	3.58	2.68	1.15	0.01	0.00	0.00	7.44
<b>Totals</b>	<b>6669</b>	<b>60.83</b>	<b>28.73</b>	<b>9.81</b>	<b>0.61</b>	<b>0.00</b>	<b>0.01</b>	<b>100</b>

**Wind Rose**

**Wind Speed (WS) (km/h)**  
**Valleyview - 2017**



**Wind Speed Classes (km/h)**



**PAZA**

**Rycroft-Portable**

**CONTINUOUS AMBIENT AIR MONITORING STATION**

**2017**

**ANNUAL SUMMARY TABLES**

**Table 34. Rycroft-Portable - Key Parameters – Continuous Monitoring Data – 2017 Summary**

Parameter	Monitoring Station	Annual Average	Maximum Values				Operational Time (%)	Readings above AAAQO		AAAQO Objectives	
			24-hr	Date	1-hr	Date		24-hr	1-hr	24-hr	1-hr
Sulphur Dioxide SO <sub>2</sub> measured in ppb	Rycroft-Portable	0.26	1.33	Feb 23	6.08	Dec 04 22:00	99.4	0	0	48 ppb	172 ppb
Nitrogen Dioxide NO <sub>2</sub> measured in ppb	Rycroft-Portable	2.39	10.71	Nov 09	30.74	Mar 05 22:00	99.3	-	0	-	159 ppb
Ozone O <sub>3</sub> measured in ppb	Rycroft-Portable	29.28	48.77	Mar 15	62.97	Jul 07 13:00	99.2	-	0	-	82 ppb
Total Hydrocarbons THC measured in ppm	Rycroft-Portable	1.90	2.09	Dec 31	2.43	Feb 15 10:00	97.7	-	-	-	-
Total Reduced Sulphur TRS measured in ppb	Rycroft-Portable	0.18	0.60	Jan 25	4.27	Jan 25 03:00	99.0	-	-	-	-
Particulate Matter PM <sub>2.5</sub> measured in µg/m <sup>3</sup>	Rycroft-Portable	3.07	72.19	Aug 13	310.86	Aug 13 09:00	99.2	2	12	30 µg/m <sup>3</sup>	80 µg/m <sup>3</sup>

## Sulphur Dioxide (SO<sub>2</sub>) – Rycroft-Portable 2017 Summary and Frequency Distribution

Rycroft Portable		SO <sub>2</sub> (ppb)											2017		
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	0.26	0.59	Jan 04	1.92	Jan 26 12:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
February	641	0.36	1.33	Feb 23	6.08	Feb 23 13:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	697	0.27	0.89	Mar 13	5.80	Mar 14 00:00	98.8	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	686	0.15	0.43	Apr 06	2.10	Apr 06 01:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	664	0.18	0.46	May 02	1.78	May 08 08:00	94.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	685	0.18	0.39	Jun 04	1.83	Jun 04 21:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	708	0.29	0.62	Jul 26	5.10	Jul 26 10:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	707	0.24	0.48	Aug 05	1.74	Aug 17 21:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	685	0.27	0.61	Sep 06	5.16	Sep 01 09:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	706	0.22	0.56	Oct 03	3.59	Oct 14 16:00	99.6	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	684	0.34	0.99	Nov 17	3.91	Nov 17 17:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	710	0.41	1.17	Dec 20	6.08	Dec 04 22:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
<b>Annual</b>	<b>8282</b>	<b>0.26</b>	<b>1.33</b>	<b>Feb 23</b>	<b>6.08</b>	<b>Dec 04 22:00</b>	<b>99.4</b>	<b>0</b>	<b>0</b>	<b>100.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

## Nitrogen Dioxide (NO<sub>2</sub>) – Rycroft-Portable 2017 Summary and Frequency Distribution

Rycroft Portable		NO <sub>2</sub> (ppb)											2017	
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	707	2.64	7.72	Jan 25	13.73	Jan 25 04:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
February	641	2.76	5.94	Feb 10	13.59	Feb 27 06:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
March	698	2.33	5.55	Mar 05	30.74	Mar 05 22:00	99.3	0	0	99.86	0.14	0.00	0.00	0.00
April	685	1.28	2.00	Apr 10	4.61	Apr 04 04:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
May	662	1.47	2.61	May 30	4.56	May 30 07:00	93.8	0	0	100.00	0.00	0.00	0.00	0.00
June	684	2.54	4.72	Jun 07	16.49	Jun 26 04:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
July	705	2.68	4.95	Jul 15	17.73	Jul 27 12:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
August	702	1.93	3.83	Aug 30	10.14	Aug 30 20:00	99.3	0	0	100.00	0.00	0.00	0.00	0.00
September	684	2.09	4.34	Sep 07	13.67	Sep 28 22:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
October	704	1.75	3.84	Oct 12	11.24	Oct 21 18:00	99.6	0	0	100.00	0.00	0.00	0.00	0.00
November	683	4.42	10.71	Nov 09	27.37	Nov 18 01:00	100.0	0	0	99.85	0.15	0.00	0.00	0.00
December	708	2.82	8.89	Dec 31	23.38	Dec 31 00:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00
<b>Annual</b>	<b>8263</b>	<b>2.39</b>	<b>10.71</b>	<b>Nov 09</b>	<b>30.74</b>	<b>Mar 05 22:00</b>	<b>99.3</b>	<b>0</b>	<b>0</b>	<b>99.98</b>	<b>0.02</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

## Ozone (O<sub>3</sub>) – Rycroft-Portable 2017 Summary and Frequency Distribution

Rycroft Portable		O <sub>3</sub> (ppb)										2017			
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	690	30.10	41.67	Jan 14	45.75	Jan 16 09:00	97.6	0	0	0.87	2.90	9.42	77.10	9.71	0.00
February	641	33.61	46.39	Feb 12	48.10	Feb 26 02:00	100.0	0	0	0.00	0.62	3.59	77.22	18.56	0.00
March	695	35.38	48.77	Mar 15	54.14	Mar 15 15:00	99.6	0	0	0.00	0.14	3.17	72.09	24.60	0.00
April	677	37.46	45.62	Apr 06	59.82	Apr 12 18:00	99.2	0	0	0.00	0.00	2.51	58.49	39.00	0.00
May	666	32.22	43.10	May 30	54.91	May 10 18:00	94.0	0	0	0.00	0.15	12.61	63.06	24.17	0.00
June	686	28.39	40.58	Jun 08	58.42	Jun 07 17:00	100.0	0	0	0.00	1.75	19.24	64.43	14.58	0.00
July	709	24.39	38.57	Jul 07	62.97	Jul 07 13:00	100.0	0	0	0.14	7.76	29.48	55.29	7.33	0.00
August	709	22.41	31.56	Aug 11	49.65	Aug 11 23:00	100.0	0	0	0.00	10.58	30.32	55.99	3.10	0.00
September	687	22.07	35.40	Sep 06	62.09	Sep 06 17:00	100.0	0	0	0.00	9.61	33.77	53.71	2.91	0.00
October	706	25.24	35.04	Oct 06	42.64	Oct 05 16:00	99.6	0	0	0.00	2.41	17.85	79.18	0.57	0.00
November	686	25.74	37.84	Nov 30	40.37	Nov 29 20:00	100.0	0	0	0.29	2.77	15.89	80.61	0.44	0.00
December	710	34.33	43.24	Dec 07	46.65	Dec 07 09:00	100.0	0	0	0.00	0.42	3.80	80.00	15.77	0.00
<b>Annual</b>	<b>8262</b>	<b>29.28</b>	<b>48.77</b>	<b>Mar 15</b>	<b>62.97</b>	<b>Jul 07 13:00</b>	<b>99.2</b>	<b>0</b>	<b>0</b>	<b>0.11</b>	<b>3.26</b>	<b>15.14</b>	<b>68.10</b>	<b>13.40</b>	<b>0.00</b>

