Nunavut Water Board File No. NWB1ULU0008

NUNAVUT WATER BOARD

DECISION

Date of Hearing: ***March 28 and 29, 2000***
Date of Decision: ***June 30, 2000***

IN THE MATTER OF Article 13 of the *Nunavut Land Claims Agreement*,

- and -

IN THE MATTER OF the renewal of Echo Bay Mines Limited's Ulu project industrial water licence.

Cite as: re: Ulu Licence Renewal 2000

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APPEARANCES

ECHO BAY MINES LIMITED (EBM)	David Hohnstein Hugh Ducasse Bill Danyluk Jerry McCrank
DEPARTMENT OF INDIAN AND NORTHERN AFFAIRS (DIAND)	Roxanne Beavers Brian Collins
DEPARTMENT OF JUSTICE CANADA (DOJ)	Lee F. Webber
ENVIRONMENT CANADA (EC) FISHERIES AND OCEANS (DFO)	Anne Wilson
CITIZENS	Moses Koihuk Stuart MacLean
BRODIE CONSULTING LTD. (BCL)	John Brodie

SUMMARY

On September 16, 1999, the Nunavut Water Board received an application for the renewal of licence NWB2ULU9700 from Echo Bay Mines Limited. Following an approved screening of the application by the Nunavut Impact Review Board, the Nunavut Water Board decided to hold a hearing on March 28 and 29, 2000 before approving the application. Following submissions from several parties, including Echo Bay Mines Limited, the Department of Indian and Northern Affairs Canada, Environment Canada/Department of Fisheries and Oceans, and Mr. John Brodie, the Nunavut Water Board decided to renew Echo Bay Mines Limited' s water licence for a term of eight years. The Nunavut Water Board attaches several conditions, including provision for a security deposit of $1.7 million with annual adjustments based on a periodic assessment of liability, the use of freshwater for industrial purposes from West Lake, hydrological modeling of West Lake to assess drawdown and impacts to aquatic biota, assessment of Acid/Alkaline Drainage on waste rock and development rock, requirements for standard operating plans such as spill contingency, waste rock and ore storage, and sewage/solid waste operation and maintenance plan, and additions to the surveillance network program i.e., monitoring salinity at settling and neutralization ponds to assess levels associated with drilling and assessment of dissolved oxygen levels to establish the possibility of the presence of fish in East Lake.

I. PROCEDURAL HISTORY AND BACKGROUND

Procedural History

This matter involves the renewal of water licence NWB2ULU9700 for Echo Bay Mines Limited (EBM)' s Ulu project. This licence authorizes EBM to use water and dispose of waste into water in conjunction with advanced exploration. Licence NWB2ULU9700 was issued by the Nunavut Water Board on December 1, 1997 and expires May 31, 2000. The Board granted a one-month extension to EBM until June 30, 2000 in order to complete its decision on the renewal of the licence. One amendment was approved by the Board on April 30, 1998 when the project was placed in care and maintenance due to the decline of world gold prices. The Ulu project site is located on Inuit Owned lands within the Hood River watershed in the Kitikmeot region of Nunavut at longitude 110°58' W and latitude 66°55' N. The Ulu project is a satellite gold-bearing ore deposit and its development would extend the life of the parent Lupin Mine. Following completion of the underground exploration program at Ulu to confirm original resource calculations, production of the "satellite" ore body will merge with production at the Lupin mine site.

On September 16, 1999, the Board received an application for licence renewal from EBM. In accordance with Articles 12 of the *Agreement Between the Inuit of the Nunavut Settlement Area and her Majesty the queen in Right of Canada* (NLCA), the project was screened by the Nunavut Impact Review Board (NIRB) to determine whether it had significant impact potential and whether it required review prior to processing by the Board. The NIRB Screening Decision[1] indicated that the project proposal could be processed without a review under Part 5 or 6 of Article 12 of the NLCA. Following receipt of the decision and an initial review of the application, the Board decided to hold a hearing before approving it. Notice of the public hearing was given on December 17, 1999. Prior to the actual public hearing, pre-hearings[2] were held on January 25 and 26, 2000 to inform the public about the project and the process to be followed by the Board.

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[1] Screening Decision of the Nunavut Impact Review Board (NIRB) on Application: NIRB 99WR055 dated December 8, 1999. The decision of the [NIRB] Board in this case is 12.4.4 (a) the proposal may be processed without a review under Part 5 or 6 [of Article 12 of the NLCA]; NIRB may recommend specific terms and conditions to be attached to any approval, reflection the primary objectives set out in Section 12.2.5. The screening decision outlines the following: authority of the NIRB; primary objectives; reasons for decision; terms and conditions with respect to drill sites, water, fuel and chemical storage, waste disposal, wildlife, environmental, structure and storage facilities, archaeological sites, reclamation, monitoring, and other recommendations; and the validity of the NLCA.

[2] Notice of Pre-hearing given on January 10, 2000 in English and Innuinaqtun to West Kitikmeot communities, local, territorial and federal government and Inuit organizations. Pre-hearings were held in Umingmaktok, Bathurst Inlet and Kuglugtuk on January 25, 2000 and in Cambridge Bay on January 26, 2000.

A public hearing was held in Kugluktuk on March 28 and 29, 2000 to deal with the water licence renewal applications for both the Ulu project and the Lupin Mine. Following the hearing and in light of issues raised at the hearing, the Board gave all parties the opportunity to respond or comment[3] in writing on specific issues related to the application. A deadline to receive submissions was set for April 14, 2000 and a deadline to reply to written submissions received during the two-week period was set for April 21, 2000[4]. At the request of the DIAND, Department of Sustainable Development (DSD) and EBM, the Board decided to extend the final deadline for submissions to April 25, 2000.

Background[5]

EBM is one of the largest producers of gold and silver in North America. In 1995, the company produced more than 750,000 ounces of gold and 11 million ounces of silver from four mines, three located in the USA and one, the Lupin Mine, in Nunavut. The history of EBM in Canada's North began in 1964 at Port Radium, on the shores of Great Bear Lake about 41 kilometers south of the Arctic Circle. After 19 years of mining, reclamation of the mine was initiated in 1982 and completed by 1985.[6]

EBM purchased the Ulu site from Broken Hill Properties (BHP) in 1995 with the intent to mine the gold bearing ore using underground mining techniques and to haul the ore to the Lupin mine site for processing. In the application, EBM has indicated that the ore body at Ulu is not of sufficient size and value to be developed on its own and will of necessity require the infrastructure and cost reduction benefits of co-milling at Lupin.

