APPENDIX 23 2023 AIR QUALITY MONITORING REPORT

AGNICO EAGLE

MELIADINE GOLD MINE

2023 Air Quality Monitoring Report

In Accordance with NIRB Project Certificate No. 006

Prepared by:
Agnico Eagle Mines Limited – Meliadine Division

MARCH 2024

EXECUTIVE SUMMARY

In accordance with Nunavut Impact Review Board (NIRB) Project Certificate No. 006 (NIRB, 2022), and as described in the Meliadine Air Quality Monitoring Plan, Agnico Eagle Mines Ltd. (Agnico Eagle) continued ambient outdoor air quality monitoring at the Meliadine site near Rankin Inlet in 2023.

Monitoring onsite in 2023 included year-round measurements of dustfall, NO_2, and SO_2 over one-month averaging periods using passive sampling devices, as well as active monitoring of suspended particulates (TSP, $PM_{2.5}$, and PM_{10}) on a six-day cycle. Summertime dustfall transect sampling was conducted at three locations along the All-Weather Access Road (AWAR) and one location along the Rankin Inlet Bypass Road.

Dustfall results are compared to Alberta's Ambient Air Quality Guidelines (Alberta Environment and Parks, 2019) for recreational and industrial areas (AB-Rec, AB-Ind) for context, which relate to nuisance and aesthetic concerns. Across all onsite perimeter dustfall monitoring stations (DF-4, DF-5, DF-6, and DF-7), 42 of the 47 samples collected in 2023 were less than the AB-Rec guideline. One sample exceeded both AB-Rec and AB-Ind (DF-4; November 8), which is anticipated to occur occasionally. An additional four samples exceeded AB-Rec only. These instances occurred at DF-4 and DF-5, which are predominantly downwind of the mine site. Historically, exceedances of the AB-Rec guideline continue to be relatively uncommon (<12% of samples in any year).

For AWAR and Bypass Road dustfall monitoring transects (DF-1, DF-2, DF-3, and DF-WT, summer-only sampling), average rates of dustfall were similar to or less than to those observed previously. Even in very close proximity to the road (25 m), average rates of dustfall over the summer season across the AWAR stations were less than the AB-Rec guideline. Dust suppressant in the form of calcium chloride dry product was applied along portions of the AWAR in July, and along the full length in August and September.

Suspended particulates (TSP, $PM_{2.5}$, and PM_{10}) are scheduled to be assessed every 6 d in two locations (DF-5 and DF-7) using four Partisol air samplers. In 2023, some data loss occurred due to occasional instrument malfunction, but down time was minimal compared to previous years. In total, 325 of 360 possible samples were collected. With the exception of one TSP sample (DF-7; February 23) all results for suspended particulates were less than regulatory guidelines for the 24-h averaging time (relevant Government of Nunavut Ambient Air Quality Standards (GN guidelines; GN, 2011), Canadian Ambient Air Quality Standards (CAAQS; CCME, 2012, 2020a & b), and/or BC Ambient Air Quality Objectives (BC objectives; BC, 2021)) and maximum concentrations predicted in the Final Environmental Impact Statement (FEIS) for the Meliadine Gold Project (Golder, 2014). From this data, no developing trends of air quality concern are evident. Annual averages for suspended particulates were less than relevant regulatory guidelines and 2014 FEIS predictions in all cases. Concentrations of metals of concern to the Project in TSP (cadmium and iron) were also less than 2014 FEIS-selected health-based screening values and FEIS maximum model predictions in all samples.

Using monthly-average measurements, calculated annual average concentrations of NO_2 and SO_2 did not exceed regulatory guidelines (GN guidelines, CAAQS) and 2014 FEIS maximum predicted values.

Incinerator stack testing was performed from September 29 – October 1, 2023. The average measured concentration of mercury was less than the GN guideline for this parameter (GN Environmental

Guideline for the Burning and Incineration of Solid Waste, January 2012), but the average measured concentration of total dioxins and furans exceeded the guideline. This result is under investigation as further discussed in the 2023 Annual Report to the NIRB.

Agnico Eagle is required by Environment Canada's Greenhouse Gas Emissions Reporting Program (GHGRP) to track greenhouse gas emissions. Calculated emissions for the Meliadine site (including Rankin Inlet operations) were reported on June 1st, 2023 for the 2022 year. Total emissions were 131,229 tonnes CO_2e, which is less than the FEIS-predicted maximum of 317,000 tonnes CO_2e.

Since monitoring results in 2023 were within applicable air quality standards and FEIS predictions, and/or did not indicate any air quality trends of concern at this time, no adaptive management measures for air quality are planned for 2024.

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SECTION 1 • INTRODUCTION

1.1. Background and Objectives

The Meliadine Gold Mine (the Mine) near Rankin Inlet, Nunavut is subject to the terms and conditions of the amended Project Certificate 006 issued by the Nunavut Impact Review Board (NIRB) in accordance with the Nunavut Land Claims Agreement Article 12.5.12 on March 2, 2022 (NIRB, 2022).

In accordance with Conditions 1, 2, 3, and 27b of the Project Certificate, Agnico Eagle maintains the Meliadine Air Quality Monitoring Plan (the Plan) to describe the program for onsite ambient air quality monitoring. Condition 5 of the Project Certificate is addressed through the Incineration Management Plan, and results are reported separately in the Annual Report. The overall goal of the air quality monitoring program is to confirm the effectiveness of mitigation measures identified in the Project's environmental assessment by measuring key air quality parameters, and in doing so, determine if alternative mitigation strategies are required to further reduce emissions from the Project.

In accordance with the NIRB Project Certificate and the Plan, air quality monitoring for the Meliadine site includes year-round analysis of suspended particulates, dustfall, NO_2 and SO_2. A real time meteorological station has been installed at the site and recorded meteorological data is reported. A summary of the air quality monitoring program according to the most recent Air Quality Monitoring Plan (Version 3, June 2020) is shown in Table 1. Monitoring according to the pre-construction objectives occurred from 2012 - 2016. In 2017, the project entered the construction phase, which continued in 2018. In 2019, the project entered the operations phase, which continued through 2023.

Table 1. Air quality monitoring objectives according to the Air Quality Monitoring Plan (Version 3, June 2020).

Project Phase	Program Objective	Monitoring Equipment
Pre-construction (2012 – 2016)	• To obtain baseline data in order to be able to compare with construction and operation phases	• Three dustfall jars (passive) onsite • Three dustfall jars along AWAR
Construction (2017 – 2018)	• To verify compliance with applicable standards • To apply mitigation measures if necessary	• One TSP/PM_{10} sampling unit (Partisol model 2025) • One passive NO_2 – SO_2 monitor • Four dustfall jars (passive) onsite Three dustfall jars (passive) along AWAR
Operations (2019 +)	• To verify the predicted concentrations of TSP, PM_{10}, and $PM_{2.5}$ • To verify that the mitigation measures considered integral to the Project are being incorporated as planned, and are effective	• Two TSP sampling units (Partisol model 2025i) (DF-5, DF-7) • Two PM_{coarse}/$PM_{2.5}$ sampling units (Partisol Model 2025i-D) (DF-5, DF-7) • Two passive NO_2–SO_2 monitors (DF-5, DF-7) • Four dustfall jars (passive) onsite (DF-4, DF-5, DF-6, DF-7) • Three dustfall (passive) monitoring transects along AWAR (km 4, 10, 23 – DF-1,

		DF-2, DF-3) and one along the Rankin Inlet By-Pass Road (DF-WT) – summer season • Background dustfall (passive) monitoring at a reference station – summer season

1.2. Reporting

According to the site's Air Quality Monitoring Plan, this comprehensive report on results of the program is provided to the NIRB by March 31 annually. This report provides results for monitoring conducted throughout the 2023 calendar year.

1.3. Program Summary

The 2023 air quality and dustfall monitoring program is summarized in Table 2 and described below, including any deviations from the Plan. Monitoring locations are shown in Figure 1.

Table 1. Planned air quality monitoring locations and parameters. *Any deviations in the sampling plan in 2023 are in italics.* Data loss for each monitoring station is described in Section 2.

Monitoring Station	UTM (15V)	Parameters	Frequency	General Location	Location Description
DF-WT	542890E 6967093N	Dustfall transect	Summer only	Rankin Inlet By-Pass Road	1.3 km northwest of Nipissak Lake and ~500m southeast (downwind) of community quarry sites. Samples at 60, 120, 300m on each side of the road and 1000 m on the east side.
DF-1	544073E 6970759N	Dustfall transect	Summer only	AWAR	AWAR km 4 South of Iqalugaarjuup Nunanga Park. Samples at 25, 100, and 300 m on each side of the road. Former year-round station DF-1: 100 m from road (west/upwind side)
DF-2	546621E 6973334N	Dustfall transect	Summer only	AWAR	AWAR km 10 East of Iqalugaarjuup Nunanga Park. Samples at 25, 100, and 300 m on each side of the road. Former year-round station DF-2: 100 m from road (west/upwind side)
DF-3	544899E 6981387N	Dustfall transect	Summer only	AWAR	AWAR km 23

					North of Iqalugaarjuup Nunanga Park. Samples at 25, 100, and 300 m on each side of the road. Former year-round station DF-3: 25 m from road (west/upwind side)
DF-4	540014E 6987836N	Dustfall	Year-round	Onsite	Adjacent to freshwater pumphouse on Lake A8 (north). Downwind of main mine site.
DF-5	542226E 6988507N	Dustfall NO_2, SO_2 TSP, PM_{10}, $PM_{2.5}$	Year-round	Onsite	500 m south-east of the mine camp. Downwind of main mine site. Within 2014 FEIS Air Quality Impact Assessment Site Study Area.
DF-6	537586E 6989096N	Dustfall	Year-round	Onsite	Adjacent to Lake B5, approx. 600 m southwest of main mine site. Cross-wind from main mine site.
DF-7	537143E 6991176N	Dustfall NO_2, SO_2 TSP, PM_{10}, $PM_{2.5}$	Year-round	Onsite	Adjacent to emulsion plant, approx. 2 km northwest (upwind) of the camp complex. Within 2014 FEIS Air Quality Impact Assessment Local Study Area (just outside of Site Study Area).
DF-8 (also called DF-REF)	525656E 7001656N Or alternative *2023: 533321E 6998540N*	Dustfall	Summer only	Reference	North end of Meliadine Lake near AEMP Reference Area 2 (MEL-04). UTM approximate. Reference stations may be rotated.

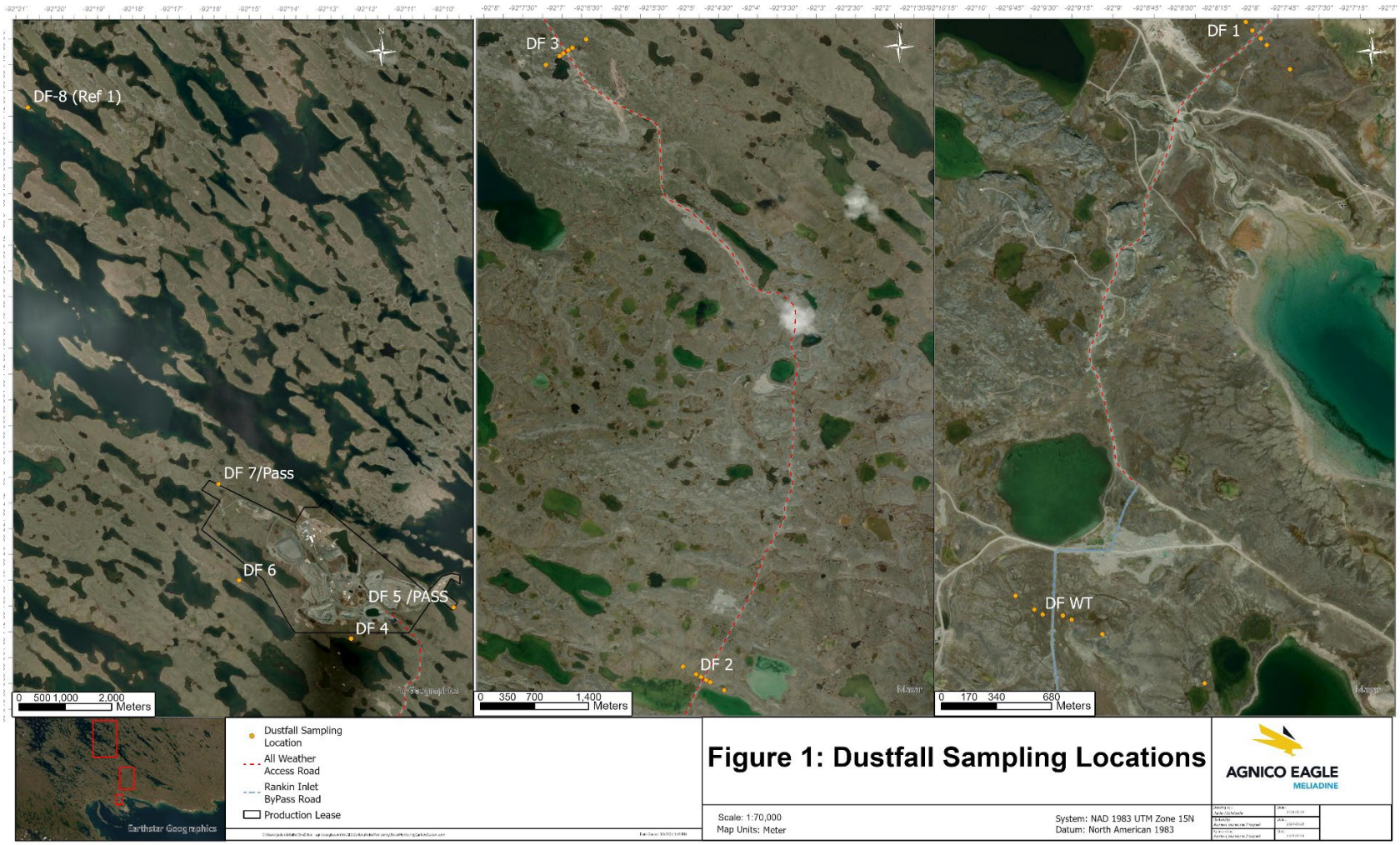

Figure 1. Air quality monitoring locations

SECTION 2 • METHODS

2.1. Sampling Methodology

2.1.1. Suspended Particulates

Suspended particulates (TSP, PM_{10}, $PM_{2.5}$) were scheduled to be sampled over 24-h averaging periods every six days using a Partisol Plus Model 2025i Sequential Air Sampler (TSP) and a Partisol Plus Model 2025i-D Dichotomous Sequential Air Sampler ($PM_{2.5}/PM_{10}$) at monitoring locations DF-5 and DF-7 (Figure 1). Partisol samplers draw in a stream of ambient air at a controlled flow rate, and particulates are collected on a pre-weighed filter supplied by an accredited laboratory. The exposed filter is then shipped back to the laboratory and re-weighed to measure the total accumulated particulates. TSP filters are also analyzed by the laboratory for cadmium and iron, as described in the Plan. As described in Section 2.3, travel blanks (filters shipped back and forth with sample filters, but not run through the Partisol instruments) were also collected and analyzed.

In 2023, suspended particulate sampling occurred every six days beginning January 6, with the exception of sampling dates where data loss occurred for various reasons (Table 3). As described in the Air Quality Monitoring Plan some data loss is anticipated, particularly during the winter months, due to the extreme weather conditions at the Meliadine site.

Overall, data loss in 2023 was significantly improved over previous years (90%, or 325 of 360 possible samples were collected in 2023, compared to 78% in both 2021 and 2022). For each of the four Partisol units, data loss for 2023 is considered minor to moderate, with rates of 0, 5, 7, and 20%, or 0 - 12 of 60 possible samples (Table 3). Downtime was most extensive for the dichotomous unit ($PM_{2.5}/PM_{10}$) at DF-7 (20%), primarily due to a broken part that needed replacement, and a power failure at the unit. These issues each took approximately 4 weeks to diagnose and remediate. The remainder of equipment failures consisted of filter exchange errors, where the instrument did not properly advance the next filter cartridge. This error occurred intermittently across all Partisol instruments.

Table 2. Summary of Partisol data loss. Check mark indicates sample was collected over 24 h from midnight to midnight, without issue.

