The Independent Environmental Watchdog
A Canadian Experiment in EIA Follow-up

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Abstract

The Ekati Diamond Mine™ is Canada's first diamond mine. When it was approved, it went through a high level of environmental assessment and one of the conditions of approval recommended was the creation of an independent "watchdog". The 'Environmental Agreement' for the mine, signed by BHP Billiton[1], the Mine operator, the Canadian federal Government and the Government of the Northwest Territories, required the creation of the "Independent Environmental Monitoring Agency" to oversee both the project and the project's government regulators. The Agency reports to the public and, especially, to the four Aboriginal communities most directly affected by the Mine. Other interesting approaches to follow up for the Mine have also been used. One reported on here is involvement by the affected communities.

This chapter reports on the follow up program for the Mine, the involvement of the affected communities in monitoring and specifically on the mandate and operation of the Independent Environmental Monitoring Agency, created in 1997. It also describes the successes and failures of that Agency as judged by the author, a member of the Monitoring Agency since its inception. The overall effectiveness of the follow up for the Mine is also evaluated.

Introduction

The purpose of this paper is to describe an innovative Canadian experiment in monitoring and management for a major northern project. The project is the Ekati Diamond Mine™ (henceforth Ekati Mine) operated by BHP Billiton (BHPB) in the Northwest Territories, Canada. The major monitoring and management innovation is the Independent Environmental Monitoring Agency (henceforth the Agency). The Agency was established to serve as an independent watchdog for environmental management at the Ekati Mine.

The chapter will describe briefly the Mine, the environmental impact assessment process used to review the mine, the follow up requirements required as a result of the review, the environmental concerns associated with the mine and, especially, the Agency. Some emphasis is placed on how the follow up programs have been able to manage the environmental impacts. The chapter also describes the involvement of the affected

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[1] The company changed from BHP to BHP Billiton, hence BHPB, during the operation of the Mine. Throughout this chapter, it is referred to as BHPB. Technically, it is BHP Billiton Diamonds Inc. that operates the Mine.

communities in monitoring and management for the Mine. Some analysis of the success of the innovation is also provided.

Ekati Mine

The Ekati Mine is Canada's first diamond mine. It produces gem quality diamonds and is located in Canada's North, on the barren lands near Lac de Gras about 300 km northeast of Yellowknife, Northwest Territories and close to Nunavut Territory. Construction of the mine commenced in 1996 and production started in October 1998.

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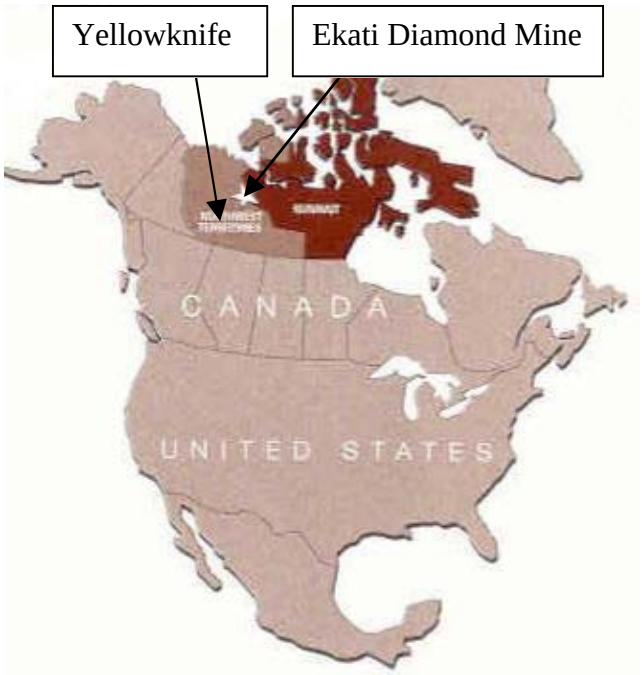

The mine involves extraction of kimberlite, the ore containing the diamonds from "pipes", usually found under lakes. The kimberlite is processed on site and the diamonds are sent through Yellowknife to market. In order to get at the kimberlite ore, which is done primarily by surface mining techniques, the lakes must be drained, or "dewatered". Explosives are used to blast the surrounding rock. The waste rock is then sent to waste

rock piles, while the kimberlite is sent to the processing plant. Capacity of the processing plant is now 9000 tonnes per day, which will be increased to 18 000 tonnes per day in a few years. The processed kimberlite is sent to a large tailings pond where it is allowed to settle onto the bottom and to become encased in permafrost (permanently frozen ground). It is possible that the tailings will be revegetated with local plant species (less expensive and environmentally preferred if this option proves feasible), although the currently approved abandonment and reclamation plan calls for covering the tailings with rock.