The Ulu project is situated in the Kitikmeot region of Nunavut with the underground exploration site at longitude 100° 58' W and latitude 66° 54' N. The exploration site is in treeless arctic tundra currently accessible year round by aircraft and seasonally by winter road. It is about 12 kilometers north of the Hood River, the major drainage system for the area, and about 150 kilometers north of EBM's Lupin mine on Contwoyto Lake which is about 80 kilometers south of the Arctic Circle. The climate is severe with winter and summer temperatures typically ranging from –50° Celsius to +30° Celsius.

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[3] At the end of the Kugluktuk hearing, the Board established time periods for replies to 2 documents:

1. Mr. John Brodie's report on the Abandonment and Reclamation Cost Estimate of the Lupin Mine; and
2. EBM 's document setting forth comments on the interventions regarding Lupin and Ulu applications.

[4] The Board decided that the reply opportunity was available only to those who submitted written submissions during the two-week period.

[5] All background information taken from "EBM Environmental Assessment Ulu Project" dated January 1997 or the original application for licence renewal filed by EBM on September 16, 1999.

[6] Exhibit # 5 shows reclamation of the Port Radium site as well as at other EBM properties.

Permafrost in this area generally persists to depths of several hundred meters.

The exploration site is located entirely on Inuit Owned Lands, which are managed by the Kitikmeot Inuit Association (KIA)[7]. In accordance with Article 26 of the Nunavut Land Claims Agreement, an Inuit Impact and Benefits Agreement (IIBA)[8] was negotiated and eventually signed on September 17, 1996.

Long range plans for the Ulu project include the complete development and permitting of an underground mine and winter road capable of handling the vehicles transporting stockpiled ore from Ulu to Lupin. A production feasibility estimate of 590 tonnes/day for seven years is presented in the application.

The gold deposit at Ulu lies within three mineral claims which covers a 2- to 3-kilometre wide lobe of mafic metavolcanic and metasedimentary rocks. The lobe is tightly folded into a north plunging asymmetrical anticline dissected by east-west trending faults. Mineralization is within a zone of basalt with subordinate sediments and gabbro. This zone can be traced on surface for 400 meters in a northwest direction near the core of the anticline. The 2- to 5-metre thick mineralizated zone dips steeply at 70° to 80° to the southwest and has been intersected by diamond drilling to depths of about 600 meters. The area of local thickening up to 10 meters corresponds to flexure points along the roughly tabular body. Mineralization is comprised of an intensely silicified zone with arsenopyrite contained in fractures and dilatancies within basalts. To date 1,762 meters of underground drifting were completed to the 155 metre level; 16, 000 meters of underground diamond drilling were completed, requiring an additional 32, 650 meters to define all zones to 20 metre spacing down to the 335 metre level; bulk of the ore zones are between 175 and 275-metre levels; and indicated geologic resources are estimated at 1,368,953 tonnes @12.91 grams/tonne with diluted minable resources of 1,156,208 tonnes @ 11.47 grams/tonne.

Further development and diamond drilling are required to firm up the resource calculations and mining design. The program will be re-evaluated when the opportunity exists (i.e., world gold prices increase) to further develop the resource in conjunction with the operations at Lupin mine.

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[7] The KIA is the Designated Inuit Organization in whose name title to Inuit owned surface lands in the Kitikmeot was vested upon ratification of the Nunavut Land Claims Agreement (NLCA) in 1993. The KIA manages Inuit Owned Lands (IOL) on behalf of Inuit and in particular Kitikmeot Inuit in order to promote Inuit self-sufficiency and economic development in a manner consistent with Inuit cultural and environmental values and goals.

[8] The IIBA is the first of its kind signed under the NLCA and establishes the framework for providing employment, training and other economic benefits to the First Nations people in the West Kitikmeot region of Nunavut. A copy of the IIBA is found in Appendix 22 of "EBM Environmental Assessment Ulu Project" dated January 1997.

II. ISSUES

Several parties raised a number of issues regarding the water licence for EBM's Ulu project. These issues include:

A. The assessment of the overall cost of reclamation or abandonment and restoration of the Ulu site and total amount of security required of EBM, including the form and schedule of payment;
B. Use of East Lake as a contingency for holding excess minewater from the designed holding pond at the storage pad area;
C. Hydrological modeling to verify drawdown and recharge rates of West Lake;
D. Concerns with Acid Rock Drainage (ARD);
E. Submission of Spill Contingency Plan, Waste Rock and Ore Storage Plan, and Sewage/Solid Waste Operation and Management Plan;
F. Modification requests to Surveillance Network Program (SNP);
G. Disposal of sewage sludge; and,
H. Term of the licence.

III. SUMMARY OF EVIDENCE

A. EBM

At the hearing, EBM provided a historical summary of the project, overviewed existing water use and waste disposal facilities and confirmed that additional advanced exploration with bulk sampling and underground diamond drilling is still required to further assess project development feasibility.[9] EBM stated that "the re-engineering study" completed for Lupin continues to include the Ulu project but a considerable increase in the world gold price is required in order to enable the exploration program to continue and confirmed that the Ulu project is on hold, and all exploration activity is suspended.[10]

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[9] EBM indicated that planned exploration would include underground diamond drilling and access development, which would remove approximately 160,000 tonnes of waste rock, and 40,000 tonnes of material that may be considered ore. The goal is to complete definition of the Ulu ore body and provide a 1,000-tonne bulk sample for metallurgical and environmental testing. Ulu facilities currently consist of camp buildings, support shops, fuel storage, incomplete ore storage pad, lay-down areas, access roads, incorporated airstrip, and parking areas. Freshwater is obtained from West Lake at a permitted rate of 100 cubic meters per day. Sewage is treated with a portable package treatment facility and treated effluent is discharged to East Lake. East Lake is also proposed as a contingency to hold excess mine water that cannot meet acceptable water quality limits in the designed holding pond at the storage pad area.

[10] EBM noted in Exhibit 2 that Ulu would remain on hold until gold prices reach the $340 US/ounce range, and that it was unlikely that activity would resume before 2001.

EBM requested no changes to the original licence and that conditions of the April 1998 amendment be included in the renewal.[11]

EBM also asked the Board to consider reviewing the Surveillance Network Program (SNP) in the license, to consider removing sampling requirements for parameters that are not part of the effluent quality limits, and to adjust and harmonize limits and sampling between discharge limits and SNP.

