Aquatic Effects Monitoring Program — Lake and Stream Sampling Locations, 2004

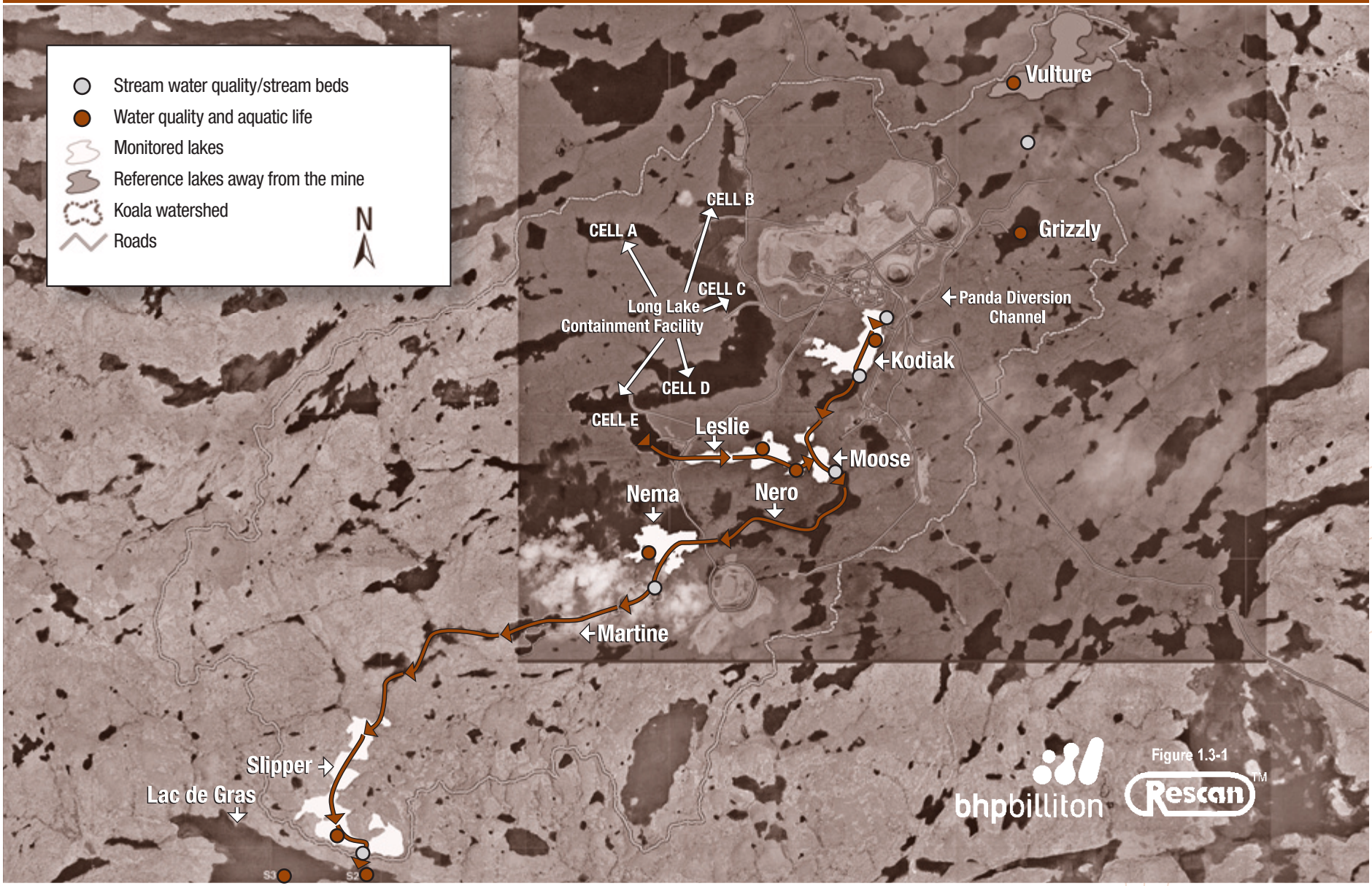

Figure 1.3-1

Wildlife Effects Monitoring

BHPB monitors caribou, grizzly bears, wolverines, wolves and birds at Ekati. BHPB also monitors losses of habitats, how garbage is disposed of, and if any wildlife are harmed by the mine or taken by predators close to the mine. Monitoring involves a combination of science and Traditional Knowledge (TK). Wildlife impacts are reduced through wildlife awareness programs, right-of-way of wildlife on roads, low speed limits for vehicles, and rules to manage garbage to avoid attracting wildlife.

BHPB's Findings

Total land disturbed at Ekati since 1997 now represents about 19.7 km^2 (about twice the size of Yellowknife). Monitoring of landfills at Ekati continues to show that the company is doing a good job to ensure wildlife will not be attracted to food waste in the garbage. In the past year, there were no reported wildlife deaths or injuries due to vehicles or aircraft. Seven caribou deaths were reported on or near the mine and six of these were associated with predators. No deaths of caribou were related to roads, buildings or pits.

Caribou numbers during the spring migration in 2004 was lower than in previous years. Caribou moving farther to the west as seen in autumn and winter may explain this. It appears that caribou prefer roads with light traffic and gently sloping edges. The wildlife effects monitoring program found no effects on caribou from the mine.

Grizzly bears, wolverines, wolves and their young continue to be widely distributed around the mine. Wolverines were regularly seen close to the mine despite strict garbage handling practices. Several methods were used to scare wolverines away from the mine buildings including bear-bangers and rubber bullets. BHPB reinforced skirting at the Misery camp to prevent

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Wolverine being released from trap

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Wolverine after release from trap

wolverines from getting under buildings to make a burrow or den.

Birds nesting near Ekati are able to breed close to mining activity. The number of birds and bird species found close to the mine were generally about the same as areas quite distant from the mine. As in previous years raptors used pit walls as nesting habitat.

Agency's Assessment

