

A PUBLIC WATCHDOG FOR ENVIRONMENTAL MANAGEMENT AT EKATI DIAMOND MINE™

Independent Environmental ■ Monitoring Agency



2006-07 Plain Language Annual Report

Independent Environmental Monitoring Agency

2 How We Do Our Work



4 Mining at Ekati Diamond Mine™



6 Mine Wastes



7 Processed Kimberlite and Wastewater Monitoring



8 Traditional Knowledge



10 Wildlife Management at Ekati



12 Water and Fish Monitoring



15 Panda Diversion Channel



16 Air Quality Monitoring



18 Closure Planning at Ekati



21 Regional Monitoring and Cumulative Effects



22 Our Review of the Performance of the Government Regulators



23 Our Review of BHP Billiton's Performance



Regulators

DFO	Department of Fisheries and Oceans
DIAND	Department of Indian Affairs and Northern Development
EC	Environment Canada
ENR	GNWT's Environment and Natural Resources (previously known as RWED or Resources, Wildlife and Economic Development)

GN	Government of Nunavut
GNWT	Government of the Northwest Territories
MLWB	Mackenzie Valley Land and Water Board
WLWB	Wek'ëezhii Land and Water Board
WRRB	Wek'ëezhii Renewable Resources Board





Message from the Chairperson

I am pleased to present to you the 2006-07 annual report of the Independent Environmental Monitoring Agency. We prepare two versions of our annual report each year. This is the plain language summary version. It presents the environmental issues at Ekati in a way that is easier to understand than our more detailed technical version. We hope that you will find both of our reports useful.

We continue to see good environmental management of Ekati by BHP Billiton (BHPB). The company made some progress in planning for closure and we were very involved in providing advice along with our Society members. Planning for closure is the job we see as the most important one for

our Agency even though the mine will remain open for many years to come. Our annual reports also have some recommendations to BHPB and the governments about caribou monitoring, environmental reports and closure planning for next year.

Please feel free to pass on your comments to us about protecting the environment at Ekati or about the job we are doing to keep our Aboriginal Society members up to date with activities at the mine. ■

William A. Ross, Chairperson
March 31st, 2007

Agency Recommendations for 2006-07

Recommendation 3:

Regional Monitoring, Cumulative Effects and Wildlife

There has been a lack of progress on regional and cumulative effects on caribou. The Government of the Northwest Territories and the Government of Nunavut should make greater efforts towards regional and cumulative effects monitoring and assessment, primarily as it relates to caribou.

Response: The GNWT remains committed to addressing cumulative impacts on barren-ground caribou as set out in the Department of Environment and Natural Resources' Framework for Action, the NWT Barren-ground Caribou Management Strategy and the Bathurst Caribou Management Plan. Although implementation of some initiatives has been delayed, the GNWT plans to convene a workshop on cumulative effects in the fall of 2007. The purpose of the workshop is to address potential cumulative effects assessment methodology and the links to regional and mine-specific monitoring

programs. The GNWT intends to work with all stakeholders including, but not limited to, communities, Aboriginal Governments, industry, DIAND and monitoring agencies. A partnership approach will be necessary to address this important issue within the Slave Geological Province and in other areas experiencing increased levels of human activities.

Recommendation 4:

Assessment of BHPB

DIAND, GNWT and BHPB should amend the Environmental Agreement to set March 31st as the deadline for submission of the AEMP and WEMP annual reports.

Response: BHPB, GNWT and DIAND acknowledge that this year is a key date for review of the Environment Agreement. It is expected that the signatories to the Environmental Agreement will consider a review of reporting requirements amongst other items in the Agreement. ■



Inukhok

Innuinagtun (language of the Kitikmeot Inuit) word for piles of stones arranged to look like a human figure.

Kimberlite

A rare, potentially diamond bearing iron and magnesium rich rock from deep below the surface. Kimberlites are generally found as vertical pipe-like structures.

Processed Kimberlite

The waste material and water mixture that is left over after the mill removes the diamonds. Also referred to as 'tailings'.

Reclamation

The recovery of areas of land and waterbodies that have been disturbed during mining.

Tailings

The waste material and water mixture that is left over after the mill removes the diamonds from the ore. Also referred to as Ekati as processed kimberlite.

Zooplankton

The small, almost microscopic animals that live suspended in freshwater (and ocean) environments. Zooplankton feed on phytoplankton and small particles in the water. ■

10

How We Do Our Work

The Independent Environmental Monitoring Agency (the Agency) has seven directors that are appointed to our board by the governments, BHP Billiton (BHPB) and the Aboriginal Society members. (For a list of our directors, see the back cover of this report.)

We also have two staff people and an office in Yellowknife. We meet five or six times each year and hold a board meeting in one of the Aboriginal communities in the Fall. Last year, we met in Wekweti and had some good discussions with people there on monitoring caribou.

We also met with the staff of the Wek'èezhii Land and Water Board (WLWB) at their office in Wekweti. Our meetings are open to our Aboriginal Society members to attend and we will gladly send one of our directors to a community to talk about Ekati.

Each year we review our budget and plan our schedule so we can meet together as a group (the directors and staff) to make sure we have time to review the environmental reports written by BHPB. Sometimes we do not agree on the use of our budget with BHPB, which happened this year. We will likely need the help of an outside person (a mediator) to help resolve the differences. We also have a seat on a Working Group that will review the closure plan for Ekati. In 2006, two new directors were appointed to our board. This was good news for us as we now have a full team and more experts (Kim Poole and Laura Johnston) in wildlife and water monitoring. Our directors were not able to visit the communities as much last year as in other years. ➤



Agency directors and youth at Wekweti community government office.

We found the communities to be very busy with other resource development projects.

Some of our directors were able to visit the mine last Summer and we had an annual general meeting with representatives from the communities, BHPB and

the governments in the Fall. Our directors also took the time to attend meetings hosted by the Government of the Northwest Territories (GNWT) where caribou management was discussed.

We sometimes receive compliments about our work and comments on

how we can improve from our Aboriginal members and the government regulators. When we receive a suggestion on how to do a better job, we take it very seriously.

Last year, we were given some advice on how to make the letters

we write to the government regulators more helpful to our Aboriginal Society members and to send our comments in earlier. We tried to send our letters out early enough so that our Aboriginal members can use them to help with their own reviews of BHPB's reports. We think the programs and licences that BHPB received to run the mine often show that our comments were used to better protect the environment.