Regarding the amount of security, EBM pointed out their long history in the North and their good track record, including compliance with previous and current licences, and suggested the Board consider these factors in its assessment for provision of security deposit. That said, EBM estimated the overall closure cost for the Ulu project to be $1,432,576 and urged the Board to use its estimate instead of Mr. John Brodie's.[12]

EBM asked the Board to consider the value of salvageable assets and the Ulu ore body in setting the security requirements for the project and suggested that these assets would be sufficient to pay for any present restoration liability.[13]

EBM is in full agreement that the public's interest needs to be protected but believes that a reclamation trust is an appropriate instrument for the provision of security. EBM proposed the establishment of a reclamation trust fund[14] as referenced in the previous Ulu water licence and further proposed that the security required under that licence be rolled over into the fund so that interest could be accrued.[15] EBM agreed that the Board would review the

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[11] Licence NWB2ULU9700 was amended to reduce the amount of administration work required from EBM until notification provided to the Board that operations were to resume. The Board maintained the requirements for provision of an Abandonment and Restoration plan, reclamation cost estimates and annual reporting. Surveillance Network Program monitoring requirements and the following terms and conditions were amended to be "effective upon at least sixty (60) days of notification to the Board by the Licensee that operation a the site will be resumed": Part D, Item 7-11(proposal for disposal of minewater and excess runoff; inspection program; annual geotechnical inspection; plan for conducting *Acid Rock Drainage and Geochemical* characterization, and a Waste Rock/Ore Storage Management plan); Part D, Item 18(plan for sewage sludge disposal); Part E, Item 1(provision of Spill Contingency Plan); Part H, Item 1(Operation and Maintenance Plan for sewage and solid waste disposal); and Part G, Item 1.

[12] EBM insisted that the differences between their figures and BCL's at $1,929,456 are mainly attributed to the 4% per annum inflation rate and 15% contingency included in BCL's estimate.

[13] EBM estimated salvageable asset value between $3 million and $ 5 million.

[14] "Reclamation Trust Fund" means a trust recognized by the Canadian *Income Tax Act* by which the beneficiary establishes, under the terms of a contract entered into with Her Majesty in right of Canada on or after January 1, 1996, funds set aside for the sole purpose of funding the reclamation of a mine.

[15] Licence NWB2ULU9700 requires security to be provided according to the following:

Part B: General Conditions

Item 2. The Licensee shall have posted and shall maintain a security deposit according to the following schedule:

need for additional security only in the event that the mine restoration liability increases.

In response to a submission from EC/DFO expressing concerns about the use of East Lake as a contingency pond for minewater discharge and possible impacts on fish and fish habitat, EBM stated that "a program could be operated from Lupin" but argued that, based on conclusions of a fisheries report, East Lake's small size, maximum depth of 6.2 meters, lack of an adequate link to other fish habitat and isolated position, precluded the existence of fish.[16] The report also provided information on lake morphology, limnology and water chemistry. In its prepared written response to EC/DFO' submission, EBM agreed with a suggestion by EC/DFO that a good way to have an indication of suitability of the lake for fish habitat would be to investigate oxygen levels prior to spring thaw, and agreed to conduct such a study if requested.

Regarding water use from West Lake, EBM stated that the estimated withdrawal was no more than 100 cubic meters per day and that West Lake would not be drawn down beyond 0.19 metre during the winter prior to recharge the following spring. EBM agreed in their prepared response that a review of the bathymetric work could provide an indication of the amount of area potentially affected by the drawdown and its effect on the littoral zone habitat, and did not object to conducting such review in the next open water season.

At the hearing, EBM confirmed that field leaching tests had commenced and that samples had been collected on a regular basis over the last two summer

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a. within thirty (30) days of issuance of this licence, an amount of $250,000.00 dollars;
b. such further or other amounts as may be required by the Board based on annual estimates of current mine restoration liability in accordance with Part H, Item 3 and part H, item 4 of this licence.

Item 3. The security deposit may be applied to carry out work necessary to fulfill requirements of this licence where there is contravention of a condition of the licence and failure by the licensee to comply with a direction issued by the Board or by any other competent and authorized governmental body or official. This includes operational requirements as well as the provision of the Final Abandonment and Restoration Plan.

The Security deposit shall be maintained until such time as the Board is satisfied that the Licensee has complied with all provisions of the approved Final Abandonment and Restoration Plan. This clause shall survive the expiry of this Licence or renewals thereof.

Item 4. The Licensee may submit to the Board for approval the terms of reference for the establishment of a Reclamation Trust Fund. The Licensee shall implement the terms of the Trust Agreement only as, and when approved by the Board.

[16] Public Registry document, "Baseline Aquatic Studies Program in the Ulu Project area, Nunavut (1997)" RL&L Environmental Services Ltd., dated May 1998.

seasons. EBM agreed to conduct additional testing on these samples.[17] EBM further confirmed, in exhibit 2, that intermittent testing of waste rock would be completed as required under the waste rock and ore storage plan (to be developed for operations). This would include waste rock used in construction as well as that stockpiled for future use.

In its prepared written response, EBM requested "further investigation[s] be postponed until the field season in 2001, allowing for a stabilization of operation at Lupin and potentially a rise, along with stability, in the price of gold".[18]

On the issue of sewage sludge disposal, EBM initially disagreed with DIAND that sewage sludge disposal in a sump was an appropriate means but later conceded, in its prepared written response, that burial of sludge on land could be accommodated as opposed to a location that might be subject to continual flushing with water during spring melt and rain events[19].

B. Environment Canada (EC) and Department of Fisheries and Oceans (DFO)

On March 17, 2000, EC/DFO made an initial joint submission to the NWB regarding EBM's application for water licence. In their initial submission, EC/DFO identified concerns and made recommendations regarding: the use of East Lake as a contingency pond for minewater containment; the need for additional studies on East Lake; modeling water level changes in West Lake; ongoing Acid Rock Drainage (ARD) testing; development of a Spill Contingency Plan, Waste Rock and Ore Storage Plan, and Sewage and Solid Waste Operation and Management Plans; and Surveillance Network Program implementation.

EC/DFO suggested that if EBM were to use East Lake as a contingency holding pond for excess minewater that cannot meet acceptable water quality limits in the designed holding pond at the storage pad area, that plans should be in place to prevent transportation of any contaminants into Ulu Lake. EC/DFO also recommended that EBM determine the rate and route of drainage from East Lake during the next open water season. In their April 14, 2000 submission, EC suggested that East Lake should not be used for minewater discharge without prior investigation being completed and mitigation measures implemented.

Additionally, EC/DFO recommended that EBM confirm the presence or absence of fish in East Lake as ongoing activities could adversely affect fish

[17] Refer to comments made by David Hohnstein at the public hearing, transcript page 18.
[18] Exhibit # 2
[19] EBM Prepared Responses: p. 10, item 3.2

population and habitat. Furthermore, EC suggested, in its April 14, 2000 submission, that a quick and cost effective means to establish the presence of fish in East Lake would be to measure dissolved oxygen levels in the winter.