The Agency views the 2004 wildlife effects monitoring program as working well and of good quality. BHPB reported the results with great detail and sound analysis. The reporting of regional data on key wildlife species is viewed as an important improvement. The production of a plain language summary is helpful for local communities and the general public. We think that BHPB sets an excellent standard for reports on wildlife monitoring.

The Agency believes that the Ekati Mine creates only minor and limited effects on wildlife. We continue to support BHPB in ensuring its monitoring activities are similar to that of other mines in the region, particularly for species like caribou that need a lot of land. We think the construction of new roads should reflect the preference of caribou to cross roads with gently sloping edges over those with large boulders.

To improve its report, we think BHPB should discuss the observations made by the Aboriginal Peoples visiting the mine. We also support BHPB participating in a program to identify wolverine individuals based on DNA collected from hair samples. We heard a lot from the elders last year about the health of the Bathurst Caribou herd and that BHPB should study the vegetation around Ekati. This is something we have suggested to the company and we have recommended to the federal and territorial governments to better understand *cumulative effects* on caribou.

Protection on pipes installed to prevent wolverine access

JIM HERMANN/BHP BILLITON DIAMONDS INC.

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Mine Wastes

Like any mine, Ekati produces waste materials that it cannot use. This includes waste rock, wastewater, processed kimberlite, dust, hazardous materials, and regular garbage. The largest source of waste is from the rock dug out of the pits that does not contain diamonds. These rocks are piled near the pits that they came from.

Processed kimberlite (*tailings*) is a fine sand mixed with water that is left over after the rock has been crushed and the diamonds have been removed. This mixture together with sewage from camp activities is placed in the *tailings* pond called the Long Lake Containment Facility (LLCF). The water is held in the *tailings* pond until it is clean enough for release into lakes downstream. To handle other wastes, BHPB has built special areas to store snow and dirt that has been mixed with spilled or leaked oil from the machines working in the pits. Food waste and waste oil are burned to prevent animals and birds from being attracted to the dumps or to heat buildings. Hazardous wastes are shipped south on the winter road.

