



Box 1500
Yellowknife, NT X1A 2R3

Your file - Votre référence

Our file - Notre référence

August 14, 2006

Mr. Sean Brennan
President and Chief Operating Officer
EKATI Diamond Mine
BHPBilliton Diamonds Inc.
#1102 4920-52nd. Street
YELLOWKNIFE NT X1A 3T1

Dear Mr. Brennan

**Re: Minister's Report on the BHPBilliton, Ekati Diamond Mine 2003-2005
Environmental Impact Report 2006**

Indian and Northern Affairs Canada (INAC), the Government of the Northwest Territories (GNWT), the Independent Environmental Monitoring Agency and the Aboriginal Peoples have reviewed the Environmental Impact Report pursuant to Article V section 5.2 of the Environment Agreement. We are providing the following comments and attachments accordingly.

Following the advice from the Deputy Minister of the Government of the Northwest Territories (GNWT), the Environmental Impact Report is deemed unsatisfactory (Attachment 1). Section 5.2 (f) requires that "within sixty (60) days of the receipt by BHPB of the Minister's Report, BHPB shall reply to the Minister's Report and provide the Minister with a revised Environmental Impact Report which addresses satisfactorily the deficiencies described in the Minister's Report."

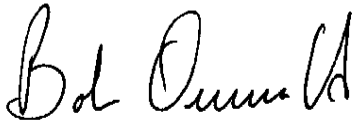
With respect to the impact or compliance issues, INAC and the Monitoring Agency acknowledge that the reports and remedial actions taken or proposed in the Environmental Impact Report are satisfactory. We have identified some concerns (Attachments 2 and 3) and we request that BHPB consider addressing these items in the revised Environmental Impact Report. As a point of clarification, items mentioned in Attachments 2 and 3 are not part of the Minister's Report.

.../2

As a first step, I suggest that BHPBilliton and the Government of the Northwest Territories meet to discuss their comments on the EIR as suggested by both parties in previous correspondence. We look forward to working with the parties on the revised Environmental Impact Report.

Please contact Mr. David Livingstone, Director of Renewable Resources and Environment at 669-2647 for further details.

Sincerely,



Bob Overvold
Regional Director General
Northwest Territories

Encl: GNWT- Attachment 1
INAC - Attachment 2
Monitoring Agency - Attachment 3

c.c. R.P. Bailey, Deputy Minister, GNWT-ENR
Dr. Bill Ross, Chair Independent Environment Monitoring Agency
Stephen Harbicht, Head, Environmental Assessment, Environment Canada
Dorothy Majewski, Manager Habitant, Department of Fisheries and Oceans
David Livingstone, Director Renewable Resources and Environment
David Scott, Manager, Engineering-BHPB
Annette Hopkins, Director, Operations
Malcolm Robb, Manager, Mineral Development

ATTACHMENT 1



Northwest
Territories Environment and Natural Resources

Mr. Robert Overvold
Regional Director General
Indian and Northern Affairs Canada
4914-50th Street, Bellanca Building
PO BOX 1500
YELLOWKNIFE NT X1A 2R3

Dear Mr. Overvold:

**Environmental Agreement Section V.2 (c)
BHP Billiton Diamonds Inc., Environmental Impact Report 2006**

Further to our letter of June 30, 2006, indicating that the Government of the Northwest Territories (GNWT) finds the Environmental Impact Report (EIR) 2006 by BHP Billiton Diamonds Inc. (BHPB) to be unsatisfactory, we have enclosed comments in support of our position.

In your subsequent letter of July 4, 2006 to Mr. Sean Brennan, you indicated that the GNWT has been unable to provide a detailed description of our concerns "within the time line set out in the Environmental Agreement (EA)." We believe this interpretation of the EA is incorrect. Our interpretation of the EA as indicated in our letter to you on June 30, 2006, is that comments in support of our position could be submitted following our initial letter and well in advance of the 90 day time line set out in the EA. By providing your Office with our comments today, we are fully meeting the obligations as set out in Article 5.2(b) and (c) of the EA.

The EA will continue to have effect for many years to come. Perhaps we should discuss our apparent different interpretations of these articles in order to present a more coordinated approach to industry.

While the EIR reflects a significant effort by BHPB in compiling data from many environmental monitoring program reports required under their water licence, the EA and special effects studies that are the initiative of the company, our comments and questions focus on the EIR's conclusions and statements about the mine's effects on the environment that are, in our opinion, unsubstantiated.

As indicated in BHPB's introductory section of the EIR, the EIR is the culmination of three years of environmental monitoring data and as such plays an important role in informing the public about environmental activities at Ekati mine. The GNWT believes it is important that the information in the EIR reflect the views of all stakeholders and, in the case of effects on the environment, it must identify areas of uncertainty where they exist.

.../2



- 2 -

In addition to our comments related to the EIR, we have concerns regarding BHPB's approach to providing "final" reports for review, rather than draft documents for comment. Providing drafts is viewed by the GNWT as an effective method of consultation as required by Article 5.2(b) of the EA and would allow the final EIR to better reflect the input of interested parties. In this manner, better information could be provided to the public regarding the impact of the mine on the environment.

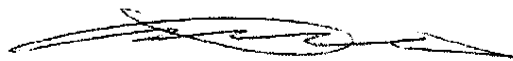
The current approach results in potentially misleading and flawed reports finding their way into the public domain.

The GNWT brought forward similar concerns in 2003 to those described in the current review of the EIR in anticipation that outstanding issues could be resolved through collaboration with BHPB. Unfortunately, attempts to work with BHPB to resolve these have not been successful to date. As a result, we are obligated to bring our concerns forward through the EIR review process outlined in the EA in order to ensure that, as a signatory to the EA, our comments and suggestions are addressed by BHPB. In doing so, we request that the comments provided be included in the Minister's Report to BHPB.

It is understood that in order for BHPB to comply with licences and agreements numerous documents must be produced annually. We believe that the timing of reports and the review process may need to be revisited to ensure that reviews are conducted in a timely and consistent manner, particularly with respect to wildlife reporting. Since wildlife studies are often conducted in the field during a narrow window of opportunity, the timing of Wildlife Effects Monitoring Program reporting is important to ensure GNWT input to these studies is considered in advance of field work conducted by BHPB.

We anticipate meeting to discuss our comments on the EIR in September 2006 as suggested by BHPB staff. We look forward to working with BHPB and your Office so that a revised EIR that is satisfactory to all parties can be finalized.

Sincerely,



R. P. Bailey
Deputy Minister

Enclosure

EKATI Diamond Mine Environmental Impact Report 2006 GNWT Comments

The Government of the Northwest Territories (GNWT) is a signatory to the Environmental Agreement (EA) for the EKATI Diamond Mine operated by BHP Billiton Diamonds Inc. The GNWT has reviewed the Environmental Impact Report (EIR) 2006 submitted by the company as a requirement of the EA (Article V, Section 5.2) and offers the following comments that were prepared by the Department of Environment and Natural Resources (ENR):

Section 1 - Air Quality

General

The review found that the Sections of the EIR dealing with air quality and emissions contained inaccuracies, questionable analysis and misleading, unsubstantiated claims and conclusions regarding the impact of mine emissions on ambient air quality and the environment. These deficiencies are due in part to the actual data collected and reported (limited and questionable quality), as well as the lack of a comprehensive air quality and emissions monitoring program to collect the appropriate data to provide the basis for trend analysis and impact assessment. While the company should be given credit for its emission mitigation efforts identified in sub-Section 3.1.3, including the Energy Smart Program, which appears to have resulted in decreased fuel consumption, their efforts do not offset the concerns regarding overall air quality and emissions management at the mine and the many deficiencies in the EIR.