## Total Reduced Sulphur (TRS) – Rycroft-Portable 2017 Summary and Frequency Distribution

Rycroft Portable		TRS (ppb)										2017			
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	0.30	0.60	Jan 25	4.27	Jan 25 03:00	100.0	0	0	99.72	0.14	0.14	0.00	0.00	0.00
February	615	0.25	0.38	Feb 11	1.04	Feb 03 17:00	96.3	0	0	99.84	0.16	0.00	0.00	0.00	0.00
March	689	0.16	0.36	Mar 09	0.42	Mar 12 15:00	98.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	686	0.08	0.19	Apr 11	0.98	Apr 29 00:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	659	0.15	0.38	May 29	0.72	May 29 07:00	93.4	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	685	0.18	0.28	Jun 28	0.59	Jun 16 15:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	708	0.18	0.29	Jul 09	0.61	Jul 09 08:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	708	0.21	0.39	Aug 13	1.10	Aug 03 21:00	100.0	0	0	99.72	0.28	0.00	0.00	0.00	0.00
September	686	0.17	0.30	Sep 23	0.94	Sep 02 19:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	706	0.15	0.29	Oct 27	3.21	Oct 27 16:00	99.6	0	0	99.86	0.00	0.14	0.00	0.00	0.00
November	685	0.15	0.25	Nov 26	0.52	Nov 29 18:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	710	0.15	0.39	Dec 27	4.27	Dec 27 03:00	100.0	0	0	99.58	0.14	0.28	0.00	0.00	0.00
<b>Annual</b>	<b>8245</b>	<b>0.18</b>	<b>0.60</b>	<b>Jan 25</b>	<b>4.27</b>	<b>Jan 25 03:00</b>	<b>99.0</b>	<b>0</b>	<b>0</b>	<b>99.89</b>	<b>0.06</b>	<b>0.05</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

\*No Alberta Environment Objectives or Guidelines for TRS



## Total Hydrocarbon (THC) – Rycroft-Portable 2017 Summary and Frequency Distribution

Rycroft Portable		THC (ppm)											2017		
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	708	1.86	2.03	Jan 25	2.10	Jan 25 04:00	100.0	0	0	0.00	95.48	4.52	0.00	0.00	0.00
February	583	1.86	1.95	Feb 01	2.43	Feb 15 10:00	91.5	0	0	0.00	99.66	0.34	0.00	0.00	0.00
March	677	1.85	1.91	Mar 12	2.03	Mar 16 04:00	96.2	0	0	0.00	99.85	0.15	0.00	0.00	0.00
April	685	1.83	1.88	Apr 20	1.95	Apr 20 05:00	99.7	0	0	0.00	100.00	0.00	0.00	0.00	0.00
May	641	1.91	1.97	May 20	2.01	May 21 05:00	91.1	0	0	0.00	98.44	1.56	0.00	0.00	0.00
June	679	1.93	1.98	Jun 24	2.25	Jun 07 04:00	99.2	0	0	0.00	92.93	7.07	0.00	0.00	0.00
July	709	1.90	1.95	Jul 01	2.06	Jul 09 09:00	100.0	0	0	0.00	97.88	2.12	0.00	0.00	0.00
August	686	1.85	1.95	Aug 06	2.04	Aug 08 07:00	97.2	0	0	0.00	98.83	1.17	0.00	0.00	0.00
September	668	1.94	2.03	Sep 14	2.13	Sep 14 07:00	97.4	0	0	0.00	80.54	19.46	0.00	0.00	0.00
October	708	1.96	2.01	Oct 26	2.11	Oct 02 09:00	100.0	0	0	0.00	89.55	10.45	0.00	0.00	0.00
November	683	1.96	2.08	Nov 09	2.16	Nov 09 17:00	100.0	0	0	0.00	81.99	18.01	0.00	0.00	0.00
December	709	1.95	2.09	Dec 31	2.16	Dec 31 00:00	99.9	0	0	0.00	91.68	8.32	0.00	0.00	0.00
<b>Annual</b>	<b>8136</b>	<b>1.90</b>	<b>2.09</b>	<b>Dec 31</b>	<b>2.43</b>	<b>Feb 15 10:00</b>	<b>97.7</b>	<b>0</b>	<b>0</b>	<b>0.00</b>	<b>93.90</b>	<b>6.10</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