There is an on site work camp, which accommodates approximately 650 persons. Thus, there are impacts of the mining, of the processing and of the largest "hotel" in the Northwest Territories. Planes fly to and from the site from Yellowknife every day (weather permitting) and there is road access during the winter (over the ice on the "winter road") for a few months each year.

Environmental Impact Assessment Process for the Ekati Mine

The Ekati Diamond Mine was subject to a full panel review (see text box), the highest level of assessment under the Canadian environmental impact assessment process. The review was carried out from 1994 to 1996. Couch (2002) reports in more detail on the environmental impact assessment process for the Ekati Mine. The environmental assessment panel held scoping meetings in early 1995 in eight communities in the Northwest Territories and Nunavut. The panel received over 50 written submissions and heard from approximately 125 presenters at that stage of the process. It then issued the final guidelines for the environmental impact statement.

When the environmental impact statement had been accepted, the panel held 18 days of project review public hearings. These were held in nine different communities in early 1996. The panel received over 75 written submissions and heard approximately 260 presentations.

Approval also required subsequent hearings in Yellowknife before the Northwest Territories Water Board. The environmental assessment panel made recommendations to the Government of Canada and the Water Board determined conditions of the Water Licence issued to BHPB. The environmental assessment panel concluded: "The Panel concludes
that the environmental effects of the Project are largely predictable and mitigable. Effects not predicted can be detected by monitoring and can be addressed by the Proponent's proposed environmental management plans and adaptive management strategy." (MacLachlan et al, 1996, p 1) At the end of the process, the project was approved subject to a number of conditions (MacLachlan et al, 1996).

The major people affected by the project were determined to be aboriginal groups from the surrounding regions: the Kitikmeot Inuit Association (based in Kugluktuk on the Arctic Ocean); the Dogrib Treaty 11 Council (based around Behchoko, also known as Rae-Edzo, north of Yellowknife); Akaitcho Treaty 8 (based in Lutsel k'e to the east of Yellowknife and in Yellowknife itself); and the North Slave Metis Alliance (based in Yellowknife). These aboriginal groups traditionally used the area where the Mine is now located. They are also based in the communities closest to the Mine. In the Northwest Territories, and especially in neighbouring Nunavut (which includes Kugluktuk), aboriginal people are a large proportion of the population (in Nunavut, a majority). These groups, as we shall soon note, have special status in the environmental management of the mine.

BHPB's main means of managing environmental impacts was "adaptive environmental management" (MacLachlan et al, 1996), in effect, to monitor results, evaluate them and manage any unacceptable results to make them acceptable. This approach made it all the more important to have an effective monitoring and management program in place for the mine.

EIA Classes in Canada (Canadian Environmental Assessment Act)

- Screening – assessed relatively quickly (~6000 annually)
- Comprehensive Study - projects that have potential for greater environmental impacts (~20 annually)
- Review Panel – more major project impacts - review by an independent panel (a few annually)

Follow Up Requirements for Ekati Mine

Because there are relatively few panel reviews and because these reviews are primarily for projects likely to have more environmental impacts, there is no "standard" requirement for follow up for such projects. Specialised attention is given to them, by the environmental assessment panel and subsequently by the regulators, and normally there is a substantial follow up requirement imposed as a condition of approval. Details of the follow up program will follow from the environmental review. More information on follow up studies under the Canadian Environmental Assessment Act is available from CEAA (2002).

There are several authorisations for the Ekati Mine. The important ones for the purpose of follow up requirements are the class A water licence (for Panda, Koala, Koala North, Misery and Fox pipes), the authorization for works or undertakings affecting fish habitat, the class A water licence for the Sable Pidgeon and Beartooth pipes, and the Sable and Pidgeon land use permits. All these documents are available from the Independent Environmental Monitoring Agency (2002d).

Most importantly for the purposes of this paper, the approval was subject to the conditions of an Environmental Agreement signed by BHPB (the project proponent), the

Government of the Northwest Territories and the Government of Canada (Independent Environmental Monitoring Agency, 2002e).

There were other monitoring and management requirements attached to the approval as well. The approval by the Northwest Territories Water Board[2] required water quality monitoring. The approval under the Fisheries Act (dewatering of the lakes) required fish studies. Approval by the Ministry of Renewable Resources of the Northwest Territories required wildlife monitoring, although this requirement and the monitoring of aquatic effects is handled mainly through the Environmental Agreement. BHPB also must provide and constantly update its operating environmental management plan (consisting of air quality management plans; materials management plans, including a spill contingency plan for on site spills and spills on the winter road; wildlife management plans, including but not limited to caribou management, grizzly bear management and the effects of esker disturbance on wildlife; traffic management plans; aquatic life management plans; waste management plan; quarry management plans; and environmental monitoring programs) (the OEMP is to be posted on the web, but that web site seems not to be available yet. The Monitoring Agency web site will refer to it when it exists, or a correct web site will be provided). BHPB also has bilateral (socioeconomic) impact benefit agreements with each of the four aboriginal groups. These agreements are based on the principle that the project causes impacts on the communities and so the company also provides some compensating benefits as developed in consultation with the individual communities. The environmental assessment panel recommended: "that all parties set the timely negotiation, conclusion and implementation of Impact and Benefits Agreements as a priority." (MacLachlan et al, 1996, p 3) The content of the impact benefit agreements is confidential and the agreements are outside the mandate of the Agency and of the Environmental Agreement. These monitoring requirements, except for those imposed through the Environmental Agreement, are fairly conventional; they are of the type that would normally be imposed on any large development project in Canada.

