British Columbia Oil & Gas Research and Innovation Society



Farmington Air Quality Monitoring Station Site Report

April 1, 2019 – March 31, 2020





PROJECT CONTACT INFORMATION

BC Oil & Gas Research Innovation Society

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AIR QUALITY REPORT SUMMARY

The following Air Quality Data report summarizes the monitoring results from the Farmington Air Quality Monitoring Station (AQMS) near Farmington, BC for the period of April 1, 2019 until March 31, 2020. The Farmington AQMS has been in operation since December 2017. Parameters monitored include continuous monitoring for Ozone (O₃), Nitrogen Oxide (NO), Nitrogen Dioxide (NO₂), Total Oxides of Nitrogen (NO_x), Sulphur Dioxide (SO₂), and Total Reduced Sulphur (TRS). The recorded (RAW) data is available from the BC Air Data Archive under the station name "Farmington Community Hall". All recorded data was been validated by Tropospheric Measurement Systems Inc. (TMS). This report is based entirely on validated data.

Meteorological parameters for wind speed, direction, temperature and humidity are also recorded at the Farmington station and results are contained in the BC Ambient Air Quality Archive. This report does not include information for the meteorological parameters monitored.

For the Farmington Deployment, the following were the significant reporting and operational events for the monitoring stations;

Operational times less than 90 percent

- For the monitoring period there were no operational times less than 90%. Capture percentages by instrument parameter are summarized in below. For comparison reported capture percentages for the previous period (2018-2019) are included.

Parameter	TRS	${ m SO}_2$	NO	\mathbf{NO}_2	NO _x	O ₃
Capture (%) (2019-2020)	92.1	94.1	95.4	95.4	95.4	94.8
Capture (%) (2018-2019)	99.4	89.8	97.7	97.7	97.7	70.6

Concentrations in excess of Ambient Air Quality Objectives

Through the monitoring period, there were no exceedances of the 1-hour, 24-hour or 8-hour rolling Ambient Air Quality objectives. For comparison reported values for the previous period (2018-2019) are included. Parameters measured with no associated objective have objective listed as "n/a".
 <u>https://www2.gov.bc.ca/assets/gov/environment/air-land-water/air/reports-pub/prov_ago_fact_sheet.pdf</u>

Parameter	TRS (ppb)	SO_2 (ppb)	NO (ppb)	NO ₂ (ppb)	NO _x (ppb)	O ₃ (ppb)
Max 1-hr (2019-2020)	2.1	13.9	51.3	22.9	59.6	58.1
Max 1-hr (2018-2019)	2.4	44.5	58.3	47.2	91.5	63.9
1-hour Obj	5 (PCO)	70 (CAAQS)	n/a	60 (CAAQS)	n/a	82 (NAAQS)
Max 24-hr (2019-2020)	1.9	1.5	10.5	11.0	14.5	47.8
Max 24-hr (2018-2019)	2.1	4.5	15.0	17.8	31.4	51.8
24-hour Obj	2 (PCO)	n/a	n/a	n/a	n/a	n/a
Max 8-hr (2019-2020)						53.7
Max 8-hr (2018-2019)						60.4
8-hour Obj	n/a	n/a	n/a	n/a	n/a	62 (CAAQS)

Monitoring Notes

- Site calibrations occurred on June 29th, 2019, September 30th, 2019 and December 18th, 2019
 - Quarterly calibration for the January 1st, 2020 till March 31st, 2020 period was not performed due to restrictions of COVID-19 outbreak in March 2020. Verification calibration will be performed at the earliest possible opportunity. Daily zero and span cycles will continue to be monitored to assess instrument operation. If any operational issues are found during next available service period, this report will be updated.
- BC Ministry of Environment Site Audits occurred on June 12th, 2019 and Nov 6th, 2019. Audit results are available

<u>http://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=43336</u>

 \circ All instruments passed site audits

Validation Notes

- Validation performed on 5-minute average values for 1 hour, 24 hour and 8 hour rolling reporting periods.
- Each instrument goes through 25-hour zero and span cycle, calibration stability values were reviewed, and found to be within target values for reporting period.
- Calibration periods were removed from the count averaging.
- TRS analyzer had a converter failure from October 8th, 2019 until Oct 17th, 2019 when a replacement converter was installed. Data was invalidated for this period.