The Kitikmeot Inuit Association (KIA) offered us access to some of its Traditional Knowledge (TK) information and we felt that was a sign of our good relations with our Aboriginal members.

Feel free to contact our office with your views on how we can monitor Ekati or give information to our Aboriginal members. ■



The Agency board of directors and staff

BHPB is mining diamonds using large open pits and underground tunnels to remove the kimberlite rock that contains the diamonds. The mine is located on the tundra North of Lac de Gras in the NWT.

1. Tailings Pond



Cell A discharge point.

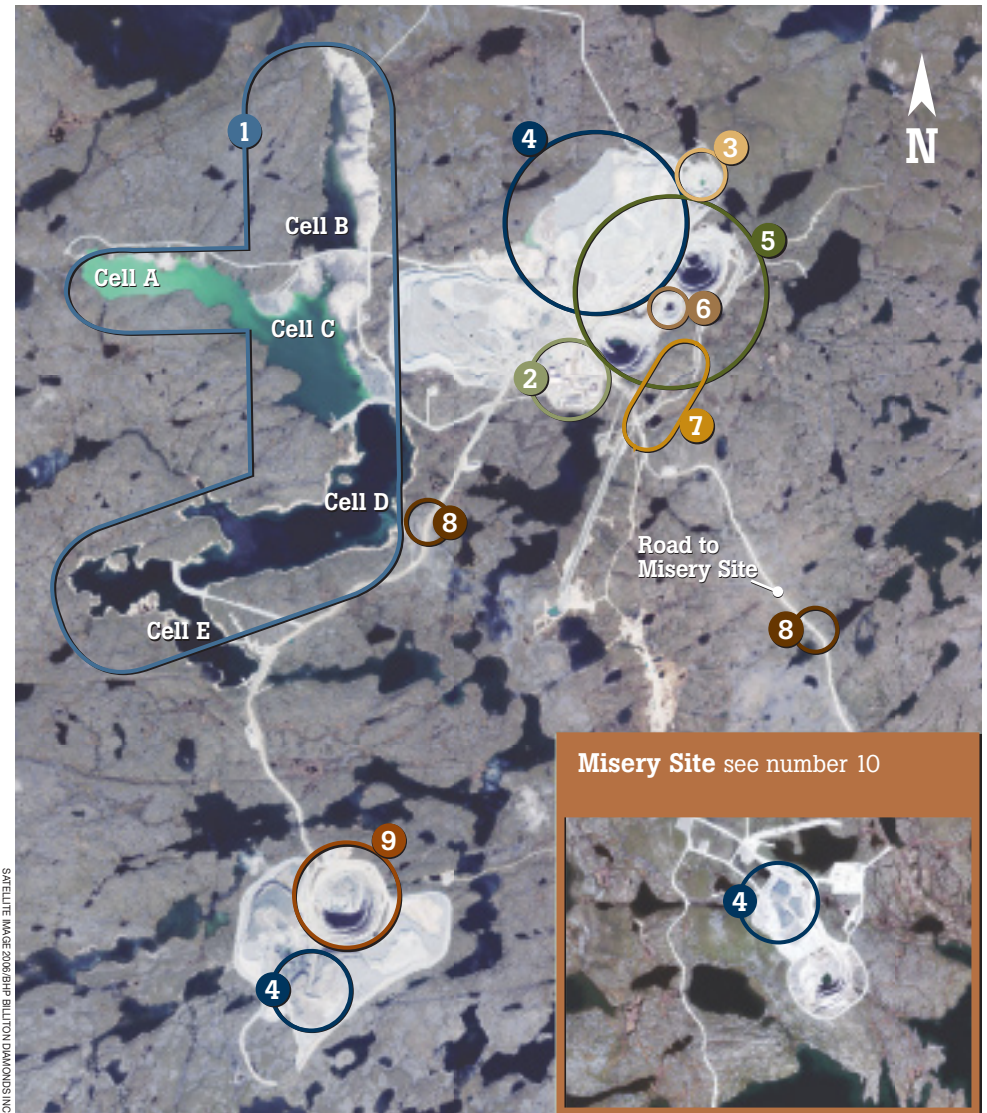
The *tailings* pond, called the Long Lake Containment Facility (LLCF), holds the crushed wet *kimberlite* that remains after diamonds are removed. It is a lake split into five sections by dykes so the *kimberlite* can settle. Water is eventually released into lakes downstream.

2. Main Camp



Ekati main camp complex.

Located at the main camp: an accommodation building for hundreds of workers; a power plant; a truck shop; and, a processing plant where the diamonds are removed from the *kimberlite*.



SATELLITE IMAGE 2006 BHP BILLTON DIAMONDS INC.

3. Beartooth Pit



Beartooth Pit.

BHPB continues to mine ore from Beartooth Pit.

4. Waste Rock Piles



Panda/Koala Waste Rock Pile.

Rock that does not contain diamonds is piled in layers up to 50 meters above the tundra close to each of the pits.

5. Panda and Koala Pits



Panda Pit.

Open pit mining has finished here and underground mining has begun.

6. Underground Mining



Panda Underground.

BHPB has built one large underground tunnel and a conveyor belt system to provide access to the bottoms of the pits.

7. Panda Diversion Channel



Panda Diversion Channel.

This is a man-made stream to divert water that would otherwise flow into the pits. Fish, mostly grayling, use it for spawning.

8. Haul Roads



Haul truck on Fox Road.

BHPB has built all-weather roads to connect the pits to the main camp.

9. Fox Pit



Mining within the Fox Pit.

This will be the biggest pit at Ekati and most mining activity in 2006 happened here.

10. Misery Site



BHPB has stopped mining at Misery Pit. It may re-open the site in a few years.

Courtesy of Jim Hemminger, BHPB
Billion Diamonds Inc.

Diamond mining at Ekati means that huge amounts of rock must be blasted and hauled out of the pits so BHPB can access the *kimberlite* rock that has the diamonds in it. The waste rock that has no diamonds in it is piled on the land close to the pit. The *kimberlite* rock is processed (crushed and washed in water) so the diamonds can be found and this waste (called *processed kimberlite*) needs to be stored as well. BHPB also uses underground tunnels to mine the *kimberlite* – these produce a lot less waste rock. Water that gets into the pits and the underground tunnels needs to be stored by BHPB as it is not clean enough to pump directly into the lakes downstream of Ekati.