BHPB has made the following observation about its monitoring programs. "The main objective of the Aquatic Effects Monitoring Program (AEMP) is to identify any effects that the EKATI™ Mine is having on the surrounding aquatic environment. Results are incorporated into BHPB's overall Environmental Management Plan such that actions can be taken to minimize any effects from mine operations." (BHPB, 2002a, p 87) This link between the monitoring program and environmental management at the Mine is consistent with the adaptive environmental management approach taken by BHPB.

BHPB has just received approval for an expansion of the project. It obtained authority to mine three other pipes not previously approved. The proposal went before the Mackenzie Valley Land and Water Board, which held hearings at which it sought input regarding conditions of approval, such as monitoring program details. The Agency participated actively in this review.

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[2] This has since been replaced by the Mackenzie Valley Land and Water Board, an inessential detail for the purposes of this paper, but an important change in the Northwest Territories.

The follow up requirements of BHPB are outlined briefly in the following text box.

Follow up Requirements for Ekati Mine

Wildlife Effects Monitoring

- Distribution, behaviour and activity patterns of wildlife are observed
- Study area of 1600 km^2
- Caribou, wolves, grizzly bear, wolverines, upland birds, loons, raptors, and wildlife habitat
- Continually refined by annual workshops to improve program

Aquatic Effects Monitoring

Surveillance Network Program

- Required by water licence
- ~20 active stations
- compliance monitoring – to ensure compliance with regulations
- Monitored parameters vary – usually include pH, total suspended solids, metals scan
- Water licence regulations cover ammonia, aluminum, arsenic, copper, nickel, total suspended solids, pH, BOD_5, and oil and grease
- Frequency varies from weekly (during open water) to annually - ~160 samples annually

Aquatic Effects Monitoring Program

- Required by both water licence and Environmental Agreement
- Meteorology, hydrology, lake water quality, stream water quality, physical limnology, phytoplankton, zooplankton, lake benthos, and stream benthos
- Continually refined by annual workshops to improve program
- Before-After-Control-Impact statistical design - Analysis of Variance
    - Before and after project (compare baseline and after project start)
    - Control is a monitoring site far from the Mine so no effect is expected
    - Impact is a site that could be affected by the Mine

Special Effects Monitoring Programs

- Panda Diversion Channel
    - Required by Fisheries authorisation (channel was constructed to provide fish habitat)
    - evaluate predictions made concerning the effectiveness of the channel
    - Fish studies (mainly Arctic grayling)
    - Fish habitat studies
- Kodiak Lake
    - Identify nutrient-related effects on the aquatic environment of Kodiak Lake
    - Assess the recovery of the lake from the input of nutrients
    - water quality, phytoplankton and zooplankton biomass, and dissolved oxygen

Follow up Requirements for Ekati Mine (continued)

Aquatic Effects Monitoring

Fish Out Studies

- Required by Fisheries authorisation
- Catch all fish when draining lakes
- Confirm predictions of fish impacts

Meteorology

- Automated weather stations (two)
- Since 1993 (baseline plus post project)
- Average annual temperature -7.3 to -8.5 degrees Celsius
- Evaporation pan to measure evapotranspiration
- Snow surveys
- Wind surveys being done to explore use of wind power

Hydrology

- Four stream hydrology stations plus two control stations (continuously operated)

Air Quality

- Mass balance emission calculations
  - NO_x, SO_2, greenhouse gases
- Total Suspended Particulate sampling
  - Two high volume air samplers
  - Operate continuously for 24 hours every six days
  - 23 measurements at each station May to September

Information for this text box obtained primarily from BHPB (2001)

Management of Environmental Impacts

The range of environmental issues associated with the mine include wildlife impacts, aquatic effects, impacts associated with mine waste and cumulative effects (Independent Environmental Monitoring Agency, 2001; Independent Environmental Monitoring Agency, 2002). MacLachlan et al (1996) observed "potential effects on wildlife, in particular caribou, and water were the most important environmental issues in this review."