BCOGRIS Farmington Report



CONTENTS

Project Contact Information	2
Air Quality Report Summary	3
Monitoring Site Location	6
Satellite View of Monitoring Location	6
Site View Images	7
Monitoring Data Summaries	8
1-Hour Data Summary	8
24-Hour Data Summary	8
8-Hour Rolling Data Summary	8
Parameter Reports	9
Total Reduced Sulphur (TRS)	9
Sulphur Dioxide (SO ₂)	10
Nitrogen Oxide (NO)	11
Nitrogen Dioxide (NO ₂)	12
Oxides of Nitrogen (NO _x)	13
Ozone (O ₃)	14
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MONITORING SITE LOCATION

The monitoring site location is near the Farmington Community Hall located near Farmington, BC.

The site elevation is approximately 698m, the location is approximately;

55.913292°, -120.531641°

Satellite View of Monitoring Location



Site View Images



MONITORING DATA SUMMARIES

<u>1-Hour Data Summary</u>

Date/Time	TRS	SO2	NO	NO2	NOx	O3
Average	0.0	0.1	0.7	2.5	3.2	26.0
Min	0.0	0.0	0.0	0.1	0.1	0.3
Max	2.1	13.9	51.3	22.9	59.6	58.1
#	8091	8269	8384	8384	8384	8326
Capture	92.1	94.1	95.4	95.4	95.4	94.8
SD	0.5	0.5	2.2	2.6	4.0	11.5
TMin	9-11-2019	1-18-2020	5-31-2019	11-17-2019	10-6-2019	8-10-2019
	23:00	03:00	20:00	23:00	03:00	02:00
TMax	3-26-2020	10-16-2019	6-16-2019	1-24-2020	6-16-2019	4-21-2019
	05:00	12:00	00:00	09:00	00:00	13:00

<u>24-Hour Data Summary</u>

Date/Time	TRS	SO2	NO	NO2	NOx	O3
Average	0.0	0.1	0.7	2.5	3.2	26.1
Min	0.0	0.0	0.1	0.4	0.6	6.6
Max	1.9	1.5	10.5	11.0	14.5	47.8
#	348	356	363	363	363	358
Capture	95.1	97.3	99.2	99.2	99.2	97.8
SD	0.5	0.3	1.0	1.7	2.3	8.7
TMin	10-28-2019	1-15-2020	5-29-2019	2-4-2020	2-4-2020	10-19-2019
	00:00	00:00	00:00	00:00	00:00	00:00
TMax	3-26-2020	10-18-2019	6-15-2019	11-29-2019	6-15-2019	4-23-2019
	00:00	00:00	00:00	00:00	00:00	00:00

8-Hour Rolling Data Summary

Date/Time	O3
Average	26.1
Min	0.6
Max	53.7
#	8617
Capture	98.1
SD	10.5
TMin	8-10-2019 05:00
TMax	5-12-2019 18:00

PARAMETER REPORTS

Total Reduced Sulphur (TRS) TRS Graph 1-Hour Averages



TRS Graph 24-Hour Averages



Sulphur Dioxide (SO₂) SO₂ Graph 1-Hour Averages



SO₂ Graph 24-Hour Averages



Nitrogen Oxide (NO) NO Graph 1-Hour Averages



NO Graph 24-Hour Averages



Nitrogen Dioxide (NO₂) NO₂ Graph 1-Hour Averages



NO2 Graph 24-Hour Averages



Oxides of Nitrogen (NO_x) NO_x Graph 1-Hour Averages



NO_x Graph 24-Hour Averages



Ozone (O₃) O₃ Graph 1-Hour Averages







O3 Graph 8-Hour Rolling Averages