In light of the fact that the water licence application indicates that water use from West Lake will result in a drawdown of 0.19 metre over an unspecified period of time, EC/DFO recommended that modeling be completed to confirm this drawdown over a specified period of time. EC/DFO also recommended that EBM assess the effects of the drawdown on littoral zone habitat and potential impacts to spawning habitat.

EC/DFO noted that their concerns for potential acid generation from ore storage piles or waste rock used in construction have been addressed by the kinetic testing done by Klohn-Crippen[20] but recommended that, as ore is extracted, testing be done periodically to identify whether changes in the rock composition may result in a higher acid generation potential.

With the suspension of activities during the term of the previous licence, certain plans were not developed.[21] EC/DFO recommended that these plans be developed as soon as the water licence is issued. EC clarified in their final submission[22] that all plans should be in place prior to start up of ore extraction except for the spill contingency plan, which should be submitted upon issuance of the licence and updated annually.

EC/DFO recommended that the Surveillance Network Program commence within a short time period following the issuance of the licence. EC/DFO suggested that an effective SNP should permit detection of impacts to the environment from project discharges. EC/DFO further recommended that salinity be added to the parameters to be measured at the settling ponds but did not provide a rational for this request.[23]

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[20] Klohn-Crippen Consultants Ltd. on behalf of EBM completed a study entitled " Ulu Project: Preliminary Assessment of acid Rock Drainage Potential" dated October 1996 and can be found as Appendix 4 of EBM Environmental Assessment report dated January 1997.

[21] In accordance with Licence Amendment No. 1 of April 30, 1998, the Spill Contingency Plan, Waste Rock and Ore Storage Plan, and Sewage/Solid Waste Operation and Management Plan effective upon at least sixty (60) days of notification to the Board by the Licensee that operation at the site will resume.

[22] EC submission dated April 14, 2000

[23] Station Numbers for the Settling/Neutralization Ponds 1 and 2 as provided in the previous water licence are 200-2 and 200-3, respectively.

C. Department of Indian Affairs and Northern Development (DIAND)

The DIAND noted in its initial submission[24] that combining the Ulu and Lupin water licences would reduce the number of requirements for separate plans and reports and reduce duplication of information.

DIAND recommended that the licence reflect current industrial licence conditions and that standard definitions for the following terms be included in the new licence: "Acid/Alkaline Rock Drainage (ARD)", "Geotechnical Engineer" and "Progressive Reclamation".

The DIAND added that the SNP in the current licence was sufficient considering the scale of the Ulu operation, but recommended the addition of nutrients (TP, P-OP, T-N, Nitrate and Nitrite) to the monitoring protocol for Station 200-1 (Sewage Effluent discharge Point at East Lake)[25] to identify potential problems.

The DIAND recommended that the Board require EBM to either bury sewage sludge in a sump or incinerate it. DIAND is of the opinion that EBM's current practice of spreading sewage solids over a portion of the site and capping with waste rock in not appropriate for a multi-year operation.

The DIAND also recommended that the Board direct EBM to conduct hydrological monitoring studies of West Lake, East Lake, and downstream water bodies to better estimate potential project-related hydrological impacts.

Additionally, DIAND recommended that if waste rock were used for construction on site, the Board should require intermittent testing to verify that the rock is not acid generating and that EBM follow up on the recommendations made in the Klohn-Crippen report.[26]

At the public hearing, DIAND stated that it was satisfied with the company's level of compliance with its licence and recognized the company's proactive approach to environmental management, particularly in the area of acid rock drainage.

In terms of security requirements, DIAND did not express any opinion as to the need for, or the amount of security – except to say that full abandonment and restoration costs should apply. However, if the Board determined that a

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[24] The DIAND made an initial submission to the NWB regarding EBM's application for water licence renewal on March 17, 2000.

[25] The sewage effluent Discharge Point at East Lake is identified as Station Number 200-1 and is monitored monthly for Faecal Coliform, Total Suspended Solids, BOD and pH.

[26] DIAND summarizes Klohn-Crippen's recommendations as follows:

1. Continued field leaching testing for an additional two years; and
2. The additional kinetic test work be done if the composition of the ore or waste rock should change with depth.

security should be imposed, DIAND recommended that the security be based on water-related components only and that the security be accessible by only one payee, in this case the Crown.

In DIAND's closing remarks at the hearing, DIAND did suggest that the Board omit the value associated with salvaging inventory on site when calculating the amount of security. Additionally, DIAND discussed EBM's idea of a reclamation trust fund and suggested that the Board can set the amount of security, but in determining the form that the security is to take, it is dealt with by statute and by the Minister of DIAND.[27] Apparently, DIAND is not opposed to the idea of posting the required security in the form of a trust fund. Finally, DIAND recognized EBM's good record but explained that the requirement of security is similar to requirements for insurance.

In its conclusion, DIAND further recommends that the licence contain clear and explicit language with respect to the powers of inspectors to reflect the provisions of the *Northwest Territories Waters Act*.

D. Brodie Consulting Limited

The Nunavut Water Board retained the services of Mr. John Brodie (BCL) as an independent expert to assist parties with the issue of security deposit at the Ulu site. The terms of his engagement were to review EBM's abandonment and restoration plan and cost estimate, to prepare a written report for all parties, to appear at the hearing and be available for cross-examination on his oral (hearing) comments and his filed report.[28]

In general, BCL agreed with EBM's approach in reaching the figure of $1.4 million. However, allowing for adjustments for inflation and omitted items,

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[27] Under Section 17 of the *NWT Waters Act and Section 12 of the NWT Water Regulations,* a trust fund is not one of the forms specifically mentioned, and therefore, Minister's approval would be required if security is to be posted in the form of a trust fund.

[28] Mr. Brodie did not visit the Ulu site in preparing his assessment; he filed his written report of the Ulu Project on March 20, 2000. In reaching his assessment, he took the following documents into account:

- Ulu Project, Environmental Overview, Dec. 1991,
- 1998 Annual Report, Ulu Project, Water Licence NWB2ULU9700, Mar. 1999,
- Ulu Project, Kinetic Testing of Sulphide-Rich Material from Ulu, Klohn-Crippen, April 1998,
- Interim Abandonment and Restoration Plan, Water Licence NWB2ULU9700, Aug. 1998,
- Estimate of Current Mine Restoration Liability, Water Licence NWB2ULU9700, Ulu Project, by EBM, Aug. 1998, and
- 16 Color photographs showing an assortment of views of the Ulu Project site, (date & photographer not identified).

