

Memorandum

To: Kevin Eppers, Hecla Yukon

From: Elizabeth Busby, Ensero Solutions Canada, Inc.

CC: Carolyn Johns, Ensero Solutions Canada, Inc.

Date: January 31, 2024

Re: Dust and Noise Monitoring Results Memo – December 2023

1 INTRODUCTION

This memo summarizes noise and dust monitoring levels recorded during December 2023. The Variation Notice issued by the Government of Yukon Compliance Monitoring and Inspections (CMI) Branch on May 12, 2023 (YG, 2023) expired on November 30, 2023. The Variation Notice was originally issued to Hecla Yukon (Hecla) for the Alexco Keno Hill Mining Corp. (AKHM) to allow for a temporary variance to QML-0009 to permit the use of a portable crusher in lieu of the permanent crusher, while the permanent crusher was under repairs. The permanent crusher has been repaired and is once again in use. The following sections outline results of dust and noise monitoring for December 2023 (Section 2 and 3, respectively).

2 DUST MONITORING RESULTS

Air quality monitoring is conducted at three stations within the Keno Hill Silver District (KHSD), with locations of each station summarized below:

TSP-1: Located on the west side of Keno City.

TSP-2: Located near the dry stack tailings facility phase 2 expansion area.

TSP-3: Located on the north side of Keno City, adjacent to the Onek 400 water treatment plant.

Dust monitoring results for December 2023 are summarized in Table 2. There were statistically significant increasing trends at TSP-1 of total copper, at TSP-2 of total particulates, total copper, lead, manganese, and silver, and at TSP-3 of copper and manganese; however, none of the trends are approaching Yukon Ambient Air Quality Standard (YAAQS) or Ontario Ambient Air Quality Criteria (OAAQC). All dust monitoring results remained below the YAAQS for total suspended particulates (TSP), fine particulate matter (PM_{2.5}), and coarse particulate matter (PM₁₀) and below the OAAQC for metals outlined in the Variation Notice (i.e., arsenic, cadmium, copper, lead, manganese, and silver; YG, 2023).

Table 2-1: Dust Monitoring Results for December 2023

Station	Parameter	TSP	PM _{2.5}	PM ₁₀	As	Cd	Cu	Pb	Mn	Ag
	Units	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³
	Standard ¹	120	50	27	0.3	0.025	50	0.5	0.4	1
TSP-1	06-Dec-2023	-	-	2.8	-	-	-	-	-	-
	08-Dec-2023	-	2.8	-	-	-	-	-	-	-
	11-Dec-2023	2.8	-	-	0.00035	0.00007	0.001	0.00035	0	0.00014
	12-Dec-2023	-	-	6.7	-	-	-	-	-	-
	15-Dec-2023	-	2.8	-	-	-	-	-	-	-
	18-Dec-2023	2.8	-	-	0.00035	0.00007	0.001	0.00164	0.001	0.00014
	19-Dec-2023	-	-	2.8	-	-	-	-	-	-
	21-Dec-2023	2.8	-	-	0.00035	0.00007	0	0.00107	0.001	0.00014
	25-Dec-2023	2.8	-	-	0.00035	0.00007	0.001	0.00088	0.001	0.00014
TSP-2	06-Dec-2023	2.8	-	-	0.00035	0.00007	0.001	0.00317	0.002	0.00014
	08-Dec-2023	-	-	6.9	-	-	-	-	-	-
	11-Dec-2023	-	10.1	-	-	-	-	-	-	-
	12-Dec-2023	9.3	-	-	0.00279	0.00056	0.002	0.05042	0.062	0.00235
	15-Dec-2023	-	-	2.8	-	-	-	-	-	-
	17-Dec-2023	-	7.9	-	-	-	-	-	-	-
	19-Dec-2023	6.1	-	-	0.00035	0.00068	0.003	0.08833	0.029	0.00326
	21-Dec-2023	-	-	6.8	-	-	-	-	-	-
	23-Dec-2023	-	7.4	-	-	-	-	-	-	-
TSP-3	06-Dec-2023	-	2.8	-	-	-	-	-	-	-
	08-Dec-2023	2.8	-	-	0.00035	0.00007	0.002	0.00103	0.003	0.00014
	11-Dec-2023	-	-	2.8	-	-	-	-	-	-
	12-Dec-2023	-	5.6	-	-	-	-	-	-	-
	15-Dec-2023	2.8	-	-	0.00035	0.00019	0.001	0.00035	0.001	0.00014
	19-Dec-2023	-	2.8	-	-	-	-	-	-	-
	23-Dec-2023	-	-	2.8	-	-	-	-	-	-

¹ Standards for total suspended particulates (TSP), fine particulate matter (PM_{2.5}), and coarse particulate matter (PM₁₀) are Yukon Ambient Air Quality Standards. Standards for metals are Ontario Ambient Air Quality Criteria.

3 NOISE MONITORING RESULTS

Noise monitoring is conducted at five stations within the KHSO, with locations of each station summarized below:

R01: Located in an east end residence, north side of Lightning Creek Road.

R02: Located at a residence on the east side of Sign Post Road.

R03: Located in the town center, north from the Snack Bar.

R04: Located at a residence on the west side of Wernecke Road.

R05: Located at a residence approximately 850 m from the District Mill.

Noise monitoring results for December 2023 are shown in Table 3-1. Temperature in the KHSD in December was on average -12°C and ranged between -8 and -16°C. These are higher than the average temperatures recorded in December 2022 (average of -22°C, ranged between -18°C and -25°C).

Low ambient temperatures during the month of December caused technical difficulties with the noise monitoring equipment. As a result, some data collected were in shorter duration than the typical 24-hour run-time.

Table 3-1: Noise Monitoring Results for December 2023

Station	Date	LAeq (dB) ¹	Notes ²
R05	23-Dec-23	36.0	Less than 24 hour duration due to low temperatures (2:26 hours)
R03	24-Dec-23	76.7	
R04	26-Dec-23	38.4	

¹LAeq – equivalent continuous noise level.

²All data collected was 24 hours in duration unless otherwise specified in the Notes.

4 REFERENCES

YG (Yukon Government, Compliance Monitoring & Inspections Branch). (2023). *Variation Notice, QML-0009*. May 12, 2023.