



PO BOX 1500
YELLOWKNIFE NT X1A 2R3

NT 909298

September 8, 2017

Distribution List

RE: Air Quality Reports for the Week of September 2, 2017.

A summary of the Giant Mine ambient air quality monitoring program (AQM) for the week ending September 2, 2017 is as follows:

Fenceline Network:

- No 15-minute average particulate matter less than 10 microns in diameter (PM₁₀) concentrations above the established Risk Based Action Level (RBAL) of 159 µg/m³ were measured at the fenceline monitoring stations during the week. PM₁₀ concentrations measured at most of the fenceline locations during the week were typical of seasonal background concentrations;
- A total of twenty-five (25) 15-minute average total suspended particulate (TSP) concentrations above the established RBAL of 333 µg/m³ were measured at the fenceline monitoring stations on August 29 and September 2, 2017. Elevated TSP concentrations above typical background concentrations were measured at all fenceline locations on these dates during the late evening and/or early morning hours. Elevated concentrations appear to be the result of heavy fog observed in the area of the samplers. No site activities that may have contributed to the measured concentrations were reported during this time period;
 - One 15-minute average TSP concentration was measured at Site H-NW Pond on August 29, 2017 of 1014 µg/m³ at 03:00 MST. Winds were calm throughout the night, including during the time period an elevated concentration was measured;
 - Twenty-four (24) 15-minute average TSP concentrations above the established fenceline RBAL were measured at fenceline monitoring Sites A North, B-Town, F-Marina, G-West, and I-S Pond on September 2, 2017. The concentrations ranged from 335 µg/m³ to 1,694 µg/m³ and were measured between 22:00 and 00:00 MST. Winds were calm throughout the night, including the time periods elevated concentrations were measured.
- Laboratory results for TSP and PM₁₀ analyses from samples collected on August 14 and 15, 2017 indicated concentrations measured above their respective Ontario 24-Hour Standards for either PM₁₀ (50 µg/m³) or TSP (120 µg/m³). On August 14, 2017 all fenceline sites, with the exception of A-North, were above their standards for PM₁₀ or TSP. On August 15, 2017 PM₁₀ was measured above the Ontario 24-Hour Standard at A-North, B-Town, C-Northwest, G-West, H-NW Pond, and I-S Pond, and TSP was

measured above the Ontario 24-Hour Standard at A-North, D-Beach, E-A1C1, F-Marina, G-West, H-NW Pond, and I-S Pond.

- On August 14, 2017 the winds were predominately from the south-southeast with an average wind speed of 3.1 m/s placing the City of Yellowknife upwind from Giant Mine. Real time fenceline results were above RBAL or elevated at all fenceline monitoring sites and community station particulate samplers also measured PM₁₀ and PM_{2.5} measurements in excess of their respective standards. Heavy smoke from nearby regional forest fires was reported on this day. Elevated PM concentrations are likely the result of forest fire smoke in the area.
- On August 15, 2017 the winds were predominately from the south-southwest with an average wind speed of 2.3 m/s placing the City of Yellowknife upwind from Giant Mine. Real time fenceline results were above RBAL or elevated at all fenceline monitoring sites and community station particulate samplers also measured PM₁₀ and PM_{2.5} measurements in excess of their respective standards. Heavy smoke from nearby regional forest fires was reported on this day. Elevated PM concentrations are likely the result of forest fire smoke in the area.
- Trace metals (including arsenic) analyses for samples collected on August 14 and 15, 2017 were less than the analytical detection limit and/or below the referenced standards. Laboratory results from TSP, PM₁₀, and trace metals (including arsenic) samples collected on August 8 and 11, 2017 at all fenceline locations were less than the analytical detection limit and/or below the referenced standards. Laboratory analyses of integrated 24-hour trace metals (including arsenic), PM₁₀, and TSP filter samples collected by the fenceline samplers after August 15, 2017 are pending.