\*No Alberta Environment Objectives or Guidelines for THC

## Particulate Matter (PM<sub>2.5</sub>) – Rycroft-Portable 2017 Summary and Frequency Distribution

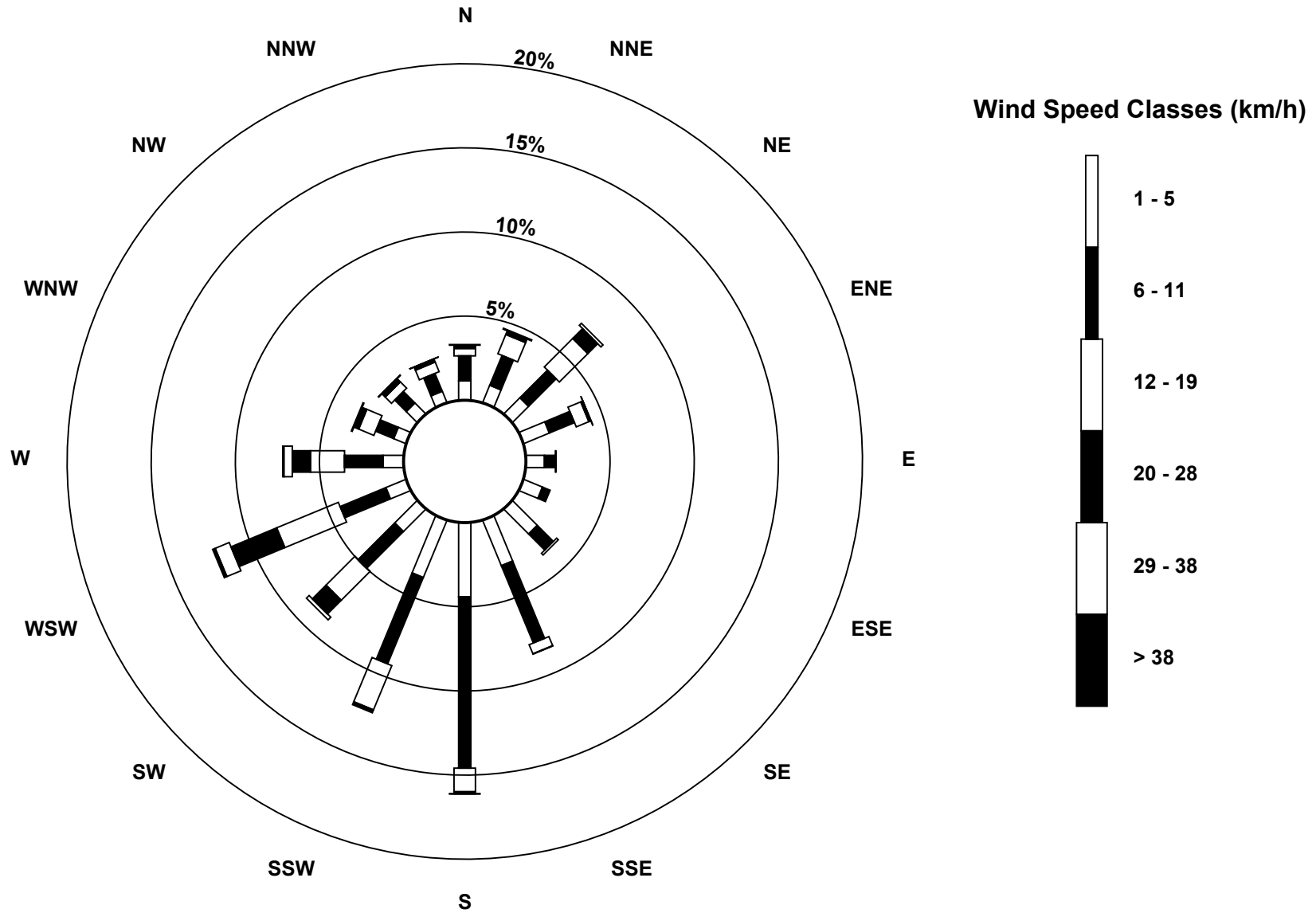
Rycroft Portable		PM <sub>2.5</sub> (µg/m <sup>3</sup> )											2017		
Month	# of Readings	Average	24-hr Maximum	Date	1-hr Maximum	Date	Operational Time (%)	AAAQO		Number of Readings in Concentration Range					
								24-Hr	1-Hr	0 - 2	2 - 6	6 - 11	11 - 17	17 - 30	> 30
January	741	2.17	12.82	Jan 24	17.22	Jan 24 18:00	99.6	0	0	67.88	22.27	4.32	5.40	0.13	0.00
February	671	1.77	6.79	Feb 10	22.91	Feb 01 19:00	99.9	0	0	71.39	22.06	5.07	0.89	0.60	0.00
March	738	1.75	4.08	Mar 07	14.33	Mar 07 17:00	99.6	0	0	58.13	40.65	0.95	0.27	0.00	0.00
April	716	1.33	4.28	Apr 27	7.52	Apr 20 20:00	99.4	0	0	76.82	22.91	0.28	0.00	0.00	0.00
May	699	2.13	8.13	May 30	26.54	May 21 20:00	94.0	0	0	62.09	31.76	4.72	1.29	0.14	0.00
June	716	2.80	7.94	Jun 07	37.27	Jun 09 02:00	100.0	0	0	51.68	37.43	8.52	1.40	0.70	0.28
July	742	5.74	20.27	Jul 19	40.46	Jul 19 22:00	99.7	0	0	36.93	28.17	16.85	11.86	4.99	1.21
August	741	6.75	72.19	Aug 13	310.86	Aug 13 09:00	99.6	2	12	47.50	35.22	9.99	2.43	0.54	4.32
September	717	3.67	28.08	Sep 07	70.22	Sep 07 22:00	99.6	0	0	56.21	28.87	9.07	2.51	1.53	1.81
October	737	2.04	5.00	Oct 27	11.25	Oct 28 09:00	99.5	0	0	61.06	31.21	7.46	0.27	0.00	0.00
November	717	4.96	21.61	Nov 09	32.27	Nov 09 20:00	99.6	0	0	41.70	29.85	16.04	6.42	5.86	0.14
December	741	1.72	7.00	Dec 19	27.51	Dec 19 04:00	99.6	0	0	71.66	23.35	4.05	0.67	0.27	0.00
<b>Annual</b>	<b>8676</b>	<b>3.070</b>	<b>72.19</b>	<b>Aug 13</b>	<b>310.860</b>	<b>Aug 13 09:00</b>	<b>99.2</b>	<b>2</b>	<b>12</b>	<b>58.59</b>	<b>29.48</b>	<b>7.28</b>	<b>2.78</b>	<b>1.23</b>	<b>0.65</b>

**Table 41. Wind Speed and Wind Direction Frequency Distribution – Rycroft-Portable 2017 Summary**

Rycroft Portable								2017
Direction	# of Readings	% of wind speed (km/hr)						Totals
		0 - 5	6 - 11	12 - 19	20 - 28	29 - 38	> 38	
N	284	1.16	1.48	0.44	0.20	0.04	0.00	3.31
NNE	391	1.12	1.91	1.24	0.23	0.06	0.00	4.56
NE	606	1.37	2.31	2.39	0.83	0.18	0.00	7.07
ENE	362	1.66	1.61	0.82	0.13	0.01	0.00	4.22
E	152	1.10	0.65	0.02	0.00	0.00	0.00	1.77
ESE	146	1.21	0.49	0.00	0.00	0.00	0.00	1.70
SE	307	2.09	1.35	0.14	0.00	0.00	0.00	3.58
SSE	728	2.92	4.97	0.58	0.02	0.00	0.00	8.50
S	1382	4.40	10.19	1.40	0.12	0.02	0.00	16.13
SSW	1051	3.68	5.55	2.85	0.19	0.00	0.00	12.27
SW	751	1.89	3.07	2.43	1.16	0.22	0.00	8.76
WSW	1046	1.30	2.94	3.97	2.94	0.90	0.16	12.21
WSW	616	1.23	2.29	2.02	1.09	0.50	0.07	7.19
WNW	282	0.79	1.16	0.98	0.30	0.06	0.00	3.29
NW	233	0.92	0.97	0.53	0.27	0.04	0.00	2.72
NNW	232	0.74	1.14	0.62	0.20	0.01	0.00	2.71
<b>Totals</b>	<b>8569</b>	<b>27.55</b>	<b>42.09</b>	<b>20.42</b>	<b>7.67</b>	<b>2.03</b>	<b>0.23</b>	<b>100</b>

**Wind Rose**

**Wind Speed (WS) (km/h)**  
**Portable Rycroft - 2017**



**PAZA**  
**Donnelly**  
**CONTINUOUS AMBIENT AIR MONITORING STATION**  
**2017**  
**ANNUAL SUMMARY TABLES**

**Table 42. Donnelly - Key Parameters – Continuous Monitoring Data – 2017 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 SO <sub>2</sub> measured in ppb	Donnelly	0.17	1.04	Dec 31	6.64	Jul 25 10:00	99.3	0	0
Hydrogen Sulphide H <sub>2</sub> S measured in ppb	Donnelly	0.13	0.54	Jan 19	3.29	May 27 23:00	99.3	0	0