The wildlife impacts are dominantly concerns for impacts on caribou, as the Bathurst caribou herd is the largest herd in Canada (population about 300 000) and thousands to tens of thousands of caribou migrate through the mine lease area twice annually. The main concern is that the Mine will disrupt caribou during their migrations. Caribou are of great importance for aboriginal people. Bears, wolves, wolverines, birds,

loons and raptors are also species of concern for which monitoring and management is carried out.

Insert caribou photo about here.

Aquatic effects (reported in Rescan, 2000a; Rescan 2000b; and in Dillon 2000) are created when lakes are drained or bypass channels are created. Monitoring requirements have been created by various legal instruments including the water licence, the Environmental Agreement and the Fisheries authorisation[3]. Both the dewatering of lakes and the creation of new channels must be carried out in such a way as to create "no net loss of fisheries habitat", in accordance with the requirements of the Canadian Fisheries Act. There have been special studies carried out in association with deposition of nutrients into Kodiak Lake, the lake adjacent to the dormitory and processing plant and to determine the effectiveness of the Panda diversion channel for fish habitat (e.g., Rescan, 2000a). The addition of nutrients from treated sewage, from dewatering the adjacent Panda Lake, and from silt loading from the Panda diversion channel, resulted in a change in the trophic status of Kodiak Lake, from unproductive to moderately productive. Associated changes in dissolved oxygen under winter ice created potential problems for fish. Indeed, the fisheries expert on the Monitoring Agency was looking at the measured results for dissolved oxygen under ice in Kodiak Lake and noticed that they were dropping quite rapidly[4]. He pointed this out to BHPB. Adaptive environmental management was applied and changes were made to protect the fish. This was one of the early examples of a possible problem being avoided by careful monitoring (collection of dissolved oxygen data), evaluation (assessment of what it means – dropping values) and management (divert sewage from Kodiak lake to the tailings pond, aeration of Kodiak Lake) programs.

One of the crucial lessons to be learned from this impact is the importance of monitoring an early warning indicator (dissolved oxygen in the water column, rather than finding dead fish in the lake). Another lesson found for this impact is the importance of watching, not just the level of a monitored parameter, but also its trend (the oxygen levels were still satisfactory when observed, but the rapid decline indicated that anoxic water would soon be dominant and fish deaths would result in the absence of corrective action).

Impacts associated with the mine waste include the runoff from the waste rock pile. The rock could be acid generating (acid mine drainage), in which case acidic runoff may need active management. This possibility is being investigated; some monitoring results suggest the possibility (a few seeps from the rock pile have low pH and high sulphate). This was a concern for a year or two, but it seems no longer to be serious. Indeed, the Independent Environmental Monitoring Agency (2002a) concluded that "BHPB's technical consultant has developed a robust approach to identifying and

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[3] All three of these documents are available through the web site of the Monitoring Agency (under "key documents") (Independent Environmental Monitoring Agency, 2002).

[4] Dr. Peter McCart, a Monitoring Agency Board member, does not enjoy discussions of "policy issues", although the Agency spends a good deal of time doing this. He tends to devote his attention during such discussions to reviewing monitoring data. He does it very well.

analysing the [acid drainage] problems that have arisen". Again, water quality monitoring of "seeps" from the Panda waste rock pile provided the indication of a possible problem. This led to a revised (much more intensive) monitoring program to understand better what was happening and what should be done about it. These more detailed studies combined with three workshops involving stakeholders led to improved understanding of waste rock chemistry and better options for managing different types, understanding that is proving useful for waste rock piles associated with other pits, where rock geochemistry is different[5].

There are still minor concerns about the possible toxicity of the kimberlite tailings on fish. Preliminary studies suggest this may not be a problem, but studies continue. One of the interesting options to limiting the size of the tailings pond is to use the kimberlite tailings to fill in the mined-out pits. This will only be possible if the kimberlite is not toxic to aquatic life. Currently, studies are being conducted comparing the growth of benthic invertebrates on a substrate of kimberlite tailings with the growth on a natural lake bottom. If the growth on a kimberlite substrate is successful, the option of putting it into the pits before reclaiming the lakes will look more promising.

Cumulative impacts, the impacts of the Ekati Mine in combination with the impacts of other human activities in the region are another concern. While the region is certainly undeveloped compared to most industrial areas, the aboriginal people have a strong desire to protect the environment and wish it to remain as a high quality refuge from industrial pollution. There are several other activities that could contribute to cumulative impacts on wildlife or aquatic effects. These include exploration for diamonds (carried out by BHPB as well as by several other companies), the construction and operation of the recently approved Diavik Mine under construction approximately 30 km to the southeast of the Ekati mine, other diamond mines currently being planned, expansion of the Ekati mine by the addition of three new kimberlite pipes (recently applied for and approved), the winter road used to transport equipment to several mines in the area, and the possible construction of an all weather road to service more mining development.