BCL estimated the governmental total costs for reclamation to be $1,929,456.[29]

To justify the higher cost, BCL suggested additional costs for the following items:

i. An adjustment of the 1997 estimate for the effects of inflation up to 2000.
ii. Airfare costs for mobilization of personnel,
iii. Low estimate for on-site camp costs at $22/man-day,
iv. Contaminated soils,
v. Revegetation,
vi. Mobilization/demobilization and winter standby of contractors equipment,
vii. Project engineering contingency of 3%,
viii. Construction management contingency of 3%,
ix. Total project contingency of 15%.

BCL noted that his estimate was prepared assuming that there was no offsetting salvage value or recovery of inventory and that reclamation would be completed under Government management.

IV. ANALYSIS

The Nunavut Water Board is seized with jurisdiction to consider this application pursuant to the NCLA, Article 13. According to Article 13.7.1, no person may use water or dispose of waste into water without the approval of the NWB.

Under section 13.8.1 of the NCLA, the NWB has the authority to request a broad range of information from an applicant for an approval, including information regarding steps to avoid and mitigate adverse impacts and any other matters that the NWB considers relevant.

The burden of proof in this hearing rests with the applicant, EBM. The NWB Rules of Practice state: In cases in which the Board accepts evidence, the party offering such evidence shall have the burden of introducing appropriate evidence to support its position. Where there is conflicting evidence, the Board will decide which evidence to accept and will generally act on a balancing of the evidence.[30]

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[29] Mr. Brodie states in his report, "It is assumed that, if required, reclamation of the Ulu site under government management would coincide with reclamation of the Lupin site. Under this scenario, mobilization of workers and equipment would be from Lupin. However, demobilization would be to a major center, probably Yellowknife."

[30] *Interim Rules of Practice and Procedure for Public Hearing*, Section 8.10.

A. The assessment of the overall cost of reclamation or abandonment and restoration of the Ulu site and total amount of security required of EBM

Interconnectedness of Land and Water

The issue regarding whether land and water should be assessed separately or together when determining security costs must again be decided by the Board. In one of the Board's previous decisions,[31] it reached the conclusion that there is a connectedness between land and water. We agree that these principles apply to Ulu's licence renewal. All elements of the environment, including land and water, are interconnected; what affects one part of the environment can ultimately have an impact on other environmental elements. By altering the natural elements of the environment, traditional Inuit culture and use of the land and water can be directly affected. The Board recognizes that the following factors related to water, from mining activities, can affect Inuit culture:

- the effect or potential effect of the economic activity resulting from the proposed use;
- the effect or potential effect on fish and wildlife resources and on Inuit and other public recreational opportunities;
- the effect or potential effect on public health;
- the effect or potential effect of losses of alternative uses of water that might be made if not eventually precluded or hindered by the proposed use; and
- the intent and ability of the applicant to complete the remediation and restoration.[32]

It is difficult to separate land reclamation procedures from water reclamation procedures. Federal legislation recognizes the relationship between land and water in their definitions of environment. The *Canadian Environmental Assessment Act* defines environment as:

> the components of the Earth, and includes,
> a) land, water and air, including all layers of the atmosphere,
> b) all organic and inorganic matter and living organisms, and
> c) the *interacting natural systems* that include components referred to in paragraphs (a) and (b).[33]

Environment is defined in the *Canadian Environmental Protection Act* as follows:

> environment means the components of the Earth, and includes,
> a) air, land, and water,

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[31] *Re BHP Diamonds Inc.* (1999), 29 C.E.L.R. (N.S.) 248.
[32] See, e.g., *Re BHP Diamonds Inc.* (1999), 29 C.E.L.R. (N.S.) 248 at 260.
[33] S.C. 1992, c. 37, s. 2 [emphasis added].

b) all layers of the atmosphere,
c) all organic and inorganic matter and living organisms and
d) the *interacting natural systems* that include components referred to in paragraphs (a) to (c).[34]

The *NWT Environmental Protection* Act[35] defines environment in the same manner as the *Canadian Environmental Protection* Act. These definitions concur with the traditional belief of the Inuit regarding the land...which includes all of nature: the earth itself as well as the water, the ice, the wind, the sky, the plants and animals.[36]

Before steps are taken to reclaim land, the potential effect of the procedures on the hydrologic patterns in the area must be assessed. If water movement is affected or impaired by the land reclamation procedures, this would ultimately add to the costs of the water reclamation procedures. The interconnectedness of land and water are obvious and they cannot be reclaimed in isolation. This is supported by the DIAND, who in this hearing stated that the distinction between land and water related reclamation costs is difficult to make due to their interconnected nature.[37] The Board acknowledges that their authority is limited to issuing water licenses and not land use approvals[38] but we also base our decision supporting the link between land and water on a broad interpretation of the fresh water cycle.

The Board did not receive any compelling evidence that would suggest that an accurate distinction between land and water components could in this case be made in the assessment of abandonment and restoration costs. Therefore, consistent with its analysis contained in previous decisions, the Board has decided not to separate land and water related components of the overall abandonment and reclamation plan and resulting cost assessment. However, the Board recognizes that the landowner may, in the future, require its own security from EBM pursuant to a land lease. If the landowner's lease-based security duplicates items covered by this water licence, EBM may apply to the Board to amend the security amount of this licence downward to account for such duplication.

Asset Value

EBM wants the Board to categorize the salvageable value of EBM assets as a credit against the final abandonment and restoration calculation. After

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[34] R.S.C. 1985, c. 16 (4th Supp.), s. 3 [emphasis added].
[35] R.S.N.W.T. 1988, c. 75 (Supp.), s. 2(c).
[36] *Re BHP Diamonds Inc.* (1999), 29 C.E.L.R. (N.S.) 248 at 262.
[37] D. Livingstone, Indian and Northern Affairs, Renewal of Water Licence NWB2ULU9700 (March 17, 2000).
[38] L. Webber, DIAND, Applications by Echo Bay for renewals of Lupin and ULU water licenses; Reply submissions (April 25, 2000). Among other things, Mr. Webber reiterated that the Board can determine quantum for the security deposit but the form of the security is to be determined between the licensee and the Minister of Indian Affairs and Northern Development.

reviewing all of the submissions, we must hold firm to the principle that sufficient security is needed to protect the public's interest in water quality and to ensure that the Crown will not be left to bear the cost of reclamation. The Board concludes that EBM's asset credit proposal is not acceptable, largely because of: 1) the difficulty in tracking the priority of security interests and/or liens in major assets, and, 2) because of the likelihood that such assets, if valuable, would likely disappear quickly in the unfortunate (and never planned) case of insolvency. Therefore, the Board accepts Mr. Webber's and DIAND's position regarding the use of salvageable assets as part of the security. The reasons listed by DIAND include:

- the Crown may not have a legal right to the salvageable assets;
- it cannot be predicted what assets will actually be on site, who has rights to the assets, what condition the assets will be in, and the actual value on that date;
- the actual value realized for the asset may be lower than anticipated;
- costs associated with preserving and disposing of the assets; and the Crown may not want to assume ownership of the assets.[39].