**Table 43. Sulphur Dioxide (SO<sub>2</sub>) – Donnelly 2017 Summary and Frequency Distribution**

<b>Donnelly SO<sub>2</sub> (ppb) 2017</b>															
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	0.17	0.59	Jan 09	0.89	Jan 03 11:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
February	640	0.24	0.80	Feb 21	3.12	Feb 21 18:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
March	709	0.22	0.62	Mar 01	1.64	Mar 21 06:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
April	640	0.12	0.37	Apr 09	1.55	Apr 22 11:00	93.3	0	0	100.00	0.00	0.00	0.00	0.00	0.00
May	707	0.13	0.52	May 29	2.09	May 29 14:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
June	684	0.17	0.61	Jun 13	6.54	Jun 13 07:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
July	703	0.14	1.02	Jul 25	6.64	Jul 25 10:00	99.2	0	0	100.00	0.00	0.00	0.00	0.00	0.00
August	709	0.12	0.35	Aug 12	0.64	Aug 30 10:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
September	686	0.17	0.36	Sep 07	0.83	Sep 29 12:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
October	708	0.12	0.35	Oct 04	1.01	Oct 27 12:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	685	0.21	0.97	Nov 04	2.55	Nov 09 12:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	706	0.28	1.04	Dec 31	1.84	Dec 31 08:00	99.6	0	0	100.00	0.00	0.00	0.00	0.00	0.00
<b>Annual</b>	<b>8286</b>	<b>0.17</b>	<b>1.04</b>	<b>Dec 31</b>	<b>6.64</b>	<b>Jul 25 10:00</b>	<b>99.3</b>	<b>0</b>	<b>0</b>	<b>100.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**Table 44. Hydrogen Sulphide (H<sub>2</sub>S) – Donnelly 2017 Summary and Frequency Distribution**

<b>Donnelly H<sub>2</sub>S (ppb) 2017</b>															
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	0.15	0.54	Jan 19	1.48	Jan 22 20:00	100.0	0	0	99.43	0.57	0.00	0.00	0.00	0.00
February	641	0.14	0.27	Feb 27	1.36	Feb 27 21:00	100.0	0	0	99.69	0.31	0.00	0.00	0.00	0.00
March	707	0.07	0.25	Mar 01	1.65	Mar 01 23:00	100.0	0	0	99.86	0.14	0.00	0.00	0.00	0.00
April	683	0.09	0.46	Apr 22	2.21	Apr 22 22:00	99.9	0	0	99.41	0.59	0.00	0.00	0.00	0.00
May	707	0.14	0.37	May 10	3.29	May 27 23:00	100.0	0	0	99.86	0.00	0.14	0.00	0.00	0.00
June	683	0.16	0.35	Jun 10	1.55	Jun 15 03:00	100.0	0	0	99.27	0.73	0.00	0.00	0.00	0.00
July	702	0.16	0.38	Jul 12	1.41	Jul 15 03:00	99.2	0	0	99.15	0.85	0.00	0.00	0.00	0.00
August	662	0.17	0.35	Aug 15	1.09	Aug 03 21:00	93.3	0	0	99.85	0.15	0.00	0.00	0.00	0.00
September	687	0.13	0.35	Sep 08	2.46	Sep 12 22:00	100.0	0	0	99.56	0.44	0.00	0.00	0.00	0.00
October	708	0.14	0.29	Oct 17	0.88	Oct 19 19:00	99.9	0	0	100.00	0.00	0.00	0.00	0.00	0.00
November	685	0.11	0.22	Nov 29	0.45	Nov 24 09:00	100.0	0	0	100.00	0.00	0.00	0.00	0.00	0.00
December	705	0.13	0.35	Dec 31	0.57	Dec 29 05:00	99.5	0	0	100.00	0.00	0.00	0.00	0.00	0.00
<b>Annual</b>	<b>8277</b>	<b>0.132</b>	<b>0.54</b>	<b>Jan 19</b>	<b>3.293</b>	<b>May 27 23:00</b>	<b>99.3</b>	<b>0</b>	<b>0</b>	<b>99.67</b>	<b>0.32</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

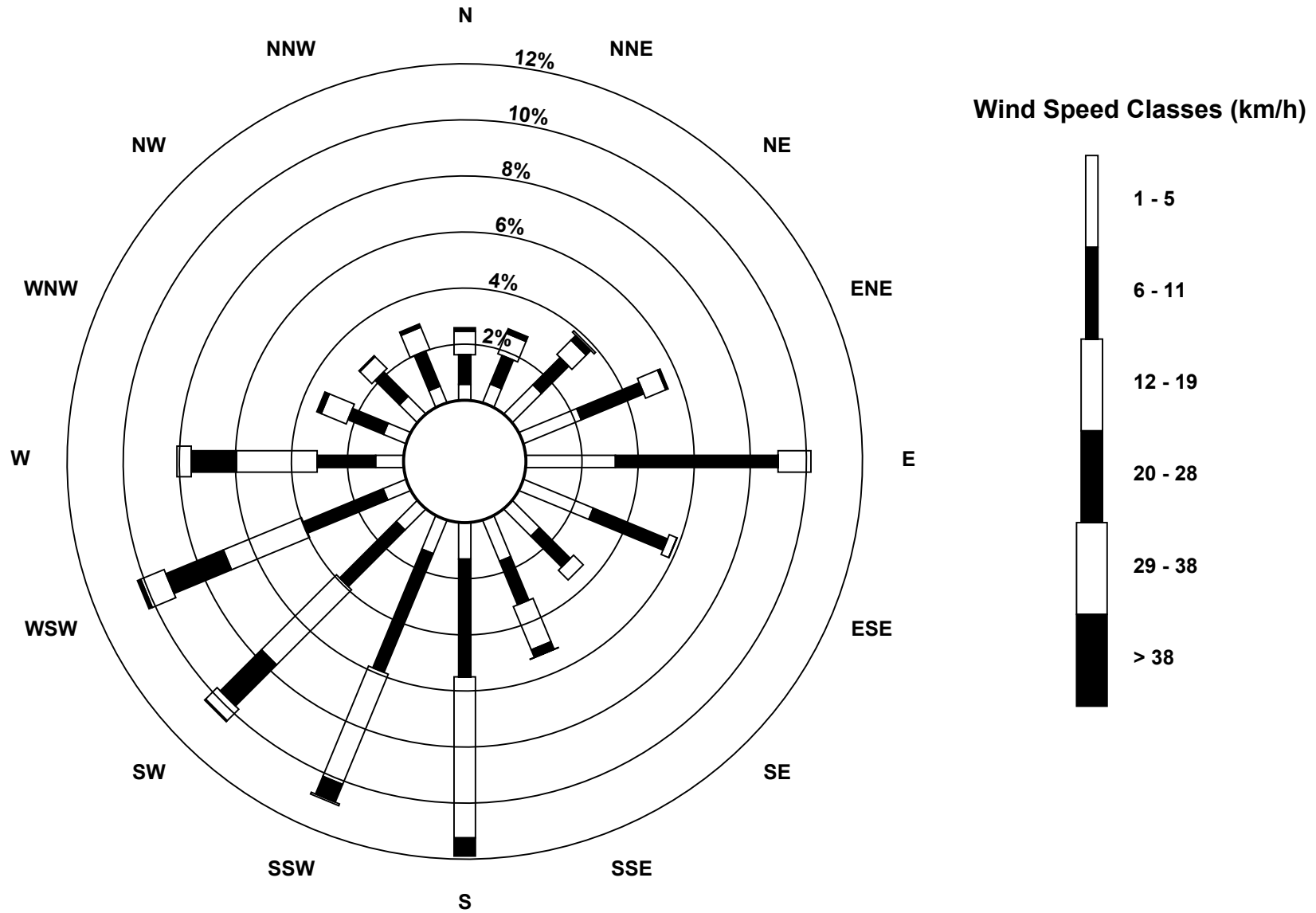
**Table 45. Wind Speed and Wind Direction Frequency Distribution – Donnelly 2017 Summary**