Indeed, the only "significant adverse effect" noted by the Agency was a cumulative effect, the effect of the Ekati Mine, the Diavik Mine and a camp operated for the winter road on the local wolverine population (Independent Environmental Monitoring Agency, 2001). In 2001, BHPB noted, "since January 1998, there have been 16 wolverines relocated or destroyed in association with mining activities in the Lac de Gras area" (BHPB, 2002, p x). The Agency noted, "the repeated relocation or destruction of wolverines in the Lac de Gras area, relative to poor waste management practices by a number of operators in 1998-2001, indeed represents a significant adverse cumulative effect on the local population of wolverines". The Agency also observed "that improved waste management practices by BHP-Billiton in 2002 have decreased its contribution to the cumulative effect on wolverines". (Independent Environmental Monitoring Agency, 2002c)

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[5] Examples of management actions include the choice of where to place different rock types on the rock pile and monitoring to ensure rapid permafrost penetration into the rock piles so that any water entering the rock pile will freeze permanently.

By early 2003, the Agency learned from inspectors and from wildlife incident reports that the waste handling problems had been greatly improved and the significant adverse effect has been properly managed. There are no longer any significant adverse effects.

The graphic of the wolverine should go about here.

It should be noted that the wolverine is also the symbol of the Agency. A wolverine is a predator that becomes very aggressive when challenged. It has sharp teeth. The Agency Chair, Red Pederson, has indicated that the best thing to do with sharp teeth is to smile with them, thus showing others how sharp they are, while remaining friendly.

Effectiveness of Environmental Management at Ekati

In its annual report of 2000, the Agency made the following observation about the effectiveness of BHPB's environmental management:

> "[BHPB's] environmental management and compliance has, to date, been good and improving. [BHPB], the regulatory authorities, the Aboriginal organisations and the Agency contribute to the ongoing improvement of the environmental management at [Ekati]. The company has made efforts to comply with the terms of its authorizations, as is evident from the available inspection reports. Overall [BHPB] has responded well to facing the challenges of being the first operating diamond mine in the North." (Independent Environmental Monitoring Agency, 2000)

It is my view that the intervening two years have not changed this evaluation. The significant adverse effect on wolverine has occurred, but, as noted above, BHPB has responded well to that problem. Other than the wolverine impact, there have been no identified significant adverse impacts to date. There will likely be other impacts discovered in the future, but the company is making efforts to avoid them, as are others.

Independent Environmental Monitoring Agency

The Environmental Agreement, among other things, establishes the Independent Environmental Monitoring Agency as a "watchdog" for environmental management for the Ekati Mine. The Agency is to watch over both the mine operator, BHPB, and the regulators, the various agencies of the Government of Canada and the Government of the Northwest Territories. It is this role as watchdog that makes the Agency unique. There have been many advisory bodies, but the Agency has the mandated responsibility to recommend action by BHPB and by the regulators to improve environmental management at the Mine. These recommendations must be responded to publicly.

The Environmental Agreement also obliges BHPB to report annually on environmental programs and every three years to prepare an environmental impact report. The annual report must "include the results of BHPB's ongoing compliance with this Agreement and applicable legislation, instruments and agreements for the preceding Reporting Year and providing the Minister, the GNWT, the Monitoring Agency and the Aboriginal Peoples with all supporting information and data from the environmental monitoring". The three year environmental impact report must present the longer term

effects of the project, the results of environmental monitoring programs and the actual performance of the project in comparison to the results predicted in the Impact Statement and to evaluate how BHPB's adaptive environmental management has performed. In its environmental management of the mine, BHPB is also required to give full consideration to the traditional knowledge of aboriginal people, a responsibility the Agency is required to "review, report, or make recommendations on". More information on community involvement aspects of this will be covered in the following section.

The full text of the Environmental Agreement is available on the Agency web site (Independent Environmental Monitoring Agency, 2002d): www.monitoringagency.net

There are seven members to whom the Agency is responsible: BHPB, the Government of Canada, the Government of the Northwest Territories, and the four aboriginal groups in the region - the Kitikmeot Inuit Association; the Dogrib Treaty 11 Council; Akaitcho Treaty 8; and the North Slave Metis Alliance. These seven members comprise the Society. There are seven Agency Board members appointed by these seven members. Three are jointly appointed by BHPB and the two governments in consultation with the aboriginal groups, while the aboriginal groups each appoint one member. While Agency Board members may be so appointed, we are not representatives of those who appoint us. We all have the same mandate, the mandate spelled out in the Environmental Agreement. The following text box describes briefly the Agency Board members.