Use of Third Party Contractor

BCL told the Board to rely on the premise that Third-Party contractors will need to be used in calculating the amount of security. Mr. Brodie based his calculation on the assumption that EBM does not carry out the reclamation work at the Ulu Project; therefore, it becomes necessary for the Government and landowners to hire contractors to reclaim the site. BCL furthermore stated that this approach was consistent with other assessments of reclamation costs for mining project in Nunavut made on behalf the Government. The Board fully agrees with this approach and accepts BCL's calculation.

Amount

In setting the security amount, the NWB concludes that the BCL third party estimate represents a more realistic estimate at the actual cost at 1.93 million. If for some reason EBM cannot or does not reclaim the mine site, the government would be required to hire other contractors to complete the reclamation work ... the cost will be higher. However, if EBM does complete the work, the actual cost may be reduced.[40]

The Board also accepts DIAND's position that the amount of security should cover the full cost of abandonment and restoration, leaving no risk to the taxpayer of having to pay these costs. Consistent with this principle, the

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[39] *Ibid.*

[40] J. Brodie, Brodie Consulting , Nunavut Water Board Hearing (March 28, 2000).

Board generally agrees with the BCL estimate. However, we disagree with the 4% inflation estimate, which we find too high. Based on more realistic inflation rates of 2% in the past two years, the Board establishes that the inflation adjustment to EBM's cost estimate in BCL's calculation should be reduced by approximately $57,000. Therefore, due to this factor, the Board has decided to establish the overall cost of abandonment and restoration at $1,872,456. This amount represents the governmental and landowner cost to carry out all necessary abandonment and restoration work in the event that EBM is unable or unwilling to carry out the reclamation of the Ulu project.

This amount represents the benchmark against which the Board establishes the *upper* limit for governmental or landowner cost of abandonment and restoration of the site. After having set this ceiling, the Board decided to consider additional factors, which are significant "fine-tuning factors": a) the ability of the applicant to pay the cost of security; and, b) the past performance by the applicant in respect of any other licence.

To illustrate, EBM has complied with the terms of the existing water licence and has self-reported any incidence of the terms being breached[41]. Therefore, the Board allows a 10% discount, again based on EBM's compliance record and history of good competent behavior.

The final security amount is therefore $1,685,210.

Form of Security

The NWB agrees with Mr. Webber and DIAND that the form of security in this case is a matter to be determined between the Licensee and the Minister. EBM earnestly pressed the Board to use a trust fund as their form of security interest. According to EBM there are tax benefits attached to this concept. The Board agrees that this option has promise; as well, Ulu's previous license refers to it.

Thus, we forward the trust concept to the Minister for his evaluation for future licenses and for whatever conclusions he might eventually reach – most likely by way of amendment to statute, regulation, or order in council. In the meantime, however, and given the facts of this case, the Board feels that the only alternatives available for the EBM security instrument are those currently codified in the *NWT Waters Act Regulations*. These forms of security are:

i. a promissory note guaranteed by a bank in Canada payable to the Receiver General;

[41] Having said this, similar environmental concerns are shared by all operating mines - even those mines that renew their licenses today. Ultimately, the Board believes that the public should not bear the cost of environmental cleanup regardless of the corporate or historical circumstances.

ii. a certified cheque drawn on a bank in Canada payable to the Receiver General;
iii. a performance bond approved by the Treasury Board of Canada;
iv. an irrevocable letter of credits from a bank in Canada; and
v. cash.[42]

Installments

Recognizing the fact that security should always be commensurate with the actual costs to conduct abandonment and restoration, which are ongoing, the Board does believe the security should be paid in installments so that the security expenditures can somewhat be synchronized with the Ulu operations. The Board asks the Minister of DIAND to consider this recommendation.

Periodic Review

Given that the security is relatively large and the mining future, including the price of gold, is relatively uncertain, the Board has decided that the security issue should be regularly revised. We therefore put all parties in this hearing on notice that there must be annual abandonment and restoration reporting and security **updating**. For example, if on the annual anniversary date of the licence EBM believes the security formerly established should be reduced due to evidence not previously available, then the applicant should apply to have the amount and/or payments curtailed. Conversely, if any party including the applicant sees new circumstances that would require elevating the security, then an application can be filed to increase the amount of security.

B. The use of East Lake as a contingency for holding excess minewater from the designed holding pond at the storage pad area

In their submission, EC/DFO recommended that East Lake should not be used for minewater discharge without prior investigation being completed and mitigation measures implemented. This opinion was shared by DIAND, and EBM did not object to conducting further investigations, but not until 2001, allowing for a stabilization of the Lupin operations and possible increase in the price of gold. The NWB decides that should the discharge of minewater be considered, then EBM shall submit to the Board for approval a proposal for the disposal of minewater and excess runoff water from the Retention Pond and Settling/Neutralization Ponds. The proposal shall include, but not be limited to, the following:

a. Options for discharge of Minewater/Runoff water;

[42] *Re BHP Diamonds Ltd.* (1999), 29 C.E.L.R. (N.S.) 248 at 268.

b. Details on quantity and quality of the Minewater/Runoff water; and
c. Options for treatment and disposal plan

Additionally, EC/DFO recommends that EBM confirm the presence or absence of fish in East Lake as ongoing activities could adversely affect fish population and habitat, and we agree. Further, EC suggests in its April 14,2000 submission that a quick and cost effective means to establish whether or not East Lake could support fish would be to measure dissolved oxygen levels in the winter. EBM agreed that this would represent a good way to assess the suitability of East Lake for fish. The Board agrees with EC/DFO's recommendation and directs EBM to submit to the Board an assessment of oxygen levels in the lake prior to the spring breakup to assess East Lake's suitability to support fish.

C. Hydrological modeling to verify the drawdown and recharge rate of West Lake

Both EC/DFO and DIAND recommended that the Board direct EBM to conduct hydrological monitoring to better estimate potential project-related hydrological impacts on West Lake, including potential impacts to littoral zone habitat and spawning habitat. The Board agrees that additional hydrological information is required and specifically directs EBM Mine to submit to the Board the terms of reference for such studies.

