Snap Lake Environmental Monitoring Agency

2012-2013

ANNUAL REPORT

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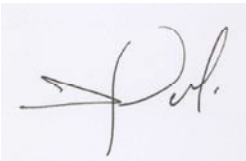
Message from the Chairperson

It is my great pleasure to present the 2012-2013 Snap Lake Environmental Monitoring Agency Annual Report. This report summarizes the agency's activities and provide a frank assessment of De Beers' environmental performance, including that of other regulators who have an important role to play in the management and regulation of the Snap Lake Mine. In the course of the year SLEMA has reviewed numerous documents, and has expressed an independent assessment of plans and reports submitted by De Beers. SLEMA continues to promote openness and transparency in all its day-to-day activities, and has again provided interested parties with a monthly report of changes and events at the mine, as well as a summary of its activities.

As part of its mandate, SLEMA also continued to encourage De Beers to integrate Traditional Knowledge into the Environmental Monitoring at Snap Lake. We understand that this is not an easy task but we believe it is an essential one, as it is the only way to ensure the integration of this knowledge with science so that impacts of the mine are better understood. This year again, SLEMA visited the community of Lutsel K'e to update the community on mine development and environmental concerns and we plan to have regular visits in the other communities to present our activities and seek the input of community members. As we continue to work together through the Environmental Agreement and provide robust and sound recommendations to De Beers, those forces are helping to ensure that our involvement remains strong in service to the community, the region and society.

The technical reviews we have completed, all summarized in this report, illustrate how SLEMA can better assist the company and all interested parties to uphold the letter and intent of the Environmental Agreement. At the end of this report, we have also included our audited financial statements. I am pleased to share them with you, and to present a financial report that describes a seriously and prudently managed budget.

Under the leadership of a committed board and competent staff, I am reaffirming our commitment that SLEMA will continue to bring greater transparency and accountability to the operation and management of the Snap Lake mine and to work with the communities, regulators and De Beers to ensure that the Snap Lake Mine will not leave a lasting legacy on the environment, so that the communities and people of the region continue to use the surrounding land and resources in a sustainable manner.



Johnny Weyallon

Chairman

Chaırperson Weyatı

Dı nı̨htł’è atł’è sıì, 2012 eyıts’ǫ 2013 xo k’è Snap Lake Envıronmental Monıtorıng Agency Annual Report, xo tat’è edaànı ndè hoìdì k’è eghàlag̨i̧da wegodı hǫt’e. Gonı̨htł’èkǫ̀ ayì k’è eghàlats’eèda eyıts’ǫ De Beers wets’ǫ sombak’è edaànı ndè hogıìhdı t’à ndè k’è eghàlageèda wegodı hǫt’e, eyıts’ǫ sąwhaà tat’è gonı̨htł’è k’aeta t’à Snap Lake Mıne etłè wegodı hǫt’e. Xo ghàà sǫmbak’è ghǫ nı̨htł’è hazǫ kàʔa gots’ǫ̀ at’i̧ sıì hazǫ wek’aeta. Wegodı ghàà sǫmbak’è dzę̀ę̀ tat’è edaànı t’ası k’è eghàlageèda sıì wègoòht’i̧ hǫt’e. Sàà tat’è sǫmbak’è t’ası ładi̧ ageèhʔi̧ eyıts’ǫ edàgot’i̧ ha sıì wek’èhodzǫ ageèhʔi̧ hǫt’e.

SLEMA wenı̨htł’èkǫ̀ dı ha g̨i̧wǫ, De Beers dǫne naàwo t’à eghàlageèda t’à Snap Lake sǫmbak’è ndè hoıdı ha g̨i̧wǫ hǫt’e. Wehodı le haànı kò wet’aʔà hǫt’e, dǫne naàwo eyıts’ǫ naedık’èzǫ naàwo ełexè sǫmbak’è wehoıdı t’à sǫmbak’è gòʔǫ t’à edaànı ndè xèhdı sıì nezi̧ wek’èhodzǫ ade ha hǫt’e. Dı xo k’achi̧, SLEMA wenı̨htł’èkǫ̀ gha eghàlaede dǫ, sǫmbak’è edaànı eghàlageèda eyıts’ǫ ndè ghǫ t’ası ghǫ nanıgede ghǫ kǫ̀ta dǫ xè gogedo gha Lutsel K’e nàgeade, eyıts’ǫ i̧dàà ni̧dè kǫ̀ta ładi̧ ełegeèhdı ha g̨i̧wǫ eyıts’ǫ dǫ ndè ghǫ edàg̨i̧wò sıì wek’ègeèzǫ ha g̨i̧wǫ. Dı haànı ełexè eghàlats’eèda t’à Envıronmental Agreement Ndè Hoıdı Naàwo ts’ıìtǫ̀ eyıt’à hotì sìghà De Beers gıgha naàwo hohłe hǫt’e. Ełets’àts’eèdı t’à nàts’etso t’à kǫ̀ta dǫne ts’àts’edı hǫt’e.

T’ası hazǫ nı̨htł’è t’à wehoıdı sıì wenı̨htł’è hazǫ wek’aetǫ, wegodı hazǫ dı nı̨htł’è k’è dek’ehtł’è, SLEMA wenı̨htł’èkǫ̀ deʔǫ sǫmbak’è xè eghàlageèda ha g̨i̧wǫ hǫt’e, eyıts’ǫ Envıronmental Agreement Ndè Hoıdı Naàwo ełexè ts’ıìtǫ̀ t’à ndè gha yatı nàtso ts’ıìtǫ̀ ha hǫt’e. Dı nı̨htł’è atł’è welǫ̀ǫ̀, edaànı sǫ̀mba t’à eghàlats’eèda wenı̨htł’è sıì dek’èhtł’è hǫt’e.

Board k’è ełexè dehkw’e dǫ eyıts’ǫ gonı̨htł’èkǫ̀ eghàlaede dǫ, SLEMA wenı̨htł’èkǫ̀ xè eghàlageèda t’à, Snap Lake sǫmbak’è hotì wehoıdı hǫt’e. Kǫ̀ta gots’ǫ dǫne, gonı̨htł’è k’aeta dǫ eyıts’ǫ De Beers gha eghàlaede dǫ hazǫ ndè t’asawode sǫ̀ǫ̀ ts’i̧i̧wǫ t’à ełexè eghàlats’eèda t’à ndè wehoıdı ha hǫt’e, haànı ni̧dè i̧dàà dǫne i̧łàà ndè k’è t’ası gòłi̧ t’à edegeèda ha dı le ade ha hǫt’e.

K'aldher begaré natı dené bayatı nı?ǫ

Ku sı̨nı sı̨ jǫ 2010-2011 xaıyé t'át'ú Snap Lake nare ?asıé hadı hél gháládá hunıdher sı SLEMA dené bá ?asıé hałnı gharé hadı. Jǫ hanı nathìlts'ı̨ sı begharé hanuní xá nıdé.T'at'u ?asıé hadı sı ghǫ hadı.SLEMA begharé t'at'tu De Beers ?asıé ghálaná nonı?á sı hałnı hél yálnı̨ ?at'é.SLEMA ?asıé hałnı gharé sá kánélt'u Dené hél halnı ?asıé ?edǫ ?ajá dé tsambá k'é nare gháladá sı tth'ı t'at'u SLEMA ?asıé hałnı sı chu deené hél hadı.SLEMA sı De Beers bá yatı natser théł?ǫ sı Dené ch'anıé hél tsambá k'é nare ?asıé hadı de nezǫ xá Snap Laké nare.Dırı bet'á ?etthę̨n hadı hunıdher Snap Lake yutthę̨ nı?á nené k'é hadı dırı xaıyé łué dałt\ı̨zá 2010 ku tth'ı SLEMA sı Dené helnaı̨łtı ?ǫ́łneth dené hél détth'ı.De Beers sı begharé t'ǫ Dené behél tsambá k'é nonı ?ǫ sı chu k'aldé sı ?ałá gháladá xá hadı.SLEMA sı béhél nadher sı ku ts'ı̨ ?érítł'ís dé góth nalyé sı ts'ı̨ ?ané Dené hat'í hél ghálaná sí jǫ ?édzá nené ts'ı̨ Dené norı̨tł'ís hanuyéłtę̨n hel t'at'u beghalada sı chu hadı.SLEMA sı dırı ku ts'ı̨ ?rı̨tł'ís degóth nalyé sı béhél nadher nı lé tth'ı dené ch'anıé hél gháládá sı ts'ı̨ yatı ?erítł'ís hałé sı behel nílyé ho?ǫ dırı ku ts'ı̨ ?erítł'ıs góth nałé sı hél hadı.

SLEMA sı harélyǫ ?asıé hadı sı Snap Laké nare ?aké yáłnı hél t'ǫ Dené behél nadher sı hałnı hel nı chu kéch'ǫndıé tsędhı ch'á badı sı Snap Laké nare.SLEMA sı Dené sǫłı̨né horél?á nadé sı hel hál ní xá dırı ?asıé hadı De Beers behél tth'ı Government chu Snap Laké tsı̨dhı ch'á gháladá ?aké badı hdı.SLEMA sı Dené ch'anıé hél ?asıé hadı hunıdher sı ?erítł'ís nedhé hałé dé beghǫ Dené ch'anıé bel ?álné xá.SLEMA ?asıé hadı hunıłther tsǫmbá k'é nare dezı̨ ?édza nené k'eyaghé tthé luzé ghǫ nats'édı sı chu t'ǫ tsambá héłtsı sı yegharé ghálaná ho?ǫ tth'ı t'ǫ Dené nı hel ghalaná sı.

What is SLEMA

The Snap Lake Environmental Monitoring Agency's (SLEMA) Board was established under direction of the De Beers Snap Lake Diamond Project Environmental Agreement, established between De Beers, Government of Canada, Government of the Northwest Territories and the four affected Aboriginal Organizations. The Aboriginal representatives originate from the Tlicho Government, Yellowknives Dene First Nation, North Slave Metis Alliance and the Lutsel K'e Dene First Nation. The mandate of SLEMA is to support the aboriginal parties in protecting the environment, support liaison between the parties, support De Beers and Government in protecting the environment, review environmental performance, serve as a public watchdog for the regulatory process, and provide a public repository for reports and plans in relation to the Snap Lake Project.

What are SLEMA's Responsibilities

SLEMA's mandate is established under Article IV Section 4.2 of the Environmental Agreement and is as follows.

(a) support the Aboriginal Parties' efforts to protect the environmental interests on which they rely;

(b) support collaborative and information-based liaison amongst all the Parties;

(c) support De Beers, Canada, and GNWT in their respective efforts to protect the environment;

(d) review and monitor the environmental performance of the Project using western science and traditional knowledge;

(e) work with De Beers to mitigate environmental impacts of the Project thereby mitigating the potential for socio-economic effects;

(f) serve as a public watchdog of the regulatory process and the implementation of this Agreement;

(g) make recommendations to any body having regulatory or management responsibility for a matter, for the achievement of the purposes and guiding principles in this Agreement;

(h) facilitate programs to provide information to and consult with the members of the Aboriginal Parties;

(i) report to the Parties and the public on the Monitoring Agency's activities and the achievement of its mandate; and

(j) provide an accessible and public repository of environmental data, studies and reports relevant to the Monitoring Agency's mandate.

How is SLEMA Structured

SLEMA is directed by a board of eight individuals with two representatives each from the four signatory aboriginal groups. The board takes direction from two panels, a science panel and a traditional knowledge panel. SLEMA also has two full time employees, an Executive Director that administers the agency and an Environmental Analyst, who reviews documents from De Beers and also provides direction to the board.

Executive Board Members:

Johnny Weyallon
Chairperson
Tlicho Government

Rachel Crapeau
Vice Chairperson
Yellowknives Dene First Nation

Charlie Catholique
Secretary
Lutsel K'e Dene First Nation

Arnold Enge
Treasurer
North Slave Metis Alliance

Board Members:

Greg Empson
Yellowknives Dene First Nation

Eric Binion
North Slave Metis Alliance

Noel Drybones
Tlicho Government

James Marlowe
Lutsel K'e Dene First Nation

Traditional Knowledge Panel.

Eddie Camille and **Harry Apples**, *Tlicho Government*

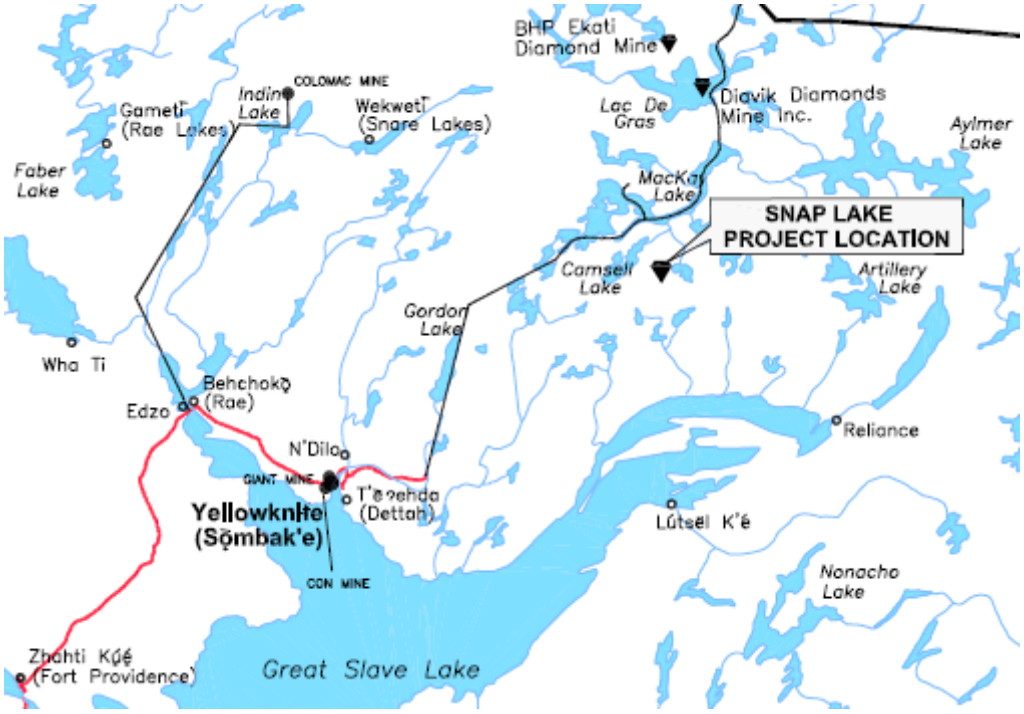
Eddie Jones and **Wayne Langenham**, North Slave Metis Alliance

Albert Boucher and **Madeline Drybones**, Lutsel K'e Dene First Nation

Mike Francis, Yellowknives Dene First Nation

Snap Lake Diamond Mine

The Snap Lake Mine (Mine) is a diamond mine owned and operated by De Beers Canada Inc. (De Beers), and is located about 220 kilometers northeast of Yellowknife, Northwest Territories (NWT). De Beers received regulatory approval for the Mine in 2004, which included Environmental Agreement, Water Licence, Land Use Permit, Land Lease, and Fisheries Authorization. Mining began in 2007 and is expected to continue for 22 years.



Map 1. Location of Snap Lake Diamond Mine

The Mine maintained production level between 62% and 93% of full capacity through 2012. 905,909 tonnes of kimberlite were processed, and about 1 million carats of diamond were produced.

De Beers has committed to maintaining the highest environmental management standards. The Snap Lake Mine is the only diamond mine in the NWT that has certified its environmental management systems to the high international standard, ISO 14001, through advanced exploration, construction and operation.

Photo 1. Aerial View of the Mine Site

There were 5 Water Licence inspections and 2 Land Use Permit inspections conducted by the Inspector of the Aboriginal Affairs and Northern Development Canada (AANDC) in 2012, all issues brought up by the Inspector were claimed by De Beers to be addressed or being addressed.

Within 2012, approximately 751,067 tonnes of coarse reject of processed kimberlite (PK), 266,966 tonnes of slime solids, and 325,797 tonnes of paste solids were deposited into the North Pile Starter Cell. 40,134 m^3 of fresh water were withdrawn from Snap Lake, and 10,657,24 m^3 of mine water, collected runoff and seepage water were treated in the Water Treatment Plants and discharged into Snap Lake. In addition, 353,954 m^3 of water were recycled in the Mine.

The Aquatic Effects Monitoring Program (AEMP) was re-evaluated and re-designed at the end of 2012. The revised AEMP was approved by the Mackenzie Valley Land and Water Board (MVLWB) in March 2013.

Agency Activities 2012-2013

- Arnold Enge was appointed by the NSMA as its Director on the SLEMA Board, and Eric Binion as Alternate Director, starting October 30, 2012.
- SLEMA normal board activities include 4 core group meetings of the board, 2 Executive board meetings and 2 workshops involving the board elders from the

traditional knowledge panel as well as various technical experts that are involved in providing SLEMA with their advice.

- SLEMA Environmental Analyst toured the mine site in June 2013, and observed the fish tasting at Snap Lake in September 2013.
- Dave White left SLEMA and Yellowknife, and Philippe di Pizzo took over the position of Executive Director in October 2013.
- SLEMA also made numerous comments or recommendations thoughout the year which will be described in more detail as we go forward.
- Monthly Environmental Updates were published on the SLEMA's website (www.slema.ca) and distributed to all stakeholders.
- SLEMA visited Lutsel Ke on November 22 and 23, 2012, and made presentations for the school, elders and the community council.

Environmental Agreement

A meeting was held on December 4, 2012 among De Beers, AANDC and SLEMA, to address the issue of late submission of the Environmental Agreement Annual Reports for 2010 and 2011.

During the meeting, a submission timeline was established and agreed by all participants. De Beers also endeavored to submit subsequent annual reports by the end of August of each calendar year to which SLEMA and AANDC agreed.

2010 and 2011 Environmental Agreement Annual Reports

The 2010 Environmental Agreement Annual Report was formally submitted in January 2013. The 2011 Environmental Agreement Annual Report was formally submitted in December 2012. The late submission was noted.

SLEMA addressed the issue of submission timeliness in the comment letters dated March 4, 2013.

