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Memorandum

To: Todd Powell, Director, Mineral Resources, Energy, Mines and Resources

From: Hecla Yukon.

CC: Keno City Residents

Date: Nov 1, 2022

Re: 2022 Q3 Air Quality Monitoring Report

INTRODUCTION

This report summarizes air quality monitoring results for Hecla Yukon Keno Hill during the third quarter of 2022.

Addressing the potential effects of fugitive dust on community health and well-being is of key importance given the location of the Keno Hill Silver District Mine Operations to Keno City. The primary dust sources in the proximity of the village of Keno City include the dry stack tailings facility, mineral processing (crushing) and mine traffic on unpaved roads.

Hecla Yukon Keno Hill monitors dust levels in the Keno City area using BGI Omni Ambient Air Quality Samplers. Figure 1 exhibits the location of these samplers which recorded data on air quality during the period. Dust or particulate matter (PM) is divided into different sized fractions for air quality monitoring. Hecla Yukon Keno Hill collects for three filter inlet sizes (TSP, PM10 and PM2.5) at each air quality monitoring station which is then sent to an analytical laboratory for gravimetric analysis. Metals analyses by Inductively Coupled Plasma (ICP) mass spectrometry are conducted on the total suspended particulate (TSP) sample.

Particulate air quality monitoring results are compared to the Yukon Ambient Air Quality Standards. Yukon does not have ambient air quality standards for metals, as a result the Ontario Ministry of Environment Ambient Air Quality Criteria 24-hr average concentrations for metals is used to assess metals of concern (arsenic, cadmium, iron, manganese, lead, and zinc).

The company also maintains a Dust Disturbance Register to record, track and address dust disturbance concerns raised by Keno City residents.

RESULTS

The data used to evaluate air quality during the third quarter of 2022 was collected at three monitoring locations, TSP-1, TSP-2, and TSP-3. All samples met the Yukon Ambient Air Quality Standards and the Ontario Ambient Air Quality Criteria. The results for the parameters of concerned are compared to the Yukon and Ontario thresholds on Table 1.

As well, no complaints were filed or recorded by area residents in the Dust Disturbance Register.

Table 1: Concentrations Summary for 2022 Q3 (24-hour)

	TSP	PM10	PM2.5	As	Cd	Fe	Pb	Mn	Zn
Air Quality Criteria (ug/m3)	120	50	27	0.3	0.025	4	0.5	0.4	120
Station	**TSP-1**								
Average	16.4	8.5	3.1	0.0006	0.0004	0.095	0.0061	0.006	0.013
Count	22	22	22	22	22	22	22	22	22
Minimum	2.8	2.8	2.8	0.0004	0.00007	0.021	0.001	0.001	0.004
Maximum	93.5	134.2	6.8	0.0013	0.00182	0.183	0.021	0.027	0.054
Geometric Mean	8.6	4	3	0.0005	0.00024	0.079	0.0042	0.005	0.009
Count Exceeding Standard (Q3)	0	0	0	0	0	0	0	0	
Station	**TSP-2**								
Average	11.4	4.8	5.1	0.0025	0.00068	0.207	0.0359	0.019	0.04
Count	44	50	48	44	44	44	44	44	44
Minimum	2.8	2.8	2.8	0.0004	0.00007	0.05	0.0021	0.002	0.004
Maximum	106.8	15.4	40.7	0.0203	0.00639	1.296	0.1989	0.151	0.204
Geometric Mean	5.5	3.9	3.7	0.0012	0.0004	0.14	0.0211	0.01	0.025
Count Exceeding Standard (Q3)	0	0	0	0	0	0	0	0	0
Station	**TSP-3**								
Average	8.7	4.4	4.7	0.0006	0.00031	0.091	0.0066	0.006	0.015
Count	46	53	44	43	43	43	43	43	43
Minimum	2.8	2.8	2.8	0.0004	0.00007	0.021	0.0014	0.001	0.004
Maximum	88.2	15.1	19.2	0.004	0.00167	0.425	0.035	0.039	0.076
Geometric Mean	4.7	3.8	3.9	0.0004	0.00022	0.076	0.0047	0.004	0.012
Count Exceeding Standard (Q3)	0	0	0	0	0	0	0	0	0