To manage its waste rock so that it does not harm the environment, BHPB monitors the waste rock piles to make sure they freeze and any water seeping out will not harm the environment. Most waste *kimberlite* and wastewater are stored in a lake called the Long Lake Containment Facility (LLCF), which is divided into five parts. By the time water has moved down to the final part of the lake, it is clean enough to pump downstream. Whenever BHPB pumps water out of the LLCF, it monitors water quality to make sure fish downstream will not be harmed. Other wastes produced at Ekati include garbage and sewage from the camp.

The garbage is recycled, burned or buried in the rock piles. Sewage is treated and released into the LLCF.

Waste Rock Monitoring in 2006

About 16.5 million tonnes of waste rock were piled up near the open pits at Ekati in 2006.

Monitoring of the rock piles show that they are freezing largely as planned and water that seeps out of the piles is not harming the land. There are different kinds of rock in the waste rock piles. Those types that can cause harmful drainage are surrounded and covered with safer rocks. ➤



Thermosyphons at Upper Panda Dam.

Tundra water is naturally able to draw dissolved metals out of the waste rock. To stop this from happening, waste rock is no longer piled on the natural tundra but placed on special rock pads.

BHPB is doing a good job studying the different waste rocks at Ekati and testing them as they are exposed to the weather outside to see what sort



Drill core sample.

of seepage comes out of them. It is also looking at the waste *kimberlite* to see if it reacts with air and water safely even though it seems like it could cause harmful drainage in lab tests. The amount of metals in water downstream of Ekati is very low but has risen over the past years. These tests by BHPB could help find out what the source of these dissolved metals may be. We will keep an eye on future waste rock monitoring reports to see how the rock piles are freezing. Some of the rock areas are not freezing as well as planned, such as waste *kimberlite* that does not contain diamonds. The presence of permafrost in the waste rock piles ensure that very little water, which could harm the land or lakes, can seep out. ■

40 Processed Kimberlite and Wastewater Monitoring

Open pit mining at Fox Pit is now producing a large amount of *kimberlite*. BHP Billiton (BHPB) has found that the Fox *kimberlite* has a lot more fine clay in it than the *kimberlite* from other pits. This fine clay is hard to settle when mixed in water at the processing stage.

BHPB adds calcium chloride (a salty, chalky powder) to the *processed kimberlite* to help settle the clay faster. If it is not controlled properly, this increase in the amount of salt in the water may cause harm to downstream water and fish. ➤



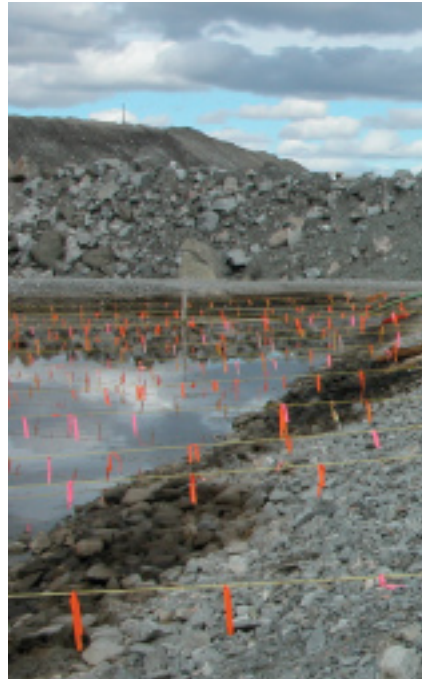
Tailings discharge into Cell A of the Long Lake Containment Facility.

4.0 Processed Kimberlite and Wastewater Monitoring

This is why we would like to see a study from BHPB on what the water that is pumped from the Long Lake Containment Facility (LLCF) will be like many years into the future. Will it be too salty for the fish downstream? We also want BHPB to plan for when mining is done, that the *processed kimberlite* stays in one place inside the LLCF and will not wash away and flow downstream.

Groundwater that seeps into the underground mines at Ekati tends to be salty as well. We would like to make sure the company looks at the effect of underground mining on the LLCF. It has yet to be decided by the Wek'èezhii Land and Water Board (WLWB) how much chloride can be in the water that is pumped out

of the LLCF and into the lakes downstream of Ekati. We feel that BHPB should not use calcium chloride permanently until research shows that the water quality will remain safe. ■



Flagging tape on lines across the contaminated snow containment facility.

5.0 Traditional Knowledge

The Kitikmeot Inuit Association (KIA) and BHP Billiton (BHPB) presented an outline of the Naonaiyaotit Traditional Knowledge Project (NTKP) at our annual meeting last year. We congratulate the KIA and BHPB on the successful completion of the NTKP, a system that maps traditional Inuit use and knowledge of the land.

We were privileged to be shown the NTKP reports and maps.

We were also pleased to see BHPB continue with the caribou and roads project with the Elders Advisory Group from Kugluktuk. This is a good example of how BHPB can use Traditional Knowledge (TK) in managing the environmental effects of Ekati. ►



Elders Advisory Group in Kugluktuk.

As part of the project, the Elders visit the site and watch what the caribou do along the roads and around the mine site. The Elders also spend time with youth from the communities and BHPB employees. This is a good way to use science and TK together, which resulted in recommendations that were followed by BHPB. For example, as part of this project, *inokhok* (piles of stones arranged to look like a human figure) and snow fencing were made to deter caribou and other wildlife from coming near the mine pits and the airstrip.

Helen Enogaloak of Kugluktuk (the Elders' assistant and interpreter) did an excellent job working with the Elders Advisory Group and encouraged

discussions to continue with other Elders in the community. Her work with the project assisted BHPB in hosting a successful TK workshop in Kugluktuk. Recommendations from other Elders in the community on wildlife issues on site were given to BHPB. The company also heard comments on new projects that it is considering such as building wind generators. While the Elders Advisory Group from Kugluktuk has been working well, BHPB could benefit from trying to obtain and include TK from Elders in other communities who have traditionally used the Ekati area. We recommend that BHPB set up a program that involves Elders from all affected communities and a workshop be held where the information

collected and observations can be shared with everyone.

It is our view that BHPB needs to find better ways to record and explain how TK is being used in other operations at the mine site. For example, the 2006 Environmental Impact Report stated that the company is monitoring vegetation based on

TK to look for changes in permafrost. A better description of this monitoring and how TK was exactly used should be provided. It would be useful to know how TK from Aboriginal employees, the NTKP and Elders from other communities has improved how the environment is protected at Ekati. ■



Aboriginal Elders visit Ekati.

BHP Billiton (BHPB) has been monitoring wildlife at Ekati for ten years.