- The Environmental Agreement is somewhat ambiguous as to the required date, each annum, that the parties can expect this submission. A report is required for each calendar year as per direction of the agreement. Considering that a calendar year ends December 31st, SLEMA feels that it is reasonable to expect this report, a considerable time before the end of the following calendar year. For the purpose of reasonable expectation, SLEMA would like to request that there be an agreement, between De Beers and the reviewing parties, that this submission have an expected submission date in August of the following year.

Six specific comments were made for 2010 EAAR, and five specific comments for 2011 EAAR. The conclusion for the two submissions is as follows.

- The EAARs for 2010 and 2011 fulfill the criteria established within the Environmental Agreement for a successful document. Indeed, De Beers used the

13 articles as the backbone to produce its document, thereby ensuring the inclusion of all the requirements. **Although the document conforms to all the articles, it does very little to go beyond the basic requirements. The document is lacking in illustrative presentation**. Apart from the cover page and one map there is no image to help the reader understand what the Snap Lake Mine is like and what type of footprint it exhibits. Although this is not required, it would be useful to see photographs and other visual aides to complement the text in future annual reports.

2012 Environmental Agreement Annual Report

De Beers drafted the 2012 Environmental Agreement Annual Report (2012 EAAR) in August 2013, and submitted the draft version to show the work had been completed. The formal submission was delayed due to translation issues.

The submission summarizes the monitoring activities and results from 2012. Three comments were made for the draft report on October 25, 2013.

- It is stated that *"(A) summary of the De Beers response to the Inspector requests is also provided (Table 5-1)*" (page 60 of the 2012 EAAR). However, no De Beers responses are found. It is recommended that De Beers add related responses into Table 5-1.
- It is noted that Section 4 of the 2010 EAAR, 2011 EAAR and 2012 EAAR summarizes the annual reports submitted in the current years, 2010, 2011 and 2012. However, Section 4 of the 2009 EAAR summarizes the annual reports for 2008. Then, where is the summary of the annual reports for 2009?
- There are no improvements in illustrative presentation in the 2012 EAAR. It is recommended that De Beers improve its reporting in illustrative presentation. De Beers can refer to the related comments made by SLEMA on March 4, 2013.

Wildlife Effects Monitoring Program 5 Year Review

A Wildlife Effects Monitoring Program (WEMP) was proposed in 2004 as required under the Snap Lake Land Use Permit and Environmental Agreement. The WEMP was implemented, and continues at the Mine site. An update to the WEMP was proposed in March 2013, following a review of current wildlife monitoring results at the mine, and at other diamond mines in the region.

The update involves the following proposed changes to the current WEMP:

- Removal of aerial surveys for caribou during the northern migration, annual raptor nest use and productivity surveys, and wolf den use surveys in the study area;

- Modification to the caribou aerial survey design to assess a zone of influence;
- Replacement of surveys for bear sign with a regional hair snagging program to monitor grizzly and black bears;
- Replacement of wolverine surveys for snow tracks with a standardized hair snagging program;
- Systematic surveys of wildlife interactions with the site, waste management areas, and the winter access road; and
- Action levels to guide adaptive management for habitat loss and direct Mine-related wildlife mortality.

SLEMA issued a letter on Wildlife Effects Monitoring Program 5 Year Review on March 22, 2013.

- In reviews of the annual Wildlife Effects Monitoring Program (WEMP) Reports, SLEMA has noted that the reports are lacking in analysis and details to De Beers' adaptive approach to monitoring. The report remains essentially unchanged, year on year. In comparison WEMP annual reports from both Diavik and Ekati are much more expansive with much greater clarity.
- SLEMA made the recommendation in 2012 that "the most efficient and effective approach for the 2012 multi-year comprehensive WEMP report is for SLEMA to be involved in providing suggestions prior to the analyses and report production rather than reviewing a final version. A collaborative approach will strengthen De Beer's commitment to environmental protection while enhancing the role of community-based monitoring". SLEMA would like to reiterate this recommendation and strongly encourages De Beers to consider this approach before completing this year's multi-year review.

De Beers responded to SLEMA comments on March 31, 2013.

- *"Unfortunately, the report was due to the Mackenzie Valley Land and Water Board (MVLWB) on March 31, and cannot be changed at this late stage. As in the past, comments and recommendations by SLEMA will continue to be encouraged and considered with respect to the WEMP and other environmental monitoring programs."*
- *"De Beers has considered and incorporated the comments and recommendations SLEMA provided in 2012 and referenced again in their March, 2013 comments (SLEMA 2012, 2013)."*

Partnership Projects for Bathurst Caribou Herd

In an e-mail dated June 19, 2013, De Beers requested to contribute $70,000 to the Department of Environment and Natural Resources (ENR) for caribou research in lieu of

the aerial survey done annually, which was in response to ENR's request on May 4, 2013

- *"if De Beers would like to contribute to any of these project as part of their 2013/14 wildlife effects monitoring program for barren-ground caribou at the Snap Lake and proposed Gahcho Kue mine sites."*

For De Beers' request to suspend the 2013 caribou aerial survey in exchange for a financial contribution towards a selection of Bathurst Caribou projects being proposed by the ENR, SLEMA made the following comments on June 20, 2013.

- *The value of the contribution should equal the cost of the aerial survey but the redistributed funds should also include the costs of an analysis of distribution of the Bathurst herd relative to Snap Lake.*
- *The suspension is for the 2013 season only.*
- *The 2013 Wildlife Effects Monitoring Program Report should include the rationale for the value of the ENR projects funded, and a detailed analysis of the distribution of the Bathurst herd and an assessment of aerial surveys and other methods.*
- *Following the work this season a discussion should be entered in late fall, between De Beers, ENR and SLEMA to discuss the allocation of resources and proposed projects for the following season.*
- *SLEMA supports ENR's initiative to build consensus amongst all the stakeholders with interests in the sustainable management of the North's caribou.*

2012 Wildlife Effects Monitoring Program Report

De Beers submitted the Report in March 2013. The Report includes a full analysis of monitoring data gathered from 1999 to 2012, which is updated on a five-year frequency.

Wildlife monitoring at Snap Lake is completed by De Beers environmental staff at the Mine, wildlife biologists from Golder Associates Ltd., and participants from communities. In 2012, Mr. Pete Enzoe and Ms. Brenda Michel from Lutsel K'e participated in wildlife monitoring surveys.

De Beers wildlife studies in 2012 were focused on Valued Ecosystem Components (VECs). Criteria for choosing VECs were based on the ecological, social, cultural, and economic aspects of the ecosystem. The VECs used in the WEMP are:

- wildlife habitat;
- barren-ground caribou;
- grizzly bear and black bear; and
- wolverine.

Raptors and wolves were also included as VECs in the WEMP between 1999 and 2010 but were discontinued as agreed by government biologists, community organizations, and the mines at a workshop in 2010. Although no longer part of the WEMP, an additional three years of raptor nest monitoring data had been collected, so the Mine chose to include raptors in the WEMP analysis.

Wildlife studies were completed in the regional study area (RSA), defined by a circle with a radius of 31 km, centered on the Mine, and equivalent to 3,019 square kilometres (km^2). Data collected from 1999 to 2004 were used to provide estimates of the range of baseline values (variation) in species presence, abundance, distribution, and habitat use in the RSA. Effects monitoring began in 2005 when construction started.

The wildlife effects of the Mine are summarized as follows.

- *"Thus far, the effects of the Snap Lake Mine to wildlife have been within the range predicted in the Environmental Assessment Report. In 2012, the monitoring of caribou indicated low levels of activity by this species. Further data collection will be required to determine whether these changes are related to the Mine, or natural factors since the last comprehensive analysis. It is likely that some of these changes are influenced by the decline in the Bathurst caribou herd, and the bears, wolverine, and wolves that depend on caribou.*
- *Wildlife habitat loss due to the expanding Mine footprint has occurred as expected, and the Mine is currently about 71 percent (%) of its total predicted size. Further habitat loss will occur as the waste rock storage at the North Pile expands; however, this expansion is not expected to increase the size of the total predicted footprint.*
- *Incidents are any wildlife interaction that requires a response by Mine personnel, and may range from simple deterrent actions to the injury or death of an animal. De Beers environmental staff record and report all wildlife incidents. Ten wildlife incidents, six of them mortalities, were recorded at the Mine in 2012. These incidents included euthanizing a wolf that was no longer responding to deterrents. This was undertaken under the guidance of the Department of Environment and Natural Resources (ENR). In 2012, wildlife mortalities were two songbirds, a muskrat, two foxes, and the aforementioned wolf. In general, wildlife mortalities remain rare at the Mine despite regular wildlife presence at the Mine site.*
- *Caribou pass through the RSA, particularly during their spring and fall migrations. They are monitored through the movements of satellite-collared caribou, observations by employees at the Mine, and with aerial surveys by helicopter. Aerial surveys during the northern migration are no longer required. They were determined to be ineffective for assessing mine-related effects by wildlife managers and monitoring agencies and were discontinued in 2010. The number of caribou observed has been very different from year to year since monitoring began in 1999 and likely reflects the reduced herd size of Bathurst caribou. In*

2012, one caribou was observed during two post-calving migration aerial surveys.

- *The pilot hair snagging study to monitor bears at the Mine that began in 2010 was discontinued in 2012 in favor of participating in a regional grizzly bear program that will help ENR monitor and assess cumulative effects. As a result of this change no monitoring for grizzly bears was completed in 2012. Participation in the regional hair snagging program by De Beers is scheduled to begin in 2013.*
- *Wolverine are monitored by recording observations of tracks in the snow along the same 50 transects each year. Each transect is 4 km long and checked by two observers on two snowmobiles. In 2012, surveys for wolverine snow-tracks were completed in March and again in April. The snow-track results indicated that wolverine continue to be present in the RSA. The percent of transects with snow-tracks in 2012 was the lowest level of wolverine activity observed since monitoring began in 2003. Although indices of wolverine presence have been annually variable, there is strong congruence between the patterns observed and the trend in Bathurst caribou numbers. The use of snow-track surveys to monitor wolverines will be discontinued after 2012, as the Mine has opted to participate in a regional and standardized wolverine hair snagging program that will support management and conservation of wolverines by the Government of the Northwest Territories."*

De Beers staff made a presentation on their wildlife monitoring and management activities at the Mine at the SLEMA Wildlife Workshop on June 18, 2013. Elders from SLEMA Traditional Panel asked questions and provided general comments for De Beers.

Vegetation Monitoring Program 2012 Annual Report

De Beers has implemented and maintained a Vegetation Monitoring Program (VMP) for the Snap Lake Mine, which includes annual and interval monitoring including Area of Impact, Ecological Land Classification (ELC) area, and reclamation monitoring programs. The VMP also includes triggered vegetation monitoring of detailed ELC, and effects of dustfall on vegetation. The Vegetation Monitoring Program 2012 Annual Report was submitted on June 26, 2013.

Interval monitoring criteria were assessed in 2008 and are scheduled to be assessed in 2013.

- Area of Impact – 155.4 hectares or 11% of the Local Study Area (LSA).
- Ecological Land Classification Area Monitoring – overall, the disturbance covers 11% of the LSA, which is below the predicted 15%.
- Reclamation Monitoring – 11 permanent sample plots (PSPs) for reclamation will be surveyed in 2013.

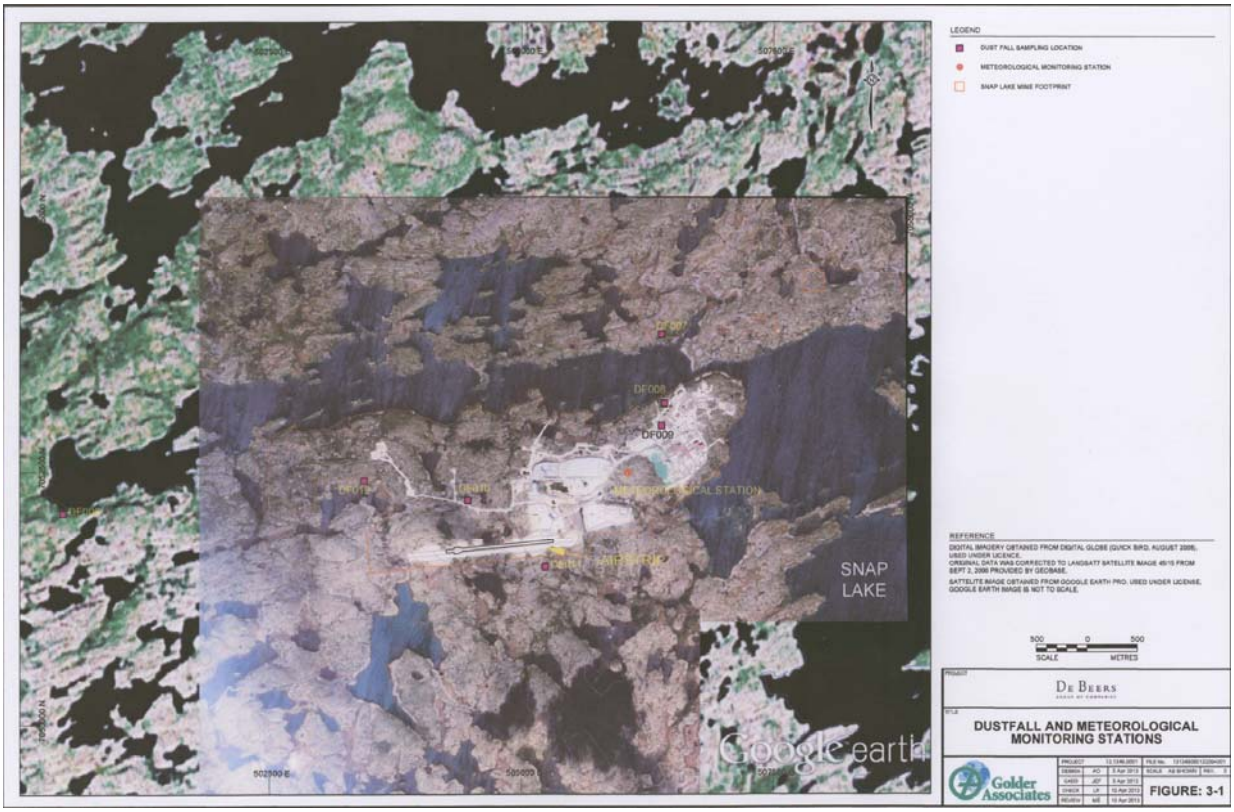


Figure 1. Dustfall Monitoring Stations

Monthly dustfall samples were collected in January to December 2012. The total dustfall deposition rates were relatively high in July/August 2012.

- On-site samples exceeded the Alberta Ambient Air Quality Objective (the 158 mg/dm^2/30d guideline for commercial and industrial properties) in July/August.
- Off-site samples exceeded the 53 mg/dm^2/30d guideline for residential and recreational areas in June/July, July/August, and September/October.

De Beers interpreted the dustfall exceedances as follows.

- *"These results cannot be used solely to ascertain whether dustfall is affecting vegetation communities. The Alberta dustfall criteria were developed in 1975 to address aesthetic concerns associated with elevated dustfall levels. There are no scientifically defensible relationships between these dustfall criteria and discernible effects on vegetation communities. Vegetation is inspected visually to assess possible impacts of dustfall on vegetation. Structured and focused visual inspection of dustfall on vegetation are conducted every five years (next in 2013), unless De Beers observes notable dust accumulation, and/or stressed vegetation in the interim."*

SLEMA made two comments on the VMP 2012 Annual Report on October 25, 2013.

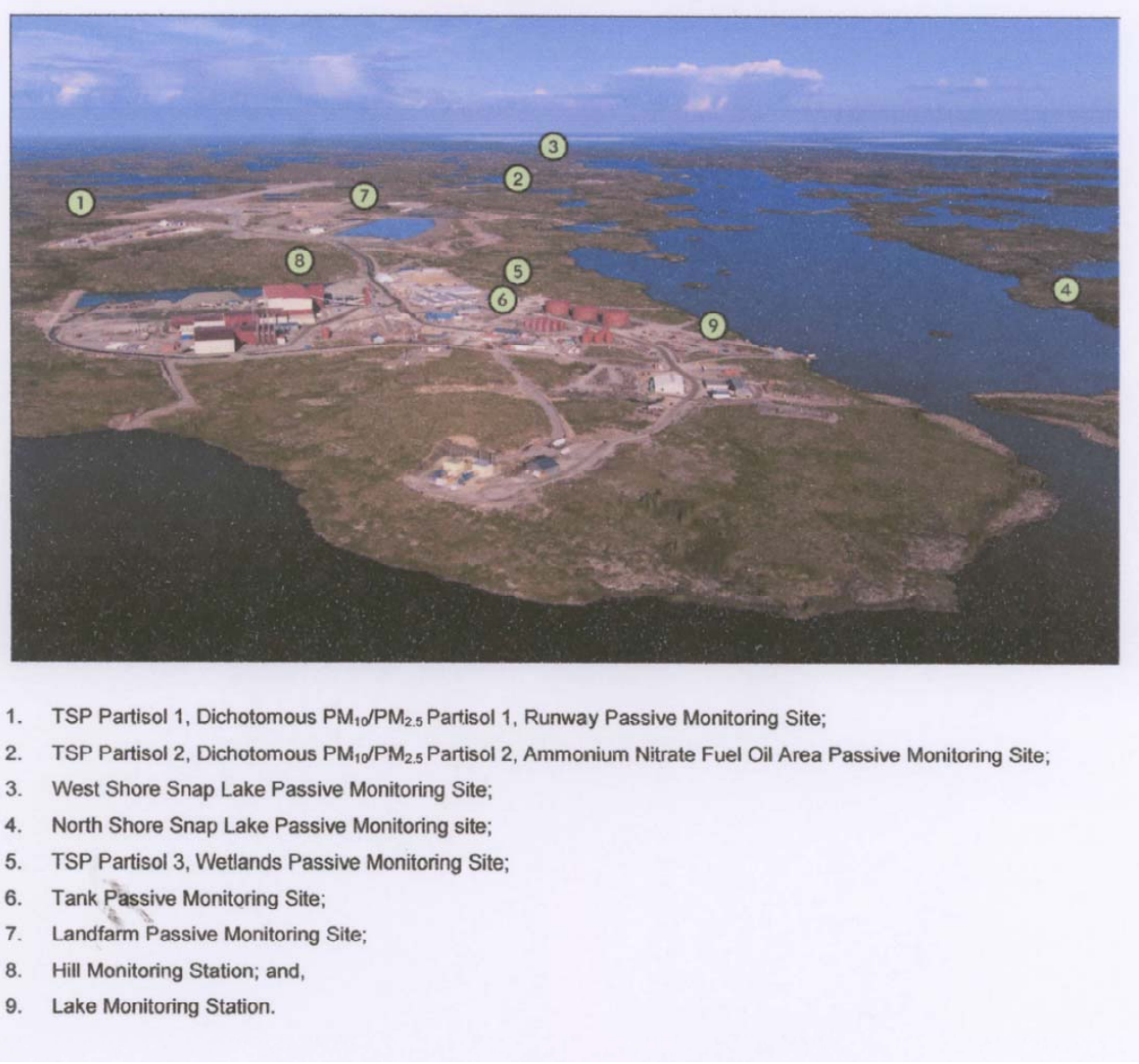
- It is stated in the Executive Summary that "(A) VMP was first prepared for the Mine in 2005. A subsequent VMP was prepared in 2008, following which VMPs are to be prepared at five year intervals. The next VMP will be prepared in 2013". It is approaching the end of the year, the updated VMP is expected.
- The dustfall levels of exceedances in 2012 are much higher than those in 2011 and 2010. It is recommended that De Beers further investigate the elevated dustfall levels.