Article VII, Section 7.2(h) and (i) of the EA states that air quality and emissions will be monitored. The company committed as far back as December 1995 (during the environmental assessment process - EARP Panel request for additional information) to implement an air quality monitoring program including continuous SO₂ and NO₂ analysis, as well as emission source testing. To date, the programs have not been implemented, although sub-Section 5.2.3.2 of the EIR indicates that BHPB is now planning to install a continuous ambient monitoring station.

Currently, there is limited, or no direct measurement of air quality pollutants at EKATI, with the monitoring focus being on measuring depositional impacts. While the impacts of airborne contaminants depositing to land and water is an obvious concern, there are potential impacts directly attributed to pollutant concentrations in ambient air as well as obligations to demonstrate compliance with NWT and federal air quality standards/guidelines. The only ambient air quality monitoring conducted is for Total Suspended Particulate (TSP). This monitoring is compromised due to limited sampling equipment (only 2 original samplers, reduced to 1 in 2003) in questionable locations; poor maintenance and servicing resulting in data loss; and intermittent operation (summer months only). The monitoring lacks both spatial and temporal coverage and cannot be used to reliably demonstrate compliance with particulate-based ambient air quality standards. For the monitoring data that is collected, the EIR presents little comparative

data with respect to year-to-year trends or to the original predictions of the 1995 Environmental Impact Statement (EIS).

There is no direct monitoring of mine emissions. Annual emissions are estimated by the company but not presented in a manner that allows year to year trend analysis or comparison to the emissions used in the initial environmental assessment (EIS, 1995). This is significant in that emissions must remain comparable to, or lower than, those used in the original EIS modelling assessment for the predictions and conclusions in the EIS to remain valid. It is recognized that the company submits emissions information to federal databases (GHG Voluntary Challenge Registry and National Pollutant Release Inventory). These emission totals need to be broken down by emission source and reported in the EIR along with discussion of trends and comparison to the 1995 EIS.

The limited ambient and emission monitoring cannot fulfill the goals outlined in Article VII, Section 7.1 of the Environmental Agreement (EA), which are to:

- Measure compliance with regulatory requirements (e.g. Federal or GNWT ambient air quality standards/objectives),
- Determine the environmental effects of the project (e.g. year to year trend analysis),
- Test impact predictions (e.g. comparison to 1995 EIS dispersion modelling predictions) and
- Measure the performance of operations and effectiveness of impact mitigation (e.g. the company's Energy Smart Program).

The above EA goals are paraphrased in the Introduction (Section 1) of the EIR as being some of the specific objectives of the EIR. However, in ENR's opinion the Sections on air quality and emissions fail to achieve these objectives.

The current air quality monitoring program is insufficient to substantiate the company's claim at Sub-Section 6.2 of the EIR, which states,

"Over the last three years, EKATI activities have not significantly adversely affected air quality."

Likewise, the determination of 'negligible' residual effects attributed to air emissions and dust in sub-Section 7.1 lacks credibility, given the scarcity of data on which to base the determination.

The lack of a comprehensive air quality and emissions monitoring program which addresses the variety of contaminant emissions and their spatial and temporal distribution does not allow any meaningful conclusions to be drawn regarding potential impacts of mine emissions on ambient air quality and the environment.

The issues and concerns regarding the monitoring of air quality and emissions are documented and have been brought to the attention of the company on previous occasions (Environment Canada (EC) letter dated June 13, 2003 to Indian and Northern

Affairs Canada (INAC); GNWT letter dated July 23, 2003 to BHPB; and monitoring agency (IEMA) letter dated May 14, 2003 to BHPB, including SENES letters dated May 5 & 6, 2003 to IEMA). In 2003 the company agreed to reassess mine emissions and use dispersion modelling to re-evaluate the impacts on air quality and the environment following direction from IEMA (letter dated July 2, 2003). The results of the modelling were to be used to assist in redesigning the company's ambient air quality monitoring program. The modelling project is still not complete, which has delayed any redesign of the monitoring programs. IEMA also directed the company to work in consultation with air quality specialists in the GNWT's Department of Environment and Natural Resources (ENR) and EC (letters dated July 3, 2003 and April 19, 2004 to BHPB). To date, consultation has been limited to EC and ENR providing detailed comments and concerns to the company during the reassessment and modelling process (letters dated April 21, 2004 and April 5, 2005). No feedback or acknowledgment of receipt of the information has been provided by BHPB. Poor communication and cooperation has been a feature in ENR's dealings with the company. The issues surrounding the dispersion modelling and air quality in general are summarized in the letter from IEMA to the company dated May 8, 2006.

The inadequacies of the company's ambient air quality monitoring program can ultimately be traced back to the Environmental Agreement. The EA requires the company to develop and implement environmental management plans and monitoring programs but provides little detail on the content of these plans and programs or the reporting expected and, consequently, gives little direction to the company. Regardless, the company has been made well aware of the concerns and the desire of EC and ENR to assist in addressing them. The EA contemplated an ongoing, cooperative approach to development of management plans and monitoring programs. Article VI, Section 6.1(a) of the EA requires the company to develop air quality management plans and Section 6.3(b) further directs that,

"The Operating Environmental Management Plan shall be developed and updated in conjunction and in cooperation with all relevant agencies of Canada, the GNWT and the Monitoring Agency."

Specific Comments

3.1.3 Energy Smart Program

- The company's implementation of the Energy Smart Program is commendable and it appears to have had some success in reduction of fuel use and associated emissions. A comprehensive air quality and emissions monitoring program would allow these emission reductions to be quantified and assessed.
- Combustion of waste oil should be undertaken with caution as it can contain metals and other contaminants, which may be released to the atmosphere on combustion. The waste oil feedstock burned in the clean-burn furnaces in the Warming Shed and the Mine Services Building should be tested on an annual basis to confirm acceptable concentrations of contaminants. Guidance on appropriate contaminant concentrations can be found in the GNWT's *Used Oil and Waste Fuel Management Regulations*.

- It is stated that ultra low sulphur diesel (0.035%) is used as fuel for underground mining equipment. However, Table 3.2-1 in sub-Section 3.2 indicates that a higher sulphur content (0.095%) diesel fuel is used elsewhere at EKATI. This higher percent sulphur is almost double what the company committed to use in the 1995 EIS (0.095% v. 0.05%). The sulphur content of fuel is significant because it governs the SO₂ emissions when the fuel is burned. Burning a higher sulphur content diesel should not be identified as an 'adaptive management action' to minimize emissions (see listing in Table 3.2-1).
- All incinerators should be able to comply with the emission levels specified in the Canada-wide Standard for Dioxins and Furans and the Canada-wide Standard for Mercury Emissions. In addition to numerical emission limits, both standards specify methods for demonstrating compliance to ensure emissions of these persistent, bioaccumulative toxics are minimized.

4.2.2.1 Air Emission Calculations

- Annual emissions of SO_x, NO_x and GHG's are calculated and reported but not Particulate Matter (PM), especially PM₁₀ and PM_{2.5}. These parameters are reported to the National Pollutant Release Inventory – they should be included in the EIR.

4.2.2.2 High Volume Air Sampling (HVAS)

- The statement that, "The Northwest Territories do not have an air quality objective for 24-hour TSP." is incorrect. The NWT has had both a 24-hour and an annual standard for TSP since the early 1990's. The NWT Ambient Air Quality Standards for TSP are identical to the federal Objectives.
- Termination of sampling at TSP 1 was recommended by IEMA because the sampling location (on the roof of the accommodations building) did not meet the definition of ambient monitoring or comply with established monitoring station siting criteria. The monitoring site was located within the active workplace area and subject to undue influence from an emissions source – e.g. building vents.
- If the sampling equipment does not operate well in winter conditions, the company should consider the use of more appropriate equipment (e.g. continuous monitors) that are housed in an indoor location.

4.2.2.3 Snow Sampling

- Snow sampling locations were adjusted based on draft modelling results but there does not appear to have been any consultation undertaken with IEMA or other interested parties.