Waste rock pile with pit in the background

Waste Rock

Mining in 2004 focused on developing access to allow underground mining at the Panda and Koala North Pits. Open pit mining at these pits is finished, and the Panda-Koala waste rock pile is being readied for closure. A small portion of the pile will remain open to accept waste rock from the underground mines. BHPB is working on another large open pit called Fox, which was the largest source of waste rock in 2004. Mining of the Misery Pit has stopped and the operation will be shut down for the next few years.

As a condition of the water licence, BHPB monitors the waste rock piles during the summer to see if any contaminants are leaking out onto the land. Over the years these surveys have shown that leaks were small and few contaminants were found. In 2004 the Agency hired an expert to review the information collected by BHPB to ensure the piles are being managed properly. We think that the water leaking from the waste rock is currently a low environmental concern. However, we want BHPB to act on our recommendations to make sure the information collected from monitoring

is used to make sure the water coming out of the waste rock pile will be safe for the environment long after the mine has closed. Our main issue with the large waste rock piles at Ekati is how to properly close them after the mining is done.

Tailings and Wastewater

Two major events related to *tailings* and *wastewater* management occurred at Ekati in 2004. The first was when BHPB found out that the water being pumped from the *tailings* facility into the environment had greater amounts of some contaminants than expected. BHPB made this information public and has started a new study to determine the cause of these increases in contaminants. None of the water released from the mine in 2004 was above the limits set by the water licence and it was not harmful to the lakes and streams near Ekati, though some contaminants were higher than in previous years. It is important to understand the causes of the increases in contaminants to prevent future problems.

The second event was a review of how BHPB stores and manages the *tailings* that are leftover after the diamonds are removed. Currently the *tailings* are mixed with water and sent to a lake that is divided into smaller sections or cells (the LLCF) that are then pumped full with the *tailings*. BHPB has learned over the years that the *tailings* do not flow as far as predicted so the cells are not being filled up as much as it planned. There is also a powdery, very fine dirt portion of the *tailings* that does not settle out of the water. It may be necessary to make sure that water covers these fine *tailings* so that after the mine closes, spring runoff will not carry it downstream.

BHPB involved our Aboriginal members, the regulators and the Agency in workshops to explore options for improving the management of *tailings*. The preferred option to come out of this consultation process was to delay pumping *tailings* into the lower cells of the lake as long as possible or until an empty pit becomes available. Having an empty cell allows the powdery *tailings* to settle to the bottom and contaminants to be filtered out of the water, making the water cleaner before it is released to the environment. An empty pit could also be used for backfilling with *tailings* and this could help ensure the water quality downstream is protected.

We think managing the *tailings* to ensure the mine can be safely closed is absolutely essential to protecting the environment at Ekati. We were impressed by the serious effort that BHPB put into including our Society members in the review of the *tailings* pond. The consultation highlighted many areas about managing *tailings* that BHPB will have to answer before it submits a new *Wastewater* and *Processed Kimberlite* (*tailings*) Management Plan to the MVLWB for approval. The very fine dirt portion of the *tailings* that does not settle easily makes closure much more difficult. Another challenge is the *tailings* beach zones where the *tailings* cannot be frozen and will be difficult to re-vegetate or cover with rock. We expect the new *tailings* management plan to describe closure of the *tailings* pond area in detail. Reviewers of the plan should expect that the *reclamation* measures proposed would actually work to recommend the plan be approved by the MVLWB.

Air Quality and Dust

We heard from our meetings with elders that the effect of dust on vegetation eaten by caribou is a key concern. We raised this issue with BHPB and would like the company to develop an improved monitoring program to see what contaminants are in the dust and how far the dust is blown before it settles. BHPB will be using a new computer model to predict where the dust monitoring stations should be located. Progress has been slow but as we go to press we have been informed that models have been developed and we look forward to reviewing the results of the sampling survey that took place in early 2005.

Truck on Misery Road