<b>Falher</b>								<b>2016</b>
<b>Direction</b>	<b># of Readings</b>	<b>% of wind speed (km/hr)</b>						<b>Totals</b>
		<b>0 - 5</b>	<b>6 - 11</b>	<b>12 - 19</b>	<b>20 - 28</b>	<b>29 - 38</b>	<b>&gt; 38</b>	
<b>N</b>	57	1.73	0.94	1.73	0.08	0.00	0.00	4.47
<b>NNE</b>	88	1.96	2.83	2.12	0.00	0.00	0.00	6.91
<b>NE</b>	108	1.57	3.38	2.75	0.63	0.16	0.00	8.48
<b>ENE</b>	99	2.12	2.28	2.35	0.55	0.47	0.00	7.77
<b>E</b>	84	2.12	1.49	2.75	0.24	0.00	0.00	6.59
<b>ESE</b>	77	1.73	1.88	2.28	0.16	0.00	0.00	6.04
<b>SE</b>	62	0.86	2.12	1.73	0.16	0.00	0.00	4.87
<b>SSE</b>	69	1.02	1.96	2.20	0.24	0.00	0.00	5.42
<b>S</b>	61	1.02	2.83	0.94	0.00	0.00	0.00	4.79
<b>SSW</b>	95	1.96	2.98	1.81	0.39	0.31	0.00	7.46
<b>SW</b>	113	1.18	2.04	1.88	2.20	0.94	0.63	8.87
<b>WSW</b>	85	0.71	1.73	2.98	0.86	0.16	0.24	6.67
<b>WSW</b>	68	0.78	1.49	2.51	0.55	0.00	0.00	5.34
<b>WNW</b>	68	1.10	1.96	1.73	0.55	0.00	0.00	5.34
<b>NW</b>	52	1.26	1.65	1.18	0.00	0.00	0.00	4.08
<b>NNW</b>	49	1.18	1.02	1.02	0.63	0.00	0.00	3.85
<b>Totals</b>	<b>1235</b>	<b>22.29</b>	<b>32.57</b>	<b>31.95</b>	<b>7.22</b>	<b>2.04</b>	<b>0.86</b>	<b>97</b>

### Wind Rose

Wind Speed (WS) (km/h)

Donnelly - 2017





**PAZA**

**PASSIVE MONITORING**

**2017**

**ANNUAL SUMMARY TABLES**

**Table 46. SO<sub>2</sub> Passive - 2017 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*	0.4												0.4	0.4
2	Bay Tree	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.3	0.2
3	Forth Creek*	0.3												0.3	0.3
4	Gordondale	0.3	0.4	0.4	0.2	0.2	0.3	0.2	0.3	0.4	0.2	0.4	0.4	0.4	0.3
5	Boone Creek	0.2	0.2	0.5	0.3	0.1	0.1	0.1	0.2	0.1	0.1	0.3	0.3	0.5	0.2
7	Steeprock Creek*	0.1												0.1	0.1
9	Spirit River	0.2	0.3	0.3	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.2
10	Woking*	0.6												0.6	0.6
11	Webber Creek*	0.4												0.4	0.4
12	Hythe*	0.4												0.4	0.4
14	Sylvester	0.1	0.1	0.3	0.1	0.1	BDL	0.1	0.1	0.1	0.0	0.1	0.2	0.3	0.1
16	Beaverlodge	0.3	0.4	0.5	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.4	0.4	0.5	0.3
17	Poplar*	0.3												0.3	0.3
18	Saddle Hills	0.4	0.3	0.5	0.2	0.2	0.2	0.4	0.3	0.3	0.2	0.3	0.8	0.8	0.3
19	Wanham	0.3	0.3	0.3	0.1	0.2	0.1	0.2	0.2	0.3	0.2	0.3	0.4	0.4	0.3
20	Shaftesbury*	0.2												0.2	0.2
21	Eglesham	0.1	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2
23	Bear Lake*	0.1												0.1	0.1
24	Wembley	0.2	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.4	0.3	0.4	0.2
25	Pinto Creek	0.1	0.2	0.3	0.1	0.1	BDL	0.1	0.1	0.1	0.0	0.2	0.2	0.3	0.1
26	Flyingshot*	0.2												0.2	0.2
27	Grande Prairie I	0.3	0.3	0.5	0.1	0.2	0.3	0.1	0.3	0.2	0.2	0.2	0.4	0.5	0.3
28	Clairmont Lake	0.3	0.3	0.4	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.4	0.6	0.6	0.3
29	Smoky Heights	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.5	0.9	0.9	0.3
30	Fitzsimmons*	0.3												0.3	0.3
32	Gold Creek	0.1	0.2	0.4	0.3	0.3	0.2	0.2	0.2	0.6	0.3	0.2	0.2	0.6	0.3
33	Wapiti*	0.2												0.2	0.2
34	Puskwaskau*	0.2												0.2	0.2
35	Jean Cote	0.2	0.2	0.3	0.1	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.3	0.3	0.2
36	Guy	0.1	0.2	0.3	0.1	0.2	BDL	0.1	0.1	0.2	0.1	0.2	1.4	1.4	0.3
37	Crooked Creek	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.4	0.2
38	Karr Creek*	0.1												0.1	0.1
39	Clouston Creek	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.4	0.4	0.2
40	McLennan	0.4	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.3	0.4	0.2
41	Valleyview*	0.1												0.1	0.1
42	Sunset House*	0.3												0.3	0.3
43	High Prairie	0.1	0.1	0.3	0.1	0.1	BDL	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.1
44	Peavine	0.1	0.1	0.3	0.1	0.1	BDL	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.1
45	Gift Lake*	0.1												0.1	0.1
46	Little Smoky	0.1	0.1	0.4	0.1	0.2	BDL	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.2
47	Kinuso	0.1	0.1	0.3	0.2	0.1	BDL	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.1
48	Deer Mountain*	0.1												0.1	0.1
49	Grande Prairie HP	0.3								0.0	0.0	0.0	0.4	0.4	0.1
62	East Prairie	0.1	0.1	0.3	0.1	0.1	BDL	0.0	0.1	0.1	0.1	0.1	0.2	0.3	0.1