Table 1. Dustfall Levels of Exceedances in 2010, 2011 and 2012

Year	2010		2011		2012	
	On-site	Off-site	On-site	Off-site	On-site	Off-site
Dustfall Range, mg/dm^2/30d	174-248	53.6-191	165	55.7-107	179-**389**	63.2-**318**
Alberta Ambient Air Quality Objective, mg/dm^2/30d	158 for commercial and industrial properties	53 for residential and recreational areas				

Air Quality, Meteorological Monitoring and Emissions Reporting 2012 Annual Report

The Report was submitted in July 2013. It provides the results of the air quality and meteorological monitoring programs that were active at Snap Lake during 2012.



1. TSP Partisol 1, Dichotomous $PM_{10}/PM_{2.5}$ Partisol 1, Runway Passive Monitoring Site;
2. TSP Partisol 2, Dichotomous $PM_{10}/PM_{2.5}$ Partisol 2, Ammonium Nitrate Fuel Oil Area Passive Monitoring Site;
3. West Shore Snap Lake Passive Monitoring Site;
4. North Shore Snap Lake Passive Monitoring site;
5. TSP Partisol 3, Wetlands Passive Monitoring Site;
6. Tank Passive Monitoring Site;
7. Landfarm Passive Monitoring Site;
8. Hill Monitoring Station; and,
9. Lake Monitoring Station.

Figure 2. Air Quality and Meteorological Monitoring Stations

There was only one occurrence recorded above the GNWT Ambient Air Quality Standard (AAQS) for all air quality monitoring in 2012. The occurrence was a TSP 24-hour concentration of 145.2 µg/m^3 which exceeded the objective of 120 µg/m^3 regulated by the GNWT. The annual average values of all major air quality parameters were below related action levels.

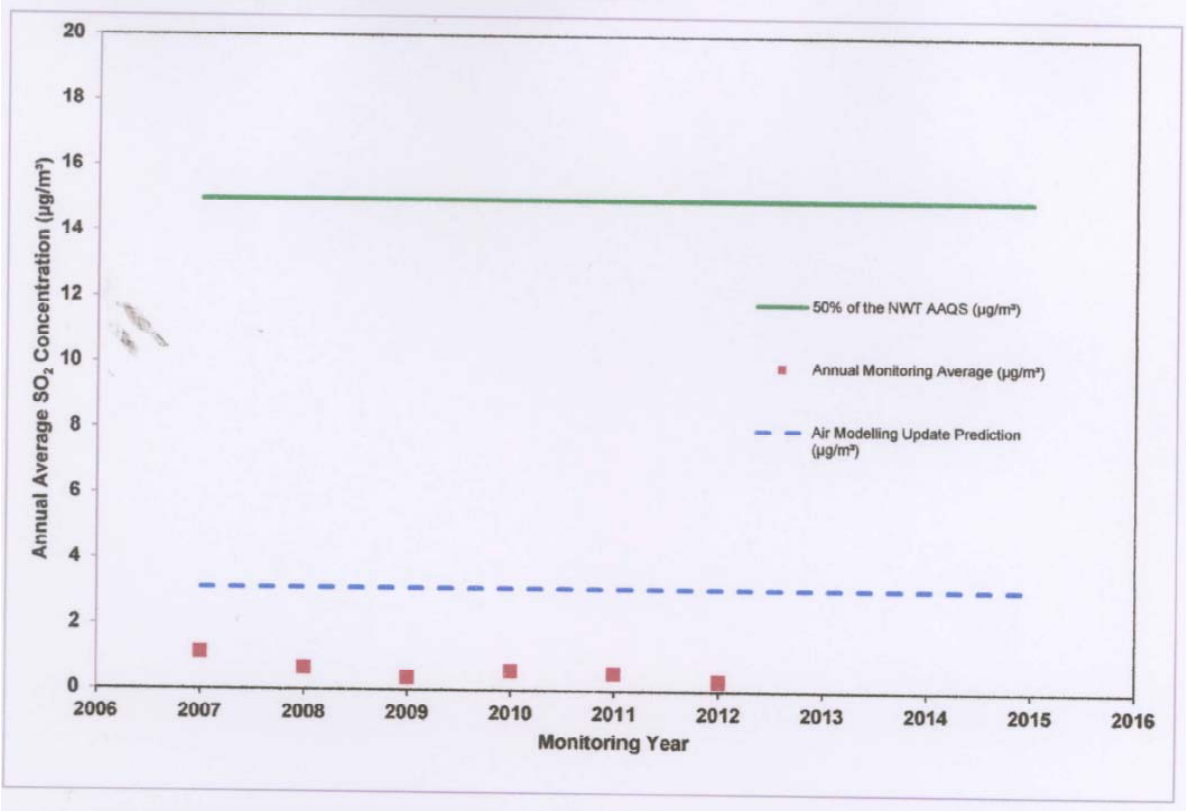


Figure 3. Annual Ambient SO_2 Concentrations

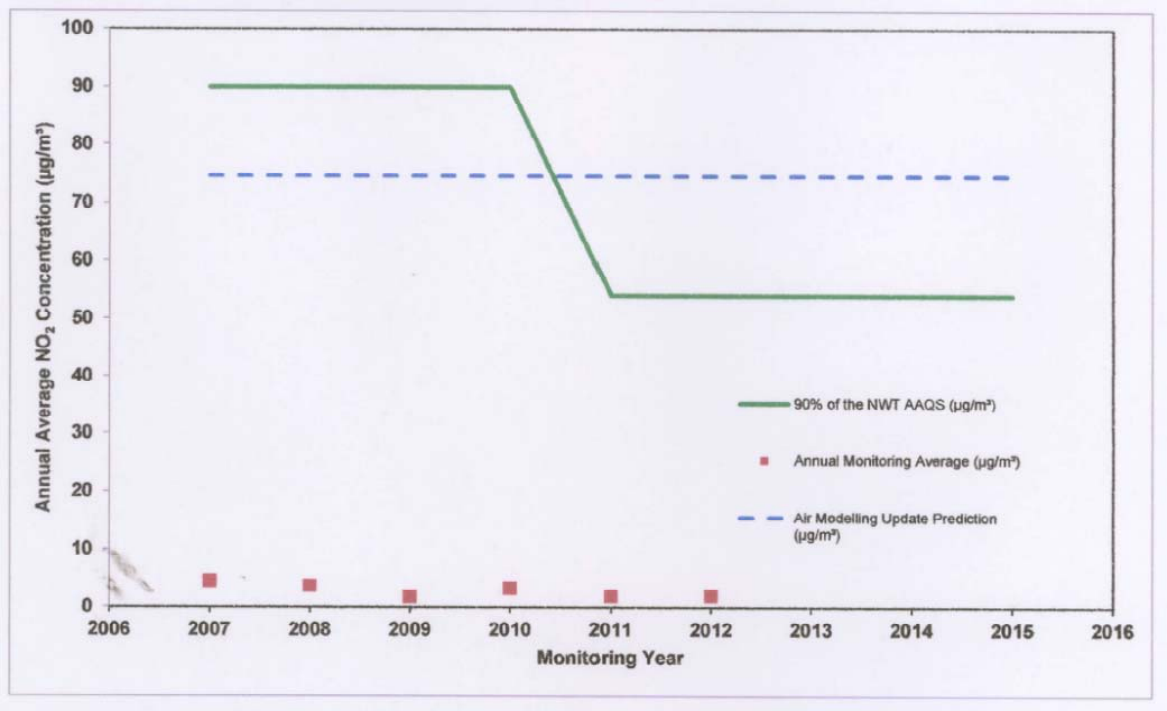


Figure 4. Annual Ambient NO_2 Concentrations

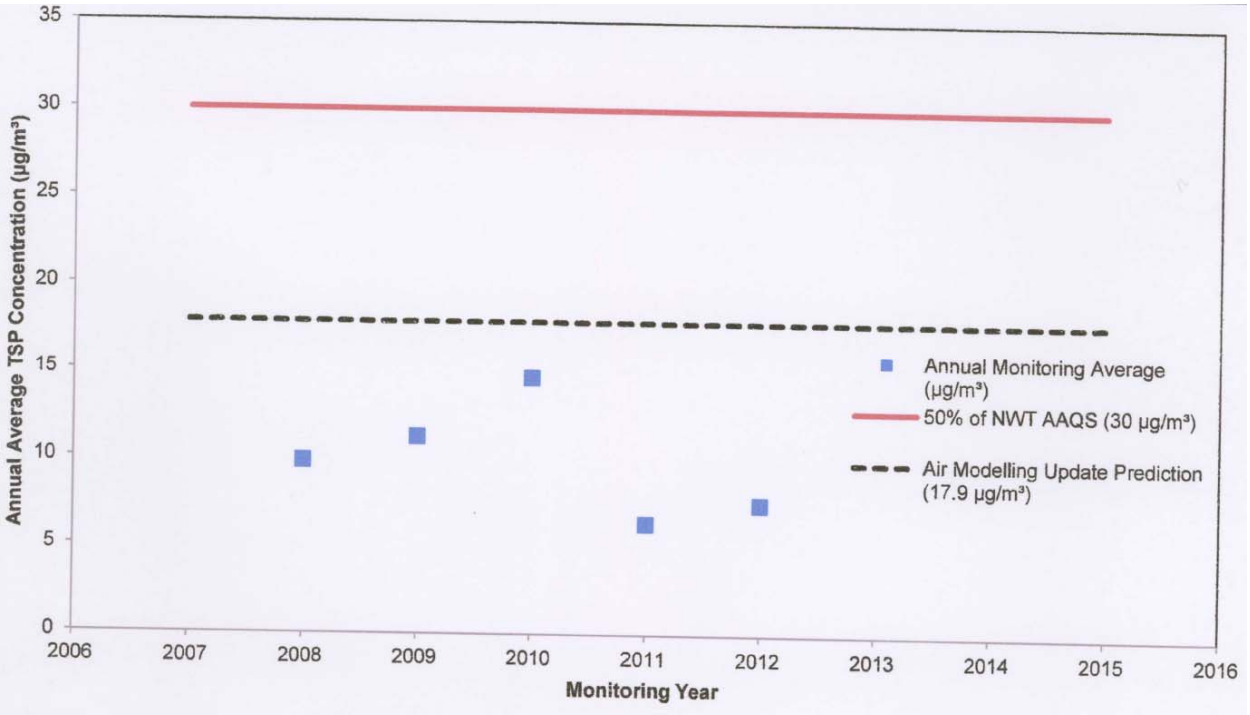


Figure 5. Action Levels for Annual Ambient Total Suspended Particulate Concentrations

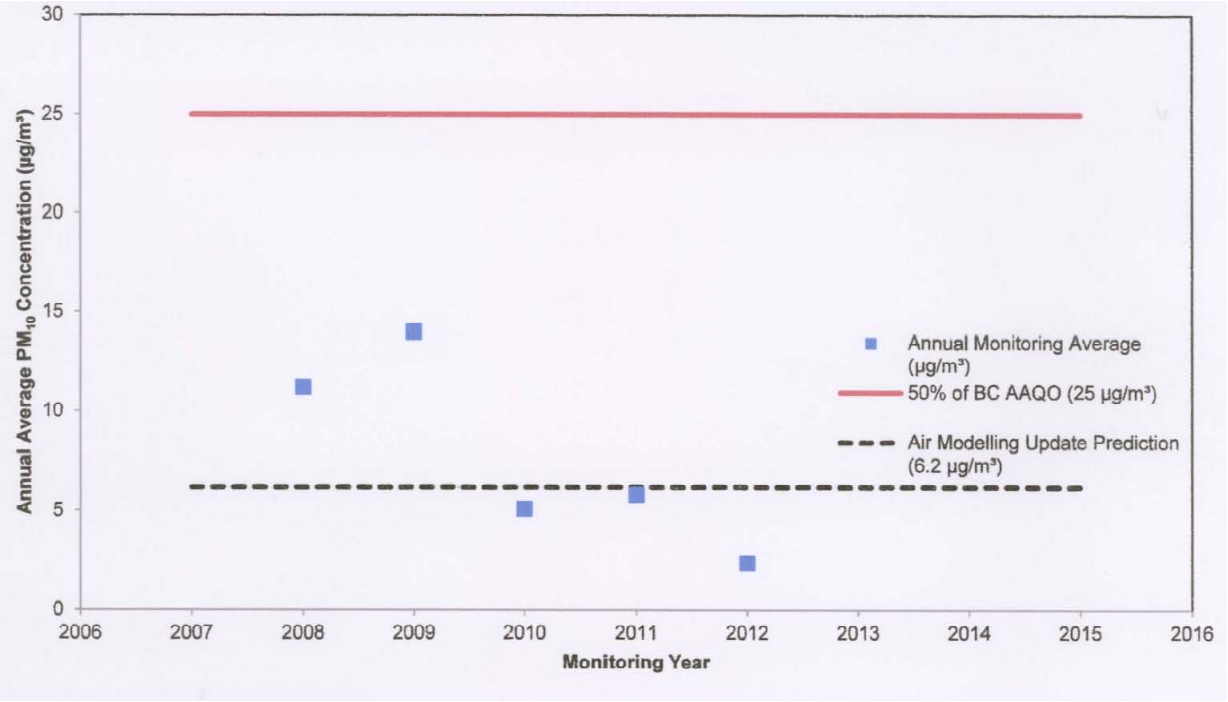


Figure 6. Action Levels for Annual Ambient PM_{10} Concentrations

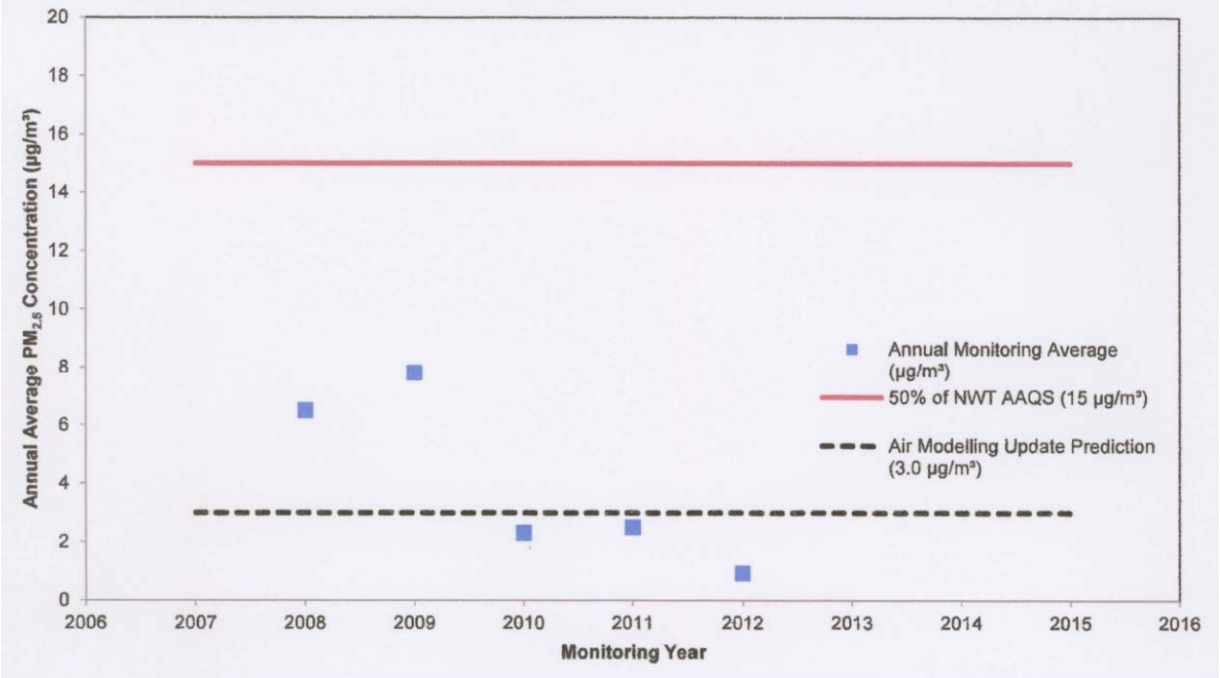


Figure 7. Action Levels for Annual Ambient $PM_{2.5}$ Concentrations

Emission rates were lower in 2012 than 2011 despite an increase in fuel consumption, and remained below the 2007 Air Modeling Update.

- The emission reduction was primarily due to increased fuel consumption in equipment that has lower emission ratings and decreased fuel consumption in equipment with higher emission ratings.
- The mine consumed 31,769 m^3 of diesel with a sulphur content of no more than 15 parts per million by weight.
- The furnaces did not burn waste oil in 2012, but rather diesel fuel.

Greenhouse Gas emissions have increased since 2005 due to increased fuel consumption and were highest in 2012. The carbon dioxide equivalent (CO_2e) releases in 2012 were 88.63 kilotonnes.