Sample Date	TSP		$PM_{2.5}/PM_{10}$	
	DF-5	DF-7	DF-5	DF-7
2023-01-06	✓	✓	✓	✓
2023-01-12	✓	✓	✓	✓
2023-01-18	✓	✓	✓	✓
2023-01-24	✓	Equipment failure[1]	✓	✓
2023-01-30	✓[4]	✓[4]	✓	✓[4]
2023-02-05	✓	✓	✓	Equipment failure[1]
2023-02-11	✓	✓	✓	Equipment failure[1]
2023-02-17	✓	✓	✓	Equipment failure[1]
2023-02-23	✓[4]	✓[4]	✓[4]	Equipment failure[1]
2023-03-01	✓	✓	✓	✓
2023-03-07	✓	✓	✓	✓

Sample Date	TSP		$PM_{2.5}/PM_{10}$	
	DF-5	DF-7	DF-5	DF-7
2023-03-13	✓	✓	✓	✓
2023-03-19	✓	✓	✓	✓
2023-03-25	✓	✓	✓	✓
2023-03-31	✓	✓	Equipment failure[1]	✓
2023-04-06	✓	✓	✓	✓
2023-04-12	✓	✓	✓	✓
2023-04-18	✓	✓	✓	✓
2023-04-24	✓	✓	✓	✓
2023-04-30	✓	✓	Equipment failure[1]	✓
2023-05-06	✓	✓	Equipment failure[1]	✓
2023-05-12	✓	✓	Equipment failure[1]	✓
2023-05-18	✓	✓	✓	✓
2023-05-24	✓	✓	✓	✓
2023-05-30	✓	✓	✓	✓
2023-06-05	✓	✓	✓	✓
2023-06-11	✓	✓	✓	✓
2023-06-17	✓	✓	✓	✓
2023-06-23	✓	✓	✓	✓
2023-06-29	✓	✓	✓	Equipment failure[1]
2023-07-05	✓	✓	✓	Equipment failure[1]
2023-07-11	✓	✓	✓	Equipment failure[1]
2023-07-17	✓	✓	✓	Equipment failure[1]
2023-07-23	✓	✓	✓	✓[4]
2023-07-29	✓	✓	✓	✓
2023-08-04	✓	✓	✓	✓
2023-08-10	✓	✓	✓	✓
2023-08-16	✓	✓	✓	✓
2023-08-22	✓	✓	✓	✓
2023-08-28	✓	✓	✓	✓
2023-09-03	✓	Other (calibration error)[3]	✓	✓
2023-09-09	✓	Other (calibration error)[3]	✓	✓
2023-09-15	✓	✓	✓	Equipment failure[1]
2023-09-21	✓	✓	✓	✓
2023-09-27	✓	✓	✓	✓
2023-10-03	✓	✓	✓	✓
2023-10-09	✓	✓	✓	Equipment failure[1]
2023-10-15	✓	✓	✓	✓
2023-10-21	✓	✓	✓	✓
2023-10-27	✓	✓	✓	✓
2023-11-02	✓	✓	✓	✓

Sample Date	TSP		$PM_{2.5}/PM_{10}$	
	DF-5	DF-7	DF-5	DF-7
2023-11-08	✓	✓	✓	✓
2023-11-14	✓	✓	✓	Equipment failure[1]
2023-11-20	✓	✓	✓	✓
2023-11-26	✓	✓	✓	✓
2023-12-02	✓	✓	✓	✓
2023-12-08	✓	✓	✓	✓
2023-12-14	✓	✓	✓	✓
2023-12-20	✓	✓	✓	✓
2023-12-26	✓	✓	✓	Equipment failure[1]

[1]Equipment failure (e.g. power failure, filter exchange error, broken parts, torn filter).

[2]Technician or laboratory error (e.g. sequence not initiated, sample lost in transit) – *none in 2023*.

[3]Other (as described).

[4]Sample was collected but was initiated a time other than 00:00.

2.1.2. Dustfall

Dustfall was collected in open vessels containing a purified liquid matrix (de-ionized water and isopropanol), supplied by a commercial analytical laboratory. Particles are deposited and retained in the liquid, which is then analyzed for total and fixed (non-combustible) dustfall by the supplying laboratory. While regulatory guidelines relate to total dustfall, the non-combustible fraction (fixed dustfall) is considered more representative of mine-related activity because it excludes organic components (e.g., pollen, plants, animal particles).

Dustfall vessels were deployed according to laboratory specifications for sequential one-month periods at each sampling location, retrieved, re-sealed, and shipped back to the laboratory. Canisters were placed on a stand at 2-m height, with an open bucket-style holder fitted with wires around the rim to deter birds (see Figure 2). Calculated dustfall rates were normalized to 30 days (mg/cm^2/30 days). Travel blanks (canisters accompanying samples but not opened) were also sent with each shipment.

In 2023, dustfall monitoring was conducted over approximately 30-day periods for onsite year-round sampling stations DF-4, DF-5, DF-6, and DF-7 (Figure 1). Results are reported here for the period of January 6, 2023 – January 7, 2024. One dustfall jar was lost for DF-4 for the period of April 6 – May 6 (the sample and stand were inadvertently knocked down by equipment during the sampling period, and therefore could not be used for analysis).

As described in the Air Quality Monitoring Plan, summer-only transect sampling is planned for AWAR stations DF-1, DF-2, and DF-3, and By-Pass Road transect DF-WT. For all four road transects, dustfall was collected over two sequential 30-d (approx.) periods from July 7 – September 7, 2023. Near-field reference samples for the DF-WT transect are collected at 1000 m east of the road, and these were collected later than the remainder of the transect samples in this location (beginning August 23 and September 23) after they were missed during the initial deployment.

Finally, background reference dustfall station DF-8 was sampled over two 30-d (approx.) periods beginning July 15, and August 22, 2023.

Figure 2: Dustfall sampling stand at the Meliadine site.

2.1.3. NO_2 and SO_2

Concentrations of NO_2 and SO_2 by volume (ppb) were analyzed over one-month periods using a passive sampling device provided by Bureau Veritas Laboratories and deployed by Agnico Eagle technicians according to laboratory-identified procedures. Following each sampling period, the sampling device was retrieved and shipped to the commercial laboratory for analysis.

In 2023, the passive samplers for NO_2 and SO_2 were installed at two locations (DF-5 and DF-7; Figure 1). Passive monitoring of NO_2 and SO_2 was conducted over approximately 30-day periods from January 6, 2023 – January 7, 2024. Duplicates and travel blanks for both parameters were also collected monthly.

One NO_2 sampler was lost, for the period of October 8 – November 8. No other data loss occurred for NO_2 or SO_2 samples in 2023.

2.2. Data Analysis

2.2.1. Suspended Particulates

2.2.1.1. Data Processing

Laboratory-reported results for mass of particulates were used to calculate associated concentrations of TSP, PM_{10} and $PM_{2.5}$ ($\mu g/m^3$) according to the Partisol operating manual, as follows.

TSP is calculated as:

$$TSP = M_{TSP}/V$$

Where: TSP = mass concentration of particulates ($\mu g/m^3$)

M_{TSP} = final mass of TSP filter – initial mass of filter (µg/filter)

V = volume of air drawn in during the sampling period (~24 m^3)

Since the dichotomous unit splits the intake air stream to determine $PM_{2.5}$ and PM_{coarse} ($PM_{10-2.5}$), the volume of air is different for each filter. Calculations are performed as follows.

$PM_{2.5}$ is calculated as:

$$PM_{2.5} = M_{2.5}/V_{2.5}$$

Where: $PM_{2.5}$ = mass concentration of particulates ($\mu g/m^3$)

$M_{2.5}$ = final mass of $PM_{2.5}$ filter – initial mass of filter (µg/filter)

$V_{2.5}$ = volume of air drawn through the $PM_{2.5}$ filter during the sampling period (~21.7 m^3)

And,

PM_{coarse} is calculated as:

$$PM_{coarse} = M_{coarse}/V_{total} – PM_{2.5}(V_{coarse}/V_{total})$$

Where: PM_{coarse} = mass concentration of particulates ($\mu g/m^3$)

M_{coarse} = final mass of PM_{coarse} filter – initial mass of filter (µg/filter)

V_{total} = total volume of air drawn into unit during sampling (~24m^3)

V_{coarse} = volume of air drawn through the PM_{coarse} filter during the sampling period (~2.4 m^3)

Concentration of PM_{10} is then calculated as PM_{coarse} + $PM_{2.5}$.

For comparison to Government of Nunavut Environmental Guidelines for Ambient Air Quality (GN, 2011), concentrations of particulates need to be calculated using air volumes normalized to 25°C and 101.3kPA (standard temperature and pressure; STP). Standardized volumes were recorded by the Partisol unit for each 24-h sampling period and used in calculations.

2.2.1.2. Regulatory Guidelines and FEIS Predictions

Results of suspended particulate monitoring are compared primarily to available Government of Nunavut (GN) Environmental Guidelines for Ambient Air Quality (GN, 2011). Where GN guidelines were not available (i.e. for PM_{10}) results are compared to the BC Air Quality Objective Guidelines (BC, 2021). In 2023, comparison to Canadian Ambient Air Quality Standards (CAAQS; 2020 or 2025, as available) was also added, for reference (CCME, 2012). CAAQS represent voluntary objectives for an individual site, and are typically used at a regional scale for airshed planning purposes. Regulatory guidelines for the measured parameters are provided in Table 4.

Finally, results are compared to 2014 FEIS predictions for maximum concentrations of suspended particulates, to ensure estimates were sufficiently conservative, and related impact assessment results continue to be representative (i.e., Atmospheric Environment and Impact Assessment – FEIS Volume 5). Maximum FEIS air quality predictions for the site study area (SSA) and local study area (LSA) where the stations DF-5 and DF-7 are located, respectively, are shown in Table 4. It is noted that monitoring results include background contributions, whereas model predictions do not, so comparisons to these FEIS predictions are expected to be conservative. Comparisons to predicted peak concentrations (which include influence of meteorological anomalies) may be conducted as warranted.

Table 3. Government of Nunavut (GN) Environmental Guidelines for Ambient Air Quality (GN, 2011), British Colombia (BC) Ambient Air Quality Objectives (BC, 2021), Canadian Ambient Air Quality Standards (CAAQS; CCME, 2012), and 2014 Final Environmental Impact Statement (FEIS; Golder, 2014a) predictions for suspended particulate matter at Meliadine along with the representative monitoring station (DF-5/DF-7).

Parameter	Averaging Time	Regulatory Guideline		FEIS Prediction ($\mu g/m^3$)	
		Jurisdiction	Guideline Value ($\mu g/m^3$)	SSA (represented by DF-5)	LSA (represented by DF-7)
$PM_{2.5}$	24-h	GN	30	55.2	19.6
		CAAQS (2020)	27*		
	Annual	CAAQS (2020)	8.8^	-	-
PM_{10}	24-h	BC	50	104.0	58.2
Total Suspended Particulate (TSP)	24-h	GN	120	213.7	122.3
	Annual‡	GN	60	16.8	17.0

*The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations.

^The 3-year average of the annual arithmetic average of the daily 24-hour average concentrations.

‡GN guideline applies to the geometric mean and FEIS prediction applies to the arithmetic mean.

In accordance with Term and Condition 1b of the Project Certificate, concentrations of particulate-bound metals of relevance to the Project (iron and cadmium) are measured in TSP samples to understand implications for human health, as predicted in the Project's Human Health Risk Assessment (FEIS Volume 10). Results are compared to the FEIS-selected health-based screening values (Golder, 2014b; Volume 10, Appendix 10-2), as shown in Table 5, as well as FEIS-predicted maximum concentrations of contaminants

for locations Camp (as represented by DF-5) and Receptor 1 (as represented by DF-7) (Golder, 2014b; Volume 10). The FEIS health-based screening values were generally selected as the most conservative air quality guideline from a wide range of jurisdictions, as described in Golder (2014b), Volume 10, Appendix 10-2. These guidelines will provide context for interpreting the results of trace metals analysis in particulate samples.

Table 4. FEIS-selected health-based screening values for chronic inhalation (24-h) from the Project's Human Health Risk Assessment (Golder, 2014b), and FEIS-predicted maximum concentrations of contaminants for monitoring locations Receptor 1 and Camp (Golder, 2014b).

Contaminant	FEIS Values		
	Selected Health-Based Screening Value ($\mu g/m^3$)	Prediction – Camp (DF-5) ($\mu g/m^3$)	Prediction – Receptor 1 (DF-7) ($\mu g/m^3$)
Cadmium	0.025	0.0180	0.0030
Iron	4	8.7300	3.7000

2.2.2. Dustfall

No standards for dustfall are available for Nunavut. Results of the dustfall analysis are therefore compared to Alberta's Ambient Air Quality Guideline for recreational areas for total dustfall (January, 2019) of 0.53 $mg/cm^2/30d$ (AB-Rec) and commercial/industrial guideline of 1.58 $mg/cm^2/30d$ (AB-Ind), to provide context (Table 6). These guidelines are based on aesthetic or nuisance concerns and are to be used for airshed planning and management, as a general performance indicator, and to assess local concerns.

Based on measurements for other mines in Nunavut (Meadowbank Complex), it is anticipated that guidelines for recreational areas may regularly be exceeded in close proximity to the AWAR or mine site, and that guidelines for industrial areas may occasionally be exceeded. However, exceedance of these guidelines does not necessarily indicate that impacts to ecological endpoints (e.g. vegetation or wildlife) are occurring. Impacts of dust deposition on the aquatic and terrestrial environments are assessed and compared with FEIS predictions through the Aquatic Ecosystem Monitoring Program (AEMP) (water and sediment quality monitoring) and Terrestrial Environment Management and Monitoring Program (TEMMP) (soil and vegetation sampling through the ecological risk assessment program).

Dustfall rates are additionally analyzed for indications of spatial trends to look at differences between transect locations, upwind and downwind locations, and distance from the road. A temporal analysis also checks for consistently increasing trends in the measured dustfall rates year-over-year.

Table 5. Alberta Environment's Ambient Air Quality Guidelines for dustfall in recreational/residential areas (AB-Rec) and commercial/industrial use areas (AB-Ind).

Parameter	Alberta Environment Guideline	
Dustfall	Recreational/Residential areas (AB-Rec)	0.53 $mg/cm^2/30d$
	Commercial/Industrial areas (AB-Ind)	1.58 $mg/cm^2/30d$

2.2.3. NO_2 and SO_2

Monthly NO_2 and SO_2 sampling results are averaged across the calendar year and compared with GN Environmental Guidelines for Ambient Air Quality (GN, 2011) and for reference, to the Canadian Ambient Air Quality Standards (CAAQS; 2020 and 2025) for the annual averaging time (CCME, 2020a & b).

A comparison to FEIS maximum model predictions plus FEIS-assumed background concentrations for NO_2 and SO_2 is also included (Table 7), along with a review of historical data for spatial and temporal trends.

Table 6. Summary of GN guidelines (GN, 2011), CAAQS (CCME, 2020 a & b), and FEIS predictions (Golder, 2014a) plus assumed background concentrations for annual average concentrations of NO_2 and SO_2.

Compound	Regulatory Guideline		FEIS Prediction (+ Background; Annual Average)	
	Jurisdiction	Guideline Value (Annual Average)	SSA (DF-5)	LSA (DF-7)
NO_2	GN	32 ppb	23.3 + 0.05 ppb	12.1 +0.05 ppb
	CAAQS (2020, 2025)	17.0, 12.0 ppb*		
SO_2	GN	11 ppb	0.1 +0.2 ppb	0.0 + 0.2 ppb
	CAAQS (2020, 2025)	5.0, 4.0 ppb*		
*The average over a single calendar year of all 1-hour average concentrations.				

2.3. QA/QC

According to the Plan, QA/QC procedures for the monitoring program included the following:

2.3.1. Suspended Particulates

- Travel blanks (laboratory prepared cartridges that travel with the samples but are not exposed to the atmosphere) were collected monthly for the two sampling locations (DF-5 and DF-7) from January through December, except in August and September (due to a communication error). Of the 20 trip blanks, nine were at or below detection limits (<3 µg/filter), with a maximum result of 7 µg/filter (April). Based on these results, no data correction is applied.
- An accredited laboratory was used for pre-sample preparation and determining sample weights;
- Samples and data were collected by appropriately trained personnel; and
- Qualified personnel interpreted the flow data and confirmed ambient particulate concentrations based on laboratory results.

2.3.2. Dustfall

- A travel blank (laboratory prepared samples that travel with the samples but are not exposed to the atmosphere) was sent with all shipments except September and October (13 travel blanks total).
    - ♦ Total dustfall results for trip blanks were most commonly between non-detect (0.001 mg/cm^2/30d) and 0.083 mg/cm^2/30d, with one sample (August 5) reported at 0.335 mg/cm^2/30d.
    - ♦ These results are similar to those observed in 2022, and indicate that dustfall measurements for samples may regularly be elevated up to 0.083 mg/cm^2/30d due to travel-related contamination, with potential for greater values occasionally.
    - ♦ Results for fixed dustfall were more consistent, with all values less than 0.083 mg/cm^2/30d.Occasionally, peaks in total dustfall without corresponding peaks in fixed dustfall are also observed in sample canisters.
    - ♦ Travel blank results are considered in data interpretation, with discussion if applicable, but no data corrections are applied.
- An accredited laboratory was used for sample preparation and analysis; and
- Samples were collected by appropriately trained personnel.

2.3.3. Passive NO_2-SO_2

- Throughout the year, field duplicates were collected for SO_2 and NO_2 at DF-5 and DF-7 (results discussed in Section 3.3);
- Travel blanks were also collected monthly for both parameters, and according to standard laboratory procedures, those results are subtracted from test canister results prior to reporting by the analytical laboratory.
    - ♦ Results for SO_2 travel blanks in 2023 ranged from below detection (0.1 ppb) to 0.2 ppb.
    - ♦ Results for NO_2 travel blanks in 2023 ranged from 0.1 – 0.8 ppb.
- An accredited laboratory was used for pre-sample preparation and sample analysis;
- Samples were collected by appropriately trained personnel; and
- Qualified personnel interpreted ambient NO_2-SO_2 concentrations based on laboratory results.