\* Monitoring at these sites discontinued January 2017

<b>Average</b>	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.4		0.2
<b>Peak</b>	0.6	0.4	0.5	0.3	0.3	0.3	0.3	0.4	0.3	0.6	0.3	0.5	1.4	1.4	

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

**Table 47. NO<sub>2</sub> Passive - 2017 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*	1.3												1.3	1.3
2	Bay Tree	1.8	1.7	0.9	0.8	0.5	1.0	0.7	0.8	1.1	1.1	2.7	0.9	2.7	1.2
3	Forth Creek*	1.3												1.3	1.3
4	Gordondale	2.6	1.8	1.1	0.4	0.6	0.8	0.8	0.8	1.2	1.8	2.7	1.5	2.7	1.3
5	Boone Creek	1.1	0.9	0.6	0.5	0.4	0.5	0.6	0.4	0.6	0.9	2.3	1.0	2.3	0.8
7	Steeprock Creek*	4.9												4.9	4.9
9	Spirit River	1.3	1.7	0.7	0.2	1.2	3.4	1.4	0.7	1.1	0.9	1.8	1.2	3.4	1.3
10	Woking*	1.1												1.1	1.1
11	Webber Creek*	2.4												2.4	2.4
12	Hythe*	1.5												1.5	1.5
14	Sylvester	0.5	0.6	0.3	0.5	0.6	0.3	0.5	0.3	0.7	0.4	1.7	0.7	1.7	0.6
16	Beaverlodge	3.3	2.8	1.2	0.8	0.6	0.6	0.7	0.9	1.2	1.1	4.5	2.2	4.5	1.7
17	Poplar*	2.1												2.1	2.1
18	Saddle Hills	1.1	0.6	0.3	0.3	0.4	0.5	0.5	0.4	0.5	0.9	2.7	1.1	2.7	0.8
19	Wanham	1.3	0.7	0.5	0.4	0.2	0.9	0.7	0.4	0.8	1.2	1.2	0.9	1.3	0.8
20	Shaftesbury*	1.6												1.6	1.6
21	Eaglesham	1.0	0.6	0.5	0.5	0.2	1.3	1.1	0.6	0.7	0.9	2.7	0.9	2.7	0.9
23	Bear Lake*	2.4												2.4	2.4
24	Wembley	2.9	1.7	0.9	0.8	0.8	1.3	1.0	0.9	1.9	1.7	4.6	2.8	4.6	1.8
25	Pinto Creek	1.0	0.9	0.6	0.9	0.3	0.4	0.6	0.4	0.5	0.8	2.0	1.0	2.0	0.8
26	Flyingshot*	3.4												3.4	3.4
27	Grande Prairie I	14.1	11.2	7.8	3.6	2.0	1.8	1.7	2.1	5.9	8.4	15.6	12.5	15.6	7.2
28	Clairmont Lake	2.6	1.7	0.8	0.9	0.6	1.2	1.2	1.1	1.6	2.5	4.8	3.1	4.8	1.8
29	Smoky Heights	2.2	1.7	0.8	0.5	0.4	N/A	0.8	0.7	1.7	1.3	3.3	2.7	3.3	1.5
30	Fitzsimmons*	2.0												2.0	2.0
32	Gold Creek	4.9	3.1	2.0	1.9	1.3	1.2	1.5	1.4	2.6	3.8	6.1	6.8	6.8	3.0
33	Wapiti*	2.2												2.2	2.2
34	Puskwaskau*	0.9												0.9	0.9
35	Jean Cote	1.0	0.6	0.6	0.7	1.0	3.3	1.6	0.4	1.1	0.9	1.6	1.0	3.3	1.2
36	Guy	0.6	0.6	0.5	0.1	0.6	2.9	1.8	0.3	0.6	1.1	1.4	1.0	2.9	1.0
37	Crooked Creek	1.7	1.5	0.5	0.4	0.7	0.7	1.0	0.7	1.1	1.1	2.8	3.4	3.4	1.3
38	Karr Creek*	1.3												1.3	1.3
39	Clouston Creek	2.0	0.9	0.6	0.2	0.5	1.4	0.5	0.4	0.8	1.1	1.8	1.2	2.0	0.9
40	McLennan	0.9	0.9	0.7	0.5	0.8	2.1	1.4	0.5	0.8	1.2	1.7	1.1	2.1	1.1
41	Valleyview*	1.9												1.9	1.9
42	Sunset House*	1.8												1.8	1.8
43	High Prairie	1.9	0.9	0.8	0.6	0.9	1.1	0.5	0.4	0.7	0.9	2.2	1.2	2.2	1.0
44	Peavine	0.5	0.4	0.7	0.2	0.2	0.5	0.2	0.1	0.3	0.6	0.7	0.7	0.7	0.4
45	Gift Lake*	0.7												0.7	0.7
46	Little Smoky	6.6	3.5	2.5	1.7	0.9	1.6	0.9	1.3	1.5	3.9	4.8	4.5	6.6	2.8
47	Kinuso	1.3	0.9	1.1	0.6	0.6	0.6	0.3	0.3	0.4	0.8	1.9	1.2	1.9	0.8
48	Deer Mountain*	1.2												1.2	1.2
49	Grande Prairie HP	16.4								0.0	0.0	0.0	12.3	16.4	5.7
62	East Prairie	0.9	0.8	1.0	0.2	0.2	0.2	0.3	0.2	0.3	0.6	1.0	0.6	1.0	0.5
* Monitoring at these sites discontinued January 2017															
Average		2.5	1.7	1.1	0.7	0.7	1.2	0.9	0.7	1.1	1.5	3.0	2.6		1.7
Peak		16.4	11.2	7.8	3.6	2.0	3.4	1.8	2.1	5.9	8.4	15.6	12.5	16.4	