SLEMA has been concerned about dioxins and furans from the on-site incinerators and requested De Beers to conduct stack testing since 2007. A dioxin and furan monitoring program measuring emissions was undertaken in 2012. The sum total of all dioxins and furans measured from incinerator stack testing was 17,787 picograms of international toxicity equivalents per reference cubic meters (pg I-TEQ/Rm^3). The result is above the Canada-Wide Standard (CWS) of 80 pg I-TEQ/Rm^3 and demonstrates the incinerators are not capable of meeting the CWS. De Beers took measures to address the concern.

- The incinerators have been locked out and are no longer in use.

- A replacement pair of incinerators capable of meeting the CWS has been installed in 2013 and is currently in operation.

SLEMA has had another concern about poor data quality of air quality monitoring. Again, consolidation of the 2012 particulate monitoring data indicates notable challenges with the particulate monitoring program in 2012. De Beers took measures to address the concern.

- Current Partisol Plus Model 2025 Sequential Air Sampler is aging, resulting in missing Data.
- The Thermo Model 5014i air quality monitors were trialed, but found to be unsuitable for the monitoring application, due to the low values of the recorded data.
- The Met One BAM 1020 monitor and the Thermo 5030 SHARP monitor are currently under review.

SLEMA made comments on October 25, 2013.

- *SLEMA is satisfied with the progress made so far, and encourages De Beers to continually improve on-site environmental monitoring management. No other concerns are raised. It is recommended that De Beers conduct stack testing for the recently installed incinerators to confirm the compliance with the CWS.*

Water Licence

Type "A" Water Licence MV2011L2-0004 was approved the Minister of AANDC on May 23, 2012 as recommended by the MVLWB. The effective date was June 14, 2012, and expiry date will be June 13, 2020.

The MVLWB made a few updates for the Water Licence MV2011L2-0004 in 2013.

- *April 25: The Board issues the following directives:*
  1. *Annex A: Surveillance Network Program: Station SNP02-20 of the WL annual test be changed to the 30 day egg/alevin ELS test for Rainbow Trout (Oncorhynchus mykiss) using Method EPS/1/RM/28. In order to reduce the volume of water necessary to conduct the test only the 1 00% effluent test shall be run and not the dilutions specified in the above noted method.*
  2. *A 7 day (egg only) Rainbow Trout ELS test be conducted for every period of increased discharge.*
- *July 18: Schedule 6 and the Surveillance Network Program have been updated to reflect approved changes to the Aquatic Effects Monitoring Program Design Plan.*

- *August 29: The Board has also updated the Surveillance Network Program accordingly to reflect the addition of a fourth monitoring station at SNP 02-20. Monitoring at the new station, SNP 02-20g, must begin after installation of the second permanent diffuser is complete.*

After a comprehensive review, the MVLWB approved the AEMP Re-evaluation Report as submitted and approved the AEMP Design Plan with conditions on March 28, 2013.

AEMP Re-evaluation Report and AEMP Design Plan

De Beers submitted the AEMP Re-evaluation Report on October 1, 2012 and the AEMP Design Plan on November 26, 2012. SLEMA commented the two reports on February 12, 2013.

The AEMP Re-evaluation Report presents detailed information and analysis of aquatic effects monitoring in Snap Lake, and provides input for the next stage of AEMP. The AEMP Re-evaluation Report is satisfactory.

The AEMP Design Plan proposes some changes, including a conceptual site model, a new reference lake, reorganization of monitoring stations, adjustment of sampling schedule, incorporation of a Weight of Evidence assessment of AEMP findings, and AEMP Response Framework.

SLEMA engaged Barry Zajdlik of Zajdlik and Associates Inc. to review the AEMP Design Plan.

SLEMA is concerned about the downsized sampling program. The proposed number of water quality and benthic invertebrate sample locations within the main basin of Snap Lake decreases by 53% for water quality and 36% for benthic invertebrate.

At this point in time the proposed reductions in sampling within the Snap Lake main basin have been insufficiently rationalized. Therefore the current AEMP design should be maintained until additional rationalization has been provided.

DeBeers should also discuss how the current AEMP addresses the spatial criteria in the MVEIRB (2003) impact definitions for water quality and benthic macroinvertebrates.

Eleven specific recommendations were made by Barry Zajdlik.

- *DeBeers should demonstrate that the ability of the proposed reduction in sampling of water quality and benthos within Snap Lake (53% and 36% reductions, respectively as presented in* **Error! Reference source not found.***) will not compromise the ability of the AEMP to confirm the EA predictions regarding benthos as the MVEIRB (2003) impact criteria have spatial attributes.*
- *The question "Please provide a worked example of the calculations described in Section 2.0, Appendix B, Pg 3/26" posed prior to the AEMP technical meeting held on January 24th was not answered. This question should be answered to better understand DeBeer's reasoning for reducing water quality sampling and prior to modifying terms of the water licence (Annex A, section D) that requires 15 TDS sampling locations.*
- *The reduction in water quality sampling frequency during the winter reduces the likelihood of detecting a whole lake average TDS concentration that exceeds the 350 mg/L criterion. DeBeers should demonstrate how the reduced sampling program will affect the ability to detect the maximum whole lake TDS average over the winter prior to reducing the sampling frequency for water quality.*
- *Reductions in sampling programs should ensure that statistical design criteria are applied at the scale of interest (zones corresponding to impact criteria stated in the EA rather than between exposure and reference lakes) for differences of interest (magnitude of effects agreed to in the EA rather than generic environmental effects monitoring program effect sizes).*
- *Apply SSWQOs at the edge of the mixing zone. Particularly, apply the SSWQO for TDS (i.e. 444 mg/L) at the edge of the mixing zone following (DeBeers, 2002, Table 9.4-19 and Figure 9.4-13).*
- *EQCs should be estimated on the basis of SSWQOs being met at the edge of the mixing zone not at the outlet of Snap Lake. This is consistent with CCME (2003) guidance on mixing zones factors 1: "The dimensions of an IDZ should be restricted to avoid adverse effects on the designated uses of the receiving water system (i.e., the IDZ should be as small as possible)."*
- *If the effluent plume is expected to substantively extend beyond Snap Lake, sufficient baseline data must be collected to answer questions regarding degree of change. The definitions of impact presented in MVEIRB (2003) pertaining to magnitude of effect should be used as guidance for designing these baseline studies. Design criteria presented in INAC (2009) should also be considered.*
- *Section 4.8.3 of DeBeers (2102b) suggests increasing the frequency of fish tissue sampling from every 5 years to every 3 years. This suggestion should be adopted if fish populations will not be adversely affected.*
- *Calculated TDS rather than measured TDS is used to confirm EA predictions and assess impacts for reasons discussed in Golder (2008). However, 53% of the measured TDS samples collected in the main basin of Snap Lake are labeled "warning, hold time was substantially exceeded and may have an effect on results" and 9% of are labeled "data invalidated because holding time was exceeded" (Appendix A3, Table A3-1 footnotes, Golder, 2012a). The*

implications of hold times being exceeded on measured TDS for calculated TDS if any, are not clear and should be discussed.

- *The whole lake averaging procedure presented by DeBeers should be reviewed in the near future as TDS concentrations are continuing to increase. As the whole lake TDS average is part of the Fisheries Authorization and current water licence a defensible estimate is necessary. It is important to note that estimating the average of three dimensional objects is routinely conducted by geostatisticians. DeBeers should consult a geostatistician to replace the ad hoc method described in DeBeers (2005) with a theoretically defensible method of estimating whole lake averages.*
- *The following recommendation was provided in Zajdlik (2011). "Repeat power calculations as TDS means approach the FA TDS limit. It is imprudent to specify at what point the analyses should be repeated as it is not clear how the mean-variance relationship (which will drive the achieved power estimates) will change as TDS concentrations increase. In the unlikely event that the current variance reflects means in the vicinity of the FA TDS limit. The AEMP sample sizes or interpretation paradigm should be revisited when mean TDS concentrations approach approximately 320-340 mg/L. However it is likely that TDS measurements will become more variable and hence the AEMP will need be modified at lower mean TDS concentrations to maintain acceptable Type I and II error rates. Guidance on choosing these rates is provided in INAC (2009)".*

SLEMA and the Department of Fisheries and Oceans Canada (DFO), for the purpose of efficiency and expedience, jointly reviewed Sections 6.0 and 7.0 of the De Beers 2012 AEMP Design Plan on May 17, 2013.

Zajdlik & Associates Inc was retained by SLEMA and M. Squires (Water Matters Consulting) was retained by DFO to jointly comment on the Action Levels proposed in the AEMP Response Framework. They provided general comments and recommendations for setting up action levels and detailed comments and recommendations for specific action levels proposed by De Beers.

Acid/Alkaline Rock Drainage and Geochemical Characterization Plan

The Acid/Alkaline Rock Drainage and Geochemical Characterization Plan was updated and submitted on January 29, 2013.

The objective of the ongoing geochemical characterization program is to evaluate the acid generation and metal leaching potential of each type of rock that will be encountered at the Mine. Metal leachability is assessed under acid generating, neutral and alkaline conditions. Samples have been collected from exploration boreholes, underground mine cover holes, quarries, surface stockpiles, and constructed site works at the Mine. For ease of operational implementation, a sulphide sulphur cut-off of 0.17%

is the preferred operational criterion for geochemical classification of granite rock the Snap Lake Mine.

Rock is segregated based on lithological designation and / or sulphide sulphur content as follows:

- **General Construction Materials on Site:** Non-potentially acid generating (Non-AG) granite rock (containing less than 0.17% sulphur or otherwise deemed non-AG) can be used as construction material in the North Pile, as well as for general site construction purposes.
- **North Pile Embankment Materials:** Coarse PK is suitable for uses as embankment construction materials for the North Pile.
- **Internal Deposition – North Pile:**
    - **PAG Granite Rock:** Granite containing greater than 0.17% sulphide sulphur may have some potential for acid generation if not mitigated appropriately. PAG granite rock is either used for internal structure construction within the North Pile footprint, or deposited within the North Pile footprint. This rock may also be retained underground in a wet environment where it will be flooded at closure.
    - **Metavolcanic Rock:** Metavolcanic rock is either used for internal structure construction within the North Pile footprint, or deposited within the North Pile footprint. Although not all metavolcanic rock is PAG, given the small amounts of metavolcanic rock it is considered simpler to for ease of handling to treat it as PAG, unless it is necessary to leave it in place (due to existing emplacement or natural occurrences) in which case monitoring of runoff is suitable to confirm the materials are non-acid generating (i.e., fresh air rise and BSMRP locations).
    - **Kimberlite and Processed Kimberlite:** Processed Kimberlite is deposited / placed as per the North Pile design. Granite rock that is visibly diluted with kimberlite that cannot otherwise be economically recovered is placed within the North Pile footprint, or used for internal structure construction within the North Pile footprint.

SLEMA made a comment on February 27, 2013.

- *The Submission fulfills the requirement of the Water Licence MV2011L2-0004. SLEMA does not have any concerns.*

The ARD Plan was revised in August 2013 to allow for the use of non acid generating clean granite from the underground with less than 5% kimberlite content to be used in the construction of embankments within the North Pile.

SLEMA made two comments via a technical memorandum sent out to the MVLWB on October 4, 2013.

- *There are no concerns on granite with diluted kimberlite to be used as general construction materials on site if sulphur content is less than 0.17%. However, it should be cautious to use granite with diluted metavolcanic rock as general construction materials on site.*
- *AANDC recommended a lower number of the sulphur concentration cut-off above which material may generate acidity. The recommendation is supported.*

Table 2. Sulphur Content Cut-off for Geochemical Classification

Mine	Snap Lake	Diavik	Fortune
Sulphur content cut-off, %	0.17	0.08	0.10

Water Licence 2012 Annual Report

De Beers submitted the Water License 2012 Annual Report (WLAR 2012) with four appendices on March 31, 2013.

- Appendix A Acid Rock Drainage and Geochemical Characterization 2012 Annual Report,
- Appendix B Summary of September 2012 Geotechnical Site Inspection,
- Appendix C Monitoring Program Summary for the Period 1999 to 2012, and
- Appendix D DRAFT – Updated Predictions of Total Dissolved Solids and Chloride Concentrations in Snap Lake for 2013 and 2014

SLEMA reviewed the Report and its appendices, and summarized its comments into one comment table requested by the MVLWB on May 17, 2013. The following are SLEMA's comments:

Water License 2012 Annual Report

- It is good to see De Beers making more efforts in improving water management
- Based on recent hydrological modeling results, De Beers has to work harder in water management, especially source control, at the mine
- A few editing issues, e.g. Table 13-1 and Table 22-2, were pointed out to De Beers via e-mails, and correction was made. It is recommended that De Beers resubmits the corrected Table 13-1 (Paste Solids numbers to be replaced by the numbers in Table 22-2).

2012 Acid Rock Drainage Annual and Geochemistry Monitoring Report

- All recommendations in Section 9.2 are supported.
- It is stated in Section 9.1 that Bogs north of SP3 and SP5 had elevated concentrations of nitrate (0.07 to 38 mg/L as N), which may result from North Pile seepage. This raises a concern.
- SLEMA has been concerned about the seepage from the North Pile to Snap Lake. During the water licence renewal process, SLEMA recommended the MVLWB put the ARD bog stations between the North Pile and the Snap Lake shoreline into the Surveillance Network Program, especially under the umbrella of SNP 02-10. The MVLWB stated in the Reasons for Decision (Page 114) that once the licence is approved, the proposed changes to the SNP based on IL-6 and proposed east cell site (SLEMA's recommendation) can be sent out for review, ensuring everyone has proper input.
- Now it may be the right time to initiate the review of SNP 02-10. It is recommended that the MVLWB do so.

2012 Dam Inspection Report

- Field Inspection Report was reviewed and commented in November 2012 Environmental Update and one SLEMA letter was issued out.
    - http://www.slema.ca/wp-content/uploads/2012/01/November-2012-Environmental-Update.pdf
    - http://www.slema.ca/wp-content/uploads/2012/01/20121221-Letter-to-MVLWB-on-2012-Geotechnical-Field-Inspection.pdf

Monitoring Program Summary for the Period 1999 to 2012

- This report presents the results from the monitoring of thermistors, piezometers, and survey prisms installed on the site.
- Recommendations in Section 5. Summary are supported. No other concerns are raised.

Updated Predictions of Total Dissolved Solids and Chloride Concentrations in Snap Lake for 2013 and 2014

- The modeling for TDS and Chloride is satisfactory. The modeling predicted that Chloride concentrations would exceed the CCME Water Quality Guideline for Chloride of 120 mg/L in 2013. SNP 02-20 data on February 10, 2013 indicates that the Chloride exceedance is coming in the following months. SLEMA is concerned about the potential impacts of the Chloride exceedance.

- It is recommended that the MVLWB require De Beers to conduct chronic toxicity tests (cladoceran crustacean Ceridaphnia dubia and alga Pseudokirchneriella subcapitata) for SNP 02-20 in the following month after a Chloride exceedance.

Aquatic Effects Monitoring Program 2012 Annual Report (Water Quality)

The core of the AEMP is monitoring of water quality, plankton, sediment quality, benthic invertebrates, and fish health. All monitoring components, with the exception of fish health, are currently undertaken annually. Fish health monitoring occurs on a three- to five-year cycle. The fish tasting component conducted in 2012 is included in this Report. Special studies conducted in 2012 were the Littoral Zone Special Study, Downstream Lakes Special Study, Reference Lake 13 Suitability Special Study, and Nutrient Special Study.

Only water quality-related sections in the Report were reviewed by SLEMA Environmental Analyst. SLEMA made a comment on October 25, 2013 and believed those sections are acceptable. The following sub-sections present the Water Quality status in Snap Lake.

Toxicity Testing

Toxicity of Discharge

- Acute toxicity for either Rainbow Trout or *Daphnia magna* has not occurred in any of the treated effluent samples collected from 2005 to 2012.
- Chronic toxicity was predicted to occur in treated effluent in the EAR. In 2012, one treated effluent sample showed evidence of chronic toxicity in terms of *Ceriodaphnia dubia* survival but not reproduction.
    - None of the treated effluent samples showed evidence of chronic toxicity in terms of algal growth inhibition, rather than stimulation.
    - Although toxicity did occur in chronic tests performed on the treated effluent from 2005 to 2012, it did not show a temporal trend of increasing frequency or severity over time.

Toxicity of Lake Water at Diffuser Stations

- There was no toxicity to algae and water flea observed at the diffuser mixing zone suggesting a lack of direct water toxicity in short-term chronic exposures.
    - Algal growth was stimulated in all samples, with the degree of stimulation increasing at higher sample concentrations.

Water Quality

- Some water quality parameters have increased in Snap Lake since the Mine started operating.
- Concentrations of nitrate, chloride, and fluoride were above an AEMP benchmark (i.e., above concentrations of possible concern) on at least one occasion in 2012.
    - Increases in these parameters were accompanied by increased hardness, which is a parameter that reduces the toxicity of those parameters. Treated effluent and receiving waters were not toxic based on laboratory toxicity testing.
- Concentrations of most water quality parameters in Snap Lake were below drinking water guidelines.
- In 2012, concentrations of Mine-related parameters reached background concentrations approximately 6 km downstream of Snap Lake (versus 44 km predicted in the Environmental Assessment).

Chloride

- In 2012, concentrations of chloride in Snap Lake were typically below the CCME WQG of 120 mg/L, with the exception of one chloride result of 121 mg/L collected from the diffuser area at station SNP 02-20e. Average chloride concentrations in the different lake areas ranged from and were below the CCME WQG.
    - 84 mg/L to 112 mg/L except one at SNP 02-20e (121 mg/L).
- The observed chloride concentrations are not expected to cause adverse effects to aquatic biota in Snap Lake.
    - Using the hardness-based formula provided in Elphick et al. (2011), and a hardness of 119 mg/L (average hardness in Snap Lake in 2012), **the site-specific benchmark for chloride in Snap Lake would be 353 mg/L.**

Nitrate

- Approximately 3% of the 2012 nitrate samples collected in Snap Lake were above the CCME WQG for nitrate of 2.93 mg-N/L.
    - Maximum concentration of 3.22 mg-N/L at SNAP03.
    - Average concentrations from 1.6 mg/L to 2.7 mg/L.
- The observed nitrate concentrations are also not expected to cause adverse effects to aquatic biota in Snap Lake.