SECTION 3 • MONITORING RESULTS

3.1. Suspended Particulates

3.1.1. Current Year TSP, PM_{10} and $PM_{2.5}$

In 2023, suspended particulate sampling was scheduled to occur every six days beginning January 6. Data loss is discussed in Section 2.1.1 and available results are shown in Figures 3, 4, and 5.

With the exception of a single TSP sample (February 23, DF-7), all values were less than the relevant GN guideline, BC guideline, CAAQS, and FEIS prediction for the 24-h averaging time. Single exceedances are likely caused by localized dust events, and these results are therefore not considered indicative of any trends towards increasing air quality concerns.

Annual average concentrations of TSP calculated for January 6 – December 26 are provided in Table 8. This was the third full year of TSP monitoring. In all cases, measured concentrations for the annual average have been less than the GN guideline an FEIS predictions.

Annual average concentrations of $PM_{2.5}$ calculated for January 6 – December 26 are provided in Table 9. This size fraction has been measured since 2019, but 2023 was the first year of data comparison to an annual average guideline (CAAQS). For both sites, measured concentrations for the annual average were less than the CAAQS value.

Table 8. Measured and predicted annual average concentrations of TSP for Meliadine monitoring stations DF-5 and DF-7.

Year	DF-5 (µg/m³)		DF-7 (µg/m³)	
	Geometric mean	Arithmetic mean	Geometric mean	Arithmetic mean
	GN Guideline: 60	*FEIS Prediction: 16.8*	*GN Guideline: 60*	*FEIS Prediction: 17.0*
2021	3.4	6.0	3.9	10.0
2022	5.5	16.5	3.0	4.3
2023	5.3	9.5	4.4	13.4

Table 7. Measured and predicted annual average concentrations of $PM_{2.5}$ for Meliadine monitoring stations DF-5 and DF-7.

Year	DF-5 (µg/m³)	DF-7 (µg/m³)
	CAAQS (2020): 8.8 µg/m³	
2023	2.1	2.1

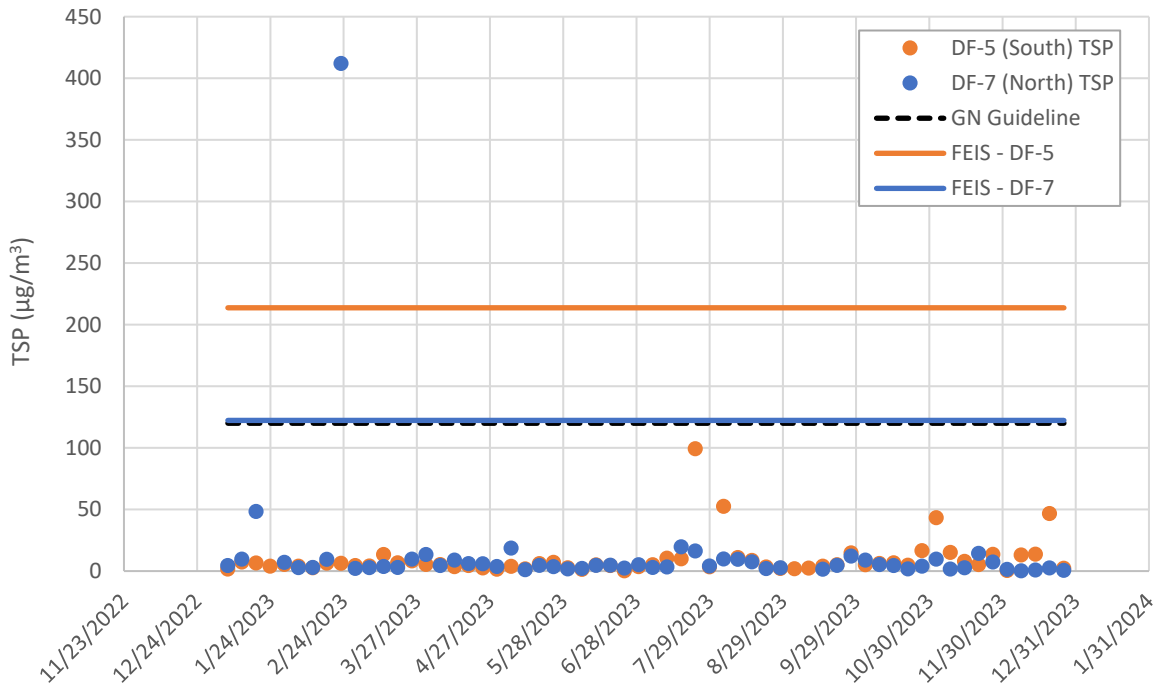

Figure 3. 24-h measured concentrations of total suspended particulates (TSP) at monitoring stations DF-5 and DF-7 at the Meliadine site (points). Lines indicate the Government of Nunavut (GN) guideline and 2014 FEIS maximum model predictions for each station.

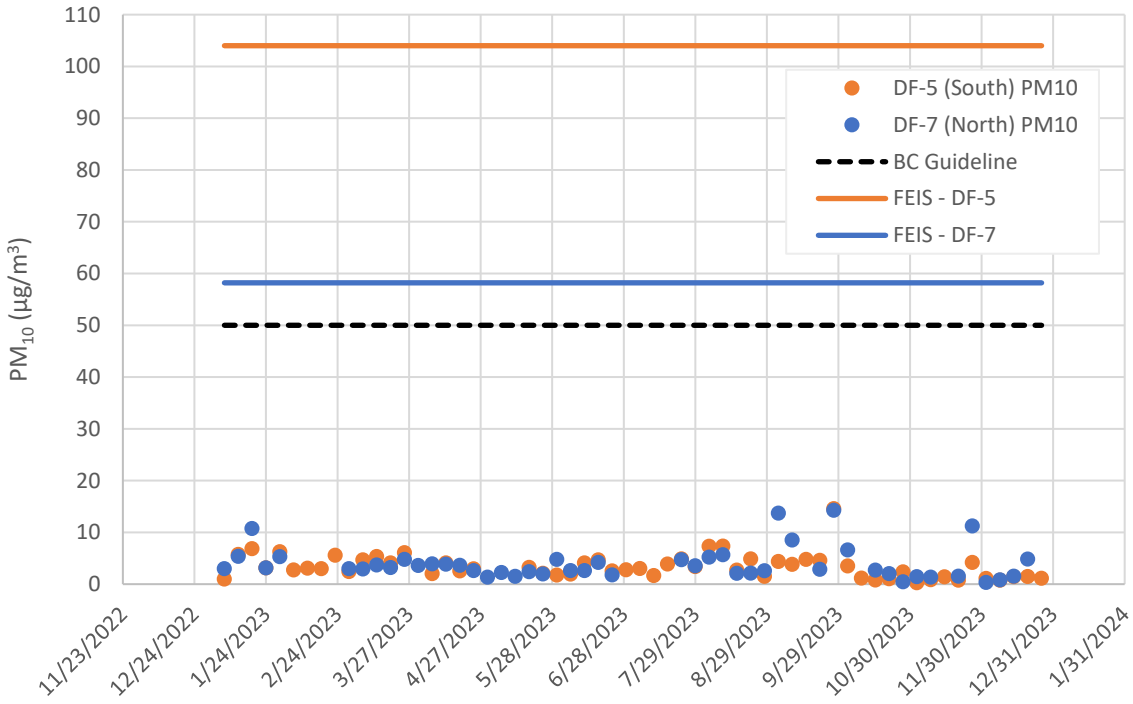

Figure 4. 24-h measured concentrations of PM10 at monitoring stations DF-5 and DF-7 at the Meliadine site (points). Lines indicate the BC guideline and 2014 FEIS maximum model predictions for each station.

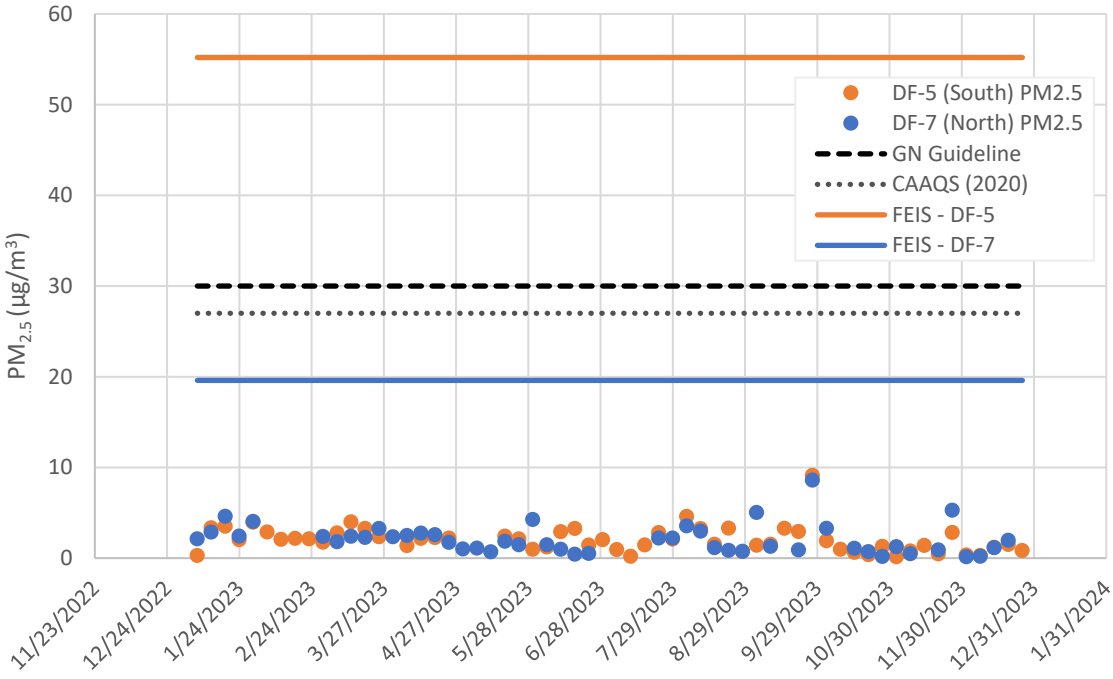

Figure 5. 24-h measured concentrations of $PM_{2.5}$ at monitoring stations DF-5 and DF-7 at the Meliadine site (points). Lines indicate the Government of Nunavut (GN) guideline, Canadian Ambient Air Quality Standard (CAAQS), and 2014 FEIS maximum model predictions for each station.

3.1.2. Historical TSP, PM_{10} and $PM_{2.5}$

Monitoring for suspended particulates first began in December 2018 and all historical data is provided in Figures 6, 7, and 8. Partisol instruments were inactive from early 2019 to October 2020, when they were sent for maintenance. To date, four TSP samples have exceeded regulatory guidelines and/or FEIS predictions for the 24-h averaging time, and no trends towards increasing air quality concerns are evident.

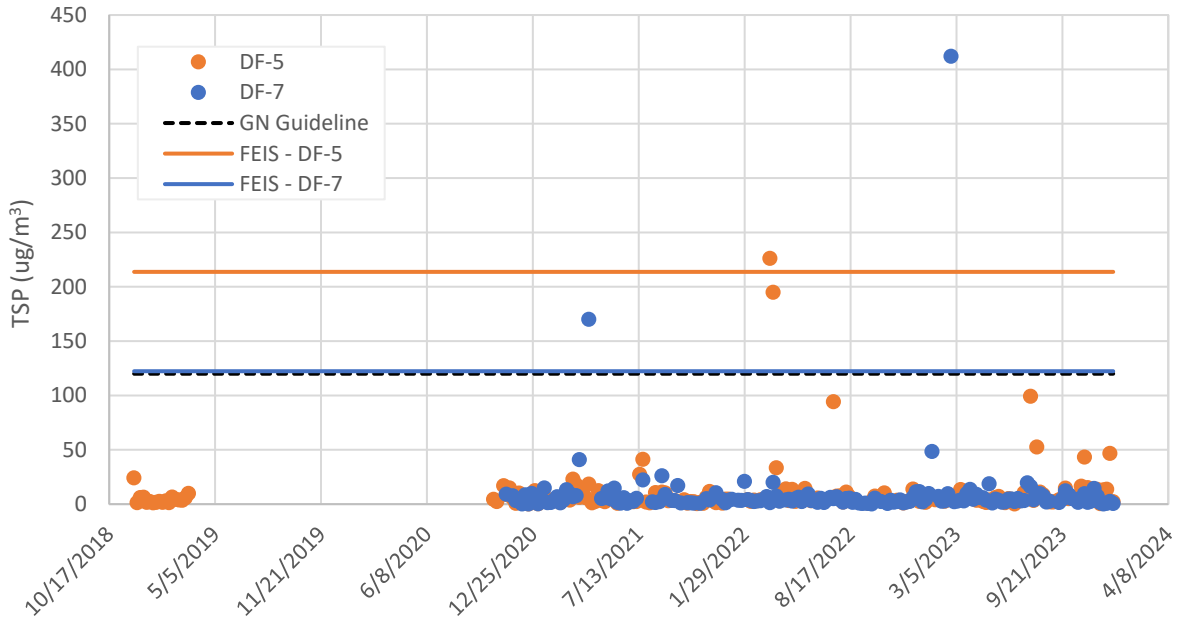

Figure 6. Historical 24-h measured concentrations of total suspended particulates (TSP) at monitoring stations DF-5 and DF-7 at the Meliadine site (points). Lines indicate the Government of Nunavut (GN) guideline and 2014 FEIS maximum model predictions for each station.

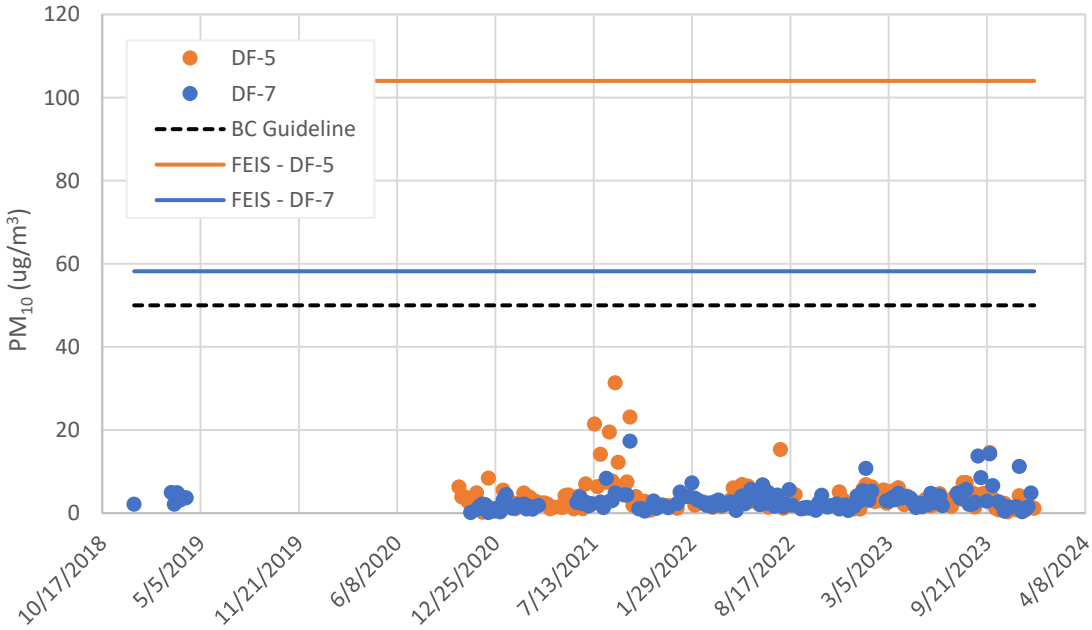

Figure 7. Historical 24-h measured concentrations of PM_{10} at monitoring stations DF-5 and DF-7 at the Meliadine site (points). Lines indicate the BC guideline and 2014 FEIS maximum model predictions for each station.