4.2.2.5 Special Effects Studies – CALPUFF Modelling

- The discussion in the opening paragraph implies that the ENR and EC reviewers were in agreement with the decision to focus the modelling solely on fugitive dust and acid deposition. In fact, both ENR and EC recommended that a comprehensive assessment of facility emissions be conducted, including gaseous (SO₂ and NO_x) and fine particulate (PM₁₀ and PM_{2.5}) emissions to determine the full extent of facility impacts on air quality and the environment. The decision to

limit the assessment to only fugitive dust and acid deposition is not supported by ENR.

- There was limited consultation with ENR and EC throughout the modelling project despite ENR and EC having supplied detailed comments on proposed modelling approaches and the emissions inventory to be used (letters dated April 21, 2004 and April 5, 2005). ENR and EC have not seen the results of the dispersion modelling, although Section 4.2.2.6 indicates that preliminary results were released in Report 74 in 2005.
- The issues surrounding the CALPUFF modelling and air quality in general are summarized in the letter from IEMA to the company dated May 8, 2006.

5.2 Air

- The title of this Section is 'VECs: Performance versus Predictions' yet the following sub-Sections provide little, if any, comparative analysis to the original 1995 EIS or even year-to-year trend discussion.

5.2.1 Predictions in 1995

- The company has been made aware of EC's and ENR's concerns regarding the 1995 air quality assessment approach and debatable conclusions. The 1995 modelling predicted ambient pollutant concentrations only at the claims boundary and identified this as the point at which compliance with air quality standards is determined. This is not appropriate as the point of maximum concentration is likely to occur closer to the mine. This approach also implies that there is no obligation to protect air quality inside the claim block. The more appropriate approach is to determine the active mine area (which represents the 'workplace'); the areas beyond this zone become the locations for determining maximum predicted concentrations and compliance with ambient standards. The 1995 modelling assessment predictions should not be used as a basis for demonstrating past compliance with ambient air quality objectives.
- The 1995 assessment may have predicted negligible acid deposition impacts from NO_x and SO₂ emissions. However, the current emissions regime at the mine differs considerably from that assessed in 1995 and the predictions and conclusions of the 1995 EIS may not be valid now. In 2004, the company reported emissions of 3624 tonnes of NO_x and 148 tonnes of SO₂ to the National Pollutant Release Inventory. Review of the 1995 EIS indicates that NO_x emissions were estimated at 2000 tonnes/year.
- The discussion of dust impacts on vegetation is confusing. The theory appears to be that because local rock is used to construct haul roads, etc there will be no impact to vegetation from any dust generated. Presumably, this conclusion is based on the idea that this rock would have weathered in place anyway and its chemical constituents would be available to the soil and vegetation. However, this discounts the accelerated break down of haul road rock as it is subjected to the crushing actions of vehicles, making the constituent chemicals available in the environment in much greater quantities and at a much faster rate. It also ignores the physical affects of dust on vegetation such as smothering of leaves,

reduced photosynthesis, as well as the affects of accelerated snow melt due to dusting of snow.

5.2.2 Results of Monitoring 1997 to 2002

- The air quality section of the 2003 Environmental Impact Report was based on an assessment conducted by MDA Consulting Ltd entitled EKATI Diamond Mine Air Quality Monitoring Report 2001 (MDA, 2002). Numerous deficiencies and concerns regarding this report were identified to the company by EC (letter dated June 13, 2003 to INAC), ENR (letter dated July 23, 2003 to BHPB) and IEMA (IEMA letter dated May 14, 2003 to BHPB; SENES letters dated May 5 & 6, 2003 to IEMA).
- Snow chemistry results cannot demonstrate compliance with air quality objectives – the two are not comparable.
- As with the 1995 EIS, flawed reports should not be cited as demonstrating previous acceptable environmental performance.

5.2.3 Results of Monitoring 2003 to 2005

5.2.3.1 Air Emissions

- This section focuses on greenhouse gas (GHG) emissions. There is no discussion of criteria air contaminant (CAC's) emissions - e.g. NO_x, SO₂ and Particulate Matter.
- The GHG emission tonnage presented represents the average for the 3 years – presentation of the individual year values would have been useful for year-to-year comparison.
- No breakdown of emissions (especially CAC's) by parameter, source and year is presented to allow comparison to the original estimates used in the 1995 EIS. This would enable a determination of whether the predictions and impact conclusions presented in the original EIS remain valid for the current mine operations.
- There is no discussion of long term trends in emission data or comparison of the 2003-2005 data to previous EIR's.
- ENR suggests that, for emissions estimates, a matrix table format should be used for each contaminant. The first column would list the various emission sources as identified in the 1995 EIS plus any subsequent additional sources; the second column would list the emission estimates used in the 1995 EIS; subsequent columns would list the emission estimates for each year. This format would provide a simple, easy to use method of comparison over time.

5.2.3.2 Total Suspended Particulates

- The lack of timely repairs to the sampler and resultant 2005 TSP data loss is a concern for a monitoring program already compromised by too few samplers and an inability to sample year round. HVAS are not difficult to maintain, assuming an adequate spare parts inventory and a trained technician are available. Had the second sampler on the roof of the Accommodations Building been maintained, it could have replaced the defective equipment at Grizzly Lake.

- Regarding the HVAS on the roof of the Accommodations Building, minutes from the June 6, 2004 IEMA meeting indicate that the Directors recommended relocation of this sampler to Cell B at the Long Lake Containment Facility to address dust concerns in that location. No explanation is provided as to why this recommendation was not implemented.
- Presentation of individual HVAS TSP results should be included (e.g. in an Appendix).
- No comparative analysis is presented (e.g. year by year trend or comparison to predicted TSP concentrations in the 1995 EIS)
- The decision to install a new air quality monitoring station featuring gaseous analyzers is commendable. However, it is unclear what criteria were used in determining the location at Grizzly Lake. As stated in sub-section 4.2.2.2, the location of equipment is an important aspect of air quality monitoring. It is suggested that the dispersion modelling discussed at sub-section 4.2.2.5 would greatly assist in determining the appropriate location for the new station. ENR is willing to provide advice on this matter.
- ENR suggests that continuous monitoring of NO_x, as the largest emitted gaseous contaminant (3624 tonnes in 2004), should also be undertaken at the new monitoring station.
- Given the issues identified for HVAS TSP sampling, the company should also consider implementing alternative sampling methodology for particulate (e.g. continuous sampling) at the new monitoring station.
- Table 5.2-1 is incorrect. The numerical standard identified for TSP is actually the NWT standard for fine particulate matter (PM_{2.5}). The NWT standards for TSP are missing.
- The relocation of the Accommodations Building HVAS should also be based on dispersion modelling guidance and consultation with ENR.
- In ENR's letter to BHPB dated July 23, 2003, the HVAS sampling protocols, filter handling procedures and filter conditioning in the company 'in-house' laboratory were questioned as being outside of accepted analytical procedures for particulate sampling. The use of 'non-standard' sampling and laboratory procedures raises serious questions as to the validity of the TSP data. No response was received from the company to this letter. What HVAS sampling protocols and filter handling procedures are currently in place?
- The average TSP values from Grizzly Lake are based on no more than 5 months of sampling in any sample year and it is inappropriate to compare them to annual air quality standards.
- The TSP results at EKATI and those measured in Yellowknife are from different monitoring scenarios and therefore not comparable. The sampler in Yellowknife represents an urban environment and is appropriately located to represent emissions sources of interest such as spring road dust whereas the sampler(s) operating at EKATI represent a pristine arctic environment and the impacts of industrial emissions. It would be more appropriate to compare TSP concentrations measured at EKATI to typical values expected in a pristine arctic environment to gauge the impacts of the company's activities on air quality.

Also, a single TSP sampler is unlikely to provide the spatial coverage required to capture the location of maximum impact (highest TSP concentration) from the numerous widely dispersed emission sources at EKATI. The poor temporal coverage of the sampling program adds to the credibility gap.

