Snap Lake Environmental Monitoring Agency
Main Floor, Lahm Ridge Tower
4501 Franklin Avenue
P.O. Box 95, Yellowknife, NT X1A 2N1
Phone: 867-765-0961 FAX: 867-765-0963
Website: www.slema.ca

Dee McCallum
SHE Manager
Snap Lake Mine
De Beers Canada Inc
300 - 5102 50th Ave
Yellowknife, NT.
X1A 3S8

April 23, 2009

Re: Review of De Beers Snap Lake Mine Air Quality, Meteorological Monitoring and Emission Reporting 2007 Annual Report

Dear Ms. McCallum,

The Snap Lake Environmental Monitoring Agency (SLEMA) has completed a review of the above document. Please accept the following comments as our views and assessments of the document.

General Comments

SLEMA acknowledges De Beers efforts to improve both meteorological monitoring and air quality monitoring in 2007 and 2008. The above report presents necessary analysis and discussion for air quality, meteorological monitoring and emissions reporting for 2007 with limited available monitoring data, and fulfills the related requirements of Water Licence and Environmental Agreement. Further details in emissions estimation are requested.

Meteorological Monitoring

The data recovery of wind speed and wind direction is not satisfactory in 2007, and no snow fall data were available in 2007. De Beers still has room to improve the meteorological monitoring.

Table 1 Meteorological Data Recovery at the Mine Site

Parameter	Data Recovery Rate (%)
Temperature	100
Wind Speed and Wind Direction	58.0
Relative Humidity	100
Solar Radiation	100
Precipitation (rainfall)	Sensor operational throughout the year
Precipitation (snowfall)	Not reported

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Air Quality Monitoring

The SO_2 and NO_2 passives monitoring program was initiated in November 2007 and therefore no trend analysis was done for SO_2 and NO_2. The TSP, PM_{10} and $PM_{2.5}$ Partisols were not installed until early 2008, and only high volume air sampling (Hi-Vol) TSP was available during 2007; therefore, analysis and discussion are limited to the Hi-Vol technique throughout this report. However, the data recovery for TSP in 2007 was only 33.8% because the Hi-Vol samplers could not operate properly during periods of cold weather (less than -20 °C). In addition, no dustfall monitoring data were reported in the document.

As a result, no year-round monitoring data are available for all air quality parameters in 2007. SLEMA is looking forward to reviewing a comprehensive summary of air quality in De Beers Air Quality, Meteorological Monitoring and Emission Reporting 2008 Annual Report.

Dioxins and Furans

Incinerator stack testing results in 2007 show that the sum total of all dioxins and furans (123.86 picograms per international toxicity equivalent per reference cubic meter, pg I-EQ/Rm^3) exceeded the Canada-Wide Standards (CWS) for total dioxins and furans incinerator emission concentrations (80 pg I-EQ/Rm^3) by 54.8%. The fact indicates that the operation performance of incinerators at the mine site was poor.

The investigation into the poor performance was conducted. It was found that the loading of solid waste into incinerators was 60% above the maximum rating recommended by the manufacturer. The overloading may be attributed to the 54.8% exceedance in dioxins and furans emissions.

The Domestic Waste and Sewage Management Plan (DWSMP, December 2006) states that "*(T)he incinerator units have been designed and were purchased with the stipulation that if the units are maintained and operated in accordance with the vendor's procedures, the unit will be in compliance with environmental standards*", including CWS for dioxins and furans at 80 pg I-TEQ/m^3. De Beers may have to revisit the practice of waste handling and incinerator operation. Stack testing is recommended to confirm the compliance of incinerator dioxins and furans. If the emissions still could not meet the standards after every management efforts, installation of scrubbers or other air quality control devices should be considered.

Emissions Estimation

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The subtotal emission rates in Table 4-7 (page 47) of the Report for all compounds ***except $PM_{2.5}$*** in 2007 are above those in 2006. However, the NO_x emission from power generators, and particulate mater emissions from both power generators and fleet in 2007 are below those in 2006. Explanation for the inconsistency is requested.

Table 2 Mine Emission Rates Comparisons

Parameter	2006	2007	Increase (%)
Diesel fuel consumption (L)	16,164,194	17,991,181	11.3
SO_2 (t/d)	0.024	0.068	***183.3***
NO_x (t/d)	2.06	2.557	24.1
TSP (t/d)	0.071	0.084	18.3
PM_{10} (t/d)	0.064	0.068	6.3
$PM_{2.5}$ (t/d)	0.063	0.057	-9.5
Greenhouse Gas (kt/yr)	46.18	51.39	11.3

In addition, from the above table, the percentage of the increase in SO_2 (183.3%) from 2006 to 2007 is extraordinarily higher than that in diesel fuel consumption (11.3%). Clarification is requested. Further, the detail for the estimation of emissions from food waste burned in the incinerators and wood burned in the pit is requested.

Typo

In Section 2.4.2 (page 14), the average annual temperature of -8.3 °C in 2007 for Snap Lake was 5.3 °C cooler than the annual temperature of -4.6 °C for Yellowknife during 1971 to 2007? (-8.4-(-4.6) =3.7)

Please make a reply to these comments by July 14, 2009.

Sincerely,

(Original signed by)

Johnny Weyallon
Chairperson

cc: Indian and Northern Affairs Canada
Environment and Natural Resources, GNWT
Environmental Canada
Mackenzie Valley Land and Water Board