- Using the formula provided in the BHP Billiton study and a hardness of 119 mg/L, **a nitrate site-specific benchmark for Snap Lake was calculated to be 12 mg/L.**

Fluoride

- Similar to 2011, fluoride concentrations in the majority (i.e., 58%) of samples collected in 2012 were higher than the 2001 interim CCME (1999) WQG for inorganic fluorides of 0.12 mg/L.
    - Maximum concentration of 0.18 mg/L at SNP 02-20d.
- The observed fluoride concentrations are not expected to cause adverse effects to aquatic biota in Snap Lake.
    - Using the British Columbia Ministry of the Environment (BCMOE) formula, and a hardness of 119 mg/L, **the BCMOE recommended WQG is 1.4 mg/L.**

SNP 02-20 Sampling and Reporting

SLEMA initiated a discussion about SNP 02-20 sampling and reporting with De Beers, the MVLWB and the Inspector via e-mail in February 2013.

Surveillance Network Program (SNP), D. Reporting Requirement, Item 1 states that the Licensee shall submit all data and information required by the SNP. SNP 02-20 is defined in the Water Licence as Snap Lake on the edge of the mixing zone around the diffuser (3 stations, called SNP 02-20d, e and f, located in a radius of 120 degrees at 200 meters from the diffuser). SNP02-20 is one of the most important SNP stations for the Snap Lake Diamond Mine, because Effluent Quality Criteria (EQCs) in the Water Licence are set on the basis of meeting Water Quality Objectives (WQOs) at the edge of the mixing zone.

SLEMA has been requesting De Beers reporting SNP 02-20 in De Beers SNP Monthly Reports. De Beers assumed SNP 02-20 was for AEMP and did not included SNP 02-20 data in the Monthly SNP Reports. De Beers claimed there was a lag in getting results, the crew could not collect the sample every month due to safety concerns, and the full process for AEMP data was long.

SLEMA believed De Beers should try the best to take monthly samples at SNP 02-20, in addition to quarterly AEMP sampling, because SNP 02-20 is very important because it monitors the mixing zone, stakeholders need the mixing zone data to assess the water quality change in a timely manner.

AANDC Inspector's Position

- *Monthly reporting of SNP02-20 is mandatory under the SNP program, however extenuating circumstances (safety/late receipt of analysis) can and will exist.*
- *To combat this, alternative follow-up reporting for late results (brief letter report) and description of safety influenced sampling cancellations within the regular on time monthly SNP report will be solutions.*

MVLWB's Position

- *The Water Licence (WL) is clear in that SNP02-20 is a SNP station and should therefore be included in the monthly SNP reports as outlined in the SNP annexed to the WL.*
- *The rationale in the WL says it is to evaluate whether water quality objectives are being met at the edge of the mixing zone.*

The MVLWB issued a letter about SNP 02-20 on February 12, 2013.

- *SNP02-20 has been reported as an Aquatic Effects Monitoring Plan (AEMP) sampling point and therefore reported annually. SNP02-20 is also part of the Surveillance Network Program (SNP).*
- *There are specific monitoring and sampling requirements for both programs. Therefore De Beers are to report SNP02-20 results in the monthly SNP report where appropriate.*

De Beers responded that De Beers would report SNP 02-20 as prescribed in the monthly SNP reports and note if there would be any lag in results. De Beers has been reporting SNP 02-20 data as promised.

Embryo-Alevin Early Life Stages (ELS) Testing

De Beers proposed a change to the Surveillance Network Program (SNP) on January 2, 2013.

- Requested to conduct a shorter duration Rainbow Trout ELS test, replacing the 70-d embryo/alevin/fry (EAF) test with the 7-d trout embryo viability test.
- A number of logistical concerns associated with performing the 70-d EAF test.
    - Field safety concerns and challenges of collecting and shipping 120L/week for three-months.
    - No laboratories maintain accreditation for either or the longer duration ELS tests.

SLEMA submitted comments on March 11, 2013.

- SLEMA does not agree with the change from 70-day embro/alevin/fry (EAF) test to 7-day trout embryo viability test. Instead, SLEMA suggests that De Beers conduct the 70-day test for not less than 2 years or 4 comparable tests (same season) and compare the 7 and 30-day results (which De Beers will have) with the 70-day results. Then the data will speak for themselves. An alternative is to do a literature review of the relative sensitivity of fish tests that go from hatch to alevin survival versus hatch to fry. The species of interest are those most relevant to Snap Lake.

The MVLWB issued the following directives on April 25, 2013:

1. *Annex A: Surveillance Network Program: Station SNP02-20 of the WL annual test be changed to the 30 day egg/alevin ELS test for Rainbow Trout (Oncorhynchus mykiss) using Method EPS/1/RM/28. In order to reduce the volume of water necessary to conduct the test only the 100% effluent test shall be run and not the dilutions specified in the above noted method.*
2. *A 7 day (egg only) Rainbow Trout ELS test be conducted for every period of increased discharge.*

De Beers started the ELS testing in July 2013. The results of 7-day test were Pass, but the results of 30-day test were Invalid. The 30-day test was conducted three times by two laboratories; however, all of them were invalidated due to a failure in the control test. De Beers requested on October 9, 2013 that the MVLWB provide guidance on how to carry out the ELS testing.

Chloride Levels in Snap Lake

WLAR 2012, Appendix D. Updated Predictions of Total Dissolved Solids and Chloride Concentrations in Snap Lake for 2013 and 2014 states:

- *TDS and chloride concentrations are predicted to be higher in Snap Lake compared to 2011 predictions. The updated site and Snap Lake models predicted that whole-lake average TDS concentrations would not exceed the Water Licence Limit of 350 mg/L through January 1, 2015, but that* ***chloride concentrations would exceed the CCME WQG for chloride of 120 mg/L in 2013.***

De Beers began to submit SNP 02-20 data from March 2013. The February 2013 SNP Monthly Report indicated that the concentrations of Chloride in SNP 02-20 (d), (e) and (f) were approaching the CCME Guideline (120 mg/L) at Snap Lake, and concentrations of Fluoride exceeded the CCME Guideline (0.12 mg/L) on February 10, 2013. SLEMA made comments on April 26, 2013.

- *SLEMA appreciates the MVLWB requesting De Beers to submit SNP 02-20 data in the monthly SNP report on February 11, 2013. From then on, stakeholders could receive the mixing zone data to assess the water quality change in Snap Lake in a timely manner.*
- *The WQO for Chloride at the edge of the mixing zone may be exceeded in the next few months (late winter means poor mixing condition). SLEMA is concerned about the potential impacts of the existing and coming exceedances of WQOs. It is recommended that the MVLWB require De Beers to conduct chronic toxicity tests (cladoceran crustacean Ceridaphnia dubia and alga Pseudokirchneriella subcapitata) for SNP 02-20 in the following month after a Chloride exceedance.*
- *In addition, SLEMA would like to reaffirm the comments dated March 11, 2013 on Rainbow Trout Early Life Stage (ELS) Toxicity Testing, i.e. "SLEMA suggests that De Beers conduct the 70-day test for not less than 2 years or 4 comparable tests (same season) and compare the 7 and 30-day results (which De Beers will have) with the 70-day results".*

Monitoring results of the following months indicated that

- Chloride levels at the edge of the mixing zone (SNP 02-20) are higher than the CCME Guideline (120 mg/L) from March to May 2013.
- Whole Lake Average levels of Chloride (SNP 02-18) are higher than the CCME Guideline (120 mg/L) in May 2013.

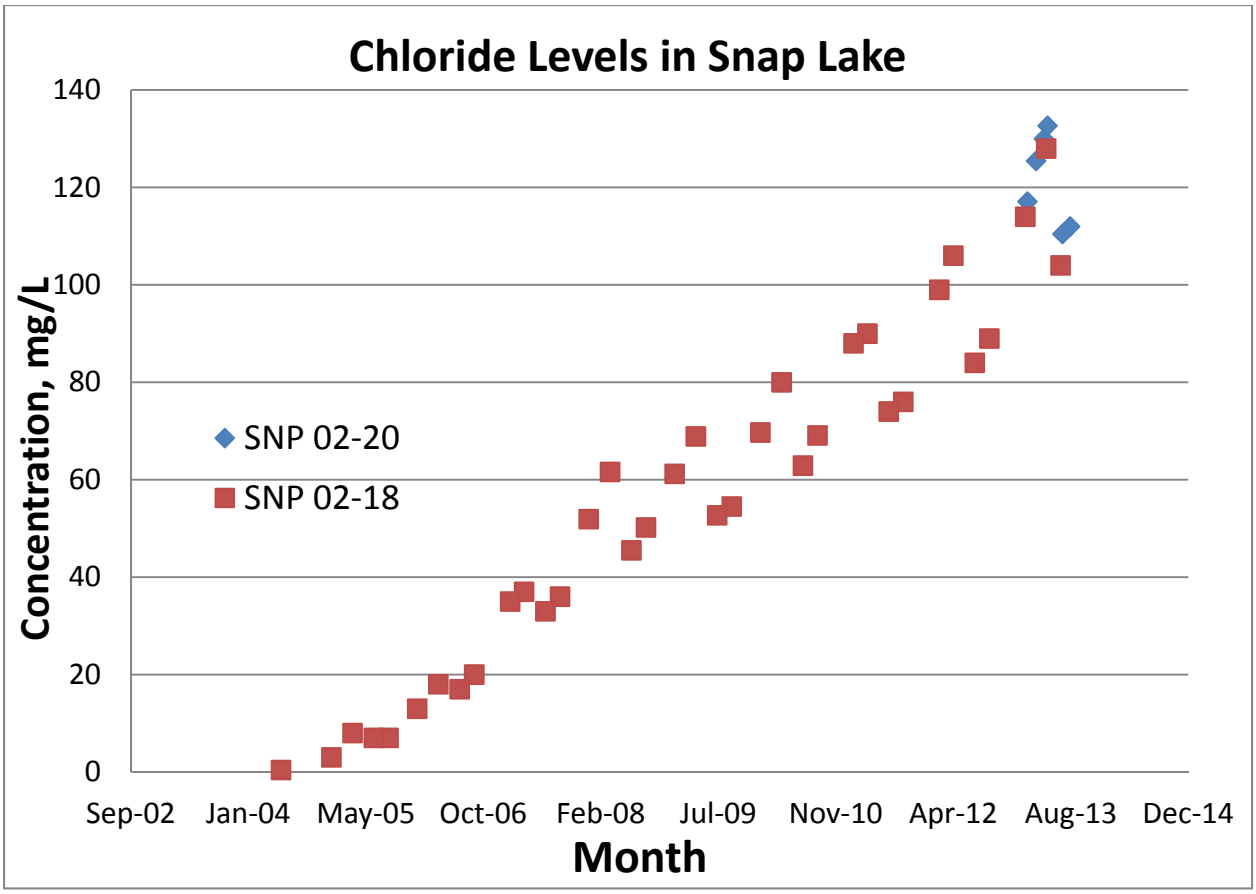


Figure 8. Chloride Levels in Snap Lake

SLEMA Modeling Update

SLEMA developed a water quality model to predict whole lake average of TDS, Chloride and Calcium concentrations in Snap Lake in 2010, and updated the predictions in 2012 and 2013. Back tests for modeling TDS and Chloride were carried out with discharge data up to August 2013, and reasonable assumptions are applied in the prediction of water quality change in Snap Lake.

Chloride Modeling

Back test demonstrated the Chloride modeling works well.

- Correlation coefficient of the two data sets (observed values and modeling results) is 0.990.
- Modeling results show that whole lake average of Chloride concentration in April 2013 (120.1 mg/L) is above the CCME Guideline.
    - Observed Chloride value in May 2013 is 128 mg/L.

- **Prediction in 2012 proved to be right.**
  - **"the exceedance of WQO for Chloride is imminent".**

Predictions made in 2010 and 2012 were relatively conservative, especially the assumption of the discharge quantity. Three scenarios were predicted. Under Scenario 2 and 3, USEPA Guideline for Aquatic Life and Canadian Aesthetic Objective for Drinking Water will be exceeded within the Mine life.

Table 3. Results of Chloride Modeling

Scenario	Assumed Discharge Quantity, m^3/month	Assumed Quality, mg/L Chloride	Guideline value to be exceeded? If yes, when?		
			120 mg/L (CCME)	230 mg/L (USEPA)	250 mg/L (Aesthetic)
1	1,000,000	240	Apr. 2013	N/A	N/A
2	1,200,000	280	Apr. 2013	Jan. 2021	Feb. 2024
3	1.400,000	310	Apr. 2013	Jan. 2018	Apr. 2019

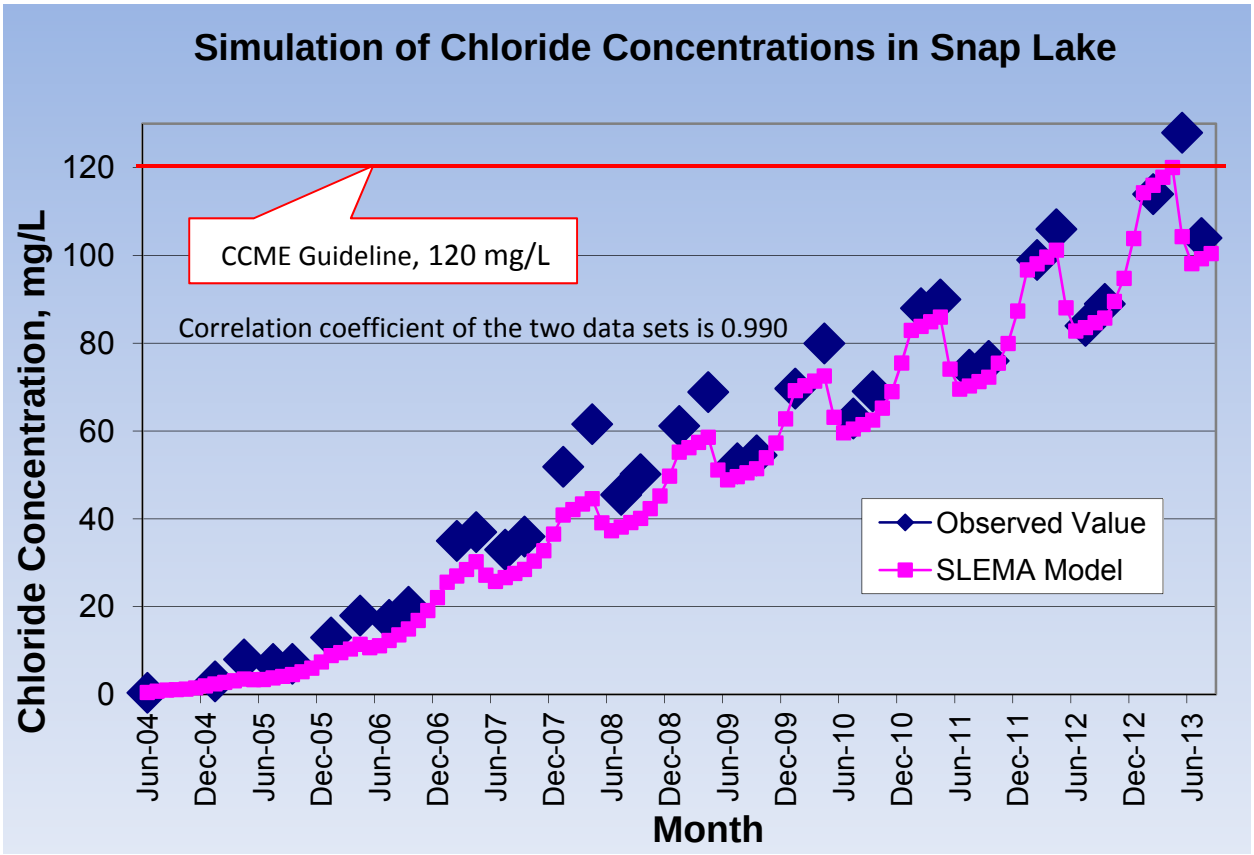


Figure 9. Chloride Modeling Back Test

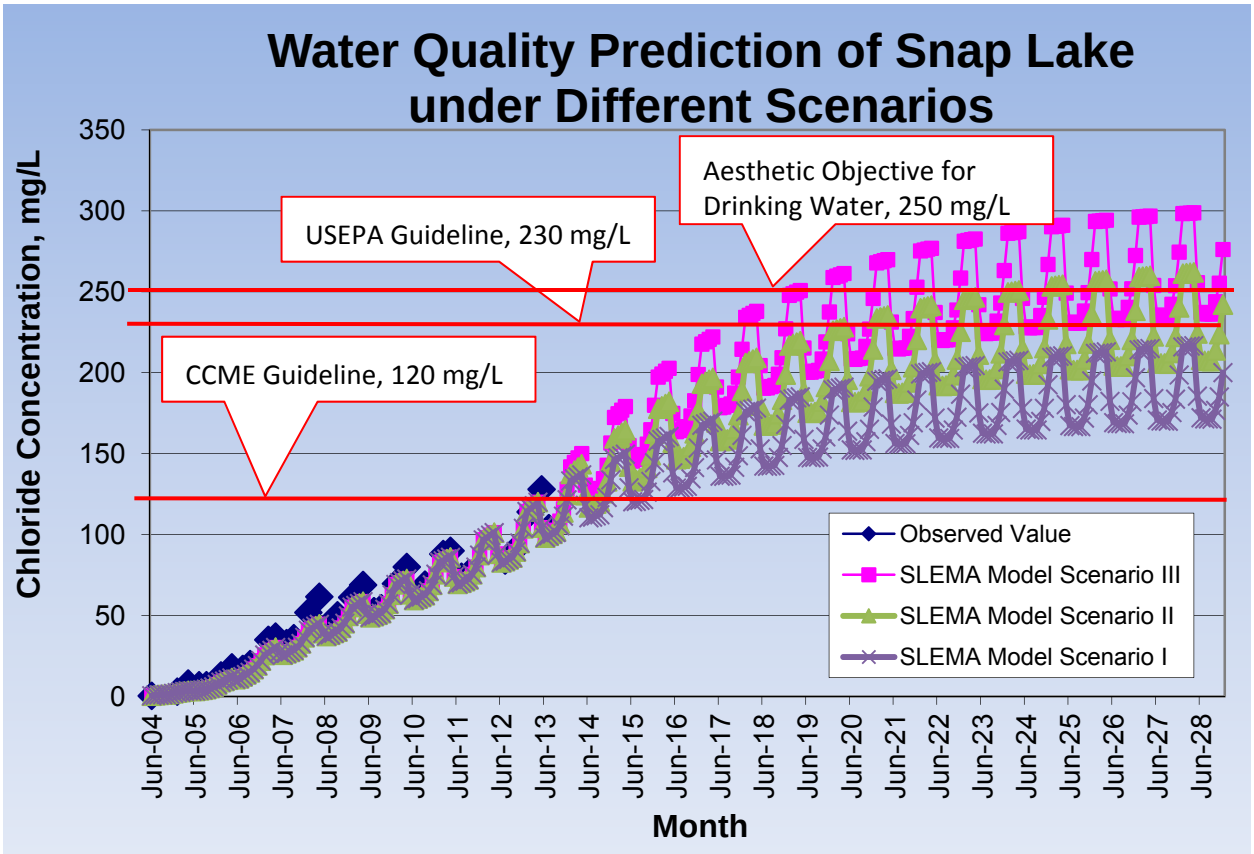


Figure 10. Chloride Predications

TDS Modeling

TDS modeling back test indicated that the correlation coefficient of the two data sets (observed values and modeling results) is 0.992, and confirmed the model capable of predicting future whole lake average of TDS concentrations in Snap Lake.