D. Concerns with Acid Rock Drainage (ARD)

At the hearing, both EC/DFO and DIAND recommended that periodic testing be undertaken to identify if changes in rock composition during mining would result in a higher acid generation potential. DIAND also suggested that EBM follow-up on recommendations provided in the Klohn-Crippen report.[43] EBM agreed that additional testing could be done.

The NWB concurs with EC/DFO and DIAND that periodic testing must be undertaken to identify potential ARD in waste rock, stockpiles and changes in rock composition with depth and that recommendations made by Klohn-Crippen shall be implemented by EBM. The Board also decides to allow the use of waste rock in construction only if it has been tested and the results show low acid drainage potential.

[43] Klohn-Crippen recommendations are summarized as follows 1) continued field leaching testing for an additional two years; and 2) additional kinetic test work be done if the composition of the ore or waste rock should change with depth.

E. Submission of Spill Contingency Plan, Waste Rock and Ore Storage Plan, and Sewage/Solid Waste Operation and Management Plan

EBM is of the opinion that the development of Spill Contingency Plan, Waste Rock and Ore Storage Plan, and Sewage/Solid Waste Operation and Management Plan is not required until operations resume at the site, likely not before 2001. On the other hand, EC/DFO would like these plans to be drawn up as soon as the licence is issued. EC/DFO conceded, at the hearing, that these plans should be required only prior to start up of ore extraction except for the spill contingency plan which should be submitted upon issuance of the licence and updated annually. The Board has decided to request EBM to submit the Waste Rock and Ore Storage Plan, and Sewage/Solid Waste Operation and Management Plan within at least 60 days following notification by EBM that operations at Ulu will resume, except for the spill contingency plan, which shall be submitted upon issuance of the licence and updated annually.

F. Modification to Surveillance Network Program

EC/DFO requested the addition of salinity to SNP monitoring requirements at the settling/neutralization ponds (200-2 and 200-3). While DFO does not provide justification for this request, the Board notes that salts are used regularly as an additive in drilling in permafrost areas to prevent freezing and therefore has decided to include parameters (Conductivity, Chlorine, Sodium, and Calcium) in the SNP to assess effluent quality.

DIAND recommends the addition of Nutrients to the monitoring protocol at Station 200-1 (Sewage Effluent discharge Point at East Lake). The Board concurs that this additional monitoring requirement at Station 200-1 would provide useful information. If it is demonstrated that East Lake is not suitable as fish habitat following the assessment of oxygen levels, then EBM may apply for an amendment to the SNP. Nevertheless, the Board also observes that water from East Lake, which shows elevated levels of some nutrients,[44] may flow through an intermittent stream and wetland system to Ulu Lake, which supports fish. The Board notes that there is "no defined inlet or outlet streams associated with this waterbody [East Lake], [and that] excess water exits the basin via a subsurface water course that flows into Ulu Lake[45]. Because the Board believes that hydrological conditions may change from one season to another, the Board has decided to add a new SNP station at the inlet of the intermittent stream/wetland intake to Ulu Lake to sample water for Nutrients (Ammonia Nitrogen, Total Nitrogen, Nitrate Nitrogen, Nitrite

[44] Public Registry document, "Baseline Aquatic Studies Program in the Ulu Project Area, Nunavut (1997)" dated May 1998, RL &L Environmental Services Ltd. pg 25, 26. Prepared for EBM.
[45] *Ibid*

Nitrogen, Total Kjeldahl Nitrogen, Total Dissolved Phosphorus and Total Phosphorus) during open water if flow is present.

G. Disposal of Sewage Sludge

In its submission, DIAND recommended that the Board require EBM to bury sewage sludge in a sump or incinerate it, rather than spreading the sewage solids over land as presently done. On the other hand, EBM believed that sump disposal may not be a suitable option. At this time, the Board does not have sufficient information as to the nature and quantities of sewage sludge produced on site. Therefore, this issue shall be addressed through the submission of relevant information in the Operation and Maintenance Plan required under the current licence. Meanwhile, the Board directs EBM to dispose of all sludge in an above-ground sump located at least 30 meters from any water body.

H. Term of the Licence

The Board decides that the term of the licence should be 8 years. In reaching this conclusion, the Board agreed with EBM that the licence should coincide with the current life of mine plan and extrapolated geological data, with steady planned production over five years and decreasing production for the following three years during which period EBM would be required to submit its final abandonment and restoration plan. Further, by agreeing to an annual (periodic) review of the security issue, the Board finds that the shorter-term licence rationale advanced by other parties is better actualized.

IV. CONCLUSION

For the reasons listed above and pursuant to Article 13 of the Nunavut Agreement, the Board approves the application for EBM subject to the following conditions and the details provided in the licence attached in Appendix C:

A. Security: EBM shall furnish and maintain a total security of $1,685,210 to cover abandonment and reclamation of the property. Having set the overall amount of security, the Board recognizes that the landowner may, in the future, require its own security from EBM pursuant to a land lease. If the landowner's lease-based security duplicates items covered by this water licence, EBM may apply to the Board to amend the security amount of this licence downward to account for such duplication.

B. East Lake: EBM shall measure dissolved oxygen levels in East Lake prior to spring breakup to assess the lake's suitability for fish habitat; no minewater shall be discharged to East Lake; should EBM decide to envisage the discharge of minewater into East Lake or anywhere else, EBM shall submit to the Board a proposal to that effect.
C. West Lake: additional hydrological work is required to better assess potential project-related hydrological impacts on West Lake, including potential impacts to littoral zone habitat and spawning habitat. EBM Mine will submit to the Board the terms of reference for such a study.
D. Acid Rock Drainage: EBM shall continue to perform field leaching tests for 2 years, and perform periodic testing of waste rock, stockpiles and changes in rock composition with depth. Only non-acid generating waste rock to be used in construction.
E. Submission of Plans: EBM shall submit the Waste Rock and Ore Storage Plan, and Sewage/Solid Waste Operation and Management Plan within at least 60 days following notification by EBM that operations at Ulu will resume, except for the spill contingency plan which shall be submitted upon issuance of the licence and updated annually;
F. Surveillance Network Program: Add Conductivity, Chlorine, Sodium, and Calcium to evaluate water quality in consideration of drilling effluent at SNP Station 200-2 and 200-3. Add SNP Station 200-5A Inlet to Ulu Lake for evaluation of Nutrients (Ammonia Nitrogen, Total Phosphorus, Total Dissolved Phosphorus, Total Nitrogen, Nitrate, Nitrite and Total Kjeldahl Nitrogen). Add nutrients to SNP Station 200-1
G. Sewage Sludge Disposal: Submit Operation and Maintenance Plan required under the current licence. Meanwhile, the Board directs EBM to dispose of all sludge in an above-ground sump located at least 30 meters from any water body.
H. Term of Licence: the Board issues this licence for a term of eight years.