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

**Table 48. O<sub>3</sub> Passive - 2017 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*	36.9												36.9	36.9
2	Bay Tree	34.9	41.3	37.6	44.1	33.5	24.4	25.7	27.8	24.0	30.4	28.3	39.9	44.1	32.6
3	Forth Creek*	45.9												45.9	45.9
4	Gordondale*	N/A												N/A	N/A
5	Boone Creek*	37.6												37.6	37.6
7	Steeprock Creek*	22.8												22.8	22.8
9	Spirit River*	35.4												35.4	35.4
10	Woking*	43.4												43.4	43.4
11	Webber Creek*	29.9												29.9	29.9
12	Hythe*	36.4												36.4	36.4
14	Sylvester*	32.2												32.2	32.2
16	Beaverlodge*	38.3												38.3	38.3
17	Poplar*	42.7												42.7	42.7
18	Saddle Hills*	42.0												42.0	42.0
19	Wanham*	43.2												43.2	43.2
20	Shaftesbury*	39.8												39.8	39.8
21	Eaglesham*	35.6												35.6	35.6
23	Bear Lake*	36.9												36.9	36.9
24	Wembley*	35.0												35.0	35.0
25	Pinto Creek*	35.6												35.6	35.6
26	Flyingshot*	35.0												35.0	35.0
27	Grande Prairie I*	25.7												25.7	25.7
28	Clairmont Lake*	38.4												38.4	38.4
29	Smoky Heights*	36.4												36.4	36.4
30	Fitzsimmons*	29.1												29.1	29.1
32	Gold Creek*	22.8												22.8	22.8
33	Wapiti*	34.4												34.4	34.4
34	Puskwaskau*	31.8												31.8	31.8
35	Jean Cote*	41.3												41.3	41.3
36	Guy*	37.3												37.3	37.3
37	Crooked Creek	31.6	47.5	38.8	BDL	34.8	BDL	24.7	23.2	28.2	23.9	26.4	37.1	47.5	31.6
38	Karr Creek*	29.5												29.5	29.5
39	Clouston Creek*	35.9												35.9	35.9
40	McLennan*	34.1												34.1	34.1
41	Valleyview*	35.4												35.4	35.4
42	Sunset House*	40.0												40.0	40.0
43	High Prairie*	34.9												34.9	34.9
44	Peavine*	36.1												36.1	36.1
45	Gift Lake*	31.2												31.2	31.2
46	Little Smoky*	26.8												26.8	26.8
47	Kinuso	25.9	41.1	29.4	44.1	29.1	29.4	20.4	23.2	20.8	27.1	30.9	BDL	44.1	29.2
48	Deer Mountain*	31.5												31.5	31.5
49	Grande Prairie HP*	22.2												22.2	22.2
62	East Prairie*	31.1												31.1	31.1
* Monitoring at these sites discontinued January 2017															
Average		34.5	43.3	35.3	44.1	32.5	26.9	23.6	24.7	24.3	27.1	28.6	38.5		34.5
Peak		45.9	47.5	38.8	44.1	34.8	29.4	25.7	27.8	28.2	30.4	30.9	39.9	47.5	

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

**Table 49. H<sub>2</sub>S Passive - 2017 Summary**

MONITORING SITE		Hydrogen Sulphide 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													0.1	0.1
2	Girouxville 3	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.2	BDL	0.2	0.3	0.2	0.3	0.3	0.2
3	Girouxville 4	0.3	0.3	0.1	0.1	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2
4	Guy		0.1	0.1	0.1	0.1	0.1	0.1	N/A	0.1	N/A	0.1	0.1	0.1	0.1	0.1
* Monitoring at this site discontinued January 2017																
	Average	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.3	0.2	0.2	0.2	0.2
	Peak	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3