One prediction was made for TDS. If the discharge amount and TDS concentration are 1,400,000 m^3/month and 650 mg/L, whole lake average TDS level will be 378 mg/L in **January 2015**, exceeding the Water Licence limit (350 mg/L).

SLEMA sent a letter on the above modeling results to the MVLWB on October 31, 2013.

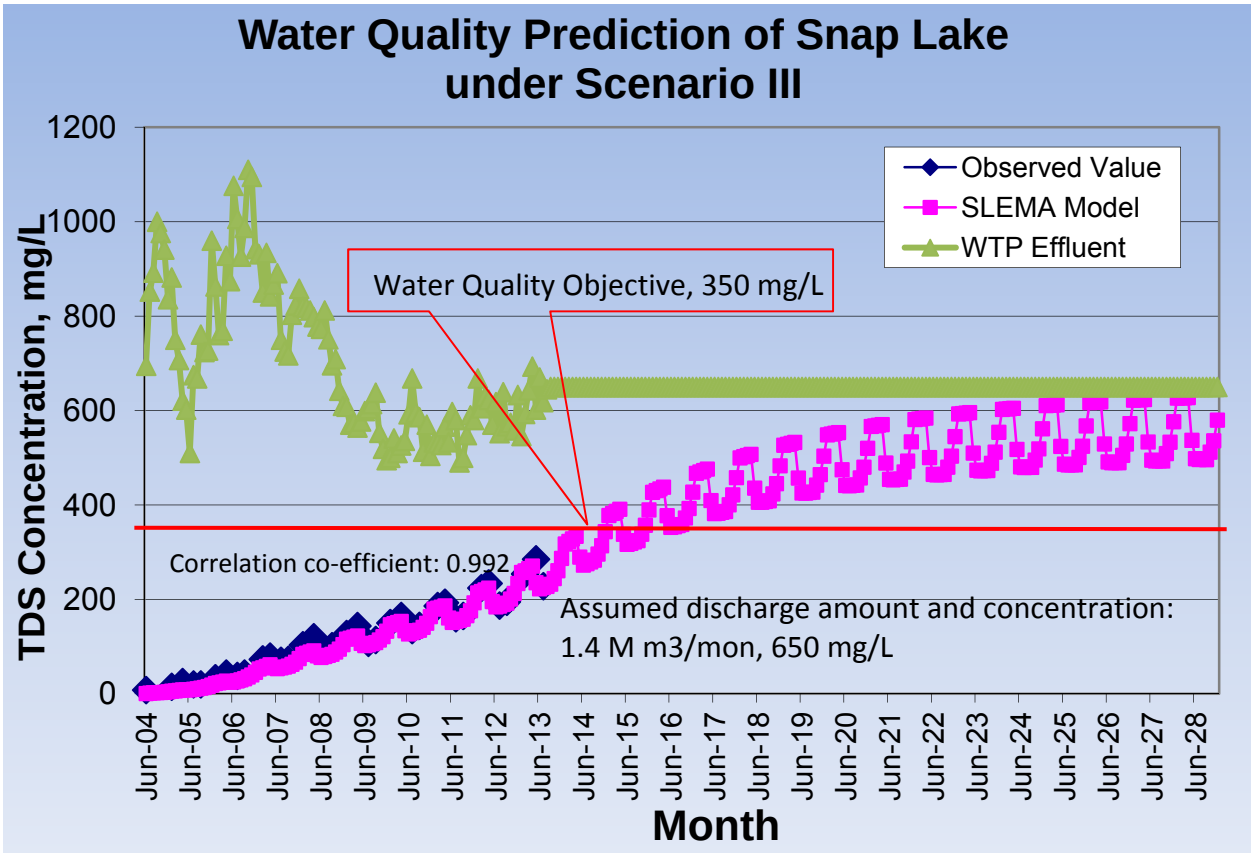


Figure 11. TDS Predication

De Beers Request to Remove Strontium Response Plan Requirement

Water Licence requires that De Beers submit a Strontium Response Plan by December 31, 2013. De Beers requested on August 21, 2013 that the MVLWB change the requirements to include only a suggested Benchmark to be monitored under the AEMP.

Strontium is present in the kimberlite and processed kimberlite. Due to mining, Strontium concentrations have been increasing since mine development in 2005.

Table 4. Strontium at the Mine

Year	2004	2006	2011	2013	2030
Strontium Concentration in the Treated Effluent, µg/L		4,320	1,500	1,200-2,200	3,100
Strontium Concentration in Snap Lake, µg/L	<15		500	500-900	1,600

De Beers proposed a Chronic Effects Benchmark (CEB) of 14,130 µg/L for Strontium in Snap Lake based on literature study and some new toxicity studies.

- *The burden of evidence (tissue burdens of strontium in Snap Lake and reference lake fish; toxicology of Strontium) does not indicate that there is a present or future risk of Strontium toxicity to the aquatic biota of Snap Lake.*

SLEMA did not submit comments to the MVLWB, but published the following comments in the SLEMA September 2013 Environmental Update.

- The elevated Strontium levels in Snap Lake are a concern.
    - Current levels in Snap Lake are around one hundred times more than the baseline lake-wide mean concentrations.
    - The long term impacts of the elevated Strontium levels to aquatic ecosystem are unclear.
- AANDC made the following comments:
    - AANDC does not support De Beers request and additional special study is required.

2012 Annual Closure and Reclamation Plan Progress Report

The Report was submitted on April 30, 2013, and previously titled Annual Mine Reclamation Status Report. Its main sections are:

- Project Schedule, Project Activities, and Impacts of Variances,
- Progressive Reclamation Status and Results,
- Reclamation Research Status,
- Interim Closure and Reclamation Plan Status, and
- Financial Security and Reclamation Liability.

The following sub-sections briefly summarize the Mine reclamation progress and status.

North Pile Development

- Due to the cumulative effects of delays to mining operations during the economic slowdown experienced during 2008 and 2009, and ongoing efforts to develop optimal paste properties for PK deposition, initial predictions for the progression of the North Pile subcells are no longer realistic.
    - Deposition of PK and waste rock in the Starter Cell will be completed in 2013.
    - Deposition of PK and waste rock in the East Cell began in 2012.

Significant Variances to the Project Schedule and Activities in 2012

- Additional developments at the project site such as the IL6 diversion ditch, expansion of the apron quarry area and installation of temporary booster pump and pad on the diffuser line.
- Continued deviation from the initial North Pile development schedule.
- Delayed progressive reclamation of the temporary construction camp pad as the area is required to support site operations.
- Continued delay of PK deposition in the underground mine workings.
- Continued deposition of processed kimberlite as a slurry/slime rather than paste.

Progressive Reclamation

- Areas and/or mine components that have been identified for progressive reclamation throughout the life of the mine include:
    - North Pile disposal facility,
    - Contaminated soil areas, as necessary, and,
    - Various small legacy areas from the exploration phase (e.g. North Pit, South Pit and Bulk Sample Mine Rock Pad).

Reclamation Research

- A drilling program and geotechnical investigation plan was developed in 2012, and planned for execution in 2013.
- A subsurface investigation including instrument installations (thermistors and piezometers) within the PK waste materials was planned for 2012, and planned for execution in 2013/2014.
- In 2012, research activities included continued monitoring of the trial cover pad instrumentation data, and refinement of the numerical model.
- In 2012, a Revegetation Research Plan was developed. The plan identified three specific research projects to be implemented in 2013

Interim Closure and Reclamation Plan Status

- In 2012, MVLWB provided De Beers with a detailed workplan for the revision of the ICRP document. This included submission of proposed closure objectives for stakeholder review, followed by a workshop held by De Beers to receive stakeholder feedback concerning the closure options, and proposed reclamation research plan

- Approved closure objectives were developed in November of 2012, and the workshop was completed in Yellowknife on March 13, 2013. The updated ICRP is expected to be submitted to the MVLWB in 2013

Financial Security and Reclamation Liability

- Below is a summary of current security at the end of 2012, with deposition of PK having occurred in both the Starter Cell and East Cell is as follows:
    - Type A Land Use Permit, $19,878,845,
    - Type A Water Licence, $36,917,856,
    - Environmental Agreement – Additional Security Deposit, $20,000,000, and
    - Land Leases, $0.

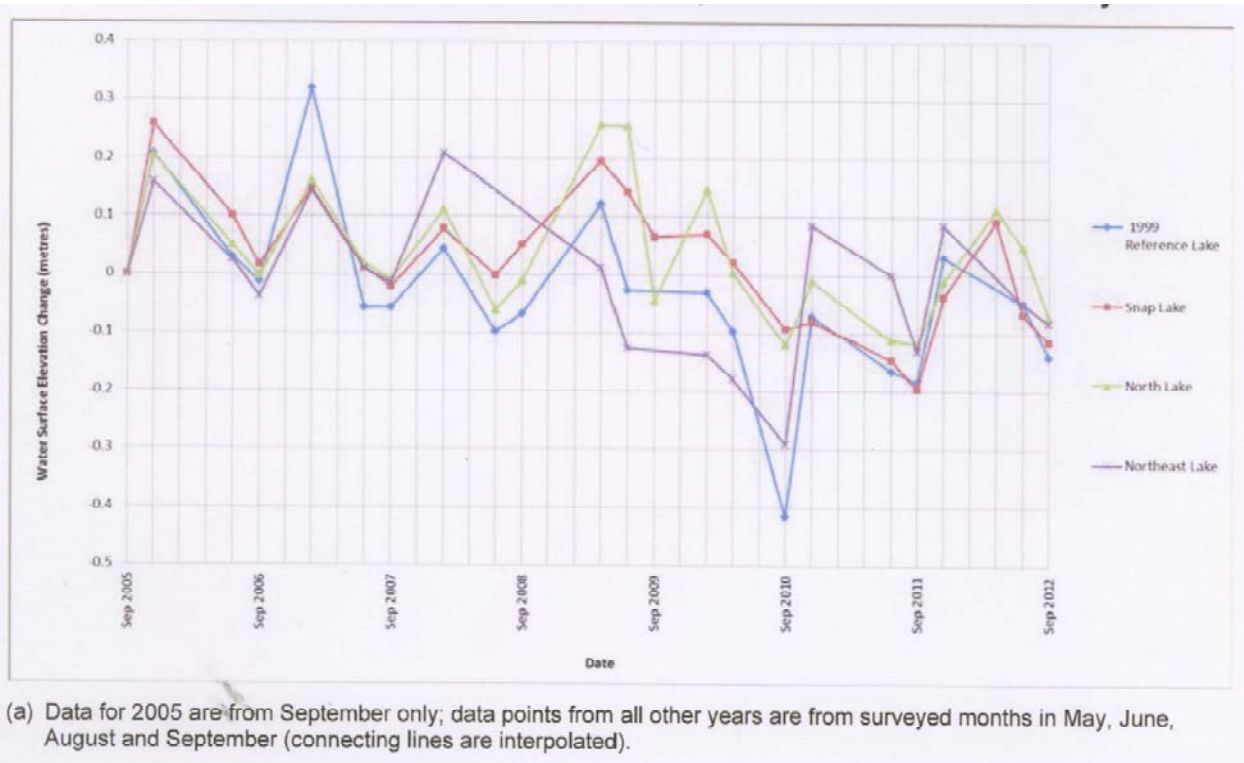
SLEMA made a comment on October 25, 2013 and had no concerns regarding this Report.

Stream-flow and Lake Elevation Monitoring Program 2012 Annual Report

This Report was submitted on June 24, 2013. It summarizes the 2012 Snap Lake water balance and the water elevation and lake discharge trends at Snap Lake, North Lake, Northeast Lake, and 1999 Reference Lake. The conclusion is

- Snap Lake water elevation trends were similar to other lakes.

SLEMA made a comment on October 25, 2013 and had no concerns regarding this Report.



(a) Data for 2005 are from September only; data points from all other years are from surveyed months in May, June, August and September (connecting lines are interpolated).

Figure 12. Surveyed Water Elevations for 1999 Reference Lake, North Lake, Northeast Lake, and Snap Lake, Relative to September 2002 Elevation Surveys

2012 Plume Characterization Study Report

The 2012 Plume Characterization Study Report was submitted on January 29, 2013.

As part of the Mine's operations, treated minewater and treated domestic waste water effluents are discharged through a minewater outfall into Snap Lake. A new minewater outfall, specifically a pipeline and diffuser, was installed in August 2011. The diffuser discharges and disperses the treated effluent into Snap Lake. The purpose of the diffuser is to increase mixing rates of the treated effluent, and thereby reduce peak plume concentrations in Snap Lake. A field program was carried out in August 2012 to evaluate the diffuser performance.

The Submission concludes that the performance of the existing minewater outfall is expected to meet the accepted Environmental Assessment Report (EAR) predictions for mixing, so long as air is minimized in the discharge, and the potential influence of stratified conditions during the early open-water season should be further reviewed through ongoing estimations of existing and predicted mixing for this season.

SLEMA commented on February 26, 2013.

- *SLEMA is concerned about the air entrainment issue of the diffuser plume and the stratification issue during the early open-water season in Snap Lake. SLEMA expects a follow-up report to address these two issues.*

Increased Discharge during 2013 Freshet and Second Permanent Diffuser

Due to the amount of water associated with freshet as well as the inflows experienced underground, additional discharge was required during 2013 freshet. As such De Beers requested, on February 6, 2013, that it be permitted to release treated discharge of up to 60,000 m³ per day (normal is 35,000 m³) for up to a 6 week period during 2013 freshet. To achieve this De Beers planned to utilize the floating discharge lines located directly above the existing diffuser line.

SLEMA made the following comments on March 4, 2013.

- *It is understood that after the peak flows of discharge De Beers will return the flows to the normal operating discharge requirements, and to ensure that these changes do not affect the environment, De Beers will continue to monitor the discharge water quality and a full monitoring program will be carried out through this period, at the diffuser stations. After further communication with De Beers via e-mail, it is understood that De Beers will not have to ask for increased discharge in future years, and has investigated various options of water management and treatment.*
- *Based on the above information, SLEMA has no concerns on De Beers request.*

On March 8, 2013, the temporary diffuser was brought online to handle the additional volumes of water occurring from the spring melt and allow De Beers to increase the treated discharge above the normal 35,000 m^3/day, which is the capability of the current main diffuser and outfall. However, underground mine flows are increasing and current volumes are approaching 37,000 m^3/day, and the Mine must continue to use the temporary diffuser to handle some of the additional flows. The temporary floating diffuser cannot continue to be used past the fall season due to concerns with lines freezing during the winter months.

Therefore, De Beers requested on June 13, 2013 that a Second Permanent Diffuser be installed to allow for responsible handling of the increased inflows and to properly discharge the treated effluent. The new one will be identical to previously installed diffuser.

The MVLWB approved De Beers' request on the modification of installing a second permanent diffuser on August 29, 2013. In the meantime, the MVLWB updated the Surveillance Network Program by adding a fourth monitoring station at SNP 02-20.

Technical Memorandum for the September 2012 Geotechnical Inspection

The engineers from Golder Associates conducted inspection of the North Pile facility (including sumps and ditches, embankments, and PK deposition) and the Water Management Pond (WMP) dams from September 10 to 13, 2012, and reported their findings in the technical memorandum on November 13, 2012. Four key issues were identified by the engineers.

1. *"The conditions and management of water observed during the geotechnical inspection were markedly improved from those noted during the September 2011 geotechnical inspection."*
2. *"The mine plan and the North Pile Operation, Maintenance, and Surveillance Manuals are not well-communicated to the various mine departments within De Beers; this is a key risk to the operations at the Snap Lake Mine." "Further, a fundamental overall understanding of the North Pile is lacking on site."*
3. *"A monitoring program for the North Pile facility and the WMP dams is in place." "Data are being collected by De Beers; however, there are major deficiencies in the collection, interpretation and use of those data."*
4. *"Golder continues to strongly recommend that, as part of addressing the items discussed above, De Beers form their own suitably staffed geotechnical department for the North Pile facility at the Snap Lake Mine."*

De Beers responded to each specific recommendation of the Technical Memorandum on November 14, 2012. De Beers implemented some of the recommendations and was investigating the others.

SLEMA made comments on December 21, 2012.

- SLEMA was satisfied with the technical memorandum and supports all of the recommendations made by Golder Associates engineers, and pointed out that key issues #2 and #3 were not fully addressed in De Beers response letter.
- One of the Future Measures Planned to Manage Risks in the September 2012 Report of the North Pile Risk Assessment is "*Improved Training / Operational Manuals / Standard Operating Procedures / Safe Work Plans*", and the proposed time is "*ongoing*". SLEMA would like to know the ongoing progress of this planned measure, and how De Beers plans to improve the collection, interpretation and use of the monitoring data from the North Pile facility and WMP dams.
- Risk assessment is a valuable management tool. De Beers made efforts in identifying and managing risks associated with the North Pile facility and

submitted a report in September 2012. SLEMA would like to recommend that the MVLWB request annual reporting of the follow-up risk assessment and management activities for the North Pile facility, in the Water Licence Annual Reports.