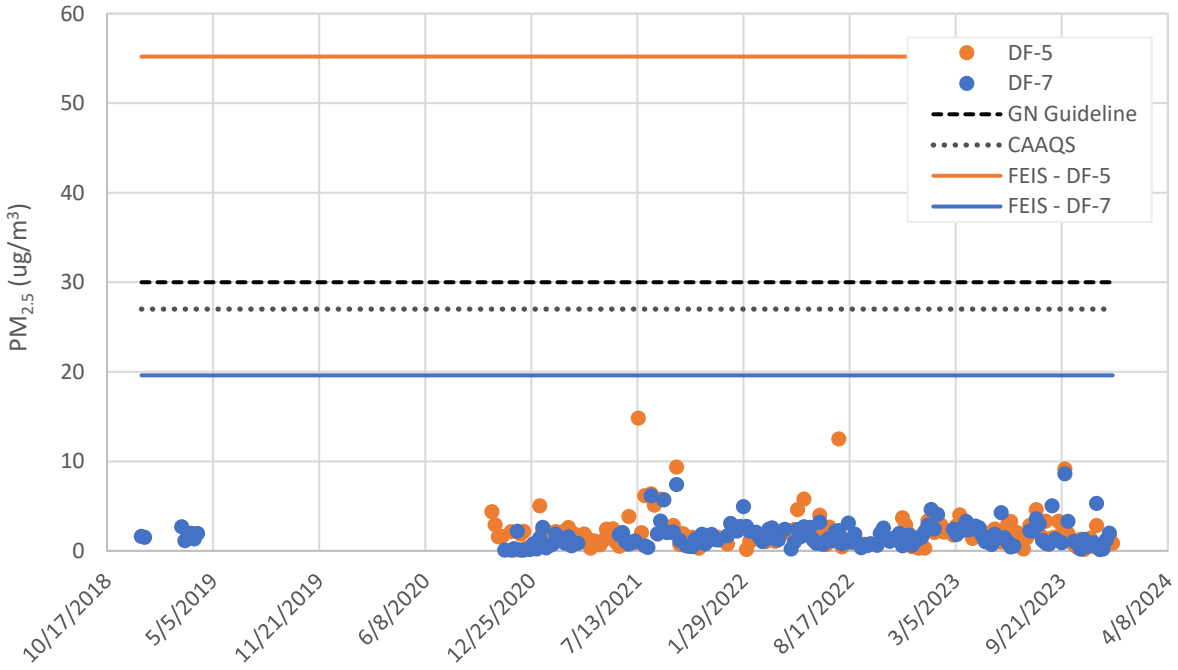

Figure 8. Historical 24-h measured concentrations of PM2.5 at monitoring stations DF-5 and DF-7 at the Meliadine site (points). Lines indicate the Government of Nunavut (GN) guideline, Canadian Ambient Air Quality Standard (CAAQS; 2020), and 2014 FEIS maximum model predictions for each station.

3.1.3. Metals

Concentrations of cadmium and iron measured in TSP samples are shown in Figures 9 and 10 along with the 2014 FEIS-selected health-based screening value and maximum model prediction (Section 2.2.1).

Where laboratory-reported results (µg/filter) were below the detection limit, ½ the limit was used in volumetric calculations which were performed using Partisol-recorded STP-corrected intake volumes (m^3). For station DF-7, the FEIS maximum model prediction for cadmium (0.003 µg/m^3) is less than the volumetric concentration calculated using ½ the laboratory detection limit (0.004 µg/m^3). As a result, the prediction is not plotted on Figure 9, and a comparison to this value will be discussed for samples where detections occur.

For both analyses, the majority of results were below the laboratory detection limit and all results were less than the FEIS-selected health-based screening values and maximum model predictions.

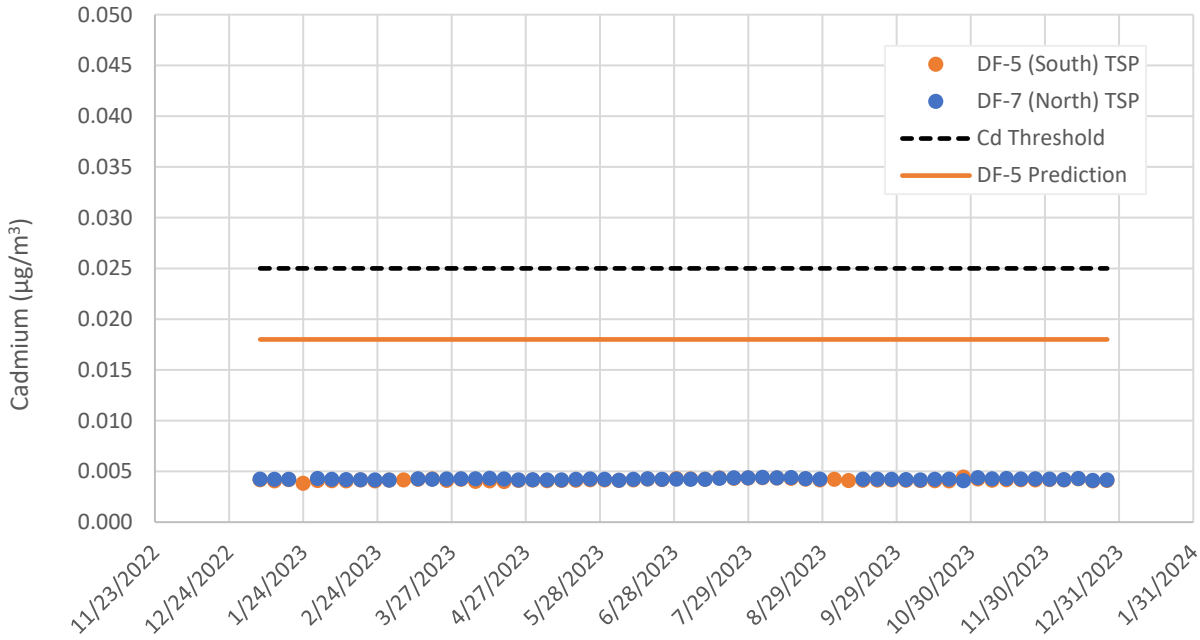

Figure 9. Measured concentrations of cadmium in 24-h TSP samples collected from stations DF-5 and DF-7 at the Meliadine site (points). Dashed line indicates the 2014 FEIS-selected health-based screening value (Cd Threshold), and solid lines indicate the FEIS maximum model-predicted value for station DF-5 (see discussion in text for DF-7).

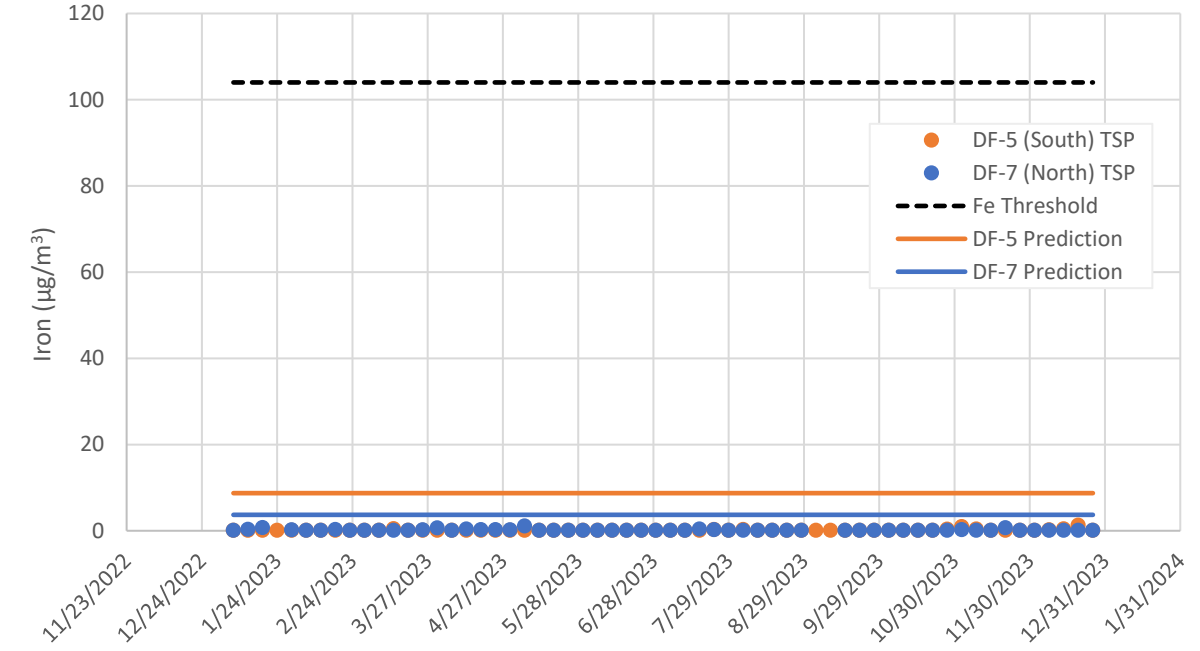

Figure 10. Measured concentrations of iron in 24-h TSP samples collected from stations DF-5 and DF-7 at the Meliadine site (points). Dashed line indicates the 2014 FEIS-selected health-based screening value (Fe Threshold), and solid lines indicate the FEIS maximum model-predicted value for each monitoring station.

3.2. Dustfall

3.2.1. Year-Round Sampling Locations

Results for the 2023 dustfall sampling program (30 day-normalized rates of dustfall) for monitoring stations DF-4, DF-5, DF-6, and DF-7 are provided in Figures 11 – 14. Values below the detection limit (0.001 mg/cm^2/30d) are plotted as ½ the limit. Samples are plotted by the collection start date. To provide context, the Alberta Ambient Air Quality Guidelines for recreational/residential and industrial/commercial areas of 0.53 mg/cm^2/30 days and 1.58 mg/cm^2/30 days for total dustfall are indicated.

As discussed in Section 2.2.2, it is anticipated that guidelines for recreational areas may regularly be exceeded in close proximity to the AWAR or mine site, and that guidelines for industrial areas may occasionally be exceeded. In 2023, one sample exceeded the industrial area guideline (DF-4; November 8). Three other dustfall samples at this station exceeded the recreational area guideline, but not the industrial area guideline. The December 8 sample at DF-5 also exceeded the recreational area guideline. Both of these stations are on the (predominantly) downwind edge of the Meliadine site, and results are generally within the range of those observed historically at these locations (Figure 15). All other samples at DF-4, DF-5, DF-6, and DF-7 were less than the recreational area dustfall guideline in 2023.

Historical results for total dustfall since 2012 along with the maximum measured background concentration (DF-8 (Table 2), assessed 2019 – 2023) are provided in Figure 15 for assessment of trends over time. Background concentrations at DF-8 measured since 2019 have ranged from 0.041 to 0.361 mg/cm^2/30d, with an average of 0.129 mg/cm^2/30d (n = 10). Generally, an increase in measured dustfall rates occurred after mid-2017 when the construction period began, and site activity increased, as anticipated. However, rates in late 2021- 2023 appeared generally less than those recorded earlier in the operations period (2019-2020). While one or two monthly measurements at DF-4 and DF-5 were elevated at the end of 2023 compared to the rest of the year, similar results have been observed historically. Overall, exceedances of regulatory guidelines for recreational/residential areas are still considered infrequent, occurring in <12% of total dustfall samples each year during this time. With limited (three) samples exceeding the industrial area guideline to date, historical results suggest that best management practices in place for dust mitigation continue to be implemented effectively to control nuisance-level emissions. Results for DF-4 and DF-5 in 2024 will help to determine whether a trend towards increasing emissions in that area is beginning, or whether observations in late 2023 were isolated events.

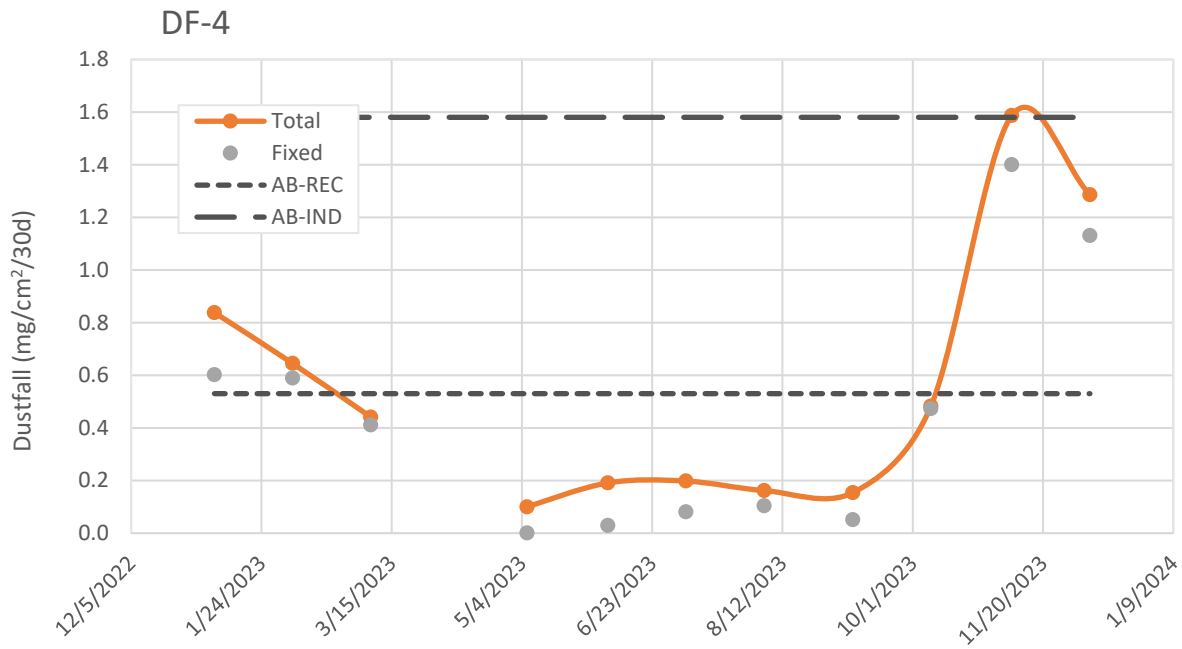

Figure 11. 30-day-normalized rates of total and fixed dustfall at sampling location DF-4 at the Meliadine site. Symbols represent start date of sample collection. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas (AB-Rec, AB-Ind).

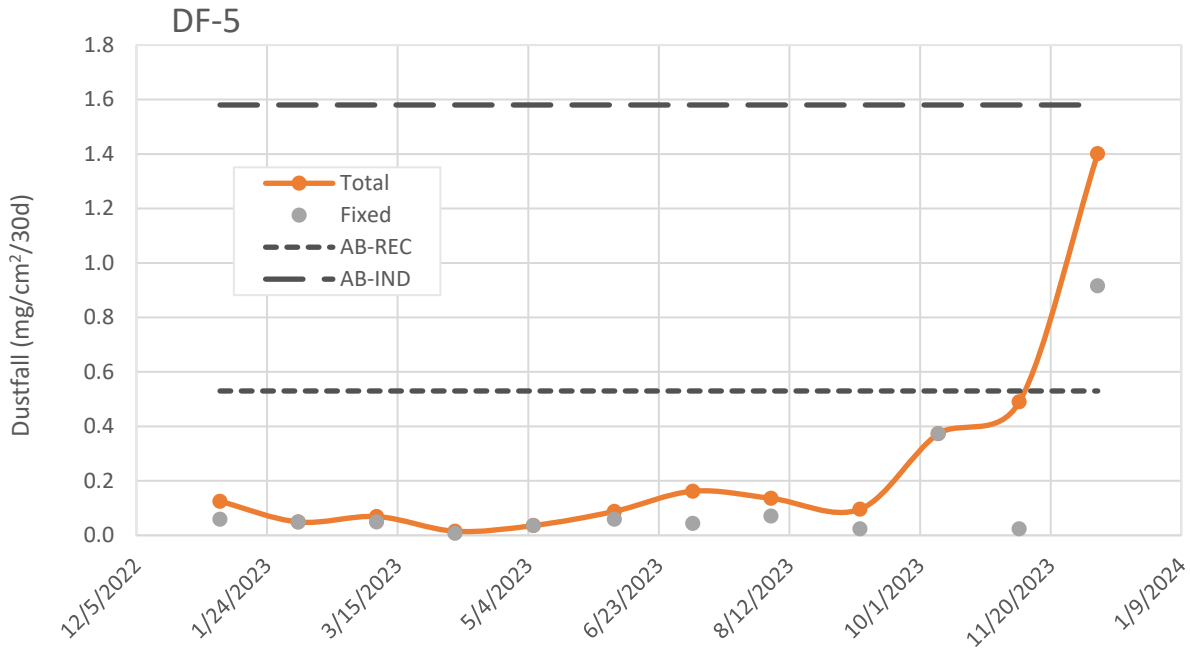

Figure 12. 30-day-normalized rates of total and fixed dustfall at sampling location DF-5 at the Meliadine site. Symbols represent start date of sample collection. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas (AB-Rec, AB-Ind).

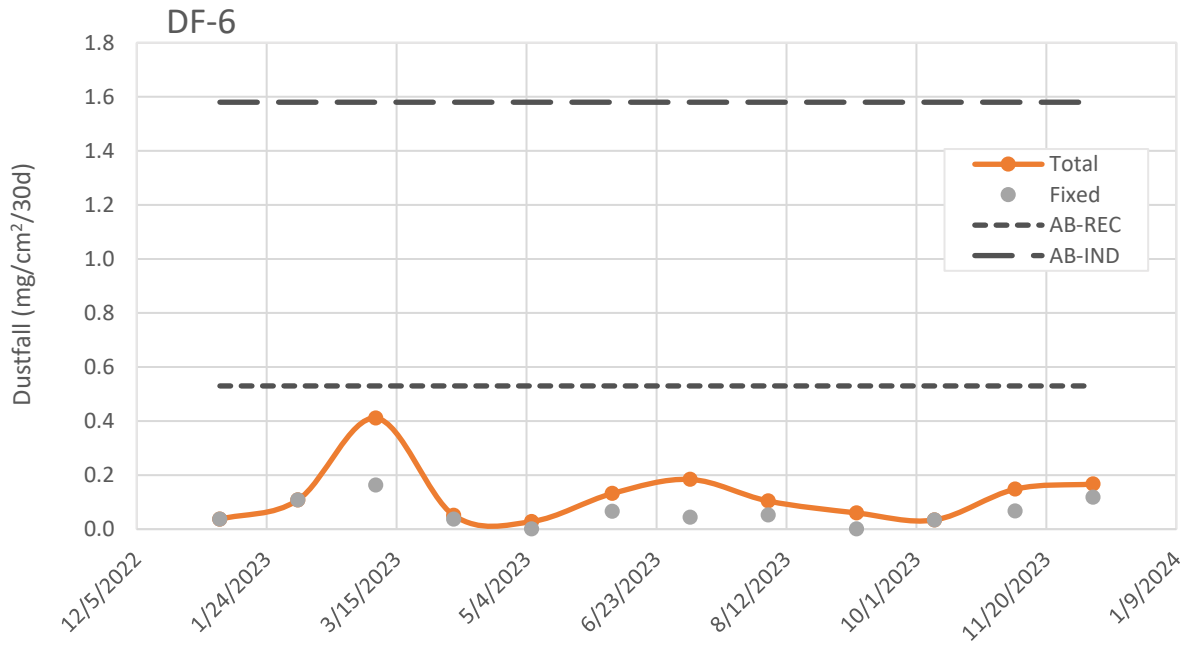

Figure 13. 30-day-normalized rates of total and fixed dustfall at sampling location DF-6 at the Meliadine site. Symbols represent start date of sample collection. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas (AB-Rec, AB-Ind).