It looks at caribou, grizzly bears, wolverines, wolves, and birds.

BHPB surveys animals from airplanes and on the ground around the mine area. It tracks and reports on any accidents or problems with animals.

No wildlife was reported

destroyed at Ekati in 2006 due to mining accidents. There were some examples of wildlife being killed at the site due to predators or non-mining related injuries.

The Agency's review of wildlife issues and monitoring at Ekati is limited as we have not yet received the full report for 2006. We have encouraged the company to submit these reports much earlier to

allow everyone to review them with enough time to suggest changes, including reductions in monitoring where there may be no further benefits.

Caribou Monitoring

We heard last year that the drop in the size of the Bathurst caribou herd is the most important concern to our Aboriginal members. This was stated often when we visited the community of Wekweti and attended other public meetings in Yellowknife and Inuvik.

BHPB puts a lot of effort into monitoring caribou. It expanded the area that it flies over to study how many caribou are in the area of the mine.

This should allow us to better understand if the mining activity at Ekati is affecting them.

About 37,000 caribou were counted in 2006 with the most caribou spotted in early July and late September. The trends noted since the 1990's include decreasing numbers of caribou in the Ekati area during the northern migration but not in the post-calving season.

BHPB uses Traditional Knowledge (TK) in monitoring caribou behaviour when the animals are close to Ekati. Recommendations from Elders that visited the site and from workshops held in Kugluktuk included advice on how to keep caribou away from unsafe areas like the pits and airstrip. ►



Caribou on-site.

Based on this advice, BHPB put up a snow fence near the Beartooth Pit and added more *inokhok* (piles of stones arranged to look like a human figure) at the airstrip. We think this is a good use of TK at Ekati.

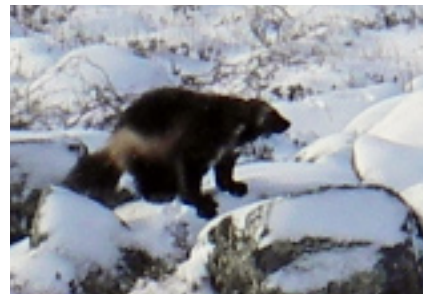
Other Wildlife Monitored at Ekati

BHPB monitors wolverines at Ekati by sampling wolverine fur and studying the genetic information. We have yet to receive the results of the wolverine study but we think that it will give us some good information on the wolverine population in the area. We urge the company to work with the Government of the Northwest Territories (GNWT) to get the results out in a timely manner.

Surveys for birds at Ekati continued in 2006. Nests belonging to ravens, peregrine falcons, rough-legged hawks or gyrfalcons were found in every pit at Ekati. Two peregrine falcon chicks were seen at the Beartooth Pit.

Dust Monitoring

People are concerned about the dust from mining that falls onto the land and what effect this may have on the vegetation eaten by caribou.



Wolverine.

We are not sure if caribou could be harmed by eating lichen that has dust on it. BHPB is improving its dust and air quality monitoring program to find out if dust is a problem at Ekati.

The Agency has suggested to the company that further work be done to look at caribou pellets to see if dust may be a problem.

Our Comments on Wildlife Monitoring

BHPB makes a very good effort

to avoid attracting wildlife to the site by managing its garbage carefully. This shows us that BHPB takes its commitment to wildlife protection seriously. This year, BHPB delivered the final wildlife monitoring report too late for us to review the information it collected. As a result, we are unable to present further conclusions about how the mine is impacting wildlife. What we can say is that it seems like caribou are less likely to be ►



Falcon.



Wolf track at the Long Lake Containment Facility.

6.0 Wildlife Monitoring at Ekati

near Ekati than in other areas, especially cows with calves. The Misery road at Ekati also seems to be a barrier to regular caribou movements around the mine site.

In our view, there has not been enough progress on regional monitoring of caribou. We heard this during workshops held by the government last year. Clearly, this monitoring requires everyone to work together. Each mine in

the area, including Ekati, must collect information about caribou in a way that is compatible with information from the other mines. This information must also be put together with information collected by communities and government to better manage *cumulative effects* on caribou. We look forward to more concrete action on this key issue next year. ■



Dust from takeoff at the Ekati airstrip.

7.0 Water and Fish Monitoring

Potential sources of pollutants to the water at Ekati include: treated sewage from the camp; the fuel and chemicals used to blast rock; power machines; the crushed wet *kimberlite* left over after the diamonds are removed from the rocks; and, the salty underground water that seeps into the pits at

Ekati. BHP Billiton (BHPB) pumps all of these to the Long Lake Containment Facility (LLCF). This is where the dirty water is settled and filtered through dams that BHPB built to divide the lake into smaller parts. Once the water reaches the final part of the LLCF, it is ready to be ►