Starter Cell Phase IV Raise

De Beers requested to raise the North Pile Starter Cell and submitted the North Pile Starter Cell Phase IV Embankments Design Report o June 3, 2013.

De Beers planned to raise the Starter Cell by 3.5 meters to 489.5 meters above sea level (MASL) in order to continue active deposition and processing at the Snap Lake Mine. In the Design Report, North Pile maximum elevation of 503.654 MASL is set as one of the Additional Criteria for the Design.

The planned Starter Cell raise is not consistent with De Beers commitment during the Environmental Assessment. In the Environmental Assessment Report (EAR, Page 3-18), it is stated that

- "*At the end of operation, the north pile will have a maximum height of approximately 34 m (crest elevation 484 m). At this elevation, the pile will be approximately the same height as the highest point of natural ground in* ***the immediate area of the project site****.*"

SLEMA pointed out the inconsistency and required clarification via e-mail on June 20, 2013. De Beers responded on June 24 as follows.

- "*The higher value is related to the commitment that the pile will be no higher than the surrounding hills within the ZOI and recent reviews of actual elevations done by a surveyor as opposed to during the EA when it was a paper exercise.*"

De Beers also provided a Technical Memorandum by Golder Associates, dated April 22, 2013 and titled North Pile Maximum Elevation and Surrounding Landforms, Snap Lake Mine, where a Zone of Influence (ZOI) is defined by a circle with a radius of 35 km, centered on the Mine site.

SLEMA made comments on De Beers request on Starter Cell Raise.

- *In comparison, the wildlife study area in the Wildlife Effects Monitoring Program is defined by a circle with a radius of 31 km, centered on the Mine site. It is noted that two reference lakes (Northeast Lake and Lake 13) and King Lake (KING 01 – downstream water quality monitoring station) are also within the circle.*

- *The highest point within 35 km of ZOI defined by De Beers, is located north northwest of the North Pile, and appears to be outside the wildlife study area.*
- *SLEMA believes that the immediate area of the project site described in the EAR should not be referred to the Zone of Influence (with a radius of 35 km).*
- *During the Closure Options and Research Workshop on March 13, 2013, De Beers presented three closure options, which are in the 2003 and 2006 Interim Mine Closure and Reclamation Plans.*

Table 5. North Pile Closure Options

Waste Pile Characteristics	Option 1	Option 2	Option 3
Crest Elevation (m)	479	484	497
Height Above Lowest Land Form (m)	35	39	52
Height Above Highest Land Form (m)	-5	0	13
Pile Visibility	Lowest	Moderate	Highest
Foot Print (ha)	126	92	69
Perimeter Length (m)	5,600	4,200	3,200

- *During the Closure Workshop, De Beers did not intend to change the chosen closure option #2, which is consistent with the Environmental Assessment commitment.*
- *SLEMA raises the following two concerns for the MVLWB to consider De Beers request.*

    - *Planned Starter Cell raise is not consistent with De Beers commitment during the Environmental Assessment.*
    - *The approach to arguing a Starter Cell raise is not appropriate. In SLEMA's opinion, ZOI is not properly defined by De Beers.*

The MVLWB made a decision about De Beers request on modification for the Phase IV Raise, on July 18, 2013.

- *Unfortunately, the Board is unable to consider the Phase IV Raise as a modification, because the proposed maximum elevation of the Phase IV Raise is higher than what was seeped in the Mackenzie Valley Environmental Impact Review Board's Environmental Assessment of the Snap Lake Diamond Project*
- *In order to proceed with the proposed Phase IV Raise, De Beers must submit an amendment application for the Board's consideration. The amendment application will be subject to preliminary screening. The Board will work with DBCI to expedite the amendment process as much as possible.*

Follow Up to Starter Cell Raise Request

De Beers submitted the Follow Up to Starter Cell Raise Request August 30, 2013. In the letter De Beers provided further information to address the MVLWB's concerns.

- Clarification on the height requirements defined during Environmental Assessment
- Geotechnical Memorandum on considerations for seepage and stability
- Technical Memorandum on Current and Plan Paste Research Initiatives
- Interim North Pile As-Built Drawings
- Engagement Plan – Current and Planned
- Short and Long-Term Plans for the North Pile

De Beers claimed that

- *The crest elevation mentioned is based on a topographic map point of 450m. Surveyed details later revealed that there were multiple elevations throughout the area. As from the MVEIRB decision report the 35 m requirement is the operational and regulatory requirement.*
- *The operational height requirement as identified by De Beers and approved by MVEIRB in the decision report of 35 m is the height requirements needed for the North Pile design and operation. The MVEIRB Decision Report indicates that a modification request to raise the starter cell embankments in the North Pile facility as defined in the Phase IV Report is within the project scope and therefore should not be subject to a preliminary screening.*

SLEMA had a different opinion, and communicated with De Beers by e-mail on September 9, 2013.

- *The statement "Ground Level Elevation in North Pile ranges from 460-476 masl" seems misguiding readers. Those data refer to the Starter Cell, the southern part of the North Pile.*
- *Starter Cell ground level does not represent the ground level of the north Side of the North Pile.*
- *The ground level elevation in the East Cell should be lower than that in the Starter Cell.*

SLEMA further provided a technical memorandum to the MVLWB on September 13, 2013.

- *The follow up information is helpful to understand the operation of processed kimberlite deposition and the North Pile status.*

- *The EA assumption stands. The height requirements during the Environmental Assessment are*
    - *Maximum height of approximately 34 m (crest elevation 484 m).*
- *De Beers claim on the North Pile operational and regulatory requirements – 35 meters (pile height) is questionable.*
- *MVLWB's conclusion dated July 18, 2013 is supported.*
    - *The Phase IV Raise is not a modification but an amendment, and it would be subject to a preliminary screening.*

The MVLWB approved De Beers modification request for the Phase IV Raise on September 25, 2013.

- *The maximum height of the Starter Cell to 21 m (489.5 masl), not including the required placement of four meters of non-acid generating cover material.*
- *De Beers is to submit an updated North Pile Management Plan for approval.*
- *The MVLWB will take the lead on organizing regular meetings with the interested parties on the paste research and other regulatory related activities.*

Land Use Permit

The Current Land Use Permit MV2010D0053 has an effective date of February 16, 2011, and an expiry date of February 15, 2016.

Fisheries Authorization

Fisheries Act Authorization SC-00-196 has been amended to reflect accepted fish habitat compensation, and to harmonize with the Aquatic Effects Monitoring Program required under Water Licence MV2011L2-0004 issued by the MVLWB. The purpose is to reduce reporting duplication for De Beers and other parties.

The Amended *Fisheries Act* Authorization, issued July 13, 2012, supersedes the previous Authorization dated August 8, 2006.

Mine Site Tour 2013

A tour of the mine by community members should have been an annual event for them to understand the Snap Lake Diamond Mine, its mining progress, and environmental impacts. De Beers organized site visits for community members as their engagement efforts in 2013. There was no mine site tour for the SLEMA Board and Traditional Knowledge Panel in 2013, like there was in 2012. Instead, SLEMA Environmental Analyst was invited to the Mine for a two-day site visit from June 10 to 11, 2013.

The observations from the Environmental Analyst are summarized in Table 6.

Photo 2. Well Maintained WMA

Photo 3. Recycling Program

Photo 4. Starter Cell

Photo 5. Underground Sump

Photo 6. Perimeter Sump #2

Photo 7. Fox at the Site

Table 6. Environmental Analyst Observations during Site Visit

Location	Positive Observations	Areas to be improved	Questions
General Management	The Superintendent for Environmental Monitoring fit in		
Waste Management Area (WMA)	Well maintained and managed		
New incinerator	The smoke looked clear; food waste to be shipped off-site in a secured place	Stack testing to be conducted as soon as possible	Is there enough space for the second incinerator installed within the same concrete pad?
Burn pit	No food waste identified	Plastics to be removed before burning; metal to be removed after burning	
Landfill	Well maintained and managed; no food waste identified	Light material such as styrene foam not to be scattered	
Landfarm	Used as lined storage area		
Recycling Program	Labeled containers seen around resting places		
Slurry / Paste Deposition		More efforts to be made for paste deposition study	
Water channels between cells within the Starter Cell	Well managed water flow within the Starter Cell: trench to allow water flow to the downstream cell; rock drain to allow clear water to pass at the corner of the cell; emergency spill way; mobile pump set up		
East Cell Construction	In track		
Tank Farms	Spill kits found in the right place	Water to be pumped out from the tank farms due to the rain	
AN Storage Building	Well maintained and managed		
Historical AN Pad		Water to be pumped out from the sump due to the rain	
Underground Clean Water Pipeline	Good strategy to reduce the amount of “dirty” minewater		

Table 6. Environmental Analyst Observations during Site Visit (continued)

Location	Positive Observations	Areas to be improved	Questions
Underground Minewater Settling Sump			No physical Oil/Water Separator in the MSS – may not need it
Underground spills		To refine the process of underground spill reporting	
PS1-5 and TS4	Water levels maintained in a low or minimum level; pump house installed for each sump and back-up pumps available for extra capacity requirement		To consider the potential locations for the coming review of SNP 02-10?
PS2	Top soil removed from the development of the East Cell, etc., stockpiled not far away from the south of PS2, for future reclamation of the site		
PS3	PS3 repair – in track; the pipes in the north and east side of PS3 to be removed, in order to prevent from any pipe related spills to shoreline		
IL6			The drain structure between PS5 and IL6 is not consistent with the original design?
TS4	Runoff/seepage directly pumped to the WMP via pipeline, not transferred via PS5	The tipped over crane to be lifted up as soon as possible	
Pipeline	Brand new heat trace pipelines to move runoff/seepage to the Water Management Pond		
Water Management Pond	Water level maintained in a low level; no pooled water observed downstream of Dam 1	To dredge for more capacity	
Water Treatment Plant	Effluent parameter concentrations compliant with the Water Licence; new features observed for better treat mine water – interlocks, more meters; clear effluent, etc.		Whether the monthly average concentration of Chloride in SNP 02-17B reaches the Water Licence limit (310 mg/L)?
Diffuser Line	Temporary diffuser line available for extra discharge requirement		

Fish Tasting 2013

The fish tasting event has been a component of the Aquatic Effects Monitoring Program (AEMP) since 2005 and is enshrined in the Environmental Agreement and the Water License. It is the only traditional knowledge-driven program in the environmental monitoring at Snap Lake. It takes place every year in September.

The fish tasting event for 2013 was held on September 12, 2013. The participants were:

- Elders
    - LKDFN: Ernest Boucher (Fisher), Madelaine Drybone
    - NSMA: Wayne Langenhan (Fisher)
    - Tlicho: Nick Football
    - YKDFN: Mike Francis, George Tatsiechele
    - Interpreters: Bertha Catholique, Berna Martin
- Observers
    - SLEMA: Zhong Liu (Environmental Analyst)
    - Golder Associates Ltd.: Paul Vecsei

In addition to the above participants, Robert Sayine Sr and Leonard Beaulieu Sr from DKFN, and Angus Beaulieu and Eddie Fabien from NWTMN were also invited by De Beers for this annual event.

17 lake trout were caught. Among them, at least three were identified by Paul, who marked them during the 2013 summer AEMP project. Parasite was observed in two trout's stomachs, and one small round white fish was observed in one trout's stomach. The elders commented on the fish surface, tissues and taste. They thought the fish generally looked healthy and tasted good.

After the fish tasting event, the Environmental Analyst was invited for a brief site visit. The observations are summarized as below.

- East Cell.
    - Ready for paste deposition but not for slurry deposition.
    - Multi-ground levels confirmed.
- Starter Cell.
    - Approaching the capacity (Phase III).
- Sumps and ditches.

- The rehabilitation of PS3 done.
- Very low water levels confirmed.

➢ New incinerators and landfill.

- Two new incinerators installed.
- Landfill fenced – to prevent from wind-blowing garbage.

Photo 8. Fish Assessment (I)

Photo 9. Fish Assessment (II)

Photo 10. Fish Tasting (I)

Photo 11. Fish Tasting (II)

Assessment of the Mine

De Beers generally ran the Snap Lake Diamond Mine in a way that maintains the majority of its environmental commitments during the reporting period of 2012-2013.

De Beers continued its efforts in communicating with SLEMA. De Beers also improved the site water management.

- The total spill number and the number of the reportable spills from September 2012 to August 2013 are much less than the period from September 2011 to August 2012.
- De Beers hired a Superintendent for Environmental Monitoring.
- De Beers separated the clear mine water from the turbid mine water, and installed extra filters and second diffuser for water treatment and discharge.

SLEMA is concerned about the capacity issues of water treatment and processed kimberlite (PK) deposition in the North Pile.

- Mine water pumped out from the underground has been increasing, current capacity and measures taken during the past few years may not meet the challenge of increasing treatment demand.
- East Cell is ready for paste deposition but not for slurry deposition, Starter Cell is reaching the capacity of Phase III development, however, paste study has not been successful and slurry has to be handled in the Starter Cell. Although De Beers proposed a Phase IV development and got approval from the MVLWB, and solved the short-tem problem, long-term PK deposition still faces a challenge.

SLEMA also feels De Beers is lacking in long-term planning for the site environmental management. De Beers should learn from the past lessons, major spills from the North Pile, the paste study, and the WQO exceedances for Chloride in 2013 and TDS in the near future, to name a few. SLEMA recommends De Beers plan the site environmental management from a longer term perspective, and improve its proactive responding mechanism.

Assessment of Regulators

SLEMA not only monitors the environmental performance of De Beers Snap Lake Diamond Mine, but also the government agencies that regulate the Mine. In general, the regulators remain effective in making sure that De Beers runs the Mine in a way that maintains the majority of its environmental commitments.

Mackenzie Valley Land and Water Board (MVLWB): The MVLWB ran well managed processes for the review of the Interim Closure and Reclamation Plan (ICRP), the AEMP Re-evaluation Report and Design Plan, the Acid/Alkaline Rock Drainage and

Geochemical Characterization Plan and its revision, the 2012 Plume Characterization Study Report, the Rainbow Trout ELS Test, the Request for Increased Discharge, the Request for Starter Cell Raise and its Follow-up, the Request for Installing a Second Permanent Diffuser, and the Request for Modifying the Requirement about the Strontium Response Plan during the period of November 2012 to October 2013. The MVLWB also re-established the Snap Lake Working Group at the end of October 2013, and meetings are planned every quarter.

Aboriginal Affairs and Northern Development Canada (AANDC):

In 2012, SLEMA expressed concerns about the declined frequency of inspections, and looked forward to a return of a dedicated inspector and monthly inspections. Patrick Kramers took over Snap Lake file from Tracy Covey and was assigned as the dedicated inspector to the Snap Lake Diamond Mine in January 2013. There were **seven** inspections during the period of November 2012 to October 2013.

AANDC inspector Jason Brenan issued a Letter of Warning in Relation to NWT Spills 11-391 and 11-398 after one year and half of investigation, and ruled that:

- *"Aboriginal Affairs and Northern Development Canada does not intend to proceed with legal action against De Beers Canada Inc. regarding the release of mine water from the North Pile East Cell at the Snap Lake Diamond Mine that occurred on or prior to October 2nd & 11th, 2011. De Beers Canada Inc., however, is hereby given **official warning** that any further action or lack of appropriate action that results in future violations of the Water Licence or other statutory obligations may result in legal recourse pursuant to the Northwest Territories Waters Act or other acts as appropriate."*

The AANDC inspectors have been showing great diligence and initiative during inspection and investigation.

AANDC Water Resources Division (AANDC/WRD) contributed to the review of related requests, study reports, annual reports and plans within its jurisdiction.

Department of Fisheries and Oceans (DFO): DFO contributed to the review of related requests, study reports, annual reports and plans within its jurisdiction. DFO and SLEMA jointly review Chapters 6 and 7 of the AEMP Design Plan. SLEMA encourages the synergy among parties.

Environment Canada (EC): EC contributed to the review of related requests, study reports, annual reports and plans within its jurisdiction.

Department of Environment and Natural Resources (ENR/GNWT): ENR has been involved in the review of Environmental Agreement Annual Reports, wildlife issues, waste management issues and air quality issues for several years. However, SLEMA notes that ENR's contribution in these reviews and the quality of comments, has significantly increased since August 2013.

Overall SLEMA is pleased with the regulators' actions and responses in regards to their respective responsibilities for the Snap Lake Mine.

Table 7. Contributions to Documents Review

Document Reviewed	Valuable Comments from	
	Regulators	Aboriginal Parties
Proposed Changes for Air Quality Monitoring	ENR	
AEMP Re-evaluation Report and Design Plan	AANDC/WRD, DFO	YKDFN, NSMA
Acid/Alkaline Rock Drainage and Geochemical Characterization Plan	EC	
2012 Plume Characterization Study Report	DFO	
Rainbow Trout ELS Test	EC, AANDC/WRD	
Request on Increased Discharge	AANDC/WRD	
Environmental Agreement Annual Reports, 2010 and 2011	AANDC, ENR	
AEMP Design Plan, Chapters 6 and 7	DFO, AANDC/WRD	YKDFN, NSMA
Request on Starter Cell Raise	AANDC Inspector, AANDC/WRD	YKDFN
Request on Installing a Second Permanent Diffuser	DFO, ENR	NSMA
Interim Closure and Reclamation Plan	ENR, AANDC/WRD, EC	NSMA, YKDFN
Request on Modifying the Requirement about the Strontium Response Plan	AANDC/WRD, ENR, EC	NSMA
Follow-up to the Request on Starter Cell Raise	ENR, AANDC/WRD	YKDFN
AEMP Design Plan, revised Chapters 6 and 7	DFO, AANDC/WRD, ENR	NSMA
Revised Acid/Alkaline Rock Drainage and Geochemical Characterization Plan	AANDC/WRD, EC, ENR	

Summary of SLEMA Comments from 2012 to 2013

The comments and recommendations for those documents reviewed by SLEMA from November 2012 to October 2013 are summarized as follow.