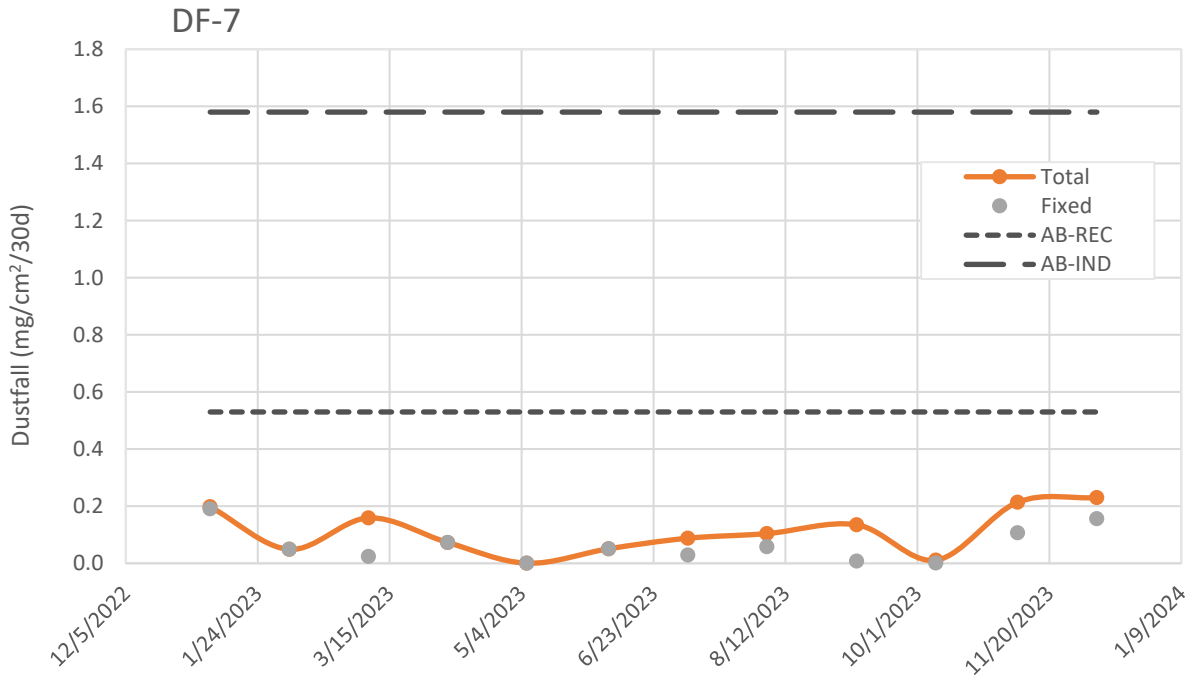

Figure 14. 30-day-normalized rates of total and fixed dustfall at sampling location DF-7 at the Meliadine site. Symbols represent start date of sample collection. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas (AB-Rec, AB-Ind).

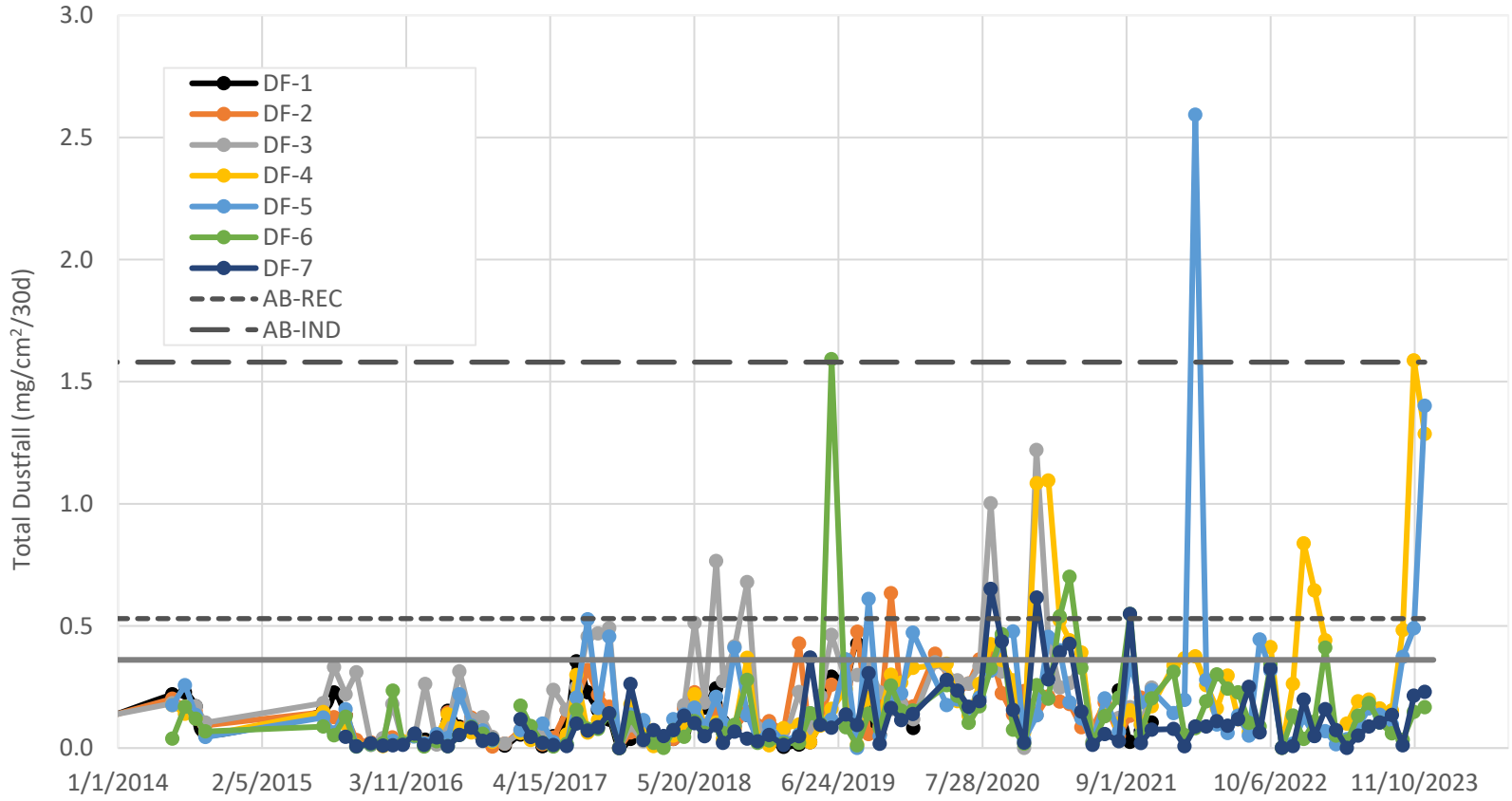

Figure 15. Historical 30-day-normalized rates of total dustfall for year-round sampling stations at the Meliadine site. Symbols represent start date of sample collection. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas. Max. background is from samples at DF-8 since 2019. Pre-construction occurred from 2012 – 2016, construction occurred from 2017 – 2018, and operations have occurred since 2019. Year-round sampling at DF-1, DF-2, and DF-3 ceased at the end of 2021 in favour of summer-only transects.

3.2.2. AWAR Dustfall Transects

Dustfall data collected at AWAR transects DF-1, DF-2, DF-3, and By-Pass Road transect DF-WT in 2023 are provided in Figures 16 – 19. Two sequential rounds (approx. 30 d each) of sampling were completed for all four transects, from July 8 – August 8, and August 8 – September 7. For the DF-WT location at 1000 m east of the road, samples were collected beginning August 23 and September 23 after they were missed during the initial deployment. Since all results in closer proximity to the road were less than the recreational area guideline (as described below), this sampling delay does not affect interpretation.

For AWAR transect DF-1 (km 4), one dustfall result at 100 m (upwind) was reported at 28.6 mg/cm^2/30d, which is above the industrial area guideline of 1.58 mg/cm^2/30d. However, the fixed dustfall result (inorganic fraction, more representative of road material) for this sample was measured at 0.156 mg/cm^2/30d, which is similar to results for other locations. This difference between organic and inorganic fractions is unusually large, and suggests an event occurred to contaminate the dustfall jar with a substantial amount of organic material. As a result, this apparent outlier sample is indicated as such and excluded from subsequent calculations of total dustfall averages. Otherwise, all results at DF-1 were less than the industrial area guideline, and declined below the recreational area guideline within 100 m of the road.

For AWAR transects DF-2 and DF-3, and Rankin Inlet By-pass Road transect DF-WT, all results were less than the recreational area guideline at all distances from the road.

Historical annual average dustfall data for all AWAR transects (DF-1, DF-2, and DF-3) combined are shown in Figure 20. For each year, data are averaged across samplings transects and monitoring events (two to three sequential 30-d periods). In 2023, average rates of dustfall along the AWAR for the summer season continued to remain below guidelines for recreational areas, for all sampling distances (as close as 25 m from the road).

Total dust suppressant application in 2023 was similar to 2022, but less than 2021 (see Section 7.1.1). Traffic rates along the AWAR increased in 2023 compared to both 2021 and 2022 [1].

[1] A review of traffic rates will be provided in Meliadine's 2023 Terrestrial Environment Management and Monitoring Plan Report, an appendix of the 2023 Annual Report to the NIRB.

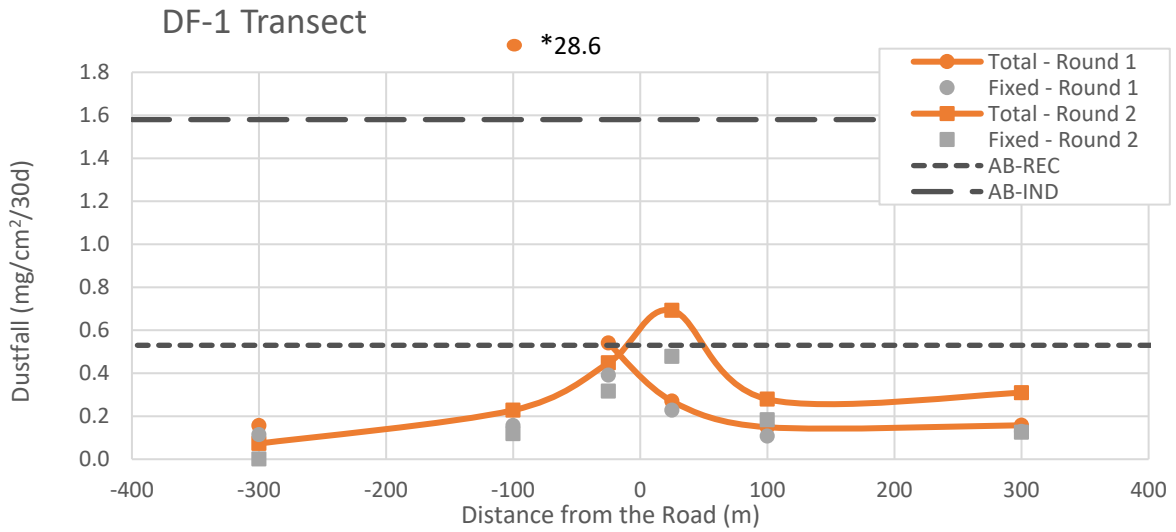

Figure 16. 30-day-normalized rates of total and fixed dustfall for transect DF-1 along the Meliadine AWAR in 2023. Negative values represent the west (upwind) side of the road. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas (AB-Rec, AB-Ind). *Apparent outlier, as described in text.

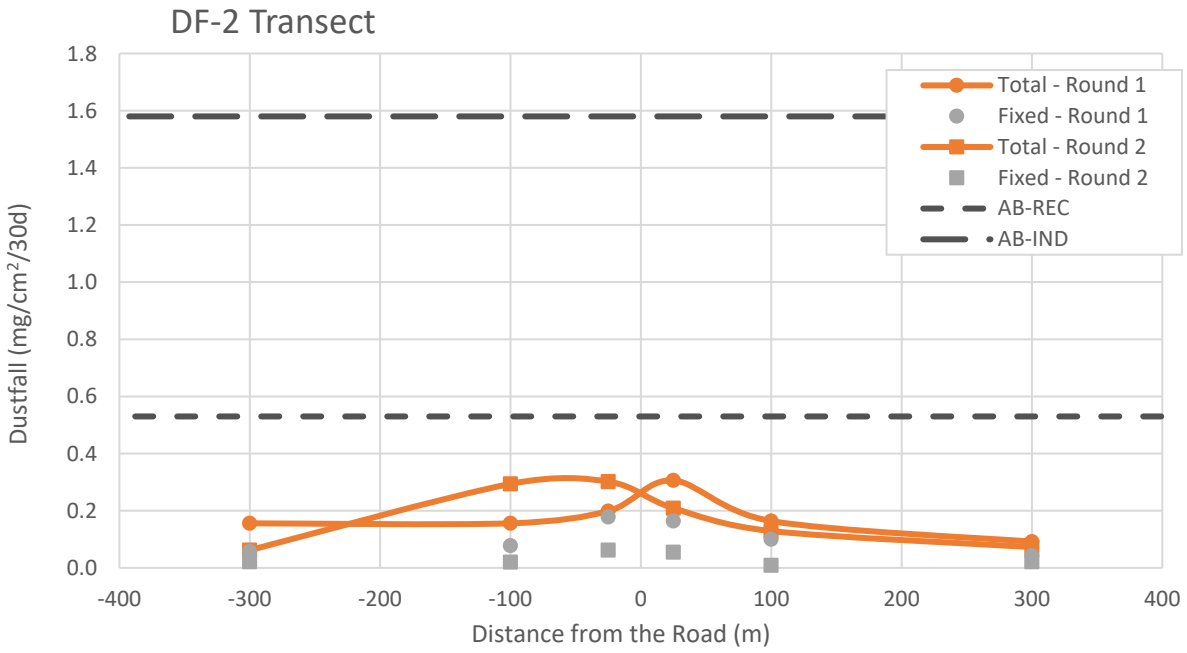

Figure 17. 30-day-normalized rates of total and fixed dustfall for transect DF-2 along the Meliadine AWAR in 2023. Negative values represent the west (upwind) side of the road. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas (AB-Rec, AB-Ind).

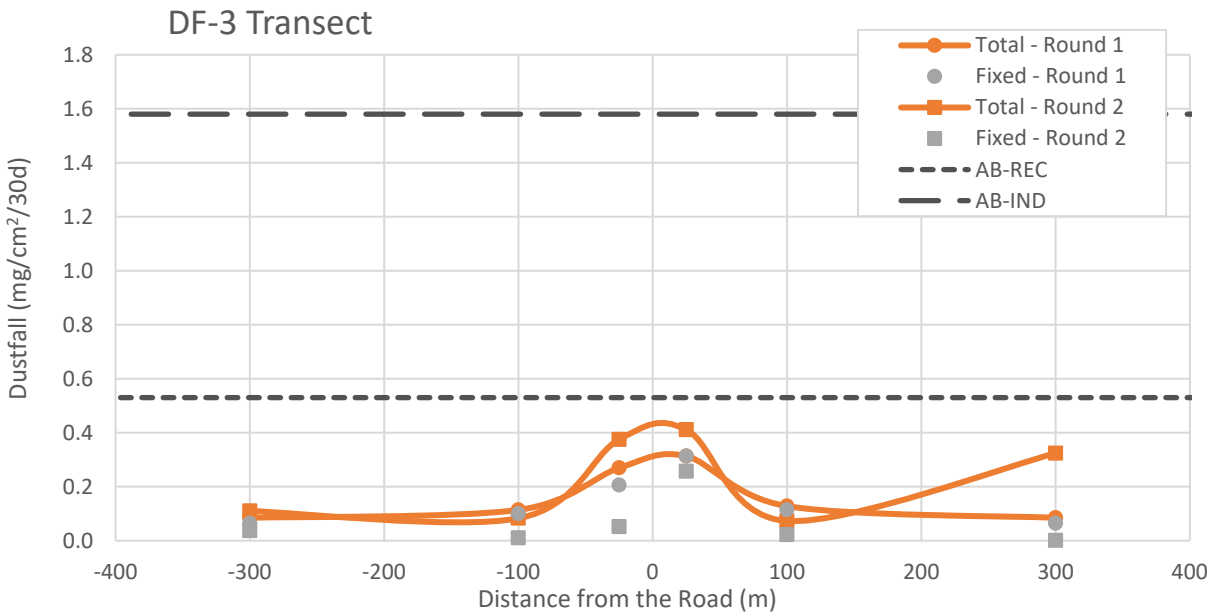

Figure 18. 30-day-normalized rates of total and fixed dustfall for transect DF-3 along the Meliadine AWAR in 2023. Negative values represent the west (upwind) side of the road. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas (AB-Rec, AB-Ind).