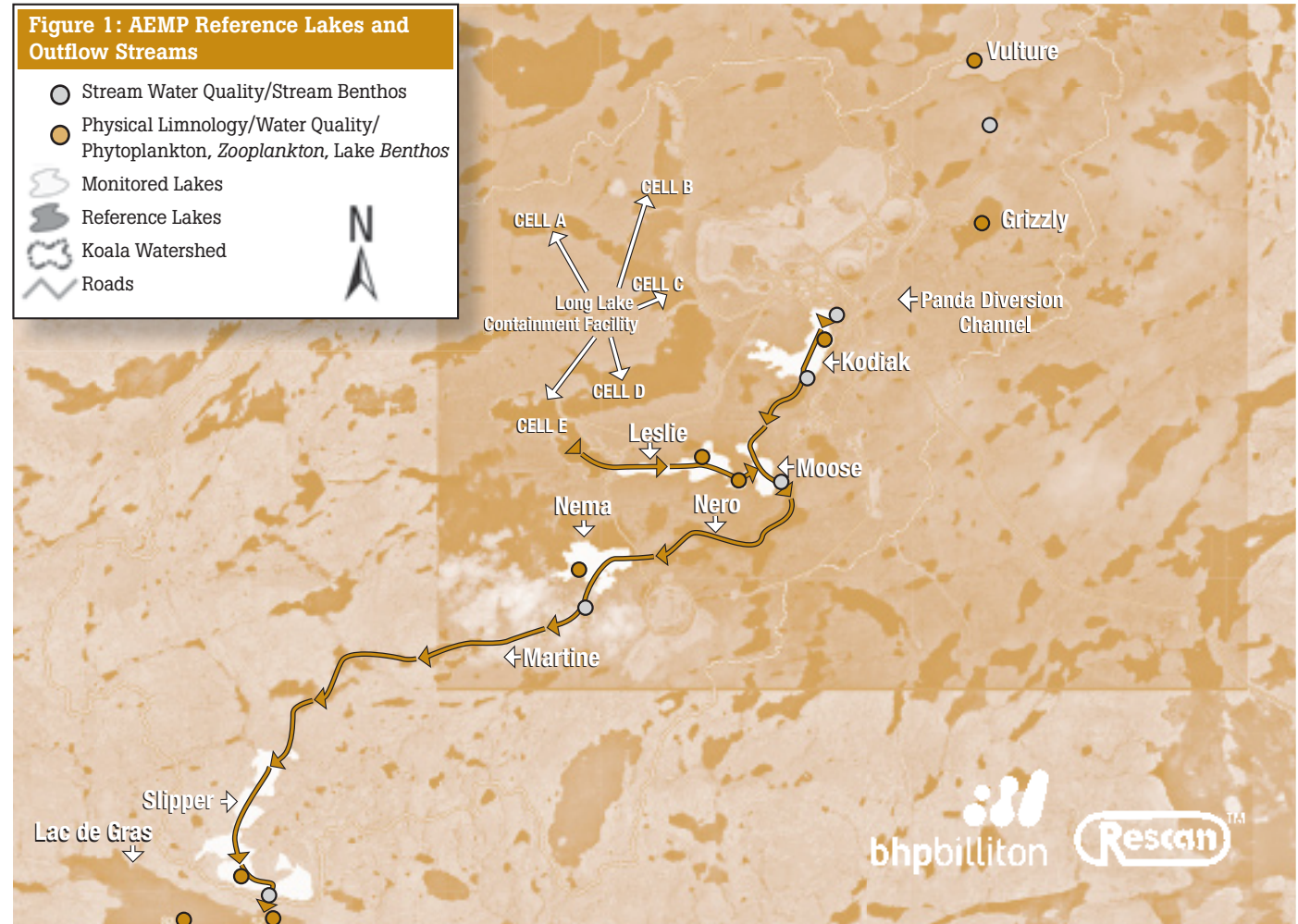
Fish box at Panda Diversion Channel.

pumped into the clean lakes downstream of Ekati.

BHPB can only pump water into lakes downstream of Ekati if the water is clean. The amount of pollutants in the water, such as dirt or salt from mining in the pits and from the wet crushed *kimberlite*, must be less than the pollution limits set in the water licence before it can be pumped out of the LLCF.

In 2006 and 2007, BHPB did not pump any water from Ekati into the downstream water bodies that was above the pollution limits set by the water licence. The water licence was put together to make sure that aquatic life would be protected.

Each year BHPB tests the water in lakes and streams to make sure it is safe for the fish, ➤



7.0 Water and Fish Monitoring

the plants and the many small creatures that live in the water near Ekati – we call this ‘aquatic life’. It does the same tests in lakes that are far from the mine so that we can compare the results against water bodies that are not affected by the mine (see Figure 1).

2006 was the ninth year of monitoring water at Ekati. Testing occurs in the Summer

and from samples taken under the ice in Winter.

BHPB has told us that there are no problems with the water it pumped from the LLCF last year.

While we have yet to receive the monitoring report for 2006, we are less sure than BHPB is about how clean the water is. We have a concern that it may be getting worse for some metals in the water such as molybdenum and copper. If this

is the case, better predictions are needed. Some metals are increasing in the water and this needs to be looked at closely to make sure that downstream aquatic life is protected in the years to come (for example, see Figure 2). We will review BHPB’s report on water and aquatic life testing when it is available and report back next year. We hope to also receive the predictions of future water quality that the

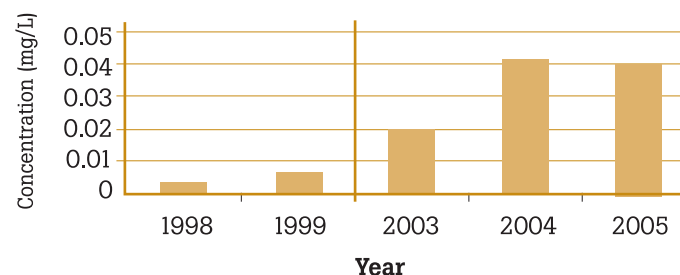
company has been working on for some time.

We met with BHPB last year to talk about improving the program for water testing and how the many tests are carried out and reported. We are pleased that BHPB has made some improvements to the program that should allow for us to notice changes to aquatic life more easily. ■



Water discharge into Leslie Lake.

Figure 2: Barium: Moose Lake (August)



The Panda Diversion Channel (PDC) is a stream that BHP Billiton (BHPB) built to make sure that water cannot flow into the open pits where the diamonds are being mined (see photo on page 16).

The PDC connects two lakes that have many kinds of fish in them—burbot, slimy sculpin, lake chub, lake trout and round whitefish. It is also used by arctic grayling to lay eggs in the Spring and swim through all Summer.

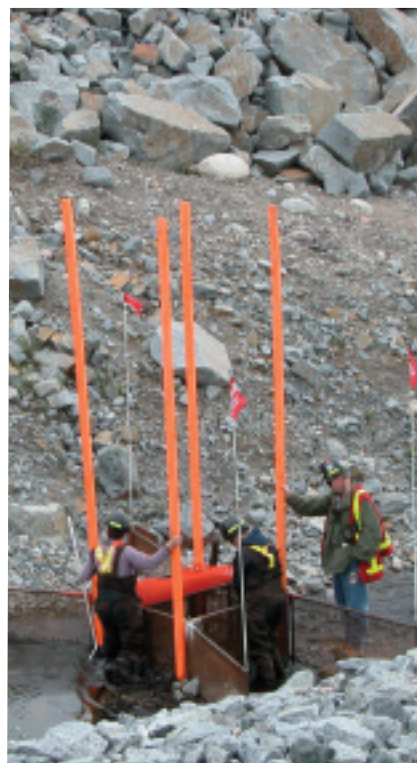
We know that the PDC is a good place for fish to lay eggs and to move through because BHPB built a fish trap to catch fish swimming into the PDC from Kodiak Lake. After the fish are caught in the fish box, they are measured and then let go to continue swimming upstream.

BHPB also records how many young fish (newly hatched that Spring) leave the PDC in the Fall to spend the Winter in Kodiak Lake.