Enforcement.

The Board believes the issue of enforceability lies in the hands of the DIAND. While it is true that licence suspension is ultimately in the hands of the Board, we believe that failure to comply with this licence will violate at least the *Northwest Territories Waters Act*,[46] and the licensee will be exposed to the enforcement measures and penalties provided for by the Act. The terms of this water licence will therefore be enforced by inspectors appointed under the *Northwest Territories Waters Act*.[47]

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[46] 1992, c. 39.

[47] L. Webber, DIAND, Applications by Echo Bay Ltd. for renewals of Lupin and Ulu water licences; Provisions with respect to powers of inspector (April 5, 2000). If subsequent to the issuance of the licence the *Northwest Territories Waters Act* is replaced by other federal legislation and to the extent it is consistent with the Nunavut Land Claim Agreement, the other federal legislation shall apply with respect to the licence and the *Northwest Territories Waters Act* will no longer apply to the licence.

APPENDIX A – LIST OF SUBMISSIONS AND CORRESPONDENCE

Application for water licence renewal for EBM's Ulu Project, received September 16, 1999.

Initial Submissions:

2. Letter dated December 8, 1999. NIRB Screening Decision and Attached Screening Forms. Larry Pokok Aknavigak, Chairman, NIRB.

3. Letter dated December 3, 1999. "Request for Comments, NWB2ULU9700-Ulu Project, Application Licence Renewal and Interim Abandonment and Restoration Plan." Roxanne Beavers, Project Specialist, DIAND.

4. Submission received March 17, 2000. "Indian and Northern Affairs Canada Public Hearing Intervention March 28-29,2000" David Livingstone, Director Renewable Resources and Environment, DIAND. (English and Inuktitut)

5. Submission received March 17, 2000. "Department of Fisheries an Oceans an Environment Canada's Joint Submission to Nunavut Water Board on an Application for Renewal of Water Licence NWB2ULU9700 (Ulu Exploration Program by EBM Mines Ltd." Laura Johnston, Manager, Northern Division, Environment Protection Branch, Environment Canada, Yellowknife, and Ron Allen & Burt Hunt, Area Directors, Fisheries and Oceans, Yellowknife. (English and Inuktitut)

6. Submission received March 20, 2000. "Ulu Project-Review of A&R Plan and Reclamation Cost Estimate" John Brodie, Brodie Consulting Ltd. Vancouver.

1st Round of Submissions re: Public Hearing

1. Letter dated March 31, 2000. " Applications for EBM for renewals of Lupin and Ulu water licenses; Schedule for post-hearing submissions." Lee F. Webber. Legal Counsel to Intervenor DIAND. Department of Justice Canada. Yellowknife.

2. Letter dated April 5, 2000. "Re: Applications by EBM for renewals of Lupin and Ulu water licenses; Provisions with respect to powers of inspector". Legal Counsel to Intervenor DIAND. Department of Justice Canada. Yellowknife.

3. Letter dated April 14, 2000. "Re: Comments of EBM Public Review for New Water Licence." Chris Nichols. Manager. Coordination of

Environmental Assessment and Claims Implementation. Department of Sustainable Development. Government of Nunavut. Iqaluit.

4. Letter dated April 14, 2000. "Re: Request for Comments EBM Response to Interventions submitted during the Water Licence Renewal and John Brodie's Review of A&R Plan and Reclamation Cost Estimate." Brian Collins. A/Head, Regulatory Approvals, Water Resources Division, DIAND. Yellowknife.

5. Letter dated April 14, 2000. "Re: EBM Application for Licence Renewals for the Lupin Mine operation and Ulu Exploration Project." Anne Wilson, Water Pollution Specialist, Environment Protection Branch, Environment Canada. Yellowknife.

6. Letter received April 14, 2000. "Re: Renewal Lupin Water Licence –N7L2-0925; Renewal Ulu Water Licence-ULU9700; and Reclamation Surety & Liability." Bill Danyluk, Mine Manager. Lupin Operations. EBM.

7. Submission dated April 13, 2000. "EBM Lupin Operation-Reclamation Liability for the Lupin Mine, A review of the Closure Cost Estimate Provided to the Nunavut Water Board by Brodie Consulting Ltd." Hugh Ducasse, Manager, Loss Control and Environmental Affairs, EBM.

2nd Round Submissions re: Public Hearing

1. Letter dated April 25, 2000. "Re: Request for comments-EBM's review of reclamation liability for the Lupin Mine" David Milburn, Manager, Water Resources Division, DIAND. Yellowknife.

2. Letter received April 25, 2000. "Re: Renewal Lupin Water Licence –N7L2-0925; Renewal Ulu Water Licence-ULU9700; Reply to Submissions." Bill Danyluk, Mine Manager. Lupin Operations. EBM.

3. Letter dated April 25, 2000. "Applications for EBM for renewals of Lupin and Ulu water licenses; Reply submissions." Lee F. Webber, Legal Counsel to Intervenor DIAND. Department of Justice Canada. Yellowknife.

APPENDIX B – LIST OF EXHIBITS FILED AT THE MARCH 28 & 29, 2000 PUBLIC HEARING

1. Public Registry. "NWB2ULU9700 Echo Bay Mines Limited Ulu Project." Nunavut Water Board. Gjoa Haven.

2. Submission dated March 26, 2000. "Echo Bay Mines Limited-Prepared responses to technical comments and recommendations submitted by interveners during the Water Licence, Public Hearing process." Prepared by David Hohnstein, Environmental Coordinator, Lupin, and Hugh Ducasse, Manager, Loss Control and Environmental Affairs, Echo Bay Mines Limited. Exhibit filed by Echo Bay Mines Ltd.

3. Final Report on Technologies Applicable to the Management of Canadian Mining Effluents. Prepared by SENES Consultants Ltd. for Environment Canada. March 31, 1999. Exhibit filed by DIAND.

4. Consultation Document. Mine Reclamation Policy for the Northwest Territories. Department of Indian Affairs and Northern Development. With cover page dated March 20, 1998 from Bob Overvold, DIAND Regional Director General, Northwest Territories. Exhibit filed by DIAND.

5. Fourteen undated colour photographs of abandonment and reclamation at Port Radium (NWT), Boulder Creek, and Borealis. Exhibit filed by Echo Bay Mines Ltd.