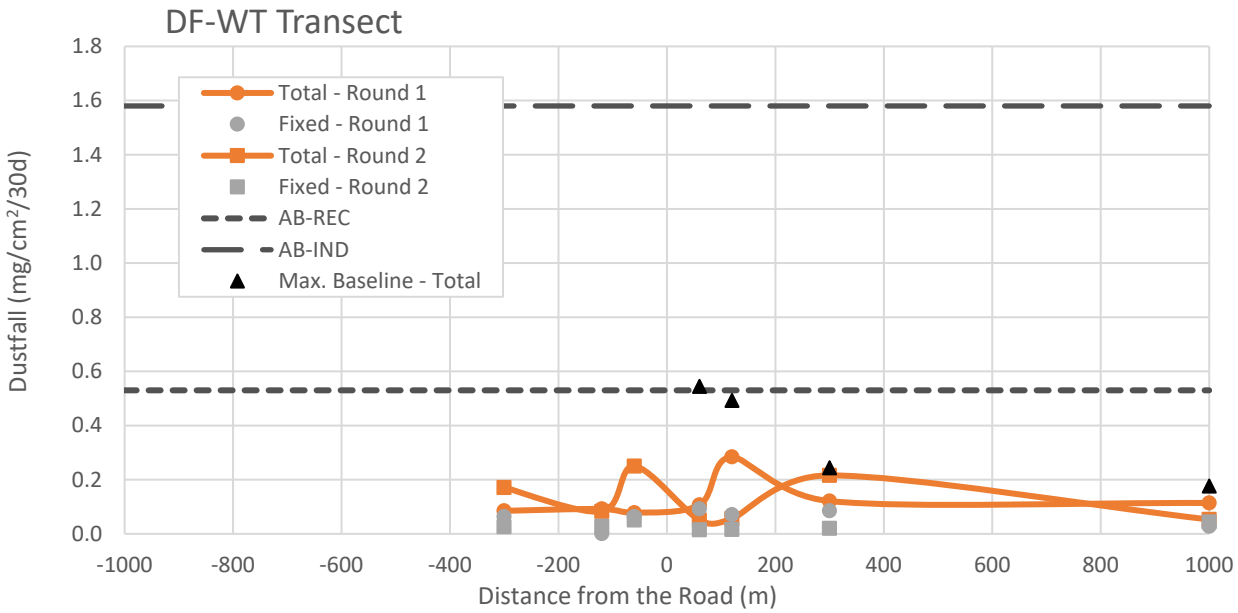

Figure 19. 30-day-normalized rates of total and fixed dustfall for transect DF-WT along the Rankin Inlet By-pass Road in 2023. Negative values represent the west (upwind) side of the road. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas. Background values are maximum recorded total dustfall rates observed in July and August, 2017 and 2018, pre-construction.

Table 8. Average rates of measured total dustfall within 300 m of the Meliadine AWAR in 2023 (samples collected at 25 m, 100 m, 300 m on both sides of the road). The Alberta Ambient Air Quality Guideline for recreational areas is indicated, for reference (AB-Rec).

Transect	AB-Rec (mg/cm²/30d)	Round 1 *(Jul 8 – Aug 8)*		Round 2 *(Aug 8 – Sept 7)*	
		n	mg/cm²/30d	n	mg/cm²/30d
DF-1	0.53	5*	0.25	6	0.34
DF-2		6	0.18	6	0.18
DF-3		6	0.17	6	0.23
n = # samples. *One apparent outlier sample at DF-1 is excluded from the calculation (see text).					

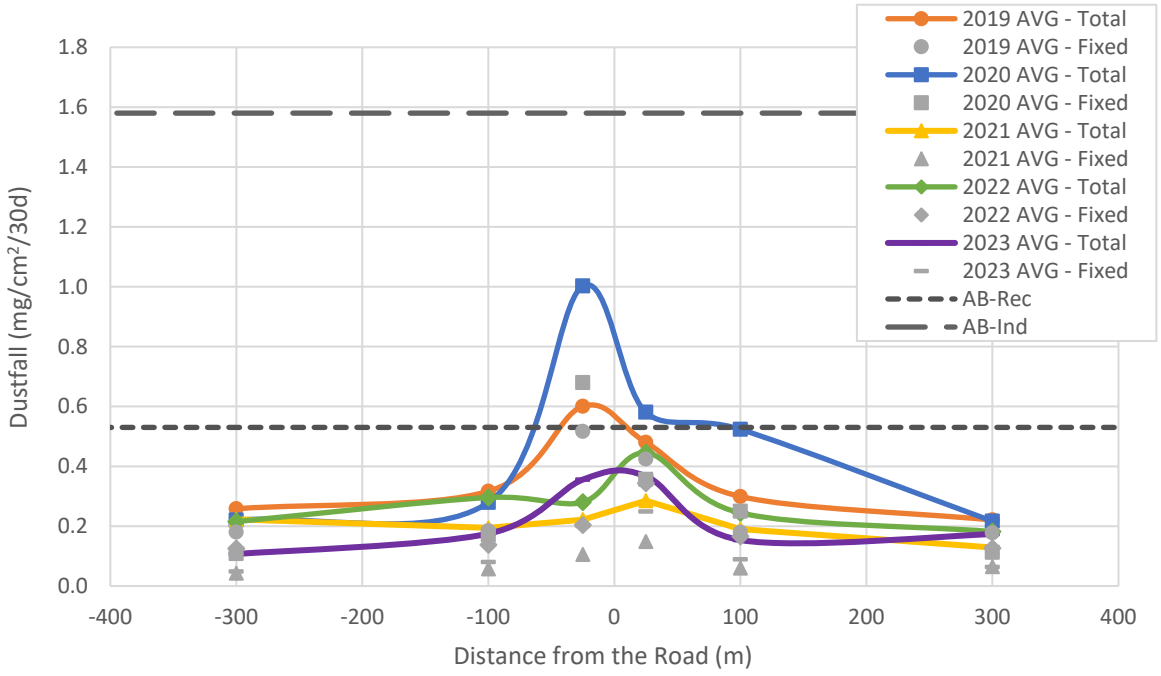

Figure 20. Average 30-day-normalized rates of total and fixed dustfall for summertime sampling transects DF-1, DF-2, and DF-3 along the Meliadine AWAR. Symbols represent average measured dustfall across transects and sampling dates (2-3 consecutive 30-d periods) within each year. Negative values represent the west (upwind) side of the road. Dashed lines indicate the Alberta Ambient Air Quality Guideline for recreational and industrial areas (AB-Rec, AB-Ind).

3.3. NO_2 and SO_2

3.3.1. NO_2

Monthly-average NO_2 trends in 2023 are presented in Figure 21, and historical results (collected since 2017) are presented in Figure 22. Samples are plotted by the collection start date, and values below the laboratory detection limit are plotted as ½ the limit. In 2023, monthly average concentrations of NO_2 varied between non-detect (<0.1) and 1.5 ppb, which is similar to the range observed historically. No clear trends between sampling stations or over time are evident in either dataset. No guidelines or FEIS predictions apply to monthly averages.

Annual arithmetic mean concentrations since sampling began (2017 – 2023) were calculated for each station from monthly average values, using ½ the laboratory detection limit where reported concentrations were less than this value (Table 11). In 2023, annual mean concentrations of NO_2 were 0.41 and 0.50 ppb for DF-5 and DF-7, respectively (January 6, 2023 – January 7, 2024). These are both below the GN guideline of 32 ppb for the annual average, the 2025 CAAQS of 12.0 ppb, and maximum predicted concentrations (2014 FEIS) adjusted for assumed background concentrations (23.4 ppb and 12.2 ppb for DF-5 and DF-7, respectively).

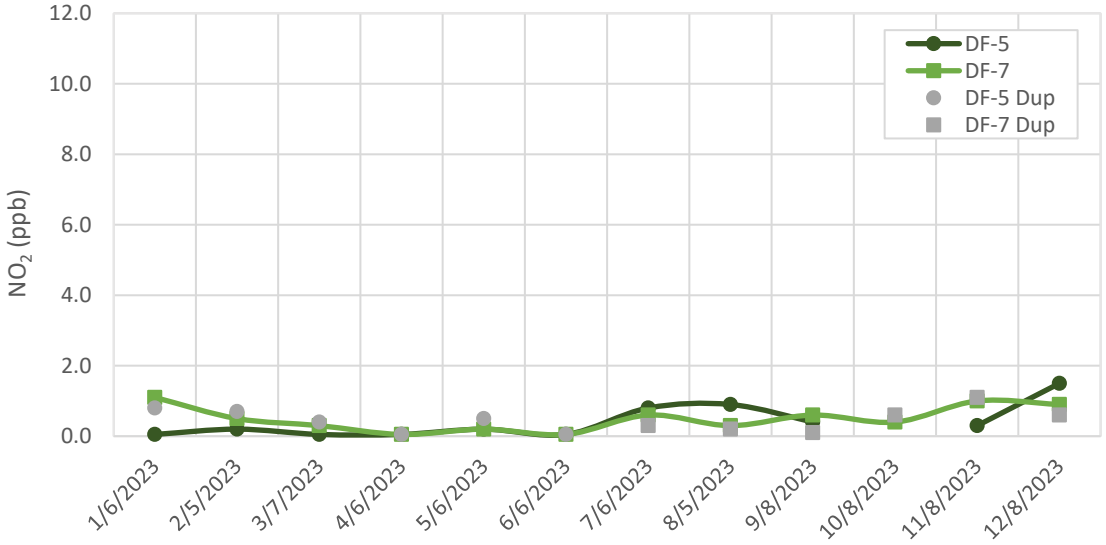

Figure 21. Monthly average concentrations of NO2 at DF-5 and DF-7. Symbols represent the collection start date. Y-axis is scaled to the 2025 CAAQS annual average guideline (12.0 ppb), for context. No guidelines or FEIS predictions apply to monthly averages.

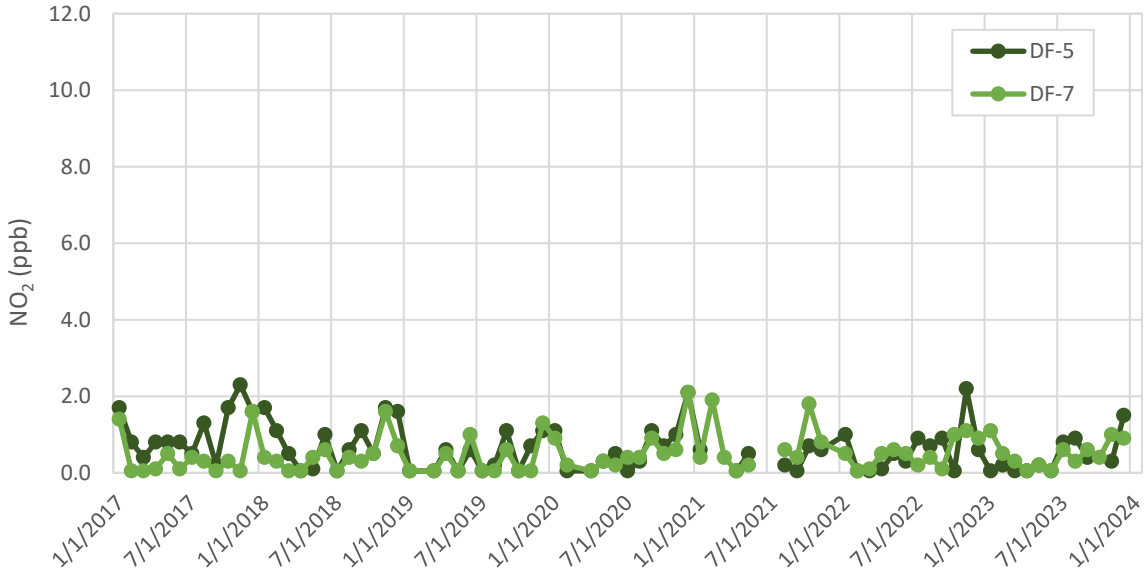

Figure 22. Historical measured monthly average concentrations of NO2 at DF-5 and DF-7. Y-axis is scaled to the 2025 CAAQS annual average guideline (12.0 ppb), for context. No guidelines or FEIS predictions apply to monthly averages.

Table 9. Annual average concentrations of NO_2 at Meliadine monitoring stations DF-5 and DF-7, measured using passive sampling devices deployed over 1-month periods (n = # samples per year).

Station	Year	CAAQS 2020 & 2025 (ppb)	GN Guideline (ppb)	2014 FEIS Prediction (ppb)	n	NO_2 (ppb)
DF-5	2017	17	32	23.4	11	1.03
	2018				12	0.83
	2019				11	0.46
	2020				11	0.66
	2021	12			7	0.39
	2022				12	0.61
	2023				11	0.41
DF-7	2017	17	32	12.2	11	0.30
	2018				12	0.52
	2019				11	0.29
	2020				11	0.60
	2021	12			9	0.73
	2022				12	0.50
	2023				12	0.50

3.3.2. SO_2

Monthly-average concentrations of SO_2 in 2023 are presented in Figure 23, and historical results collected since 2017 are presented in Figure 24. Samples are referred to by the collection start date, and values below the laboratory detection limit are plotted as ½ the limit. In 2023, SO_2 was not detectable (<0.1 ppb) in the majority of samples and duplicates (18 of 36), with a maximum measured value of 0.2 ppb. With limited detections above the laboratory limit historically, no clear trends between sampling stations or over time are evident. No guidelines or FEIS predictions apply to monthly averages.

Annual arithmetic mean concentrations of SO_2 since sampling began (2017 – 2023) were calculated for each station from monthly average values, using ½ the laboratory detection limit where reported concentrations were less than this value (Table 12). In 2023, annual mean concentrations of SO_2 were 0.10 and 0.08 ppb for DF-5 and DF-7, respectively (January 6, 2023 – January 7, 2024). These are both less than the GN guideline of 11 ppb, 2025 CAAQS of 4.0 ppb, and 2014 FEIS maximum predicted values of 0.3 ppb and 0.2 ppb for DF-5 and DF-7, respectively.

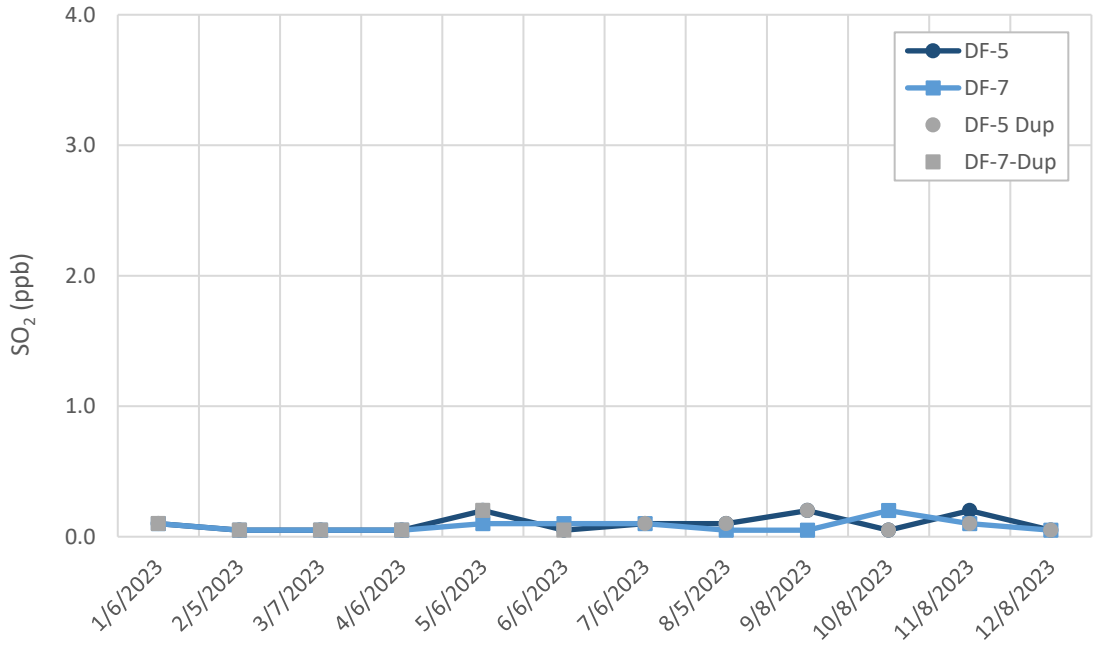

Figure 23. Monthly average concentrations of SO2 at DF-5 and DF-7 in 2023. Symbols represent the collection start date. Y-axis is scaled to the 2025 CAAQS value for the annual average (4.0 ppb), for context. No guidelines or FEIS predictions apply to monthly averages.