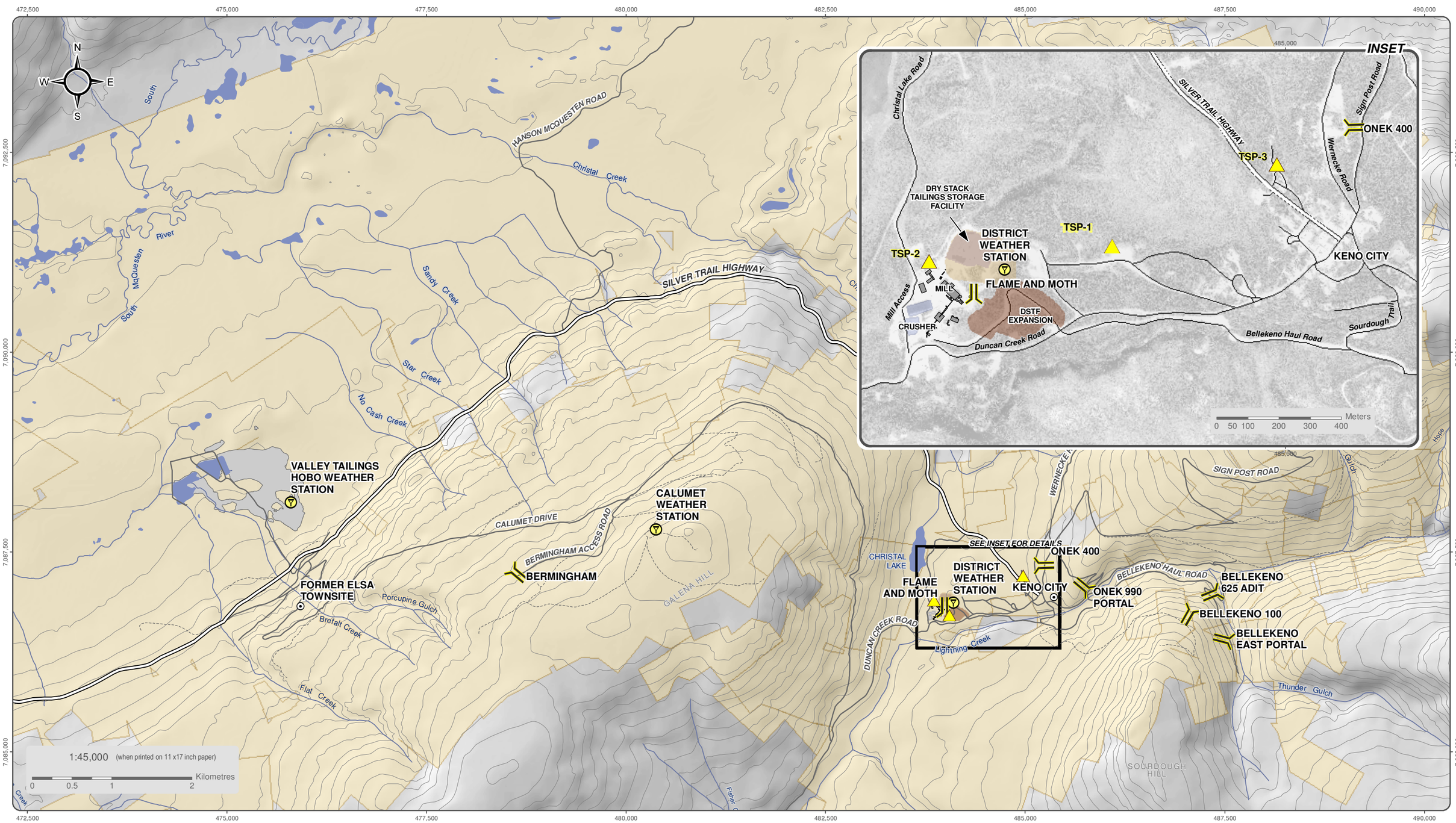
CONCLUSION

The data collected during the third quarter of 2022 shows any dust originating from Hecla Yukon Keno Hill did not exceed thresholds. The dust abatement and monitoring program will continue at Hecla Yukon Keno Hill throughout the year.

REFERENCES

Ontario Ministry of Environment. (2012). Ontario's Ambient Air Quality Criteria. Standards Development Branch. PIBS#6570e01. April 2012.

Yukon Environment. (2019). Yukon Ambient Air Quality Standards. April 2010, updated October 2019.



- Alexco TSP Monitoring Stations
- Weather Station
- Adit
- Alexco/ERDC Quartz Claims
- Mill Pond
- DSTF Phase II Expansion
- DSTF 322k Tonnes Design
- Current DSTF
- Existing Building
- Valley Tailings
- Waterbody
- Watercourse
- Silver Trail Highway
- Other Road
- Limited-Use Road

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HECLA YUKON KENO HILL.

FIGURE 1
DUST MONITORING STATIONS LOCATION

OCT 2022

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