Community Stations:

- No 24-hour average concentrations of PM_{2.5} and PM₁₀ were measured above the referenced standards at the community stations during the week. PM_{2.5} and PM₁₀ concentrations during the week were typically representative of seasonal background concentrations;
- Laboratory results for TSP, PM₁₀, and trace metals (including arsenic) analyses from samples collected on August 11, 2017 at the community stations were less than the analytical detection limit and/or below the referenced standard. Laboratory analyses of community station filters collected after August 11, 2017 are pending;
- Laboratory analyses of asbestos samples collected at the community stations after August 14, 2017 are pending;
- There were no NO₂ concentrations measured at the recently established Niven Lake community air monitoring station above the NWT Ambient Air Quality 24-Hour Standard of 106 parts per billion (ppb) or the 1-Hour Standard of 213 ppb during the week. Table 1 summarizes the daily hourly maximum concentrations and the daily 24-Hour average concentrations measured at the Niven Lake community station during the week.

Table 1
Niven Lake Community AQM Station NO₂ Concentrations

Date	Maximum One-hour Average	24-hour Average
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	(ppb)	(ppb)
August 27, 2017	0.5	0.0
August 28, 2017	1.4	0.1
August 29, 2017	1.3	0.2
August 30, 2017	1.0	0.2
August 31, 2017	3.3	0.5
September 01, 2017	0.8	0.1
September 02, 2017	0.9	0.1

General Operation:

- The AQM program operated as specified during the week ending September 2, 2017, with the following exceptions:
 - The NVN community station continuous PM₁₀ monitor did not report on August 27 and 28, 2017 due to a malfunctioning temperature probe;
 - Fenceline location Site C-Northwest did not report 29 15-minute averages on August 29, 2017 from 16:45 to 23:45 MST, due to a battery malfunction;
 - The laboratory reported that it was unable to analyze the asbestos samples collected on August 14, 2017 at the YCC, NVN, and NDL community stations due to particulate matter overloading on the filters, preventing fibre counting analysis.

Sincerely,



Natalie Plato
Deputy Director
Giant Mine Remediation Project

c.c.: Distribution List

From: Geneva Irwin
Subject: Air Quality Monitoring Weekly Summary Week Ending in September 2
Date: September 8, 2017 11:56:53 AM
Attachments: [September 2.pdf](#)

Good Morning,

A SUMMARY OF THE GIANT MINE AMBIENT AIR QUALITY MONITORING PROGRAM (AQM) FOR THE WEEK ENDING SEPTEMBER 2, 2017 IS AS FOLLOWS:

FENCELINE NETWORK:

NO 15-MINUTE AVERAGE PARTICULATE MATTER LESS THAN 10 MICRONS IN DIAMETER (PM₁₀) CONCENTRATIONS ABOVE THE ESTABLISHED RISK BASED ACTION LEVEL (RBAL) OF 159 MG/M³ WERE MEASURED AT THE FENCELINE MONITORING STATIONS DURING THE WEEK. PM₁₀ CONCENTRATIONS MEASURED AT MOST OF THE FENCELINE LOCATIONS DURING THE WEEK WERE TYPICAL OF SEASONAL BACKGROUND CONCENTRATIONS;

A TOTAL OF TWENTY-FIVE (25) 15-MINUTE AVERAGE TOTAL SUSPENDED PARTICULATE (TSP) CONCENTRATIONS ABOVE THE ESTABLISHED RBAL OF 333 MG/M³ WERE MEASURED AT THE FENCELINE MONITORING STATIONS ON AUGUST 29 AND SEPTEMBER 2, 2017. ELEVATED TSP CONCENTRATIONS ABOVE TYPICAL BACKGROUND CONCENTRATIONS WERE MEASURED AT ALL FENCELINE LOCATIONS ON THESE DATES DURING THE LATE EVENING AND/OR EARLY MORNING HOURS. ELEVATED CONCENTRATIONS APPEAR TO BE THE RESULT OF HEAVY FOG OBSERVED IN THE AREA OF THE SAMPLERS. NO SITE ACTIVITIES THAT MAY HAVE CONTRIBUTED TO THE MEASURED CONCENTRATIONS WERE REPORTED DURING THIS TIME PERIOD;