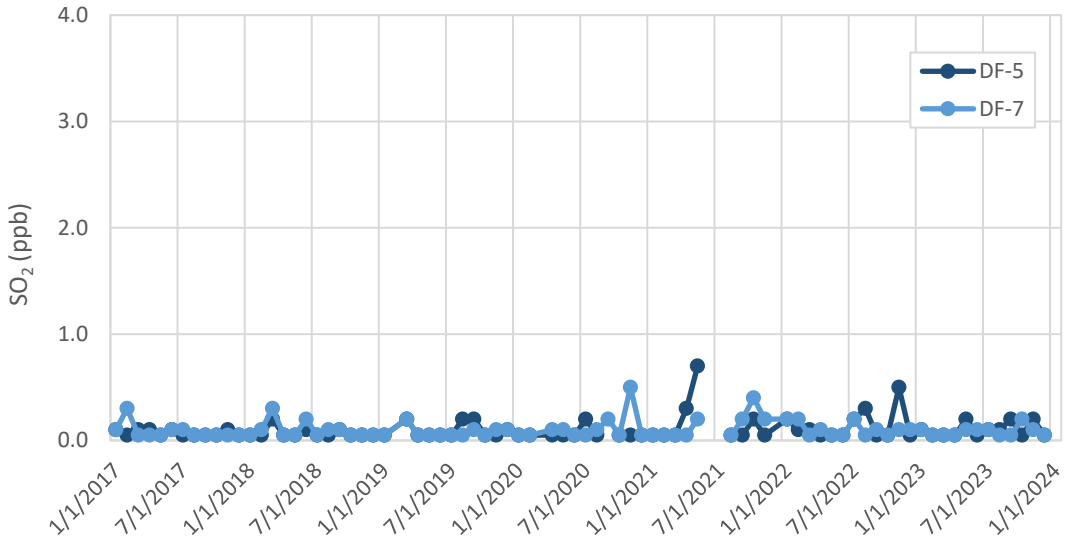

Figure 24. Historical measured monthly average concentrations of SO2 at DF-5 and DF-7. Y-axis is scaled to the 2025 CAAQS value for the annual average (4.0 ppb), for context. No guidelines or FEIS predictions apply to monthly averages.

Table 10. Annual average concentrations of SO_2 at Meliadine monitoring stations DF-5 and DF-7, measured using passive sampling devices deployed over 1-month periods (n = # samples per year).

Station	Date	CAAQS 2020 & 2025 (ppb)	GN Guideline (ppb)	2014 FEIS Prediction (ppb)	n	SO_2 (ppb)
DF-5	2017	5.0	11	0.3	11	0.07
	2018				12	0.07
	2019				11	0.09
	2020				10	0.07
	2021	4.0			9	0.17
	2022				12	0.14
	2023				12	0.10
DF-7	2017	5.0	11	0.2	11	0.09
	2018				12	0.10
	2019				11	0.07
	2020				11	0.12
	2021	4.0			9	0.14
	2022				12	0.10
	2023				12	0.08

SECTION 4 • METEOROLOGICAL MONITORING

As described in the Air Quality Monitoring Plan, a permanent weather station was installed at the Meliadine site, and daily averages or maximum values for the following parameters in 2023 are provided in Appendix B.

- wind speed;
- wind direction;
- temperature;
- solar radiation;
- precipitation; and
- relative humidity.

SECTION 5 • INCINERATOR STACK TESTING

Incinerator stack testing was performed by Consulair between September 29 and October 1, 2023 and results were compared to the GN's Environmental Guideline for the Burning and Incineration of Solid Waste (2012). The associated Atmospheric Emission Characterization Report is provided under separate cover, as an appendix of the 2023 Annual Report to the NIRB.

During the assessment, three tests are performed, and average results are compared to the relevant GN guidelines for total dioxins and furans and mercury.

The average measured concentration of mercury (0.336 µg/m^3 @ 11% O_2) was less than the GN standard of 20 µg/m^3 @ 11% O_2, but the average measured concentration of total dioxins and furans (0.108 ng TEQ /m^3 @ 11% O_2) exceeded the GN standard (0.08 ng TEQ/m^3 @ 11% O_2). This result is under investigation, as further discussed in the 2023 Annual Report to the NIRB.

SECTION 6 • GREENHOUSE GAS EMISSIONS

Agnico Eagle is required by Environment Canada's Greenhouse Gas Emissions Reporting Program (GHGRP) to track greenhouse gas emissions based on annual fuel consumption, composition and the US EPA's AP-42 emission factors.

In the Meliadine Project 2014 FEIS, total GHG emissions from the mine site were conservatively estimated to be not more than 304,000 tonnes/yr CO_2e. Estimated GHG emissions from the additional marine operations at Rankin Inlet were estimated at approximately 13,000 tonnes/yr CO_2e.

Calculated emissions for the Meliadine site (including Rankin Inlet operations) were last reported on June 1st, 2023, for the 2022 reporting period. Total facility emissions reported for 2022 under the GHGRP were 131,229 tonnes CO_2e.

SECTION 7 • MITIGATION AND ADAPTIVE STRATEGIES

7.1. Mitigation

Fugitive dust abatement measures were identified in the 2014 FEIS for the operations phase as follows, with comments on their implementation in 2023.

- Best management practices to control fugitive particulate emissions from haul roads and material handling, and the AWAR (see Road Management Plan for details).
    - 2023: Dust suppressant application and road watering were conducted as described in Section 7.1.1
- Sources of particulate emissions at the processing facility are controlled through the use of baghouses.
    - 2023: In practice
- Enclosures are used to reduce fugitive emissions at the processing facility.
    - 2023: In practice
- Exhaust emissions from non-road vehicles are managed through purchasing equipment that meet Tier 3 emission standards.
    - 2023: New purchases are Tier 4
- Exhaust emissions from non-road vehicles are managed through regular and routine maintenance of vehicles.
    - 2023: In practice
- SO_2 emissions from non-road vehicles and stationary equipment will be reduced through the use of low sulphur diesel fuel (<15 ppm).
    - 2023: Actual fuel in use in ultra-low sulphur fuel (<8 ppm)

A Dust Management Working Group was put in place in 2021 involving several departments from the Meliadine Mine to develop and support initiatives for dust management. Agnico Eagle is committed to continuously improve the environmental performance of the mine infrastructures and will continue to explore potential additional improvements through the Dust Management Working Group.

Overall, since monitoring results to date are generally within applicable air quality criteria and/or 2014 FEIS predictions, no additional or contingency air quality mitigation measures are planned at this time.

7.1.1. Dust Suppressant Application

In 2023, Agnico Eagle conducted detailed record-keeping for dust suppressant application and road watering activities. The complete details (dates, locations, quantities) were recorded, and are retained by the Environment Department. A figure showing locations and dates of dust suppressant (calcium chloride) application along the AWAR and Rankin Inlet By-Pass Road is provided (Figure 25).

As in previous years, onsite watering was conducted as feasible to control dust on haul roads, service roads, pits, waste rock storage facility (WRSF), tailings storage facility (TSF), and at the crusher. Watering occurred primarily from May 20 – August 18. Over the year, a total water application of 4077 m^3 was recorded.

Applications of calcium chloride occurred at onsite locations (primarily service and haul roads) and along the AWAR in July, August, and September. AWAR applications were completed from km 3 – 27 between July 18 and 20, along the full length of the AWAR and By-Pass Road between August 5 – 12, and again on September 15 and 19. A total of 31 bags of $CaCl_2$ product were applied on the AWAR in 2023 (950 kg/bag). This quantity is similar to 2022 (29 bags) but less than past years (e.g., 92 bags were applied in 2021). Despite this change, rates of dustfall over the summer season continued to meet regulatory guidelines for recreational areas within 25 – 100 m of the road.

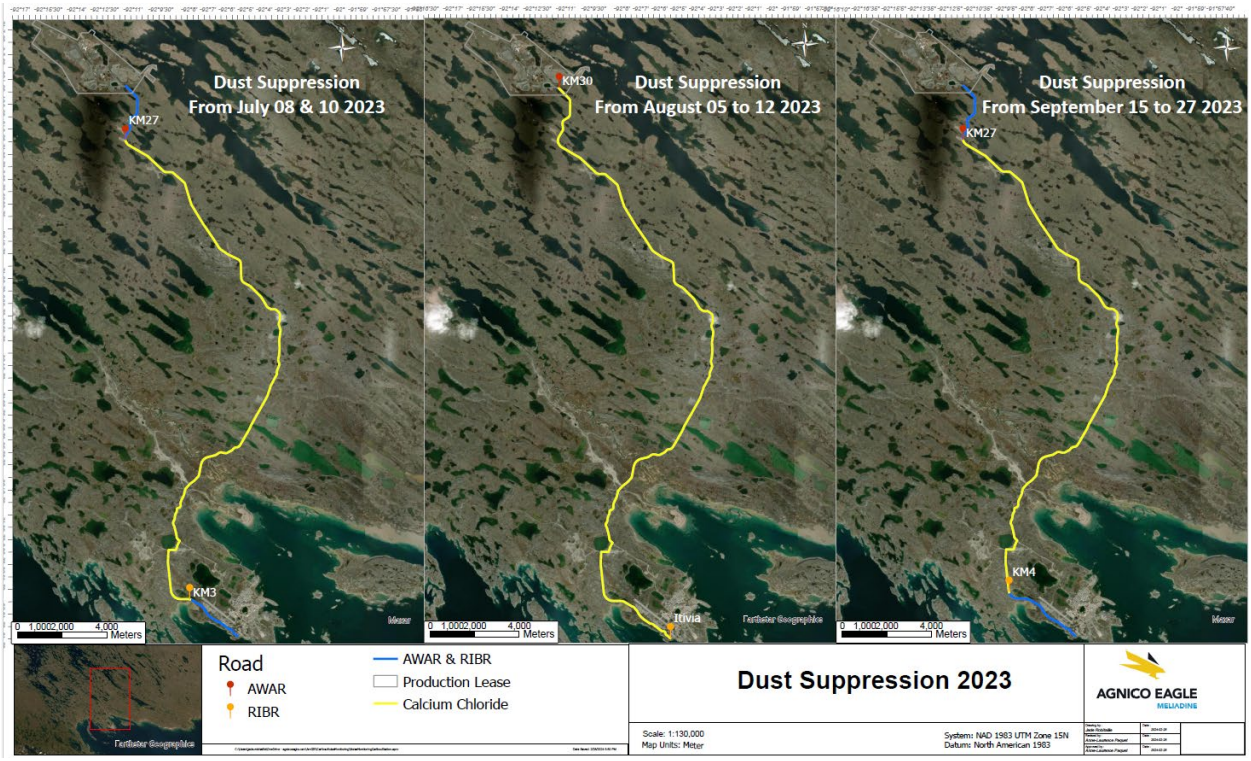

Figure 25. Locations and dates of calcium chloride (dust suppressant) application along the Meliadine AWAR and Rankin Inlet By-Pass Road in 2023.

7.2. Monitoring

No adaptations to monitoring were planned for 2023.

Based on results of this program to date, no changes to scheduled monitoring are recommended in 2024.

SECTION 8 • REFERENCES

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Golder (Golder Associates), 2014b. Final Environmental Impact Statement (FEIS) – Meliadine Gold Project, Nunavut. Volume 10.0 – Environmental and Human Health Risk Assessment. April 2014.

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APPENDIX A: DAILY AVERAGE WEATHER DATA

APPENDIX A - TABLE 1: DAILY MAXIMUM RELATIVE HUMIDITY (RH), AVERAGE TEMPERATURE, AVERAGE WIND SPEED, AVERAGE WIND DIRECTION, AVERAGE SOLAR RADIATION, AND TOTAL PRECIPITATION AS MEASURED BY THE MELIADINE ONSITE WEATHER STATION.

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-01-01	-15.9	95	0.1	134	3	0.4
2023-01-02	-22.2	94	0.0	0	2	0.0
2023-01-03	-19.3	94	0.4	8	3	3.0
2023-01-04	-33.4	78	1.0	354	2	0.1
2023-01-05	-31.4	80	2.6	161	4	0.2
2023-01-06	-25.2	84	3.6	29	5	0.1
2023-01-07	-21.1	91	13.7	145	5	0.7
2023-01-08	-20.5	92	26.1	124	5	0.1
2023-01-09	-19.8	91	14.4	134	5	0.0
2023-01-10	-24.6	88	2.9	112	6	0.0
2023-01-11	-23.6	94	10.5	142	7	0.4
2023-01-12	-19.1	96	25.3	291	6	0.9
2023-01-13	-30.9	74	25.5	331	7	0.0
2023-01-14	-28.3	81	10.9	16	6	0.0
2023-01-15	-34.0	73	11.8	336	6	0.0
2023-01-16	-23.8	92	15.2	159	6	0.0
2023-01-17	-18.0	92	20.5	141	6	0.1
2023-01-18	-16.5	95	13.0	128	8	0.0
2023-01-19	-14.6	97	15.7	169	8	0.3

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-01-20	-9.6	100	7.9	174	7	0.2
2023-01-21	-11.4	100	16.5	226	8	0.0
2023-01-22	-19.5	97	25.8	340	11	0.0
2023-01-23	-30.7	82	26.3	356	11	0.1
2023-01-24	-34.1	70	25.3	349	11	0.0
2023-01-25	-34.3	70	17.4	322	12	0.0
2023-01-26	-35.7	70	27.8	338	11	0.1
2023-01-27	-36.6	64	21.9	339	12	0.0
2023-01-28	-39.7	60	11.4	349	14	0.1
2023-01-29	-36.3	67	23.2	351	12	0.0
2023-01-30	-36.8	68	11.7	318	14	0.0
2023-01-31	-35.3	68	19.2	352	14	0.0
2023-02-01	-38.6	63	17.4	348	16	0.0
2023-02-02	-39.7	60	15.5	350	17	0.1
2023-02-03	-39.0	62	24.0	346	17	0.0
2023-02-04	-37.8	63	15.1	342	18	0.0
2023-02-05	-39.7	59	8.3	348	19	0.0
2023-02-06	-36.7	67	3.2	244	16	0.0
2023-02-07	-32.3	74	2.4	161	11	0.2
2023-02-08	-36.5	70	5.2	340	16	0.0
2023-02-09	-33.8	71	4.2	0	11	0.1

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-02-10	-29.5	78	4.4	238	12	0.2
2023-02-11	-28.1	80	18.4	31	16	0.0
2023-02-12	-38.3	64	21.4	351	18	0.0
2023-02-13	-32.1	80	7.9	127	19	0.0
2023-02-14	-25.4	83	18.2	85	29	0.2
2023-02-15	-35.8	69	20.6	346	44	0.0
2023-02-16	-38.1	63	17.6	334	43	0.0
2023-02-17	-38.7	62	23.1	330	45	0.1
2023-02-18	-39.7	58	14.0	347	47	0.0
2023-02-19	-39.5	59	16.8	344	42	0.0
2023-02-20	-38.3	62	16.3	329	42	0.0
2023-02-21	-39.7	57	19.3	358	46	0.0
2023-02-22	-39.7	56	14.6	355	53	0.0
2023-02-23	-38.8	62	19.5	345	55	0.0
2023-02-24	-35.5	70	27.3	341	51	0.0
2023-02-25	-31.7	70	24.0	319	55	0.0
2023-02-26	-33.3	71	6.8	283	52	0.0
2023-02-27	-35.8	67	5.6	333	61	0.1
2023-02-28	-35.3	68	5.3	355	59	0.0
2023-03-01	-37.1	65	12.5	357	64	0.1
2023-03-02	-35.7	70	14.2	12	56	0.0

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-03-03	-26.5	89	11.2	28	64	0.1
2023-03-04	-23.3	89	5.8	64	61	0.0
2023-03-05	-21.4	92	5.2	41	45	0.0
2023-03-06	-28.7	81	14.2	357	74	0.0
2023-03-07	-28.6	77	16.8	2	80	0.0
2023-03-08	-23.9	88	20.7	352	79	0.1
2023-03-09	-26.6	80	22.3	331	87	0.0
2023-03-10	-28.3	79	8.3	325	95	0.0
2023-03-11	-26.8	79	7.7	354	100	0.0
2023-03-12	-27.4	81	7.9	342	100	0.1
2023-03-13	-25.2	88	6.2	338	83	0.0
2023-03-14	-28.7	78	12.1	302	114	0.1
2023-03-15	-26.9	85	16.1	355	105	0.0
2023-03-16	-29.1	79	15.5	1	112	0.0
2023-03-17	-27.9	84	8.7	347	122	0.1
2023-03-18	-23.6	91	6.8	193	111	0.0
2023-03-19	-18.4	93	9.2	115	109	0.1
2023-03-20	-26.3	87	13.6	15	127	0.0
2023-03-21	-27.9	79	11.6	349	131	0.0
2023-03-22	-30.1	76	8.9	325	135	0.1
2023-03-23	-28.0	87	2.5	210	127	0.0