- It is incorrect to state that 24-hour average TSP concentrations in Yellowknife **often** exceed the ambient air quality standard. Exceedences are **only** observed following the spring thaw when winter gravel is present on roads. As a result of timely street sweeping efforts by the City of Yellowknife, the annual number of exceedences over the last 5 years has ranged from 1 to 3 (average of 56 samples/year).

5.2.3.3 CALPUFF Air Dispersion Modelling

- The opening paragraph appears to contradict statements by the company indicating that modelling of gaseous and particulate parameters (i.e. SO₂, NO_x, PM₁₀ and PM_{2.5}) was not performed. If no modelling results are available for these parameters, how can it be stated that the majority of these emissions are advected out of the model domain?
- If the majority of emissions are advected out of the model domain, this would indicate that the dimensions of the domain should be expanded to determine the areal extent of potential impacts. A model domain is supposed to be large enough to capture the predicted maximum impacts.
- No actual values for the modelling predictions are presented, only qualitative statements such as, "Although 80% of the TSP emissions were deposited within the model area, the overall loadings were small." – what is the value of "small"?
- Predicted sulphate deposition levels are stated to be, "... in the same range as unpolluted background deposition levels..." but the actual level used for comparison is not stated and, therefore, no determination can be made as to its appropriateness.
- The GNWT has not formally adopted guidelines for sulphate deposition. The deposition rate cited appears to have been adapted from the 7kg/ha/yr deposition rate, which has appeared in various NWT Air Quality Reports. While this sulphate deposition limit may still have some validity, ENR recognizes that with advancing scientific knowledge, the single acid pollutant assessment approach (i.e. sulphate) has largely been replaced by the more complete Potential Acid Input (PAI) approach, which accounts for the additional acidic effects of nitrogen compounds. The PAI assessment approach is the one used in current environmental assessments conducted in the NWT and given the greater emissions of NO_x (approx. 3500 tonnes/year) as compared to SO₂ (approx. 150 tonnes/year) from EKATI, an assessment approach that included nitrogen compounds would be the most appropriate to use.
- It is stated that the modelling predictions for acid and particulate deposition support the conclusions reached in the 2001 Air Quality Monitoring Report produced by MDA Consulting Ltd (2002) and the 2005 snow survey data. It is also stated that, "The contributions to acid and particulate depositions from the EKATI and Diavik mines appear to be low compared to background depositions

hence emissions from the mine sites are unlikely to have a significant impact on acid and fugitive dust deposition rates within the EKATI claim block.”

These statements cannot be verified since no quantitative data or analysis are presented in support and the background deposition values to which the modelled predictions are compared are not provided.

The MDA report was reviewed by ENR, EC and IEMA (see discussion at sub-Section 5.2.2 above) and does not provide support to claims that acid deposition around the mine site is “low compared to background”. In ENR’s review of the MDA report, the data presented was compared to data from the Canadian Air & Precipitation Monitoring Network (CAPMoN) station operated by ENR and EC at Snare Rapids (which is considered a background acid deposition site for the NWT) and it appeared that snow sampling at EKATI returned sulphate concentrations up to 4 times higher than background. The ENR review also pointed out that, “...nitrate concentrations appear much lower than background – almost an order of magnitude lower.” and that “The ‘lower than background’ nitrate values are puzzling given the large tonnage of NO_x emitted from the mine operations...”

- Why is the focus only on impacts within the EKATI claim block? While it is likely that the majority of dust impacts will occur in close proximity to the emission sources, this may not be true of the gaseous and finer particulate emissions which may be dispersed further afield. According to statements made earlier in this sub-Section, the CALPUFF modelling indicates that the majority of emissions from the mine are “advected out of the model domain”. The company is responsible for any impacts that might occur due to their emissions – not just those that occur within their claims boundary.
- If acidic and dust deposition are a concern to the company and/or other interested parties, some form of direct monitoring should be initiated to provide quantifiable data and supplement the theoretical predictions of the CALPUFF modelling.

5.2.3.4 Snow Sampling

- This sub-Section provides little discussion or data to support the statements made. No comparative analysis is provided – e.g. year-to-year trends.
- What analysis was conducted to determine the selection of stations to be used as reference sites?
- For sulphate, nitrate and ammonia, the absence of a discernable trend with distance from emission sources could indicate a ‘blanket’ deposition of these acidic contaminants around the mine operations and that the established ‘reference sites’ are within the zone of influence. The 2002 MDA Report indicated similar results in that these compounds appeared to be distributed across a wide area as far as 20 kilometres from the main mine site and concluded that, “...true backgrounds have not as yet been established.” In ENR’s review of the MDA Report it was recommended that the monitoring should be extended outwards beyond the 20-kilometre radius, until background concentrations were

identified. It is not known if this advice was acted upon by the company, although Figure 4.2-1 supplied with the current EIR seems to indicate stations beyond the 20 kilometre radius (stations Q54 and Q55). Presentation of the actual sulphate and nitrate concentrations for these stations would be useful for comparison to the concentrations measured at the CAPMoN site at Snare Rapids.

5.2.3.5 Vegetation Survey and Lichen Sampling

- No concentration values are presented, only qualitative statements that elevated metal concentrations were found at distances ranging from 9-20 kilometres from the mine. From this limited discussion, it cannot be determined if these concentrations are of concern or where they are located.
- It is stated that 15 of the 17 sites that were sampled in the 2001 program were resampled in 2005. No discussion of the two data sets is presented for comparative purposes, although the change in sampling protocol from collection of 3 lichen species in 2001 to a single species in 2005 may reduce the usefulness of comparisons given the differing affinity for lichen species to accumulate metals and other contaminants.
- What analysis was conducted to determine the selection of stations to be used as background sites?
- The discussion speculates that diesel fuel combustion may be the source of the elevated metals (especially vanadium) present in the lichen tissue and appears to imply that this is acceptable since it may be occurring at other locations where diesel is used as a fuel (e.g. diesel power generation in communities). However, no data is available to support this assumption and it does not take into account the potential differences in fuel consumption and subsequent emissions between EKATI and communities.

6.2 Air

- The statement that, "Over the last three years, EKATI activities have not significantly adversely affected air quality." cannot be supported or substantiated by the limited monitoring program conducted by the company. The EKATI mine has numerous emission sources, distributed across a wide geographic area and emitting a variety of air contaminants. The current monitoring program is limited both spatially and temporally and does not capture and quantify potential ambient impacts from these emissions.

7.1 Number and Magnitude of Residual Effects

- Based on the discussion at 6.2 above, there is insufficient information to support the company's classification of residual effects related to air emissions and dust as 'negligible'.

Section 2 - Wildlife

General

A number of concerns and issues related to wildlife have been noted in the EIR where conclusions have been reached erroneously or are unsubstantiated. These are noted in the technical comments below.

Specific Comments

Background

- It is stated that, "Others (wildlife) are non-migratory, including grizzly bear, ... and peregrine falcon." (p. 2-10)
- Peregrine falcons are a migratory species that do not spend the winter on the tundra. Winter range for this species extends from the southern United States to South America. This statement needs to be corrected.

4.2.6.2 Wildlife Effects Monitoring Program (WEMP)

- "The few year-round resident bird species found in the vicinity of the mine include willow and rock ptarmigan and small numbers of snowy owl, snow bunting, common raven, and occasionally rough-legged hawk." (p. 4-45)
- Snow buntings and rough-legged hawks are migratory bird species that do not over-winter on the tundra. This sentence needs to be corrected.