Now that we know the PDC is a good place for fish to move through and to have their young, we need to look closer at the chances those young fish have to survive through the Winter under the ice when food is harder to get. We would like to know if the young grayling have enough fat on them to last through the Winter or if they are much smaller than the fish from natural streams near the mine. BHPB has looked into these questions and found that the young grayling from the PDC are just as healthy as those from natural streams.

In 2003, BHPB clipped part of the fin of some young grayling that were leaving the PDC.

If they came back to the PDC a few years later, we would know for sure that they survived the Winter. ➤



Fish box at upper end of the PDC.



Directors at the PDC fish box at Spring break-up.

8.0 Panda Diversion Channel

In 2006, BHPB told us it found some of those fin-clipped fish in the PDC. That is good news and shows that the PDC is a good stream for fish.

Another issue with the PDC is what will happen to the stream when the mining is all done.

BHPB now plans to keep the stream open after mining is done. The company must make sure that the PDC will not be blocked by too much ice or falling rock. We think that keeping the PDC is a good idea if BHPB can show the stream will continue to be a good place for fish. ■



Panda Diversion Channel.

9.0 Air Quality Monitoring

Our concern about how mining can affect the air and land comes from how dust and contaminants could be deposited on lichens and vegetation around Ekati. We have heard from Aboriginal Elders and participants at BHP Billiton's (BHPB) and our past environmental workshops, as well as the 2006 caribou workshops, that dust being deposited on the land and vegetation may affect caribou habitat and health.

BHPB monitors air quality at Ekati regularly and reports on the results every three years. Last year, BHPB released the report from its 2005 air quality monitoring program and a computer modelling report. Although positive changes have been made to the design of the

program in recent years, we still have a number of concerns.

As we have suggested in previous annual reports, we see a need for BHPB to work with government air quality officials to improve air quality modelling and monitoring programs. We hired a technical expert to look over the 2005 air quality and modelling reports. We are in the process of looking at this independent review and hope to discuss it in the future with BHPB and others.

BHPB monitors what contaminants are in the air and how far dust is blown from Ekati before it settles on the land. Some of the activities at the mine that put dust and contaminants into the air include: the diesel burning ►

electricity plant; diesel powered heavy equipment; incinerator operations; blasting in pits; road traffic; waste rock; and, dust from the *processed kimberlite* left over after the diamonds are removed.

The company works out the amount of dust and contaminants that are put into the air from these different activities and takes samples of the air, snow, lichen and vegetation at different points around the mine site to measure for contaminants.

BHPB's results have shown that some snow and lichen samples have higher than the normal levels of some heavy metals. These metals from the dust and contaminants are found in an area up to 18 km around the Ekati mine site.

We recommend that BHPB improve its air quality monitoring program by also taking samples of caribou pellets to find out how much dust and metals the caribou may be eating.

We would also like BHPB to link dust and air quality monitoring with other caribou monitoring at Ekati to provide a big picture view of the possible effects of mining on caribou.

BHPB is trying to reduce the amount of air pollution it is producing by making improvements at the mine site. The company's Energy Smart program has reduced fuel consumption, a new incinerator ►



Haul trucks generate dust.

has been built and wind generators are being considered, all of which would lower the amount of contaminants entering the air. We support all of these

projects and we think they will help reduce the amount of dust around Ekati in order to keep the air clean. ■



New air quality monitoring station at Grizzly Lake.

100 Closure Planning at Ekati

As part of its new water licence in 2005, BHP Billiton (BHPB) had to update its *Interim Closure and Reclamation Plan* (we will call it the 'closure plan'). *Reclamation* is cleaning up the land after the mining is done so that it is safe for people and wildlife. The development and review of a new closure plan is a major challenge for BHPB, the regulators and the Aboriginal parties. This is why a Working Group was made of representatives from all of the groups affected by the mine. Approving the closure plan will take many months and a lot of cooperation from everyone.

The Working Group met with BHPB before the closure plan was written to agree on what it should contain.

BHPB hosted a tour of the Ekati site last summer and had a workshop after that to discuss options to close parts of the mine such as pits, rock piles and the Long Lake Containment Facility (LLCF). This was done to make sure that the ideas and values of ►



Enclosed revegetation test plot on Cell B.

our Aboriginal members and input from the regulators could be included in the closure plan. In the Fall, BHPB sent out a list of overall closure 'objectives' that would apply to each part of the mine. By 'objective', we mean how each part of the mine should look and how it could be used by people and wildlife after it has been closed and reclaimed. When we talk about the closure 'option' chosen, we mean what closure method will be used to clean up a piece of the mine.

The draft closure plan was submitted to the Wek'ëezhii Land and Water Board (WLWB) in January of 2007 and a review process has now begun. Due to the large size of the plan, it is being reviewed in small pieces

and the Working Group has begun to work out issues as they come up. The WLWB staff track the progress and organize the meetings of the Working Group. There will likely be a public hearing to allow the WLWB to approve the finished closure plan.

Our Views on the Closure Plan

We sent a lot of comments to BHPB during the development of the closure plan. Our comments tended to be grouped in two ways: (a) how BHPB was gathering information, consulting and presenting its report and content; and, (b) what statements and decisions were made on how the closure work will be done.

We felt that BHPB made an effort to consult but it did not listen to the advice given that could have made a big improvement to the closure plan. This led to the closure plan missing some really important information when it was submitted. We did

not think it was right for the company to select what options for closure could be discussed at consultation events. We wanted to start out with a clear set of closure objectives before any discussion about what to do with each part of the mine. ➤



BHPB staff tour Ekati with visitors.

It was not only the Agency that gave this advice to BHPB. The Department of Indian Affairs and Northern Development (DIAND) also gave strong recommendations to BHPB about process and consultation. When BHPB finally sent out a list of closure objectives, the consultation process was over, the plan was due in a few months and all of those that reviewed the objectives felt they were not clear enough. When the plan was submitted to the WLWB a few months later the objectives were included again without any changes. The Agency held its own workshop in early 2006 to come up with clear closure objectives. We forwarded this list to BHPB for consideration.

Some examples of what we felt were appropriate objectives are listed below:

Open pit closure objectives

- Clean water layers at the tops of pit lakes that do not mix with water at the bottoms of the pits;
- Waters downstream of pit lakes are not harmed from water flowing from pit lakes; and,
- Pit lakes are safe for use by fish and other wildlife.

Long Lake Containment Facility closure objectives

- Safe for wildlife and physically stable surface;
- Fish can continue to live in the LLCF not used for *processed kimberlite* storage; and,
- Downstream water quality is good.