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

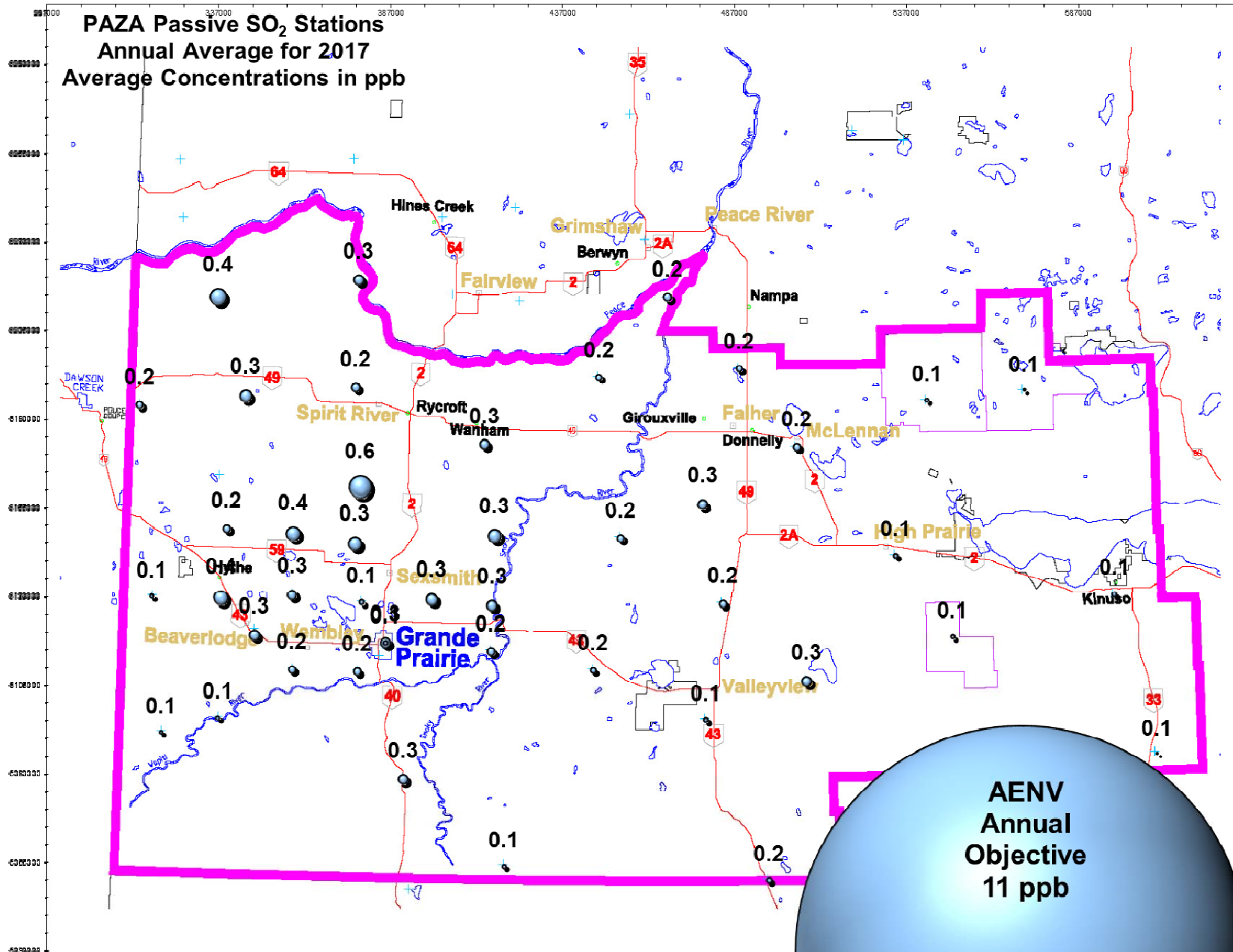


Figure 11. PAZA SO<sub>2</sub> Bubble Chart – 2017 Annual Average



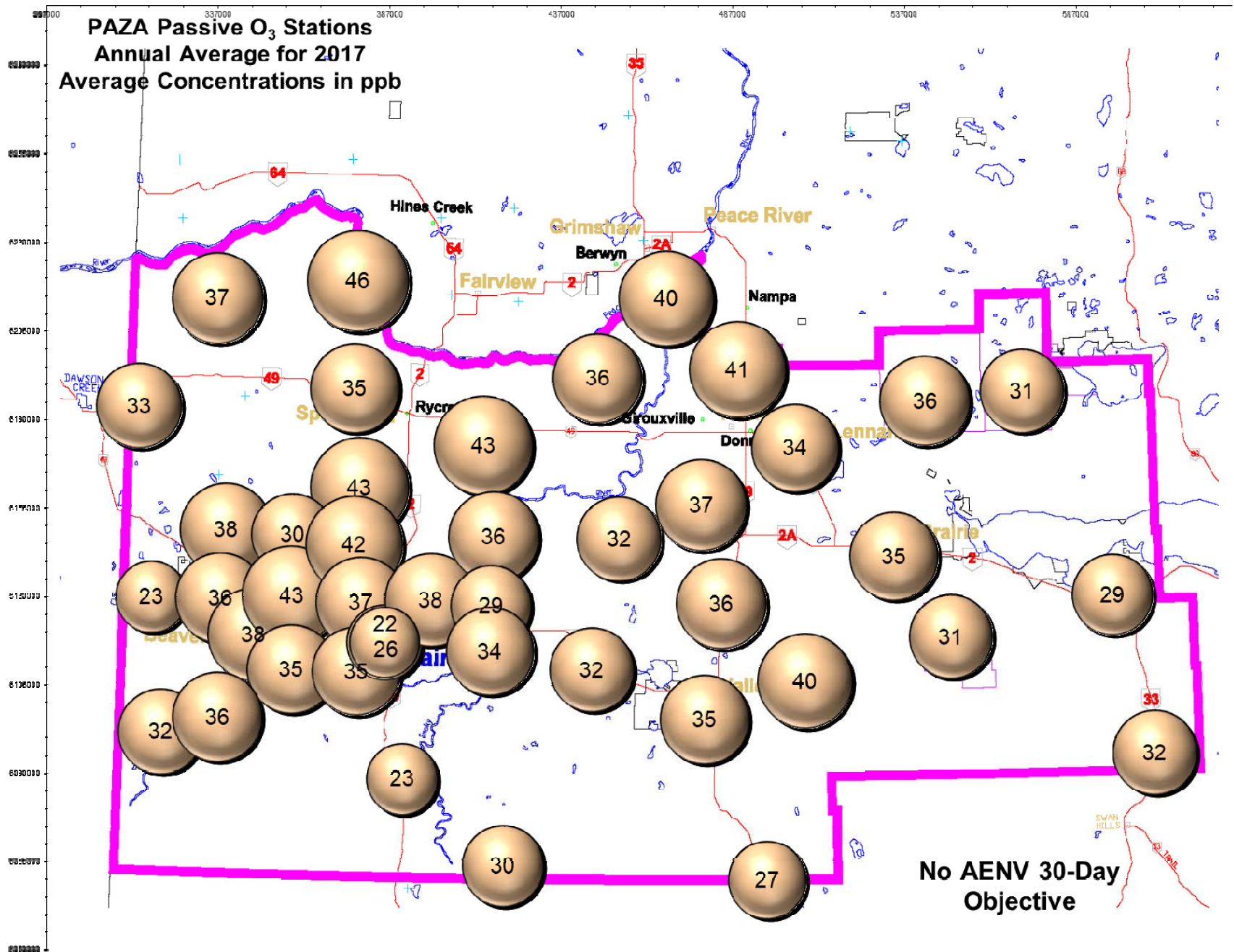


Figure 13. PAZA O<sub>3</sub> Bubble Chart – 2017 Annual Average



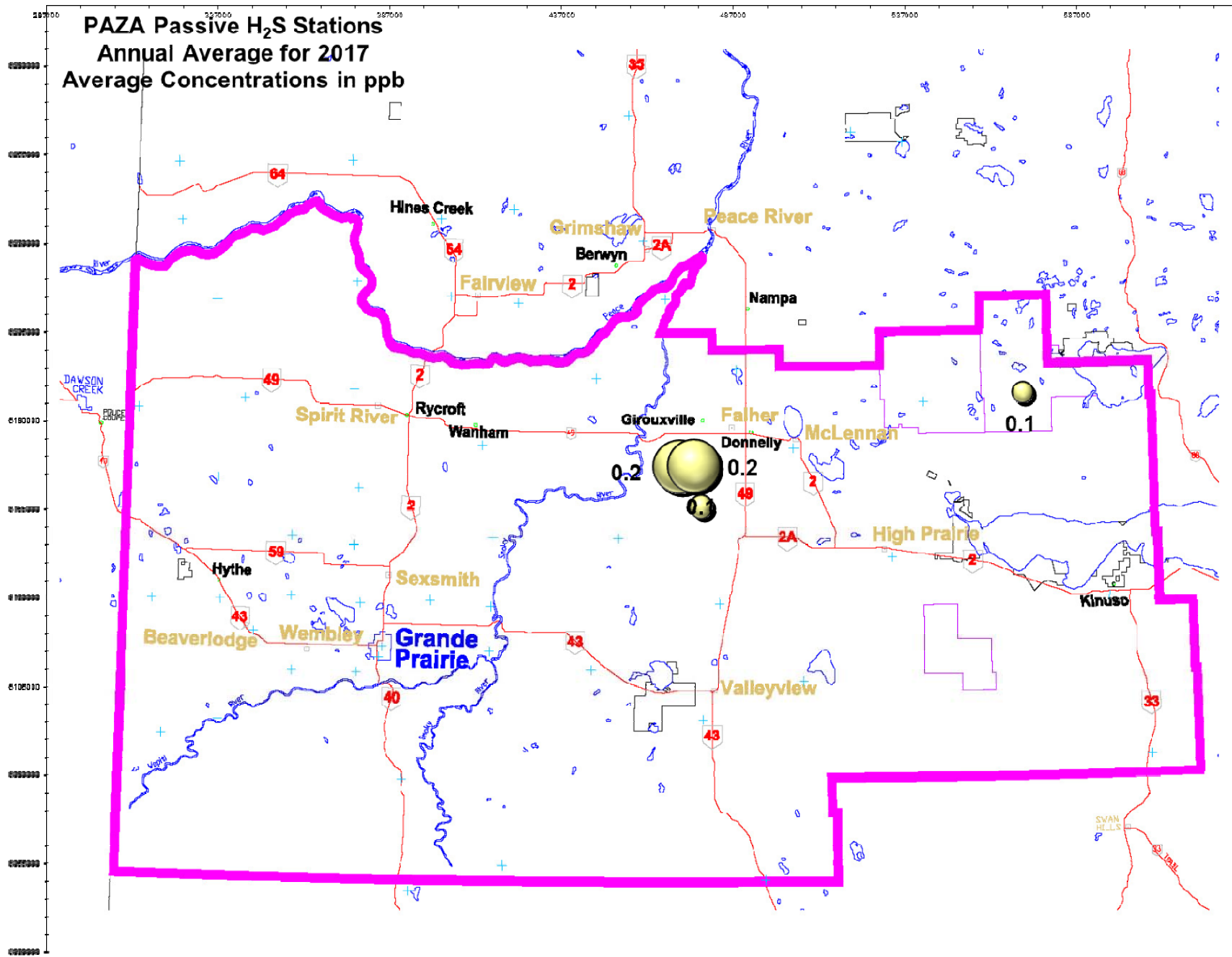


Figure 14. PAZA H<sub>2</sub>S Bubble Chart – 2017 Annual Average