5.5.3.1 Caribou

- "The Bathurst herd was estimated in 1986 to contain 460,000 individuals (Boulanger *et al.*, 2004). The most recent estimate for the Bathurst herd (in 2003) was 186,000 individuals. The most recent estimate for the Ahiak herd (in 1996) was 200,000 individuals (ENR, 2006). It is unclear whether or not these two herds have changed in size because the Bathurst herd has effectively been split in two since the 1986 estimate and there is no recent estimate for the Ahiak herd. (p. 5-74)
- The wording in the paragraph above is awkward and suggests that there are three herds, two Bathurst herds and the Ahiak herd. This is incorrect. There is only one Bathurst herd.
- "Direct mortality of caribou from mine activity is non-existent at Ekati." (p. 5-82)
- There is no reference to the three caribou that entered King Pond during de-watering and became stuck in the pond sediment. They died in place and were removed by helicopter. This occurred in 2000.
- There is also no reference to the caribou that became entangled in the supporting guy wires of a tower and was successfully freed after some of its antlers were cut-off.
- Incidents of caribou injury or mortality should be reported in the EIR.
- "The behaviour of caribou does not appear to be negatively altered or affected by the mine because no significant differences in dominant group behaviours have been detected near versus away from the mine (Report 82). This finding is

consistent both between caribou groups with and without calves and for all years of observation." (p. 5-82)

- "As anticipated in the 1995 EIS, mine-related activities such as blasting, sirens, the presence of people, haul trucks and helicopters affects caribou behaviour (Report 82). Nursery groups (i.e., caribou with calves) are more likely to respond to stressors than non-nursery groups and blasts are more likely to induce a response than trucks." (p. 5-82)
- The statements given above appear to be contradictory. Caribou respond to mine related activities, therefore their behaviour nearer to the mine would be different than those further from the mine.
- In the EIR, reference is made to some predation on caribou but no mention is made that wolves may be opportunistically using mine infrastructure to help kill caribou. This should be acknowledged.

5.5.3.2 Carnivores/Habitat

Grizzly Bear/Habitat:

- Page 5-84 – 5-90 (Grizzly bear/Habitat)
- The term "habituated" is being used improperly. A habituated bear is one that has learned to tolerate people, vehicles, and human activity at close distances (Herrero, 1985). Habituation is a decline in a bear's behavioral response to people, vehicles, and/or human developments following repeated inconsequential exposure to these stimuli. A bear that walks onto site to investigate is not necessarily a habituated bear.
- Bears that were destroyed are referred to as "sick" bears. The term "sick" is usually reserved for wildlife that has been diagnosed with some illness. It does not include bears in poor health due to injuries, advanced age or starvation.
- Based on ENR's GPS collaring of several bears near Lac de Gras, the EIR states that: "one bear repeatedly crossed the Misery Road and spent time near the two camps". It further concludes that "bears continue to use habitat occupied by Ekati infrastructure". (p. 5-84)
- Although grizzly bears do utilize habitat within BHP's claim block, the EIR doesn't acknowledge the subtle distinction that bears may be responding to human activities and are influencing how available habitat is being used. For example, ENR analysis of the GPS collaring data suggests that bears may in fact be responding to linear developments. Specifically, the frequency of road crossings and rate of movement across the Misery road suggests an avoidance of vehicle traffic. Although technically correct, stating that bears still use habitat near Ekati infrastructure is somewhat simplistic. In reality, mine infrastructure and associated activities are probably having a negative impact on how bears use available habitat near the Ekati mine site.
- "However, in 2005 grizzly bear sign was found more frequently in spring habitat blocks closer to the mine relative to those farther away (Figure 5.5-8). This pattern was not seen in summer for willow riparian habitat. This suggests that bears are not avoiding areas close to the mine but may actually be attracted to the mine." (p. 5-86)

- "Grizzly bears have been sighted near the mine, and bears habituated to this practice have been deterred or destroyed because of the potential threat to human life."
- "Between 2003 and 2005, a total of 24 incidental sightings of bears required some form of deterrent action (5 sightings in 2003, 3 in 2004 and 16 in 2005) (Reports 33, 61, 82)."
- The numbers for 2005 do not match the numbers in the 2005 WEMP Report. This discrepancy needs to be resolved.
- "All three bears that have been destroyed at EKATI were found to be unhealthy. This suggests that predominantly sick bears are attracted to the mine for food and shelter, but healthy bears forage and den away from the mine." (p. 5-89)
- Although one cub and an old male were in poor nutritional condition, this does not mean that disease was the primary cause of death. The cub mortality at Misery was more likely due to inadequate waste management practices and access to garbage at this camp.
- "Sick bears appear to be attracted to mine infrastructure, probably in search of shelter and food, but healthy bears avoid contact with the mine. As a result, no collisions of bears with vehicles have occurred." (p. 5-90)
- The statements from Page 5-89 and 5-90 conflict with other statements. There were 27 bear incidents at Ekati. Of these, three resulted in bears being killed. Some of the incidents would have included these three bears. However, some would not have included them. Furthermore, the collaring works, as well as the incidental incidents/sightings, show that bears interact with mine infrastructure regularly.
- No investigation into the health of deterred bears was made. Without specific data on the health status of all bears involved, the statement "sick bears are attracted to the mine for food and shelter ..." cannot be substantiated.
- In 2004 there was a near collision between a bear and a vehicle.
- The conclusions that are made on Pages 5-89 and 5-90 cannot be substantiated from the information that is available.
- In their original EIS predictions, BHP did not make a prediction that: "Ekati would likely cause fragmentation of bear habitat and that mine-related activities like aircraft and vehicle traffic would disturb bears". Therefore, as IEMA also points out in their comments, it seems inappropriate for BHP in this EIR to now take credit and state that these were predicted effects.

Wolverine/Habitat:

- The EIR states "wolverines continue to inhabit the Ekati area". (p. 5-90)
- There is no review or discussion of trends in winter track surveys or incidental observations. If this multi-year data is inconclusive, this should be addressed. Perhaps the monitoring methodology used prior to 2005 was not sensitive enough to detect any change in wolverine abundance or assess any potential impact of mining activities.
- BHP's participation in a regional DNA sampling protocol is a positive development, but the EIR only confirms participation in 2005 and 2006. In order

- to obtain real benefit from this methodology, a longer-term commitment to using this survey design is required.
- In 2004 and 2005, shelter provided by accommodation buildings at Ekati attracted wolverines." (p. 5-90)
 - Wolverine were also attracted to water that was leaking under the building when the kitchen water tank leaked.
 - "In 2005, a wolverine that had taken shelter under the Misery camp accommodation building had to be destroyed after it charged an employee." (p. 5-90)
 - The wolverine that was destroyed had run towards an employee when the employee approached within 1.5 meters of an opening in a snow tunnel, where the wolverine had sought refuge. The wolverine ran at the employee and then ran back into its tunnel. It later left the tunnel and was followed away from camp, where it was destroyed. The statement that the wolverine "had to be" destroyed is unsubstantiated. The statement should read that the wolverine "was" destroyed.
 - "A wolverine relocation program was completed in collaboration with ENR between January 17 and 27 of 2005." (p. 5-90)
 - The wording of this statement is incorrect. It implies that BHP operated a wolverine relocation program. There were two relocation operations that ENR conducted at the request of BHP to remove wolverine that were frequenting the area under the accommodations building.
 - "It is possible that wolverine (and bears) may be attracted to Ekati simply because they are curious. It is also reasonable to speculate that they are attracted to Ekati in late winter when their food caches are exhausted but before caribou arrive in the study area during their spring migration. In other words, they may be pulled in by nutritional stress." (p. 5-91)
 - The inclusion of bears in parenthesis makes the rest of the paragraph incorrect, as bears do not cache food for late winter.
 - "Some wolverine have been attracted to the mine in search of food and denning opportunities, but mitigation measures such as reporting observations of wolverines, deterring wolverine from the site and skirting buildings have discouraged that activity." (p. 5-91)
 - The skirting at Misery camp in 2003-2005 was not effective at deterring wolverine. The incident involving the wolverine that was killed in 2005 began from it accessing grey water pipes under the trailers, after going through the skirting.
 - The skirting at the main accommodation building at Ekati did not reach the ground in several places and was not effective at deterring wolverine. Wolverines were moved from Ekati in 2004 due to them accessing the areas under the accommodation building. This report is a review for 2003-2005, ending in October 2005. Changes to the skirting occurred in the fall of 2005. Wolverine problems historically occur in early January, therefore it is too early to determine the effectiveness of the changes to skirting in this report.
 - Reporting observations of wolverines is not a mitigation measure. It is something that allows for deterrent actions to be taken.