The objectives that BHPB distributed were a mixture of corporate goals and operating principles, not the clear language we needed to help decide what option to use to reclaim the pits and rock piles. BHPB has since agreed to a better way of presenting its closure objectives that we support. We feel this issue is so important that it is worth discussing here and we are making formal recommendations to BHPB about closure objectives as well.

When BHPB assessed the environmental risk from closing the mine, the Agency commented that the company did not look hard enough at long-term risks. We felt that the portion of the *processed kimberlite* that does not settle to the bottom of the LLCF (the fine clay part of the crushed *kimberlite*)

was a risk that BHPB should have considered in more detail. BHPB did assess risk but this issue was not on the list. In our view, the very fine *kimberlite* is a potential long-term problem at Ekati because it does not settle easily and has the potential to harm aquatic life.

In summary, BHPB has made some progress in developing the new closure plan. The plan was not as good as it could have been because the early input from reviewers was not used by BHPB. Without clear closure objectives and ways to measure these objectives, we will have a hard time supporting the closure plan. We will report back next year on how BHPB has addressed the problems with its closure plan. ■

We heard a lot about the importance of the Bathurst caribou herd to the Tlicho people when we visited Wekweti. The Agency would like to ensure better monitoring of the combined effects of people's activities on the Bathurst caribou (see the wildlife monitoring section for further information on caribou monitoring).

The Agency is also working with other monitoring agencies (the Environmental Management Advisory Board for Diavik and the Snap Lake Environmental Monitoring Agency for the Snap Lake Mine) to improve monitoring of the Bathurst caribou.

We understand that there has been more progress toward the Multi-Project Environmental Monitoring Agency (MPEMA), which is to replace the three monitoring agencies now in place.

The Agency gave advice on how to improve MPEMA when asked to do so by a researcher helping the MPEMA working group.

Discussions continue on how to define cumulative or combined effects and who should manage these effects in the Northwest Territories. These discussions are based on concerns about the decline in the health and numbers of the Bathurst caribou herd. The Agency is of the view that *cumulative effects* are the effects of a project (for the Agency, this project is the Ekati Mine) combined with the effects of other activities and changes. Others believe that *cumulative effects* are all the effects of a single project, even though there are fewer impacts on Bathurst caribou from one project than from many.

It is the combined (cumulative) impact that must be properly managed.

The Agency watches the Cumulative Impact Monitoring Program and the *Cumulative Effects Assessment and Management Framework and Strategy*.

We think that lack of funding has not helped this work proceed, resulting in the need to better understand the part that the Ekati mine may play in the overall combined effects on the Bathurst caribou herd. Dealing with *cumulative effects* needs everyone to be involved. ■



Diamond drill rig at Pigeon Pipe.

Our Review of the Performance of the Government Regulators

Each year we look at how well BHP Billiton (BHPB) is protecting the environment as well as how the government regulators and inspectors carry out their work. We look at the comments the regulators make on BHPB's environmental reports and plans. This tells us a lot about how much time they spend making sure BHPB is doing a good job.

Below are some of our thoughts on each regulator.

Department of Fisheries and Oceans (DFO)

We want DFO to be more active in giving advice to BHPB about how the open pits can become lakes once the mine is closed. DFO has started to do this and we would like this work to continue.

Department of Indian Affairs and Northern Development (DIAND)

Making sure Ekati is inspected regularly is a key job for DIAND. We are pleased to report that a new inspector was recently hired for Ekati and that regular inspections have begun again. We also think DIAND did a good job by funding respected experts to review BHPB's closure plan and water quality monitoring plan. DIAND also sent some very good advice to BHPB on consultation related to the closure plan.

Government of the Northwest Territories (GNWT)

The GNWT Department of Environment and Natural Resources made some strong comments about how BHPB reported its wildlife and air

quality monitoring results. We would like the GNWT to become involved in giving advice to the company about end land use at Ekati when mining is done.

Environment Canada (EC)

EC has reviewed a lot of environmental plans from BHPB and is working on air quality monitoring with the company and GNWT.

Wek'èezhìi Land and Water Board (WLWB)

The WLWB is a new regulator and puts together the water licences that Ekati needs to mine and use water. The board is making decisions carefully and improving its ability to make timely decisions. We want to support the board in making sure it gets the right scientific advice to help with tough decisions. ■



Visitors examine processed kimberlite.

13.0 Our Review of BHP Billiton's Performance

BHP Billiton (BHPB) continues to do a good job protecting the environment at Ekati. A good example is BHPB's energy saving program that has reduced the diesel burned by over 1.5 million litres for the year ending June 2006 and over three million litres since 2002. BHPB deserves a lot of credit for this program.

BHPB is also looking into wind generators to help generate electricity instead of using more diesel fuel. The Agency is also very pleased to see that a new incinerator is being installed at Ekati. This should burn garbage with very little harmful smoke and less contaminants being released into the air.

One of the complaints we have had about BHPB in the past is that it has been late with the

environmental reports that it makes each year. Without the 2006 reports on wildlife and water, we had a hard time coming up with a complete review of how well the company is doing in its mandate to protect the environment. BHPB also has a hard time keeping its employees and finding new ones to help it stay on top of all of its environmental commitments. We want to make sure BHPB gives its environment staff enough resources to do all of the jobs it must do. We have recommended that there be a deadline for the company to submit its wildlife and water monitoring reports.

Last year, the Government of the Northwest Territories (GNWT) was firm with the company in dealing with a disagreement about the Environmental Impact Report,

a report that describes the overall environmental effects of the project every three years. BHPB is taking steps to make sure the GNWT is satisfied with the environmental reporting. We supported a lot of the GNWT's comments but we were not asked to get involved in working out a solution.

The main project at the mine last year was putting together a new closure plan. The mine is not ready to close yet but planning for how the pits, rock piles and tailings pond will look when mining is done needs to be improved. We sent our advice to BHPB and tried ►



Dialogue at the Fox Pit.

to help improve its consultation on the closure plan. Once the plan was submitted to the WLWB, we made many comments to improve it. Our 2006-07 annual report contains two recommendations to assist BHPB in improving the closure plan (for further detail see the chapter in this annual report on closure). We have another disagreement with the company about the use of the funds we are given to do our work.

This disagreement is being sent to a mediator to help us to come to an agreement. In our view, we are closely following the rules that are in place in the *Environmental Agreement* and the arrangement we had from an earlier disagreement with BHPB. We look forward to moving beyond our disagreements and into another year of good environmental management at Ekati. ■



Agency director speaking with BHPB staff.