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-03-24	-24.9	89	6.2	156	114	0.1
2023-03-25	-20.7	92	13.1	136	131	0.0
2023-03-26	-19.6	92	21.8	78	137	0.0
2023-03-27	-22.7	86	21.0	35	129	0.0
2023-03-28	-18.6	95	24.6	43	130	0.0
2023-03-29	-15.8	95	23.7	71	127	0.0
2023-03-30	-22.9	92	18.8	139	161	0.0
2023-03-31	-20.5	91	20.5	96	161	0.0
2023-04-01	-22.5	92	21.9	10	152	0.0
2023-04-02	-21.0	92	16.9	56	170	0.0
2023-04-03	-21.5	90	13.6	16	164	0.0
2023-04-04	-24.4	86	9.3	335	161	0.0
2023-04-05	-23.2	88	4.5	269	178	0.0
2023-04-06	-24.8	88	3.4	139	169	0.0
2023-04-07	-18.9	93	5.3	258	168	0.0
2023-04-08	-14.1	98	10.8	190	179	0.0
2023-04-09	-10.5	100	12.1	157	175	0.0
2023-04-10	-8.1	100	16.8	283	144	0.0
2023-04-11	-9.9	97	23.6	4	157	0.0
2023-04-12	-16.9	95	13.5	10	210	0.0
2023-04-13	-18.7	93	6.8	13	211	0.0

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-04-14	-20.6	93	9.5	350	219	0.0
2023-04-15	-20.3	95	7.8	348	225	0.0
2023-04-16	-18.8	94	6.8	352	225	0.0
2023-04-17	-16.4	96	3.8	68	228	0.0
2023-04-18	-17.1	97	6.6	0	225	0.0
2023-04-19	-13.9	99	9.0	347	224	0.0
2023-04-20	-10.8	99	15.9	345	225	0.0
2023-04-21	-10.5	100	20.1	354	181	0.0
2023-04-22	-11.2	100	10.6	359	199	0.0
2023-04-23	-10.4	99	12.0	20	224	0.0
2023-04-24	-11.7	100	10.6	10	229	0.0
2023-04-25	-10.9	100	10.3	5	232	0.0
2023-04-26	-9.6	100	6.2	44	232	0.0
2023-04-27	-7.3	100	4.9	93	185	0.0
2023-04-28	-6.4	100	10.1	71	198	0.0
2023-04-29	-6.6	100	5.6	156	238	0.0
2023-04-30	-3.1	100	7.7	219	122	0.0
2023-05-01	-4.6	100	5.7	272	211	0.0
2023-05-02	-4.3	100	6.9	199	218	0.0
2023-05-03	-4.6	100	22.9	146	186	0.6
2023-05-04	-2.1	100	26.8	135	159	0.0

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-05-05	-3.2	100	17.8	174	254	0.0
2023-05-06	-3.5	100	9.5	137	219	0.0
2023-05-07	-3.3	100	6.8	91	261	0.0
2023-05-08	0.2	100	10.0	198	222	0.0
2023-05-09	3.0	100	7.8	308	266	0.0
2023-05-10	1.0	100	11.0	140	275	0.0
2023-05-11	2.8	100	10.0	302	212	0.3
2023-05-12	0.3	100	25.1	341	184	0.0
2023-05-13	1.0	100	15.7	333	220	0.0
2023-05-14	4.7	100	13.9	246	218	0.3
2023-05-15	0.9	100	20.3	21	264	0.0
2023-05-16	-1.9	100	14.3	30	293	0.0
2023-05-17	0.1	99	9.5	355	294	0.0
2023-05-18	2.6	98	20.0	305	278	0.0
2023-05-19	-1.4	100	24.0	352	302	2.0
2023-05-20	-2.0	100	13.6	340	202	2.3
2023-05-21	-6.6	100	32.3	6	244	0.0
2023-05-22	0.0	96	13.8	240	254	0.2
2023-05-23	1.5	100	22.3	13	234	0.0
2023-05-24	2.3	100	20.2	319	252	0.0
2023-05-25	9.0	91	18.4	245	272	0.3

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-05-26	2.4	100	26.3	354	133	3.3
2023-05-27	-1.3	97	12.8	214	291	0.1
2023-05-28	1.1	100	16.5	106	147	2.1
2023-05-29	1.1	100	18.2	191	189	0.1
2023-05-30	2.5	100	14.4	50	64	0.4
2023-05-31	1.4	100	13.3	85	257	0.1
2023-06-01	2.3	96	7.8	196	286	0.0
2023-06-02	1.8	100	12.8	175	277	0.0
2023-06-03	3.4	93	15.2	184	281	0.0
2023-06-04	6.4	100	12.0	88	251	0.0
2023-06-05	5.2	279	8.4	230	268	0.0
2023-06-06	2.1	278	10.6	178	296	0.1
2023-06-07	4.3	235	19.3	152	315	0.1
2023-06-08	4.9	100	9.7	167	115	50.7
2023-06-09	5.1	100	15.8	126	114	0.6
2023-06-10	6.1	100	27.0	3	254	0.3
2023-06-11	13.9	95	13.8	224	299	0.0
2023-06-12	5.3	100	22.3	35	162	0.9
2023-06-13	4.7	99	13.2	345	283	0.0
2023-06-14	8.8	95	11.2	341	339	0.0
2023-06-15	11.2	91	6.1	155	319	0.0

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-06-16	3.9	95	13.4	172	82	0.3
2023-06-17	2.8	100	22.4	159	129	0.6
2023-06-18	6.6	100	15.6	226	201	4.0
2023-06-19	9.5	100	11.1	37	233	0.1
2023-06-20	7.7	94	20.4	334	321	0.0
2023-06-21	6.6	100	5.2	109	97	1.9
2023-06-22	9.1	100	9.5	246	337	0.0
2023-06-23	8.1	100	10.9	223	311	0.0
2023-06-24	6.9	100	15.7	211	232	3.1
2023-06-25	11.3	100	15.8	238	205	6.6
2023-06-26	6.6	100	33.2	330	167	0.3
2023-06-27	9.6	94	23.2	321	261	0.0
2023-06-28	10.6	91	16.7	333	296	0.0
2023-06-29	13.9	85	10.1	169	305	0.0
2023-06-30	11.5	92	11.7	158	314	0.0
2023-07-01	11.3	100	13.6	113	218	3.0
2023-07-02	14.9	100	13.9	11	312	0.0
2023-07-03	15.5	95	13.5	306	269	0.0
2023-07-04	10.4	87	23.3	97	266	0.0
2023-07-05	11.4	85	13.9	78	259	0.0
2023-07-06	10.3	92	11.5	202	163	0.0

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-07-07	11.6	100	16.9	327	279	0.0
2023-07-08	10.6	100	13.3	327	225	0.0
2023-07-09	10.0	100	11.3	178	215	0.8
2023-07-10	7.4	100	35.9	91	75	0.0
2023-07-11	11.7	98	19.5	84	232	0.0
2023-07-12	9.4	100	25.2	62	52	2.0
2023-07-13	8.9	100	15.1	53	65	4.5
2023-07-14	7.0	100	32.7	103	127	0.1
2023-07-15	10.9	100	22.4	89	181	0.1
2023-07-16	15.4	100	11.4	23	195	0.1
2023-07-17	16.1	100	11.4	45	221	0.0
2023-07-18	17.9	100	7.5	275	251	0.0
2023-07-19	18.6	89	19.2	333	264	0.0
2023-07-20	14.5	89	22.0	12	276	0.0
2023-07-21	16.6	87	18.5	333	292	0.0
2023-07-22	12.7	100	13.7	326	66	8.1
2023-07-23	14.9	100	18.7	26	226	1.0
2023-07-24	15.4	100	24.2	27	239	0.1
2023-07-25	11.9	100	30.9	43	73	1.9
2023-07-26	13.6	100	23.9	56	207	0.1
2023-07-27	14.5	99	13.4	55	249	0.0

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-07-28	16.9	97	17.2	5	224	0.0
2023-07-29	16.6	97	7.2	177	263	0.0
2023-07-30	16.6	93	9.9	170	261	0.0
2023-07-31	17.4	100	10.4	281	273	0.0
2023-08-01	18.2	89	9.3	258	263	0.0
2023-08-02	18.2	98	6.6	142	251	0.0
2023-08-03	17.7	100	12.1	97	262	0.0
2023-08-04	20.1	99	9.1	282	253	0.0
2023-08-05	20.1	96	7.4	219	246	0.0
2023-08-06	14.7	100	9.0	170	223	0.0
2023-08-07	14.1	100	7.2	171	232	0.0
2023-08-08	14.5	99	16.9	102	235	0.0
2023-08-09	14.8	97	8.8	233	244	0.0
2023-08-10	16.7	90	9.3	277	250	0.0
2023-08-11	15.0	100	7.8	194	138	0.5
2023-08-12	-	-	-	-	-	-
2023-08-13	-	-	-	-	-	-
2023-08-14	-	-	-	-	-	-
2023-08-15	-	-	-	-	-	-
2023-08-16	-	-	-	-	-	-
2023-08-17	-	-	-	-	-	-

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-08-18	13.6	67	8.1	327	57	0.0
2023-08-19	12.4	95	7.4	153	105	1.1
2023-08-20	11.8	100	13.1	326	106	0.0
2023-08-21	9.9	100	27.0	324	101	4.4
2023-08-22	10.6	99	23.8	327	171	0.0
2023-08-23	11.8	90	14.3	301	180	0.0
2023-08-24	10.4	100	22.5	352	94	4.6
2023-08-25	10.1	94	24.9	326	146	0.0
2023-08-26	11.0	100	14.8	299	111	1.5
2023-08-27	9.3	100	25.3	322	65	0.0
2023-08-28	4.4	100	31.2	336	103	0.0
2023-08-29	5.5	99	26.6	339	133	0.0
2023-08-30	6.4	100	6.6	234	95	0.1
2023-08-31	7.6	100	19.0	330	160	0.0
2023-09-01	6.1	99	6.2	40	37	1.0
2023-09-02	6.1	100	19.7	124	93	1.4
2023-09-03	9.0	100	15.3	193	26	7.5
2023-09-04	4.6	100	45.8	335	95	0.0
2023-09-05	4.7	98	32.3	343	120	0.0
2023-09-06	4.0	100	20.6	342	139	0.0
2023-09-07	4.5	100	13.2	320	147	0.0

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-09-08	7.5	100	13.0	201	68	0.2
2023-09-09	6.5	100	11.1	160	84	0.2
2023-09-10	5.9	100	8.6	209	89	0.4
2023-09-11	6.7	100	13.3	309	98	3.5
2023-09-12	8.0	100	10.6	214	50	0.0
2023-09-13	6.5	100	19.7	92	104	0.0
2023-09-14	2.4	100	14.5	135	98	0.0
2023-09-15	3.1	100	9.1	104	152	0.0
2023-09-16	6.9	100	6.8	271	127	0.0
2023-09-17	4.9	100	13.9	207	54	0.0
2023-09-18	7.0	100	11.2	179	18	0.4
2023-09-19	8.2	100	5.6	131	74	0.0
2023-09-20	6.6	100	18.1	135	38	0.0
2023-09-21	8.3	100	8.9	160	90	0.0
2023-09-22	-	-	-	-	-	-
2023-09-23	8.4	100	12.4	270	87	0.0
2023-09-24	7.7	100	9.0	221	88	0.0
2023-09-25	11.1	100	10.8	191	96	0.0
2023-09-26	8.9	100	13.1	188	38	0.1
2023-09-27	6.5	100	20.9	308	70	0.0
2023-09-28	8.2	100	14.8	159	53	1.0

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-09-29	9.0	100	13.0	169	45	0.0
2023-09-30	3.0	100	21.6	316	45	0.0
2023-10-01	2.5	100	40.4	316	36	0.2
2023-10-02	1.4	100	36.8	334	67	0.0
2023-10-03	1.0	100	9.6	268	59	0.0
2023-10-04	3.2	100	7.5	173	39	0.8
2023-10-05	3.3	100	22.1	89	20	0.0
2023-10-06	0.1	100	28.6	9	55	0.0
2023-10-07	0.0	100	20.1	333	38	0.1
2023-10-08	-2.2	100	18.9	3	71	0.0
2023-10-09	-0.9	100	9.3	182	74	0.0
2023-10-10	3.9	100	15.9	202	42	0.0
2023-10-11	4.0	100	11.1	173	42	0.0
2023-10-12	4.3	100	9.7	181	69	0.1
2023-10-13	6.8	95	14.3	256	52	0.0
2023-10-14	3.0	100	10.0	353	40	0.0
2023-10-15	3.8	100	11.7	230	18	0.0
2023-10-16	3.6	100	11.6	268	65	0.1
2023-10-17	5.0	100	9.5	236	85	0.0
2023-10-18	1.4	100	12.4	345	18	0.2
2023-10-19	1.4	100	27.7	359	24	0.0

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-10-20	-0.8	100	11.4	98	54	0.0
2023-10-21	-0.2	100	9.2	158	24	0.3
2023-10-22	-0.5	100	22.8	282	47	0.7
2023-10-23	-3.0	100	19.7	253	45	0.0
2023-10-24	-3.6	100	31.9	307	29	0.0
2023-10-25	-5.5	99	23.1	312	32	0.0
2023-10-26	-4.2	100	33.8	308	30	0.1
2023-10-27	-5.4	100	25.7	318	21	0.0
2023-10-28	-8.5	100	12.7	358	32	0.0
2023-10-29	-9.1	100	6.2	352	21	0.0
2023-10-30	-7.5	100	5.4	13	15	0.2
2023-10-31	-10.0	99	11.7	345	40	0.0
2023-11-01	-7.7	100	33.4	314	25	0.3
2023-11-02	-10.7	97	37.5	341	32	0.0
2023-11-03	-8.0	100	19.9	320	20	0.6
2023-11-04	-10.5	99	16.3	27	31	0.0
2023-11-05	-9.6	99	31.3	347	25	0.1
2023-11-06	-12.6	99	10.7	353	28	0.0
2023-11-07	-16.7	94	2.8	267	34	0.2
2023-11-08	-6.8	97	7.4	276	0	-
2023-11-09	-13.3	96	21.6	346	15	0.3

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-11-10	-14.0	84	10.7	356	18	0.0
2023-11-11	-12.3	92	12.7	237	12	4.4
2023-11-12	-7.6	98	3.3	114	15	0.6
2023-11-13	-2.3	100	3.1	131	9	0.3
2023-11-14	-1.6	100	7.6	188	9	0.5
2023-11-15	-10.6	95	6.4	288	11	0.0
2023-11-16	-10.5	95	24.4	345	14	0.3
2023-11-17	-16.4	88	30.9	321	11	0.1
2023-11-18	-14.9	88	28.1	308	15	0.0
2023-11-19	-18.2	86	34.9	312	16	0.1
2023-11-20	-18.2	88	20.3	314	16	0.0
2023-11-21	-9.6	100	13.1	149	7	7.7
2023-11-22	-10.5	91	41.9	343	0	3.6
2023-11-23	-14.6	90	68.6	341	10	1.5
2023-11-24	-15.4	89	41.7	327	8	0.5
2023-11-25	-15.8	88	7.4	322	10	0.1
2023-11-26	-15.6	89	21.6	334	7	0.1
2023-11-27	-20.0	88	30.6	330	9	0.2
2023-11-28	-29.6	73	10.1	319	6	0.0
2023-11-29	-31.1	70	8.2	324	7	0.2
2023-11-30	-20.7	88	32.9	329	6	0.0

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-12-01	-11.3	91	27.0	16	5	2.5
2023-12-02	-15.4	93	0.5	123	5	0.0
2023-12-03	-12.0	91	0.0	197	5	0.5
2023-12-04	-9.8	94	10.7	144	2	1.1
2023-12-05	-17.4	85	7.3	321	2	0.9
2023-12-06	-12.5	91	11.2	112	6	0.5
2023-12-07	-7.3	96	8.8	105	5	0.4
2023-12-08	-12.8	92	11.4	335	8	0.0
2023-12-09	-19.6	87	14.7	318	4	0.0
2023-12-10	-17.5	86	15.4	352	5	0.2
2023-12-11	-	-	-	-	-	-
2023-12-12	-	-	-	-	-	-
2023-12-13	-	-	-	-	-	-
2023-12-14	-12.7	89	15.9	145	0	2.9
2023-12-15	-10.7	94	36.0	268	3	2.3
2023-12-16	-23.2	85	24.0	281	4	0.2
2023-12-17	-	-	-	-	-	-
2023-12-18	-	-	-	-	-	-
2023-12-19	-23.4	78	5.7	171	5	138.1
2023-12-20	-29.3	74	20.0	321	6	0.0
2023-12-21	-30.3	80	9.2	254	4	0.1

Date	Temp. (°C)	RH (%)	Wind Speed (km/h)	Wind Direction (deg.)	Solar Rad. (watts/m^2)	Precipitation (mm)
2023-12-22	-15.1	89	16.7	162	3	8.0
2023-12-23	-21.7	85	22.9	277	4	0.0
2023-12-24	-13.2	88	34.3	105	0	1.3
2023-12-25	-11.0	90	30.1	74	3	2.4
2023-12-26	-21.2	89	33.3	326	4	0.1
2023-12-27	-20.7	87	8.3	113	3	0.1
2023-12-28	-12.6	90	24.8	127	5	0.8
2023-12-29	-11.3	90	12.4	136	4	2.2
2023-12-30	-12.9	91	23.4	295	5	0.0
2023-12-31	-20.6	77	5.4	275	0	0.1