- It is stated that the residual effects of the mine on carnivores is minor. (p. 6-4)
- Only with a better understanding of population abundance, reproductive parameters and cumulative impacts of various human activities will it be possible to assess these residual effects. There is still uncertainty surrounding the significance of the death/removal of 3 bears and 10 wolverines within BHP's claim block since 2000, and a poor understanding of how carnivores are responding to mining activity around Ekati.

ENR recognizes that sections pertaining to carnivores and other wildlife provide a reasonable effort to summarize the WEMP program between 2003-2005. Sections dealing with grizzly bears and wolverines acknowledge the various carnivore incidents (with 1 wolf, 3 bears and 10 wolverines killed or moved) since 2000. There is also a clear acknowledgement that mitigation strategies targeting continual vigilance regarding waste management and securing mine facilities from shelter-seeking carnivores are required. BHP's participation in the regional wolverine DNA monitoring program in 2005 and 2006 is a positive example of adaptive management and bodes well for improving monitoring collaboration and impact assessment on the central barrens.

Wolves/Habitat:

- "One vehicle collision has occurred, but over a period of 8 years." (p. 5-92)
- The wording of this statement suggests that the collision took place over a period of 8 years. In other words, from the time that the collision began to when it ended was 8 years. This sentence is awkward and should be reworded.

Arctic and Red Foxes/Habitat:

- "There are two hypotheses for this change: red foxes are taking advantage of the winter road to migrate further north or the extent of red fox distribution is moving north because of global warming. The available evidence supports the latter hypothesis. Red foxes appeared on Baffin Island 50 years ago and that island has no road connection to the Canadian mainland. In Scandinavia, red foxes have been displacing Arctic foxes from the southern end of their range for several decades (Hersteinsson and Macdonald, 1992; Korhonen *et al.*, 1997; Tannerfeldt *et al.*, 2002)." (p. 5-92)
- Red Foxes have been found in the Northwest Territories from the NWT/Alberta border to the Arctic coast for many years. The occurrence of red foxes in the Ekati area is not new. The statement that red foxes are migrating further north is not substantiated in the EIR.
- Although fox is not a carnivore VEC, a short section is included. This section could have pointed out that the attraction of foxes to mining operations is often an early warning of inadequate waste management practices. The report does not indicate that when BHP declared a "state of emergency" at the Misery camp in early 2000 to deal with wolverine problems, at least 10 foxes were killed. There is little quantitative data in the previous WEMP reports to support the suggestion that red fox numbers are increasing.

5.5.3.3 Breeding Birds/Habitat**Raptors:**

- "In summary, there is little evidence that Ekati activities have affected the abundance and diversity of raptors. The changes that have been observed are more likely related to regional scale events and natural cycles of abundance." (p. 5-96)
- This section does not have any information on the usage of the pit walls by nesting rough-legged hawks (or other species). There has been increased nesting activity by hawks within the mine site, therefore the statement is unsubstantiated. In fact, the mine site appears to be having a positive effect on some raptor populations by providing additional nesting habitat, increasing the number of nesting pairs and increasing total raptor production in the area. The statement (p. 4-46) "The number of identified nest sites has increased since the survey began in 1995 and now includes 22 sites" would support this conclusion.

6.5 Wildlife**6.5.1 Caribou/Habitat**

- There is no reference to the caribou that was trapped in tower guy wires.

Injury to caribou - Table 6.2-1

- There is no mention of the caribou that became entangled in tower guy wires, resulting in the loss of an antler.

Carnivores/Habitat - Habituation to humans – Observed effects (Table 6.2-1 and Section 5.5.3.2):

- "All three deaths occurred after all other means of deterrence were exhausted."
- This statement is incorrect. ENR staff destroyed one of the bears because its poor physical condition made it unlikely that it would survive and destroying it at that time permitted the collection of biological information from the bear. Little deterrent action was taken with this bear at the Ekati site.

Carnivores – Trend description (1997-2005)

- In Table 6.2-1, it is acknowledged "No observed local trends but regional trends suggest cumulative effects of development are having a negative effect on wolverine, grizzly bear and wolves causing reductions in habitat effectiveness (Johnson *et al.*, 2005)."
- Although current monitoring may not be sensitive enough to detect an impact at the local level, the EIR acknowledges the potential for impacts on a regional scale.

WEMP and EIR

An important issue related to this 2006 EIR involves the need for a review of the WEMP reporting schedule. Over the past two years, WEMP reports have been submitted in late spring, well after the next annual cycle has begun. As well, there appears to have been significant deterioration in BHP's timely reporting of wildlife incidents. Late WEMP and wildlife incident reports make a timely and thorough technical review, and incorporation of editorial comments, difficult. Perhaps regulatory agencies and IEMA could meet with BHP to discuss options for revitalizing the WEMP review and reporting process to the satisfaction of all parties involved. This would also provide an opportunity to review and revise the predicted effects of the project and come to agreement on new impact hypotheses and the methodologies needed to test them.

Section 3 - Hydrocarbons, Permafrost

5.4.3.2 Water Quality and Aquatic Life Other Than Fish (Hydrocarbons)

- The report indicates that 10 kg/day of extractable petroleum hydrocarbons were deposited in the Long Lake Containment Facility (LLCF) "during the period of study". If this rate of deposition is consistent over the remainder of the mine life, the anticipated load of extractable petroleum hydrocarbons to the LLCF is approximately 50 000 kg.
- Will this amount increase as underground mining activity increases?
- We understand the hydrocarbons will be mixed with processed kimberlite and therefore diluted such that sediment samples are expected to be in compliance with CCME standards for hydrocarbons in soil. BHP Billiton's Sustainable Development Policy (Figure 3.1-2) indicates the company's commitment to reducing and preventing pollution. With this in mind, could the extractable petroleum hydrocarbons be managed to reduce the amount to be deposited into Long Lake?

5.3.3.1 Permafrost

- The significance ranking for waste rock permafrost growth should not be described as a "positive residual effect" since the waste rock piles are likely permanent changes to the pristine tundra landscape and a direct result of mining activity.
- Section 5.3.3.1 (Permafrost) of the report indicates no change in vegetation communities compared with previous studies which in turn suggests no change in permafrost conditions at those sites. There is insufficient information provided to allow the reader to understand how the suggested conclusions were made.

Where are these study areas? When were these studies initiated? How was traditional knowledge used to assess the findings of the 2005 survey? Is there adequate data to draw these conclusions?

ATTACHMENT 2

MEMO

To: Lionel Marcinkoski
Environmental Scientist
Environment & Conservation

From: Rebecca Chouinard
Pollution Control Specialist
Water Resources

Subject: Environmental Impact Report 2006 for the Environmental Agreement
Article V, Section 5.5. BHP Ekati Mine

Date: June 26, 2006

Lionel,

Comments on the 2006 BHPB Environmental Impact Report have been prepared by the Water Resources Division and are described below.