- o ONE 15-MINUTE AVERAGE TSP CONCENTRATION WAS MEASURED AT SITE H-NW POND ON AUGUST 29, 2017 OF 1014 MG/M³ AT 03:00 MST. WINDS WERE CALM THROUGHOUT THE NIGHT, INCLUDING DURING THE TIME PERIOD AN ELEVATED CONCENTRATION WAS MEASURED;
- o TWENTY-FOUR (24) 15-MINUTE AVERAGE TSP CONCENTRATIONS ABOVE THE ESTABLISHED FENCELINE RBAL WERE MEASURED AT FENCELINE MONITORING SITES A NORTH, B-TOWN, F-MARINA, G-WEST, AND I-S POND ON SEPTEMBER 2, 2017. THE CONCENTRATIONS RANGED FROM 335 MG/M³ TO 1,694 MG/M³ AND WERE MEASURED BETWEEN 22:00 AND 00:00 MST. WINDS WERE CALM THROUGHOUT THE NIGHT, INCLUDING THE TIME PERIODS ELEVATED CONCENTRATIONS WERE MEASURED.

LABORATORY RESULTS FOR TSP AND PM₁₀ ANALYSES FROM SAMPLES COLLECTED ON AUGUST 14 AND 15, 2017 INDICATED CONCENTRATIONS MEASURED ABOVE THEIR RESPECTIVE ONTARIO 24-HOUR STANDARDS FOR EITHER PM₁₀ (50 MG/M³) OR TSP (120 MG/M³). ON AUGUST 14, 2017 ALL FENCELINE SITES, WITH THE EXCEPTION OF A-NORTH, WERE ABOVE THEIR STANDARDS FOR PM₁₀ OR TSP. ON AUGUST 15, 2017 PM₁₀ WAS MEASURED ABOVE THE ONTARIO 24-HOUR STANDARD AT A-NORTH, B-TOWN, C-NORTHWEST, G-WEST, H-NW POND, AND I-S POND, AND TSP WAS MEASURED ABOVE THE ONTARIO 24-HOUR STANDARD AT A-NORTH, D-BEACH, E-A1C1, F-MARINA, G-WEST, H-NW POND, AND I-S POND.

- o ON AUGUST 14, 2017 THE WINDS WERE PREDOMINATELY FROM THE SOUTH-SOUTHEAST WITH AN AVERAGE WIND SPEED OF 3.1 M/S PLACING THE CITY OF YELLOWKNIFE UPWIND FROM GIANT MINE. REAL TIME FENCELINE RESULTS WERE ABOVE RBAL OR ELEVATED AT ALL FENCELINE MONITORING SITES AND COMMUNITY STATION PARTICULATE SAMPLERS ALSO MEASURED PM₁₀ AND PM_{2.5} MEASUREMENTS IN EXCESS OF THEIR RESPECTIVE STANDARDS. HEAVY SMOKE FROM NEARBY REGIONAL FOREST FIRES WAS REPORTED ON THIS DAY. ELEVATED PM CONCENTRATIONS ARE LIKELY THE RESULT OF FOREST FIRE SMOKE IN THE AREA.
- o ON AUGUST 15, 2017 THE WINDS WERE PREDOMINATELY FROM THE SOUTH-SOUTHWEST WITH AN AVERAGE WIND SPEED OF 2.3 M/S PLACING THE CITY OF YELLOWKNIFE UPWIND FROM GIANT MINE. REAL TIME FENCELINE RESULTS WERE ABOVE RBAL OR ELEVATED AT ALL FENCELINE MONITORING SITES AND COMMUNITY STATION PARTICULATE SAMPLERS ALSO MEASURED PM₁₀ AND PM_{2.5} MEASUREMENTS IN EXCESS OF THEIR RESPECTIVE STANDARDS. HEAVY SMOKE FROM NEARBY REGIONAL FOREST FIRES WAS REPORTED ON THIS DAY. ELEVATED PM CONCENTRATIONS ARE LIKELY THE RESULT OF FOREST FIRE SMOKE IN THE AREA.