The Agency Board members and the member(s) who appointed them are:

- a retired senior politician from the Government of the Northwest Territories (Kitikmeot Inuit Association)
- a retired fisheries consultant with extensive Northern experience (BHP and Governments)
- a university professor specializing in wildlife biology (BHP and Governments)
- an environmental consultant with impact assessment experience, mostly working for aboriginal consultants (Dogrib Treaty 11 Council)
- a university professor specializing in environmental impact assessment (BHP and Governments)
- the vice president of the North Slave Metis Alliance who is also the chair of a similar Agency recently put in place for the Diavik Mine (North Slave Metis Alliance) As this chapter was being submitted, the Metis member was changed to an environmental consultant specialising in aquatic effects.
- a consultant with extensive Canadian Arctic experience (Akaitcho Treaty 8)

The Board is an active one in that a good deal of the work of the Agency is carried out by Board members, although we are ably assisted by two staff persons (manager and an environmental analyst) who run the office in Yellowknife and carry out much of our analysis and day-to-day work. The Agency operates with an annual budget of approximately $500 000 (Canadian dollars) provided by BHPB, in accordance with the Environmental Agreement. The tasks of the Agency, as outlined in the Environmental Agreement are outlined in the following text box.

The tasks of the Agency include:

1 reviewing and commenting on monitoring and management plans and the results of these activities;

2 monitoring and encouraging the integration of traditional knowledge of the nearby aboriginal peoples into the mine's environmental plans;

3 participating in regulatory processes directly related to environmental matters involving the Ekati mine, its impacts and its cumulative effects;

4 bringing concerns of the aboriginal peoples and the general public to the Ekati diamond mine operators and to government;

5 keeping aboriginal peoples and the public informed about Agency activities and findings; and

6 writing an annual report with recommendations that require the response of BHP and governments.

In order to carry out these tasks, the Agency engages in the activities outlined in the following text box. It is worth explaining some of these further. Two tasks to which Board members dedicate the bulk of their time are reviewing documents (BHPB annual reports, applications for Mine expansions, annual monitoring reports, regulatory reports and the like) and reviewing and commenting on regulatory approvals. The latter is illustrated by the application for a new licence to mine three new kimberlite pipes: Sable, Pidgeon and Beartooth. These three pipes were not included in the original approval and went through a two year approval process. An EIA document was prepared for the Mackenzie Valley Environmental Impact Review Board, which held hearings and made recommendations. The Agency reviewed the EIA document, offered advice to the Review Board and participated in the hearings. While this was a much more modest EIA review process than was used for the original Mine application, it was still very demanding of Agency, regulator and industry time. The final approvals were issued by the Mackenzie Valley Land and Water Board, which again solicited input from the Agency and held a short hearing in which we participated fully.

In order to meet its mandate, the Agency:

- monitors and reviews environmental management plans and reports by BHP and government agencies
- analyses issues to promote the identification, evaluation and management of environmental impacts
- reviews the activities of regulatory agencies and their interactions with BHP
- monitors the progress of traditional knowledge studies funded by BHP and conducted by aboriginal organisations
- facilitates interaction between BHP and aboriginal organisations to integrate traditional knowledge into BHP's management plan
- participates in technical workshops involving environmental management at the Ekati mine
- meets and corresponds regularly with with BHP and regulators about environmental issues at Ekati
- reviews and comments on regulatory approvals sought by BHP that relate to environmental matters
- reports to aboriginal organisations and the public at large
- maintains a publicly accessible library of all materials regarding environmental management of the Ekati mine
- publishes newsletters, a web site, a brochure and annual reports
- holds an annual general meeting for members of the Monitoring Agency

Community Involvement in Follow Up Studies

It was noted above that BHPB had a formal requirement under the Environmental Agreement to include consideration of traditional knowledge in its mine environmental management. It has done so in a variety of ways.

> "BHP Billiton Diamonds Inc. strives to incorporate Traditional Knowledge into its environmental programs. In an effort to do so, representatives from the communities have visited the mine site to see first-hand, the success of our mitigation measures. During their visit we encourage them to share with us their understanding of the land and its wildlife. Elders from various communities are flown up to site, housed in staff accommodations, and accompany environmental staff during their monitoring duties. In 2001, for example, visitors from Kugluktuk, Lutsel k'e, North Slave Metis Alliance, Treaty 11, and the Yellowknives Dene came to site to observe the caribou migration, provide input on environmental management programs and to become familiar with the site" (BHPB, 2002, p 17).

One of the wildlife monitoring requirements agreed to is to do snow track surveys (a common means of counting animals in the winter) of wolverine regularly. The question of who is best qualified to do such surveys was asked and the answer was clear. Allen Niptanatiak, of Kugluktuk, several hundred kilometres north of the Mine is known as the best wolverine trapper in the area. He was hired by BHPB to do the surveys, thus obtaining the best qualified person for this monitoring responsibility, obtaining direct input from an aboriginal person based on traditional knowledge and hiring someone from one of the directly affected communities – truly a win – win choice. In commuting from his home to the Mine site, Mr. Niptanatiuk often does so by snowmobile over the barren lands with neither a global positioning device nor maps to guide him. Since this happens in the winter (one can only do snow track surveys when there is snow on the ground), the temperature is distinctly inhospitable (often dropping below –30 degrees Celsius at night). The results of his surveys are provided to the environmental consultants for incorporation into BHPB's wildlife effects monitoring program report.