- It is great that BHP has been studying and acknowledging the increasing trend in concentrations of ions downstream of the Long Lake containment Facility. Such a trend should be cause for concern. Details that should be expanded on in this report include the engineering and water management strategies that will be employed, when they will be employed, and trigger levels for action. Each adaptive management strategy should have timelines and trigger levels associated with them. Having a detailed adaptive management or action plan in place will become increasingly important if there is an increase in saline waters released to the receiving environment. Waiting until 2009 for updates on such details may not be environmentally responsible. In the water quality summary BHP mentions that eventually the discharge water quality will require mitigation. Now is the opportunity to be discussing preventative pro-active measures.
- Trends in downgradient concentrations of the KPSF are described as less pressing due to the suspension of activity; trends in water quality are expected to stop and reverse themselves in the near future. Management plans should be developed and implemented before activity resumes.
- There are statements made throughout the report that require more information. For example, section 5.3.3.1 states that there has been disturbance of the permafrost layer over the last three years in small areas adjacent to camps, roads, open pits and waste rock storage areas. There is no information on what areas were monitored and how. Section 5.4.3.2 talks about exceeded discharge criteria, erroneous sample collection, and seeps that exceed discharge criterion, yet it fails to discuss the adaptive management response. Section 5.4.3.2 talks about the Kodiak Lake Ammonium Nitrate Study, stating that the results show that remediation efforts were successful in reducing levels of total ammonia, nitrate, and nitrite. Stating what the levels were reduced to in this section would have been useful.

- There are many reports that are referenced throughout the text. It would be useful to pull the data of interest out of these reports and summarize their significance to the EIR. This document should be a stand alone document and additional information on the scope, methods, and results of particular reports and studies would strengthen the EIR.
- Effects or predictions into the longer future could be expanded on. One example is the toxicity of coagulants in the LLCF. The report states that under the current operating conditions at EKATI, the residual coagulant concentrations are at concentrations below those that are toxic to certain species. Discussion on potential effects over an extended period of time is absent.
- The descriptions of risk factors are somewhat misleading and/or unjustified. For example, the current risk of chloride toxicity is described as being zero (pg 5-55). A risk of zero is very unlikely to impossible; perhaps negligible is a more appropriate term. The labelling of effects as being “positive” is also misleading. Perhaps “not adverse” is a more appropriate term.
- In a letter correspondence from BHP to the Mackenzie Valley Land and Water Board, dated June 24, 2004 the company describes a special effects study to source and evaluate the change in water chemistry. Have the results and response from this study been incorporated into the EIR?
- A summary of “where more work is needed” would be beneficial in section 6.1.
- Section 6.3.3 Groundwater states that there is negligible residual significance because no effects and trends have been observed. Page 5-58 states however, that 2003-2005 showed trends of increasing flow rates of mine water from the underground operations with large temporary inflows of groundwater. Also, that mine water flow rates are expected to increase as underground developments continue and that predictions of future mine water flows from underground are associated with considerable uncertainty. This should be identified as a trend along with the potential implications (such as an increase discharge of saline water).

Please let me know if you have any questions or comments regarding this review.

Rebecca Chouinard
 Pollution Control Specialist
 669-2664

c.c Michael Palmer, Pollution Control Specialist, Water Resources, BHP Alternate
 Robin Staples, Water Quality Specialist, Water Resources, BHP Expert Technical Reviewer



INDEPENDENT ENVIRONMENTAL MONITORING AGENCY

P.O. Box 1192, Yellowknife, NT X1A 2N8 • Phone (867) 669-9141 • Fax (867) 669-9145
Website: www.monitoringagency.net • Email: monitor1@yk.com

June 23, 2006

David Livingstone
Director, Renewable Resources and Environment
Department of Indian Affairs and Northern Development
Box 1500
Yellowknife NT X1A 2R3

Dear Mr. Livingstone

Re: BHP Billiton Environmental Impact Report (EIR) 2006

Please accept this letter as the Agency's comments on BHP Billiton's EIR 2006 as requested in your letter dated May 31, 2006. Despite some deficiencies as identified below, the Agency finds the overall report satisfactory and recognizes the effort that BHPB and its consultants expended in preparing this important document. We note that the plain language summary of the EIR 2006 was not delivered at the same time as the full technical version and we encourage the company to do so in the future.

The Agency has three major points we would like to raise and then a number of other comments and suggestions.

Major Points

1. Usage of Adaptive Management

In reviewing the EIR, we noted several good examples of adaptive management were presented in the text, and summarized in Tables 3.2-1 and 6.2-1. These are a considerable strength of environmental management at Ekati. There were also many examples of mitigative measures and environmental policies that are clearly not adaptive management as defined by BHPB. For example, Table 3.2-1 lists many actions, such as use of low sulphur fuel and silt curtains, that are simply best practices or in some cases, regulatory requirements (e.g. revegetation research).

Responsible management of project effects are not necessarily adaptive management if the mitigative measures simply reflect best practices. We encourage BHPB to make a clear distinction between adaptive management and implementation of best practices.



2. Use of Traditional Knowledge (TK) in Mine Management

The Agency is pleased to see that BHPB has made a more serious effort in documenting the use of TK in managing the environmental effects of the Ekati mine. The Agency has already gone on record complimenting BHPB on the recent report related to the Caribou and Roads project. However, the other initiatives cited require better documentation to explain how the TK of Aboriginal employees, the Naonaiyaotit Traditional Knowledge Project, and the Aboriginal elder visits have improved environmental management.

3. Better Description of Project Effects on Downstream Zooplankton

On page 5-60 of the EIR, there is an attempt to explain downstream changes in zooplankton communities and abundance. The Agency did not find the explanation convincing. More work is required including, possibly, some further research and analyses to more adequately determine the reasons behind the changes, and additional description of potential mitigative measures, if necessary.

Other Comments

1. Presentation of Environmental Impact Statement (EIS) Predictions

The Agency found that the comparison of the significance of residual effects presented in the EIR to the predictions in the Environmental Impact Statement (EIS) is not accurate. The EIR authors appeared to stretch the limited results of some monitoring programs to draw conclusions that some residual effects are negligible in nature.

To illustrate the first point, we offer the following examples:

- The EIR report acknowledges that caribou are more likely to be seen farther than nearer the mine, indicating that the mine may be having an effect (pg. 5-80). The report also states that this was predicted in the 1995 EIS (pg. 5-84). We reviewed the EIS and could not find such a prediction. We did locate the following:
 “With appropriate mitigative measures in place, caribou will be largely unaffected by the NWT Diamonds Project. Based on caribou response to development elsewhere, the overall impact on caribou of the NWT Diamonds Project is expected to be minor.” [Vol. IV, pg.31]
 One would have to conclude that the observed effect of caribou more likely being found farther away from the mine site was NOT predicted, and should not be construed as a predicted effect by BHPB.
- The EIR states that a cumulative effects study of mining development on grizzly bears demonstrated a negative response to mines and other developments, and that this is consistent with the EIS prediction that Ekati would likely cause fragmentation of bear habitat (pg. 5-89). We have reviewed the EIS and could find no prediction that this would happen at Ekati. However, we found the following quote regarding predictions for grizzly bear habitat:
 “The NWT Diamonds Project will not remove or significantly alter cover important to grizzly bears.” [Vol. IV, pg.31]

One would have to conclude that the observed effect was NOT predicted, and should not be construed as a predicted effect by BHPB.

- The EIR states that the EIS predicted that collisions would likely happen between bears and vehicles (p.5-90). We could find no such prediction in the EIS. The EIR notes that there have been no collisions recorded, and concludes that BHPB's mitigation measures are effective. We do not believe that this conclusion can be drawn.
- The EIR states that the EIS predicted that wolverines may be attracted to landfills. The EIS makes no such reference to landfills, although it does state that "wolverine may be attracted to camps and human activity, becoming nuisances by breaking into buildings and consuming food." Wolverine being attracted to landfills is an unpredicted impact and should be as such. The unpredicted effect helps explain why five wolverines had to be destroyed in the 1998-2001 period.
- The EIR states that the one raptor-vehicle collision recorded is 'consistent with a prediction made in the EIS of collisions between vehicles and raptors' (p.5-96). We could find no reference to this in the EIS. On the same page in the EIR, it also notes that vehicle-related mortalities for waterfowl were predicted in the EIS. Disturbance from fixed-wing and helicopters is a potential impact identified in the EIS for waterfowl, but collisions with vehicles are not identified.