Agency Recommendations for 2006-07

Recommendation 1:

Closure and Reclamation Planning

BHPB should develop mine component-specific closure objectives as part of the *Interim Closure and Reclamation Plan*. The objectives for each mine component should be linked to the overall site closure goal, and lead to measurable closure criteria.

Response: BHPB provided draft closure objectives and criteria related to each mine component in the recent release of the *Interim Closure and Reclamation Plan* for the Ekati mine site. The Working Group, including representatives from DIAND, GNWT, the Department of Fisheries and Oceans (DFO), Environment Canada (EC), Aboriginal communities and the Agency, was set up by the Wek'èezhii Land and Water Board (WLWB) to provide comments and suggestions on the *Interim Closure and Reclamation Plan*. These comments and suggestions were incorporated into the final objective and criteria tables to improve clarity and understanding. Input from Laura Johnston from the Agency and guidance from the WLWB were particularly useful in this process.

Recommendation 2:

Closure and Reclamation Planning

Where information uncertainties exist in formulating objectives, options or criteria for any mine component, BHPB should explicitly identify the uncertainties in the text of the *Interim Closure and Reclamation Plan (ICRP)* and link them to that part of the reclamation research plan that addresses them.

Response: BHPB has always recognized that there will be a requirement for additional research in order to clarify the processes, techniques and plans to be employed in final closure of the mine site. While some of this research is currently underway other areas are in the planning stages and all these different areas of research were included in the research plan of the *Interim Closure and Reclamation Plan*. BHPB has provided improved connections and additional cross-referencing to outline the links with the reclamation research plans in the *Interim Closure and Reclamation Plan*. This was a result of input from the WLWB Working Group members during the recent meetings to review the Plan. ►

Glossary

Benthos

The bottom of water bodies that can contain living organisms.

Cumulative Effects

The environmental changes that occur from a project or activity combined with effects from other human activities.

Environmental Agreement

Created as a legally binding instrument to provide monitoring and input into management practices not covered by other authorizations. Parties to the Ekati Environmental Agreement include BHP Billiton, the federal and territorial governments, Akaicho Treaty 8, Kitikmeot Inuit Association, North Slave Metis Alliance and Tlicho Government. ►

Agency Recommendations for 2006-07

Recommendation 3:

Regional Monitoring, Cumulative Effects and Wildlife

There has been a lack of progress on regional and cumulative effects on caribou. The Government of the Northwest Territories and the Government of Nunavut should make greater efforts towards regional and cumulative effects monitoring and assessment, primarily as it relates to caribou.

Response: The GNWT remains committed to addressing cumulative impacts on barren-ground caribou as set out in the Department of Environment and Natural Resources' Framework for Action, the NWT Barren-ground Caribou Management Strategy and the Bathurst Caribou Management Plan. Although implementation of some initiatives has been delayed, the GNWT plans to convene a workshop on cumulative effects in the fall of 2007. The purpose of the workshop is to address potential cumulative effects assessment methodology and the links to regional and mine-specific monitoring

programs. The GNWT intends to work with all stakeholders including, but not limited to, communities, Aboriginal Governments, industry, DIAND and monitoring agencies. A partnership approach will be necessary to address this important issue within the Slave Geological Province and in other areas experiencing increased levels of human activities.

Recommendation 4:

Assessment of BHPB

DIAND, GNWT and BHPB should amend the Environmental Agreement to set March 31st as the deadline for submission of the AEMP and WEMP annual reports.

Response: BHPB, GNWT and DIAND acknowledge that this year is a key date for review of the Environment Agreement. It is expected that the signatories to the Environmental Agreement will consider a review of reporting requirements amongst other items in the Agreement. ■



Inukhok

Innuinagtun (language of the Kitikmeot Inuit) word for piles of stones arranged to look like a human figure.

Kimberlite

A rare, potentially diamond bearing iron and magnesium rich rock from deep below the surface. Kimberlites are generally found as vertical pipe-like structures.

Processed Kimberlite

The waste material and water mixture that is left over after the mill removes the diamonds. Also referred to as 'tailings'.

Reclamation

The recovery of areas of land and waterbodies that have been disturbed during mining.

Tailings

The waste material and water mixture that is left over after the mill removes the diamonds from the ore. Also referred to as Ekati as processed kimberlite.

Zooplankton

The small, almost microscopic animals that live suspended in freshwater (and ocean) environments. Zooplankton feed on phytoplankton and small particles in the water. ■



Independent Environmental ■ Monitoring Agency

How To Reach Us

In Person

Suite 203, 5006 Franklin Avenue
Yellowknife NT

By Mail

P.O. Box 1192
Yellowknife NT
X1A 2N8

By Telephone

(867) 669-9141

By Fax

(867) 669-9145

By E-mail

monitor1@yk.com
Or visit our website:
www.monitoringagency.net

Office Hours

Monday to Friday
9:00 a.m. – 12:00 p.m.
1:00 p.m. – 5:00 p.m.

Directors

Bill Ross

Chairperson
Faculty of Environmental Design
University of Calgary
Calgary AB T2N 1N4
Phone (403) 220-6961
Fax (403) 284-4399
E-mail ross@ucalgary.ca

Tim Byers

Vice-Chairperson
Box 1049, Teulon MB ROC 3B0
Phone/
Fax (204) 886-4642
E-mail Byerses@escape.ca

Jaida Ohokannoak

Secretary-Treasurer
P.O. Box 2366
Cambridge Bay NU X0B 0C0
Phone (867) 983-2153
E-mail jaida@polarnet.ca

Sheryl Grieve

P.O. Box 2301
Yellowknife NT X1A 2P7
Phone (867) 873-6762
Fax (867) 669-7442
E-mail lands@nsma.net

Laura Johnston

611-16th Avenue North
Creston BC V0B 1G5
Phone (250) 402-0036
E-mail laurajo@shaw.ca

Tony Pearce

RR1 – S6, C-9
Mayne Island BC V0N 2J0
Phone (250) 539-3015
Fax (250) 539-3025
E-mail tpearce@gulfislands.com

Kim Poole

2305 Annable Rd.
Nelson BC V1L 6K4
Phone (250) 825-4063
Fax (250) 825-4073
E-mail kpoole@aurorawildlife.com

Office Staff

Kevin O'Reilly

Manager

Sean Kollee

Environmental Analyst

2006-07 Plain Language Annual Report