One of the most successful means of obtaining traditional knowledge from affected aboriginal groups has been bringing elders to the Mine site and seeking their advice on matters of environmental concern (noted above). Because the caribou are the ecosystem component most valued by Northern aboriginal people, much of their input relates to caribou. For example, BHPB is now investigating means of revegetating its tailings pond. According to BHPB:

> "The Dogrib have indicated that they would like [BHPB] to discourage caribou from using the revegetated cells and based on their report appear to have some ideas about plants that the caribou do not like to eat. This would appear to be an excellent opportunity for collaboration." (BHPB, 2001, p 112)

Aboriginal elders have also made other caribou observations when they have visited the Mine site. They have expressed concerns about airborne dust (from roads, blasting and the tailings pond) covering vegetation used for food by caribou. As a result of this input, members of the Monitoring Agency and government regulators have also raised the same

question at workshops to improve the monitoring programs. Such studies of vegetation are now being undertaken by BHPB.

Elders who visit the site during caribou migration have also been taken along haul roads leading to kimberlite pipes being mined at some distance from the main camp. Here the concern is how much the haul road influences caribou migration and hence, the design of future haul roads can be adjusted depending on what is found. The elders, with their trained eyes, are far better able to detect different behaviour by caribou than are road design engineers. While there, elders are able to see many different aspects of caribou ecology. In the summer of 2001, wolves were watched herding caribou into "boulder fields" (land covered with large boulders where the caribou could not run as fast and where they would be easier prey for the wolves). One caribou had apparently broken its leg and was being ignored by the wolves temporarily. An elder reported the lame caribou as being "in nature's freezer", as it would remain there, unable to escape, until the wolves wanted it (Armstrong, 2001).

In addition, Gerry Atatahak on behalf of the Kugluktuk Agoniatit Association and the Kitikmeot Inuit Association has carried out much of the work on a BHPB funded traditional knowledge study that has resulted in a traditional knowledge based geographic information system designed for use in preliminary land use screening (BHPB, 2001).

BHPB also is obliged to visit the communities to explain what it is doing and what it has found in its annual report. In this way, it provides feedback on environmental performance.

Evaluation of the Agency

In preparing this chapter, I carried out my own personal evaluation of the successes and failures of the Agency. This evaluation has been shaped in part by an independent evaluation. The Agency contracted with an independent consulting firm, the Macleod Institute, to interview Society members, regulators and other stakeholders, and to conduct an evaluation of the Agency's performance to date. The Macleod Institute (Macleod Institute, 2000) identified the Agency's strengths and weaknesses and made recommendations for improvement. What follows is my assessment combined with that of the Macleod Institute.

— The strengths of the Agency have been:

(1) Improvements to monitoring programs. The monitoring programs originally proposed by BHPB were, in the Agency's view, very poor. We worked immediately with BHPB and its consultants to improve them modestly and encouraged better consultation to make future monitoring programs better yet. Following the implementation of these annual workshops (see the next point), we believe the monitoring programs are now very good. Indeed, others have also reached this conclusion. Clark, the environmental screener for the Kitikmeot Inuit Association indicated "I have also been impressed by the rigour and quality of the [aquatic effects monitoring program] of the Ekati project." (Clark, 2003)

(2) Annual workshops to improve the monitoring programs conducted by BHPB involving all stakeholders (BHPB and its consultants, the Agency, government regulators, aboriginal people, interested environmental groups and other industry representatives).

(3) Aboriginal liaison to promote traditional knowledge work. We have worked actively with the four aboriginal members and with BHPB to further the development and use of traditional knowledge. With the cooperation and encouragement of all of our members, we facilitated two major workshops involving all four aboriginal groups and BHPB. The most recent one was jointly sponsored by ourselves and the similar board for the Diavik project (ref, 2003).
(4) Identification and management of impacts. Agency Board members have identified potential problems and immediately urged BHPB to adjust its management in response to the observed results. We have also made suggestions to BHPB and to government agencies concerning good environmental management practices.
(5) Reporting to aboriginal members. We have held meetings in aboriginal communities and have frequently met with these aboriginal groups at our regular board meetings.
(6) "The Agency's technical (scientific) contributions are well accepted. A number of Society members expressed a real feeling of comfort that the Agency is ensuring that BHPB's licence conditions are being met." (Macleod Institute, 2000)
(7) "Establishing facilities such as a public access library, frequent newsletters and a website." (Macleod Institute, 2000)