Summary Table of SLEMA Comments from 2012 to 2013

Date	Addressee	Concern	Subject	Comment	Recommendation	Feedback/Response
10/31/ 2013	MVLWB		SLEMA modeling	Chloride modeling: Prediction in 2012 proved to be right, i.e. "the exceedance of WQO for Chloride is imminent". USEPA Guideline for Aquatic Life (230 mg/L) and Canadian Aesthetic Objective for Drinking Water (250 mg/L) may be exceeded within the Mine life. TDS modeling: Whole lake average TDS level may be 378 mg/L in January 2015, exceeding the Water Licence limit (350 mg/L)		
10/25/ 2013	De Beers		2012 Annual Reports	De Beers 2012 Submissions about Reclamation, AEMP, Lake Elevation, Environmental Agreement, Vegetation, and Air Quality were reviewed, and specific comments and recommendation are provided.		

Summary Table of SLEMA Comments from 2012 to 2013

Date	Addressee	Concern	Subject	Comment	Recommendation	Feedback/Response
06/26/ 2013	MVLWB	EA commitment	Starter Cell Raise	Two concerns are raised: Planned Starter Cell raise is not consistent with De Beers commitment during the Environmental Assessment. The approach to arguing a Starter Cell raise is not appropriate. In SLEMA's opinion, ZOI is not properly defined by De Beers		The MVLWB was not able to consider the Request as a modification but an amendment on July 18. After further review of the follow-up Request, the MVLWB approved the Request on September 25.
06/20/ 2013	De Beers and ENR		Caribou survey	The value of the contribution should equal the cost of the aerial survey but the redistributed funds should also include the costs of an analysis of distribution of the Bathurst herd relative to Snap lake. The suspension is for the 2013 season only. The 2013 Wildlife Effects Monitoring Program Report should include the rationale for the value of the ENR projects funded, and a detailed analysis of the distribution of the Bathurst herd and an assessment of aerial surveys and other methods. Following the work this season a discussion should be entered in late fall, between De Beers, ENR and SLEMA to discuss the allocation of resources and proposed projects for the following season		

Summary of SLEMA Comments from 2012 to 2013

Date	Addressee	Concern	Subject	Comment	Recommendation	Feedback/Response
05/17/ 2013	MVLWB		AEMP	SLEMA reviewed Sections 6 and 7 of the AEMP Design Plan with DFO. General and specific comments and recommendations are made for action levels.		The MVLWB held a technical workshop on May 29. De Beers had a follow-up meeting with SLEMA on June 13.
04/26/ 2013	MVLWB		WLAR 2012	Specific comments and recommendations are made for WLAR and its four appendices.		
04/26/ 2013	MVLWB	exceedances	SNP 02-20	It is noted that the concentrations of Chloride in SNP 02-20 (d), (e) and (f) were approaching the WQO (120 mg/L) at Snap Lake, and concentrations of Fluoride exceeded the WQO (0.12 mg/L) on February 10, 2013. The WQO for Chloride at the edge of the mixing zone may be exceeded in the next few months (late winter means poor mixing condition). SLEMA is concerned about the potential impacts of the existing and coming exceedances of WQOs.	It is recommended that the MVLWB require De Beers to conduct chronic toxicity tests (cladoceran crustacean Ceridaphnia dubia and alga Pseudokirchneriella subcapitata) for SNP 02-20 in the following month after a Chloride exceedance. In addition, SLEMA would like to reaffirm the comments dated March 11, 2013 on Rainbow Trout Early Life Stage (ELS) Toxicity Testing, i.e. "*SLEMA suggests that De Beers conduct the 70-day test for not less than 2 years or 4 comparable tests (same season) and compare the 7 and 30-day results (which De Beers will have) with the 70-day results*".	The MVLWB required further clarification before considering SLEMA's request on chronic toxicity tests, on June 24.

Summary of SLEMA Comments from 2012 to 2013

Date	Addressee	Concern	Subject	Comment	Recommendation	Feedback/Response
03/22 /2013	De Beers		WEMP	SLEMA has noted that the reports are lacking in analysis and details to De Beers' adaptive approach to monitoring. The report remains essentially unchanged, year on year. In comparison WEMP annual reports from both Diavik and Ekati are much more expansive with much greater clarity.	SLEMA recommended in 2012 that "the most efficient and effective approach for the 2012 multi-year comprehensive WEMP report is for SLEMA to be involved in providing suggestions prior to the analyses and report production rather than reviewing a final version. A collaborative approach will strengthen De Beer's commitment to environmental protection while enhancing the role of community-based monitoring". SLEMA would like to reiterate this recommendation and strongly encourages De Beers to consider this approach before completing this year's multi-year review.	De Beers responded on March 31 that the report is due on March 31, and cannot be changed at this late stage; De Beers has considered and incorporated some comments and recommendations.
03/11 /2013	MVLWB		Toxicity testing	SLEMA does not agree with the change from 70-day embro/alevin/fry (EAF) test to 7-day trout embryo viability test.	SLEMA suggests that De Beers conduct the 70-day test for not less than 2 years or 4 comparable tests (same season) and compare the 7 and 30-day results (which De Beers will have) with the 70-day results.	The MVLWB two directives on April 25: Station SNP 02-20 of the WL annual test be changed to the 30 day egg/alevin ELS test for Rainbow Trout; a 7 day (egg only) Rainbow Trout ELS test be conducted for every period of increased discharge.
03/04 /2013	MVLWB		Increased discharge	SLEMA has no concerns on De Beers request		

Summary of SLEMA Comments from 2012 to 2013

Date	Addressee	Concern	Subject	Comment	Recommendation	Feedback/Response
03/04/ 2013	AANDC	submission timeliness	EAAR 2011	EAAR 2011 was submitted in December 2012. 5 specific comments were made.	General comments and recommendations are the same as the ones for EAAR 2010	
03/04/ 2013	AANDC	submission timeliness	EAAR 2010	EAAR 2010 was officially submitted in 2013. 6 specific comments were made. The EAAR for 2010 fulfills the criteria established within the Environmental Agreement for a successful document, but it does very little to go beyond the basic requirements. The document is lacking in illustrative presentation	For the purpose of reasonable expectation, SLEMA would like to request that there be an agreement, between De Beers and the reviewing parties, that this submission have an expected submission date in August of the following year. Although this is not required, it would be nice to see photographs and illustrations aiding and complimenting the text in future versions of this report.	
02/27/ 20133	MVLWB		ARD	The Submission fulfills the requirement of the Water Licence. SLEMA does not have any concerns.		The MVLWB approved the Plan as submitted on April 25
02/26/ 2013	MVLWB	Diffuser performance	2012 Plume Characterization Study Report	SLEMA is concerned about the air entrainment issue of the diffuser plume and the stratification issue during the early open-water season in Snap Lake.	SLEMA expects a follow-up report to address these two issues.	De beers responded on March 21 that the issue was resolved, and air entrainment is no longer a concern. The MVLWB approved the Report on April 25

Summary of SLEMA Comments from 2012 to 2013

Date	Addressee	Concern	Subject	Comment	Recommendation	Feedback/Response
02/12/ 2013	MVLWB	Downsized sampling	AEMP	The AEMP Re-evaluation Report is satisfactory. The proposed number of water quality and benthic invertebrate sample locations within the main basin of Snap Lake decreases by 53% for water quality and 36% for benthic invertebrate. At this point in time the proposed reductions in sampling within the Snap Lake main basin have been insufficiently rationalized.	The current AEMP design should be maintained until additional rationalization has been provided. DeBeers should also discuss how the current AEMP addresses the spatial criteria in the MVEIRB (2003) impact definitions for water quality and benthic macroinvertebrates. 11 specific recommendations were made.	The MVLWB approved the AEMP Re-evaluation Report as submitted, approved the AEMP Design Plan with conditions, and approved the Workplan for Section 6and 7 of the AEMP Design Plan on March 28.
12/21/ 2012	MVLWB	North Pile Management	Geo-technical site inspection	SLEMA was satisfied with the technical memorandum and supports all of the recommendations made by Golder Associates engineers, and pointed out that key issues #2 and #3 were not fully addressed in De Beers response letter.	De Beers to address the communication issue and the geotechnical data issue. The MVLWB to request annual reporting of the follow-up risk assessment and management activities for the North Pile facility, in the Water Licence Annual Reports.	De Beers responded on Feb. 13, and addressed the two outstanding key issues.

Acronyms

AANDC – Aboriginal Affairs and Northern Development Canada
AdMP – Adaptive Management Plan
AN – Ammonia Nitrate
ARD – Acid Rock Drainage
AEMP – Aquatic Effects Monitoring Program
CCME – Canadian Council of Ministers of the Environment
DFO – Department of Fisheries and Oceans
DKFN – Deninu Kue First Nation
DO – Dissolved Oxygen
EA – Environmental Agreement
EAR – Environmental Assessment Report
EC – Environment Canada
EQC – Effluent Quality Criterion
EMS – Environmental Management System
ENR – Environment and Natural Resources (GNWT)
GNWT – Government of the Northwest Territories
INAC – India and Northern Affairs Canada (before May 2011)
LKDFN – Lutsel Ke Dene First Nations
MVLWB – Mackenzie Valley Land and Water Board
NSMA – North Slave Metis Alliance
PK – Processed Kimberlite
SLEMA – Snap Lake Environmental Monitoring Agency
SNP – Surveillance Network Program
TDS – Total Dissolved Solids
TK – Traditional Knowledge
WLAR – Water Licence Annual Report
WQO – Water Quality Objective
YKDFN – Yellowknives Dene First Nations

Financial Statements

Snap Lake Environmental Monitoring Agency

Financial Statements

March 31, 2013

Snap Lake Environmental Monitoring Agency

Financial Statements

March 31, 2013

Independent Auditors' Report

To the Shareholders of Snap Lake Environmental Monitoring Agency

We have audited the accompanying financial statements of Snap Lake Environmental Monitoring Agency, which comprise the statement of financial position as at March 31, 2013, and the statements of operations, changes in net assets, and cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements
Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal controls as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility
Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian accounting standards for not-for-profit organizations. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditors consider internal control relevant to the Agency's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Agency's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained in our audit is sufficient and appropriate to provide a basis for our audit opinion.

Opinion
In our opinion, the financial statements present fairly, in all material respects, the financial position of Snap Lake Environmental Monitoring Agency as at March 31, 2013, and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

Yellowknife, Canada
September 17, 2013 **Chartered Accountants**

Snap Lake Environmental Monitoring Agency

Statement of Operations

For the year ended March 31,	2013	2012
Revenue		
De Beers Canada Mining Inc.	**$ 505,000**	$ 505,000
Transferred from deferred revenue	**476,991**	487,133
Transferred to deferred revenue	**(480,835)**	(476,991)
	501,156	515,142
Expenses		
Accounting and legal	**10,976**	11,788
Bookkeeping	**9,450**	9,450
Honorarium	**154,330**	150,114
Insurance	**2,421**	2,600
Interest and bank charges	**1,633**	1,105
Meetings - catering, translation, and rentals	**15,861**	27,261
Meetings - travel and accommodation	**44,697**	54,827
Office and administration	**22,235**	21,125
Professional fees	**10,461**	2,688
Rent	**33,894**	32,970
Wages and benefits	**194,385**	197,147
	500,344	511,076
Excess of revenues over expenditures before other item	**812**	4,066
Other expenses		
Loss on sale of capital assets	**812**	-
Purchase of capital assets	**-**	4,066
	812	4,066
Excess of revenues over expenditures	**$ -**	$ -

See accompanying notes

Snap Lake Environmental Monitoring Agency

Statement of Changes in Net Assets

For the year ended March 31,		2013		2012
Net assets, beginning of year (note 3)	**$**	**5,530**	$	10,008
Excess of revenues over expenditures		**-**		-
		5,530		10,008
Purchase of capital assets		**-**		4,068
Amortization		**(2,569)**		(8,546)
Net assets, end of year	**$**	**2,959**	$	5,530

See accompanying notes

Snap Lake Environmental Monitoring Agency

Statement of Financial Position

As at,		**March 31, 2013**	March 31, 2012	April 1, 2011
Assets				
Current				
Cash	**$**	**508,632**	$ 512,132	$ 529,898
Prepaid expenses		**5,576**	5,971	8,029
		514,208	518,103	537,927
Capital assets (note 4)		**2,147**	5,530	10,009
	$	**516,355**	$ 523,633	$ 547,936
Liabilities				
Current				
Accounts payable and accrued liabilities (note 5)	**$**	**24,965**	$ 41,112	$ 50,795
Deferred revenue (note 6)		**488,431**	476,991	487,133
		513,396	518,103	537,928
Net Assets				
Investment in fixed assets		**2,959**	5,530	10,008
	$	**516,355**	$ 523,633	$ 547,936

Approved on behalf of the board:

__ Director

__ Director

Snap Lake Environmental Monitoring Agency

Statement of Cash Flows

For the year ended March 31,	2013	2012
Cash provided by (used for)		
Operating activities		
Excess of revenues over expenditures	**$ 812**	$ 4,066
Change in non-cash working capital items		
Prepaid expenses	**395**	2,058
Accounts payable and accrued liabilities	**(16,147)**	(9,681)
Deferred revenue	**11,440**	(10,142)
	(3,500)	(13,699)
Investing activity		
Purchase of capital assets	**-**	(4,067)
Decrease in cash	**(3,500)**	(17,766)
Cash, beginning of year	**512,132**	529,898
Cash, end of year	**$ 508,632**	$ 512,132

Supplemental cash flow information (Note 7)

1. Nature of operations

Snap Lake Environmental Monitoring Agency ("the Agency") is a not-for-profit organization incorporated under the *Societies Act* of the Northwest Territories. It is exempt from income tax under Section 149(1)(l) of the *Income Tax Act*.

The mission of the Agency is to oversee environmental management of the De Beers Snap Lake Diamond Project.

The Agency was incorporated and commenced operations on December 10, 2004.

2. Significant accounting policies

These financial statements are prepared in accordance with Canadian accounting standards for not-for-profit organizations. The significant policies are detailed as follows:

(a) Financial instruments- recognition and measurement

(i) Measurement of financial instruments

The Agency initially measures its financial liabilities at fair value adjusted by, in the case of a financial instrument that will not be measured subsequently at fair value, the amount of transaction costs directly attributable to the instrument.

The Agency subsequently measures its financial assets and liabilities at amortized cost.

Financial assets measured at amortized cost include cash and accounts receivable.

Financial liabilities measured at amortized cost include accounts payable and accrued liabilities and deferred revenue

No financial assets or financial liabilities have been subsequently measured at fair value.

2. Significant accounting policies (continued)

(ii) Impairment

Financial assets measured at amortized cost are tested for impairment when there are indicators of possible impairment. When a significant adverse change has occurred during the period in the expected timing or amount of future cash flows from the financial asset or group of assets, a write-down is recognized in net income. The write down reflects the difference between the carrying amount and the higher of:

- the present value of the cash flows expected to be generated by the asset or group of assets;

- the amount that could be realized by selling the assets or group of assets;

- the net realizable value of any collateral held to secure repayment of the assets or group of assets.

When the events occurring after the impairment confirm that a reversal is necessary, the reversal is recognized in net income to a maximum of the accumulated impairment loss recorded in respect of the particular financial asset.

(b) Capital assets

Capital assets are recorded at original cost plus any costs of betterment less accumulated amortization and excludes any assets not in current use. Amortization is calculated by the declining balance method at the annual rates set out in note 4.

(c) Investment in capital assets

Investment in capital assets represents the accumulated cost of acquired capital assets net of disposals and amortization.

(d) Revenue recognition

The Agency follows the deferral method of accounting. The Agency recognizes unrestricted contributions when they are received or receivable if the amount receivable can be reasonably estimated and its collection is reasonably assured. Restricted contributions are recognized as revenue when the terms and conditions are met. The portion of revenue related to projects not completed at year end is deferred. This will be brought into income as the goods and services are acquired. Contributions for projects for which unexpended funds must be reimbursed at the end of the fiscal year are shown as contributions repayable.

2. Significant accounting policies (continued)

(e) Use of estimates

The preparation of financial statements in conformity with Canadian accounting standards for not-for-profit organizations requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. By their nature, these estimates are subject to measurement uncertainty. The effect of changes in such estimates on the financial statements in future periods could be significant. Accounts specifically affected by estimates in these financial statements are .

3. Impact of the Change in the Basis of Accounting

These are the Agency's first financial statements prepared in accordance with Canadian accounting standards for not-for-profit organizations. The 2012 comparative financial statements include an opening balance sheet as at April 1, 2011 that provides for the impact of the transition. There were no changes required to the comparative balances presented as a result of this new framework

Elective exemptions

The rules for transition to Canadian accounting standards for not-for-profit organizations normally require that an enterprise prepare its opening statement of financial position using the standards that will be followed thereafter. However, certain elective exemptions are available. In preparing the opening statement of financial position referred to above, the Agency used none of the elective exemptions.

4. Capital assets

	2013				2012
	Rate	**Cost**	**Accumulated amortization**	**Net book value**	Net book value
Furniture and fixtures	20%	**$ 9,925**	**$ 7,777**	**$ 2,148**	$ 2,685
Computer equipment	45/55%	**7,298**	**7,298**	**-**	2,845
Computer software	100%	**15,334**	**15,334**	**-**	-

2. Significant accounting policies (continued)

$	**32,557**	**$** **30,409**	**$** **2,148**	$ 5,530

5. Accounts payable and accrued liabilities

		2013	2012
Accounts payable and accrued liabilities	**$**	**21,614**	$ 41,112
Government remittances payable		**3,351**	-
	$	**24,965**	$ 41,112

6. Deferred revenue

		2013	2012
Opening	**$**	**476,991**	$ 487,133
Adjustment for excess of revenues over expenditures- De Beers		**11,440**	(10,142)
	$	**488,431**	$ 476,991

7. Supplemental cash flow information

		2013	2012
Interest paid	**$**	**1,633**	$ 1,105

8. Economic dependence

The Agency receives all of its contribution funding from De Beers Canada Mining Inc. Management is of the opinion that operations would be significantly affected if the funding was

substantially curtailed or ceased.

9. Commitments

The Agency has entered into a premise lease agreement commencing June 1, 2013 and expiring May 31, 2016 for $2,900 per month plus GST.

10. Comparative figures

The financial statements have been reclassified, where applicable, to conform to the presentation used in the current year.

11. Financial instruments

The following section describes the Agency's financial risk management objectives and policies and the Agency's financial risk exposures:

Credit risk

Credit risk arises from the potential that a counter party will fail to perform its obligations. The Agency is exposed to credit risk from contributors. However, De Beers Canada Mining Inc. typically provides funding in advance which mitigates the risk.