To illustrate the second point above, we offer the following:

- Even though ambient air quality modeling, and more importantly monitoring, has not taken place to help determine compliance with standards and guidelines and any residual effects, BHPB concludes that there are negligible residual effects.
- Contrary to the Table 6.2.1 assertion of a negligible residual effect from Ekati on zooplankton communities, it should actually be stated that these effects are uncertain. The Company's own significance rating system states that "negligible" means that residual effects impact a small group of organisms for less than one generation. The Agency is aware cladocera have been depressed in Moose and Nema for several generations (cladocera produce at least one generation per year). Without quantitative analysis of changes in the zooplankton community, BHPB's qualitative assessment as "negligible residual effects" is overconfident at best, faulty at worst.

2. Accurate Use of Terminology

The Agency noted several inconsistent and inappropriate examples of environmental policies, research and mitigative measures presented in the EIR as "monitoring". For example, the Land Disturbance Policy noted in section 4.2.3 is not a monitoring program but a review mechanism. The reclamation monitoring described in section 4.2.3.3 is really a description of progressive reclamation (a regulatory requirement) with very little on how these activities were evaluated for success through monitoring.

3. Limited Description of Reclamation Research

The Agency noted the helpful but brief descriptions of a few revegetation studies in the EIR. We look forward to a full and comprehensive description of reclamation research in the Interim Closure and Reclamation Plan. We expect that the past and current research will be clearly linked to information needs, mitigative measures, monitoring and other essential components of the Plan, including timelines.

4. Environmental Audit Improvements to Environmental Management

The Agency found the presentation of the number and types of internal audits performed helpful as shown in Table 4.2-3. We believe that BHPB missed a very important opportunity to demonstrate environmental leadership by summarizing the audit outcomes. This could be done through a short discussion or list of improvements to environmental management as a result of these audits.

5. Permafrost Monitoring

The EIR states that the company is monitoring vegetation based on TK, to indicate changes to permafrost. A better description of this monitoring and the contributions of TK should be provided.

6. Compliance with Ambient Air Quality Standards

The EIR erroneously draws the conclusion that the air emissions from Ekati meet ambient air quality standards based on the results of snow and lichen sampling. This type of monitoring is not a substitute for ambient air quality modeling or monitoring. The Agency has drawn this fact to the attention of BHPB in a lengthy letter dated May 8, 2006.

7. Flawed Significance Ratings and Conclusions

The Agency noted that there are differences between the significance criteria presented in the EIR and those used during the environmental assessment (as submitted by BHP as part of the Additional Information to the Panel). Specifically, the geographical extent (“ecozone”, “ecoregion” and “ecosection”) have been removed from the table used in the EIS “*Ratings used for the significance of residual effects in the impact assessment matrix*”. Furthermore, there are logical flaws in the significance criteria presented in the EIR. If there are logical flaws in the criteria for residual effects, some of the conclusions reached in the EIR on the significance of residual effects may be uncertain at best.

The Agency also noted that even where there are important research efforts under way by the company, for example, the work on the toxicity of vegetation use in reclamation, the significance is almost always noted as negligible. It would be far more appropriate to indicate that the residual effects are uncertain or unknown until appropriate studies and research are concluded.

8. Flawed Example of Positive Residual Effects

The EIR concluded that at least two project residual effects are positive, the development of permafrost in the waste rock piles, and progressive reclamation. These two examples are clearly not residual effects but mitigative measures. We further note that the removal of Leslie Lake from the mine plan (as presented in Table 6.2-1) as an example of a mitigative measure for land disturbance is questionable. We have always understood that Leslie Lake pipe was removed from the mine plan as a result of its poor economic potential rather than a conscious effort by the company to limit its land disturbance.

We note too that BHPB states that it has a Land Disturbance Policy and the Agency would like to receive a copy of this document.

We would be pleased to discuss these concerns with BHPB and others, should such an opportunity present itself.

Sincerely,

-ORIGINAL SIGNED BY-

Bill Ross
Chairperson

cc. Society Members

INTER - OFFICE

MEMO

To: Lionel Marcinkoski
Environmental Scientist
Environment & Conservation

From: Rebecca Chouinard
Pollution Control Specialist
Water Resources

Subject: Environmental Impact Report 2006 for the Environmental Agreement
Article V, Section 5.5. BHP Ekati Mine

Date: June 26, 2006

Lionel,

Comments on the 2006 BHPB Environmental Impact Report have been prepared by the Water Resources Division and are described below.

- It is great that BHP has been studying and acknowledging the increasing trend in concentrations of ions downstream of the Long Lake containment Facility. Such a trend should be cause for concern. Details that should be expanded on in this report include the engineering and water management strategies that will be employed, when they will be employed, and trigger levels for action. Each adaptive management strategy should have timelines and trigger levels associated with them. Having a detailed adaptive management or action plan in place will become increasingly important if there is an increase in saline waters released to the receiving environment. Waiting until 2009 for updates on such details may not be environmentally responsible. In the water quality summary BHP mentions that eventually the discharge water quality will require mitigation. Now is the opportunity to be discussing preventative pro-active measures.
- Trends in downgradient concentrations of the KPSF are described as less pressing due to the suspension of activity; trends in water quality are expected to stop and reverse themselves in the near future. Management plans should be developed and implemented before activity resumes.
- There are statements made throughout the report that require more information. For example, section 5.3.3.1 states that there has been disturbance of the permafrost layer over the last three years in small areas adjacent to camps, roads, open pits and waste rock storage areas. There is no information on what areas were monitored and how. Section 5.4.3.2 talks about exceeded discharge criteria, erroneous sample collection, and seeps that exceed discharge criterion, yet it fails to discuss the adaptive management response. Section 5.4.3.2 talks about the Kodiak Lake Ammonium Nitrate Study, stating that the results show that remediation efforts were successful in reducing levels of total ammonia, nitrate, and nitrite. Stating what the levels were reduced to in this section would have been useful.

- There are many reports that are referenced throughout the text. It would be useful to pull the data of interest out of these reports and summarize their significance to the EIR. This document should be a stand alone document and additional information on the scope, methods, and results of particular reports and studies would strengthen the EIR.
- Effects or predictions into the longer future could be expanded on. One example is the toxicity of coagulants in the LLCF. The report states that under the current operating conditions at EKATI, the residual coagulant concentrations are at concentrations below those that are toxic to certain species. Discussion on potential effects over an extended period of time is absent.
- The descriptions of risk factors are somewhat misleading and/or unjustified. For example, the current risk of chloride toxicity is described as being zero (pg 5-55). A risk of zero is very unlikely to impossible; perhaps negligible is a more appropriate term. The labelling of effects as being "positive" is also misleading. Perhaps "not adverse" is a more appropriate term.
- In a letter correspondence from BHP to the Mackenzie Valley Land and Water Board, dated June 24, 2004 the company describes a special effects study to source and evaluate the change in water chemistry. Have the results and response from this study been incorporated into the EIR?
- A summary of "where more work is needed" would be beneficial in section 6.1.
- Section 6.3.3 Groundwater states that there is negligible residual significance because no effects and trends have been observed. Page 5-58 states however, that 2003-2005 showed trends of increasing flow rates of mine water from the underground operations with large temporary inflows of groundwater. Also, that mine water flow rates are expected to increase as underground developments continue and that predictions of future mine water flows from underground are associated with considerable uncertainty. This should be identified as a trend along with the potential implications (such as an increase discharge of saline water).

Please let me know if you have any questions or comments regarding this review.

Rebecca Chouinard
Pollution Control Specialist
669-2664

c.c Michael Palmer, Pollution Control Specialist, Water Resources, BHP Alternate
Robin Staples, Water Quality Specialist, Water Resources, BHP Expert Technical Reviewer