The weaknesses of the Agency have been:
(1) Inadequate reporting to aboriginal members. In spite of our efforts, we have not generally succeeded in this challenging task. Note that I believe this is both a strength and a weakness of the Agency's performance.
(2) Poor working relationships with BHPB and government agencies. In performing out watchdog role, I believe we have unduly sacrificed the ability to work more closely with BHPB and the government agencies. At the time of this writing, I believe these problems have been significantly reduced. In the beginning, these were more serious. Some may question whether the Agency can be truly independent if three of its seven members are appointed by governments and the mine operator (in consultation with the aboriginal organisations). I am told that the aboriginal groups effectively had a veto over the three appointments and all three have remained from the initial appointment. The independent review of the Agency by the Macleod Institute (2003, p 18) concluded:

> "In its efforts to be independent, the Agency operated somewhat in isolation from other organisations … The degree of independence the Agency has undertaken has significantly limited its ability to build effective partnerships and realistic expectations with organisations and initiatives."

In short, the Macleod Institute concluded we were too independent. Following these findings, we made efforts to work more closely with all stakeholders, an action needed to build trust in Canada's North.
(3) Internal difficulties in reaching decisions we agree on.

One suggestion that the Agency has been seen as being effective by the aboriginal people is illustrated by the following text box, which contains a quote from Joe Rabesca,

the Grand Chief of the Dogrib[6]. The statement was made at the 1999 annual general meeting of the Society responsible for the Independent Environmental Monitoring Agency.

> **Joe Rabesca** *(Grand Chief Dogrib Treaty 11)* This is the kind of work that should have been done a really long time ago. The area between Rae Edzo and Great Bear Lake is my part of the country and mines have historically been bad for us; a complete lack of effort to clean them up.
> I can see the importance of the work being done and feel BHP working through the Agency is what we all need. There is a lot of uncertainty and that's why we have to work together. If people like the ones in this room can demonstrate that the land will be fine, then we will listen. Diavik did not do this. We must hit these things before the problems happen, but there's no sense talking about it after the fact. Hit it early and plan ahead. We have to keep this land clean. We have one kind of water up there: pure and clean. We want to keep it this way. This is our homeland and I'm not going to move away. I grew up with fish and wildlife and I'm going to keep them around. My kids will have them too. I appreciate what you guys (Directors of the Agency) have done over the past few years and I wanted to give you a pat on the back to say good work and I want you to keep it up. We need to work on these uncertainties. The Dogrib are not against development. A mine gives our people jobs. This mine needs to be a safe and sound place to work. It needs to be a

Another indicator of success is based on recent discussions involving both Agency Board members and staff and government regulators. There is increasingly better regulation of the Mine based on inputs from the Agency. Conditions of approval recommended by the Agency are being seriously examined and adopted. Recommendations to government regulators in our annual report are agreed with and actions taken. And, there is a general view that an independent watchdog looking over a regulator's shoulder leads to better performance by the regulator.

Similarly, the working relationship with BHPB has improved and the suggestions for improvements in monitoring programs are being increasingly accepted by both BHPB and the regulators. This acceptance has been coupled with greater tolerance by the Agency and by regulators that expensive monitoring programs that seem to be providing little information can be either eliminated or, more commonly, cut back.

Perhaps the best indicator of acceptance of the idea of an independent watchdog has been its replication (with some adjustments) for the second diamond mine in Canada,

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[6] The Dogrib are composed of several distinct communities. The grand chief is an elected chief who represents all the communities.

just 30 km from the Ekati Mine[7]. The Diavik Mine also has a similar monitoring agency, the Environmental Management Advisory Board based on an environmental agreement (Canada et al, 2000).

Moreover, the acceptance of using an environmental agreement and a monitoring agency has been so widely accepted in the North that other major projects are likely to use the same tools. Two complications, however, are serious impediments to using such an approach. The first is the need to deal with cumulative effects (noted above), effects of all projects combined. This is complicated if the monitoring agency deals with projects individually, as does (largely) the Independent Environmental Monitoring Agency. The second complication is the duplication of work that would be performed by several different agencies for several different projects.

As a result of the success of agencies and the need for more of them, there has been a recent movement to create a "regional monitoring agency" to oversee many (preferably all) projects in a region (references here). The current suggestions are to build the regional monitoring agency based on the greater success of the Diavik monitoring agency in working closely with the communities and the greater success of the Independent Environmental Monitoring Agency in its scientific and technical achievements.

The Ekati Mine has not created unacceptable long term impacts. The Mine operator, BHPB, has used adaptive environmental management effectively in collaboration with the Independent Environmental Monitoring Agency and others to achieve good environmental management. Potential impacts remain and these will need continuing vigilance, including an effective continuing environmental monitoring program, with careful application of the results for project management. The monitoring agency experiment appears to be a success with general acceptance by the major stakeholders based on years of developing trust in the community.

[7] More information about the Diavik Mine can be obtained from the Diavik web site, http://www.diavik.ca/

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