TRACE METALS (INCLUDING ARSENIC) ANALYSES FOR SAMPLES COLLECTED ON AUGUST 14 AND 15, 2017 WERE LESS THAN THE ANALYTICAL DETECTION LIMIT AND/OR BELOW THE REFERENCED STANDARDS. LABORATORY RESULTS FROM TSP, PM₁₀, AND TRACE METALS (INCLUDING ARSENIC) SAMPLES COLLECTED ON AUGUST 8 AND 11, 2017 AT ALL FENCELINE LOCATIONS WERE LESS THAN THE ANALYTICAL DETECTION LIMIT AND/OR BELOW THE REFERENCED STANDARDS. LABORATORY ANALYSES OF INTEGRATED 24-HOUR TRACE METALS (INCLUDING ARSENIC), PM₁₀,

AND TSP FILTER SAMPLES COLLECTED BY THE FENCELINE SAMPLERS AFTER AUGUST 15, 2017 ARE PENDING.

COMMUNITY STATIONS:

NO 24-HOUR AVERAGE CONCENTRATIONS OF PM_{2.5} AND PM₁₀ WERE MEASURED ABOVE THE REFERENCED STANDARDS AT THE COMMUNITY STATIONS DURING THE WEEK. PM_{2.5} AND PM₁₀ CONCENTRATIONS DURING THE WEEK WERE TYPICALLY REPRESENTATIVE OF SEASONAL BACKGROUND CONCENTRATIONS;

LABORATORY RESULTS FOR TSP, PM₁₀, AND TRACE METALS (INCLUDING ARSENIC) ANALYSES FROM SAMPLES COLLECTED ON AUGUST 11, 2017 AT THE COMMUNITY STATIONS WERE LESS THAN THE ANALYTICAL DETECTION LIMIT AND/OR BELOW THE REFERENCED STANDARD. LABORATORY ANALYSES OF COMMUNITY STATION FILTERS COLLECTED AFTER AUGUST 11, 2017 ARE PENDING;

- **LABORATORY ANALYSES OF ASBESTOS SAMPLES COLLECTED AT THE COMMUNITY STATIONS AFTER AUGUST 14, 2017 ARE PENDING;**
- THERE WERE NO NO₂ CONCENTRATIONS MEASURED AT THE RECENTLY ESTABLISHED NIVEN LAKE COMMUNITY AIR MONITORING STATION ABOVE THE NWT AMBIENT AIR QUALITY 24-HOUR STANDARD OF 106 PARTS PER BILLION (PPB) OR THE 1-HOUR STANDARD OF 213 PPB DURING THE WEEK. TABLE 1 SUMMARIZES THE DAILY HOURLY MAXIMUM CONCENTRATIONS AND THE DAILY 24-HOUR AVERAGE CONCENTRATIONS MEASURED AT THE NIVEN LAKE COMMUNITY STATION DURING THE WEEK.

TABLE 1

NIVEN LAKE COMMUNITY AQM STATION NO₂ CONCENTRATIONS

Date	Maximum One-hour Average (ppb)	24-hour Average (ppb)
August 27, 2017	0.5	0.0
August 28, 2017	1.4	0.1
August 29, 2017	1.3	0.2
August 30, 2017	1.0	0.2
August 31, 2017	3.3	0.5
September 01, 2017	0.8	0.1
September 02, 2017	0.9	0.1

GENERAL OPERATION:

THE AQM PROGRAM OPERATED AS SPECIFIED DURING THE WEEK ENDING SEPTEMBER 2, 2017, WITH THE FOLLOWING EXCEPTIONS:

- o THE NVN COMMUNITY STATION CONTINUOUS PM₁₀ MONITOR DID NOT REPORT ON AUGUST 27 AND 28, 2017 DUE TO A MALFUNCTIONING TEMPERATURE PROBE;
- o FENCELINE LOCATION SITE C-NORTHWEST DID NOT REPORT 29 15-MINUTE AVERAGES ON AUGUST 29, 2017 FROM 16:45 TO 23:45 MST, DUE TO A BATTERY MALFUNCTION;
- o THE LABORATORY REPORTED THAT IT WAS UNABLE TO ANALYZE THE ASBESTOS SAMPLES COLLECTED ON AUGUST 14, 2017 AT THE YCC, NVN, AND NDL COMMUNITY STATIONS DUE TO PARTICULATE MATTER OVERLOADING ON THE FILTERS, PREVENTING FIBRE COUNTING ANALYSIS.

SINCERELY,

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