Echo Bay Mines Ltd.

Prepared responses to technical comments and recommendations submitted by interveners during the Water Licence, Public Hearing process.

Environment Canada and DFO Joint Submission

Lupin Operation - N7L2-0925

4. Technical comments

a) **Application for use of 1.7 million cubic metres of water**
Echo Bay Mines will continue to monitor the use of water and review the use on a regular basis to improve recycling within the process and conserve on water use (which will reduce the amount of water to be treated).

b) **Doesn't exist?** (there's a mix up here in the bullet headings)

c) i) Nutrient loading from the sewage lakes discharge and TCA
If this issue has not been raised previously, is there now a concern with nutrients being released to the nutrient poor waters of Contwoyto Lake? Most of these parameters have been measured at one point in the past, and data can be made available to help substantiate the need for monitoring. Earlier results indicate minimal phophorus (detection limits) and low levels of nitrogen and ammonia in the TCA effluent. Phosphorus may not have been checked in the past for the sewage lakes effluent, however given that there may be nutrients released, the effluent flows through a significant wetland area prior to entering Contwoyto Lake which would have some remedial affect on the effluent quality.

The Lupin area is subject to the migration of the Bathurst Caribou herd during the spring and to a lesser extent in the fall. These 100,000 plus animals must provide some nutrient input to the same waters that Lupin is releasing effluent to. Is there any studies which might compare nutrient loading from the caribou herds to a 200 man camp?

Currently monitoring takes place monthly at the sewage lakes discharge and daily at the TCA discharge. Is monitoring frequency to be increased for the sewage lakes discharge (weekly as suggested) or is this only for nutrients (why?).

New SNP station in the bay of Contwoyto Lake? Where? There is an historical station in the bay to the east of Lupin that was used in conjunction with the sewage effluent monitoring; or is the new SNP station for the TCA effluent? Where? Monitoring on a monthly basis during open water in the lake? July, August, September, October. There would only be effluent released from the sewage system during the June, July, August and maybe September period; and open water (ice free?) does not exist until mid-July. With only two or three samples, a relatively low volume of water released, the expected nutrient levels (low) and the size of the receiving water body, it might be difficult to assess any levels reaching the lake.

Aquatic Effects Technology Evaluation (AETE) Program (initial field studies in 1996?) had begun its preliminary work using Lupin as one of the test locations. Lupin was not used for any further evaluation due to the apparent low impact and the difficulty in assessing the methods used with little significant difference in the results. The Lupin survey report had been received, however the report regarding recommendations of this site for further studies in 1997 was not. The report should be available through CANMET.

c) ii) **Bioassay included as licence condition.** Echo Bay Mines at Lupin have been conducting bioassay tests from the time of initial discharge of TCA waters in 1985. This has been a proactive approach from the beginning and this information has been made available to numerous regulators and special study incentives over the years. This has been a proactive part of the environmental management and will remain so. However, it is conducted **PRIOR** to any release of water.

Echo Bay Mines Ltd. Would like to question the rationale behind bioassay testing at the initiation of decant and at the termination. The management of the TCA is such that effluent water quality is known prior to

release and that quality does not change significantly during the course of discharge (see historical data). To conduct the bioassay at the initiation of discharge would allow approximately 7 days of release prior to obtaining the results. Upwards of 490,000 cubic metres of water (70,000 m^3/day) could be released during that time.

The water quality does not change significantly over the period of discharge, so why perform the test at the termination of decant?

Under which jurisdictions is the toxicity testing becoming standard, and for what reasons (legislation?).

c) iii) Oil and grease added to sewage lakes monitoring; all current SNP for the sewage lakes discharge is on a four week basis. Is this the only parameter to be monitored weekly or is the recommendation inferring that all monitoring be done weekly?

The mine water is currently being directed to the #2 sewage lake, however once start-up of the mill is completed and time allows, a method of directing the mine water to the TCA will be investigated. This will reduce the overall volume in the sewage lakes as well as reducing the likelihood of oils/fuels from underground finding their way into the sewage lakes system.

With regard to Oil and Grease parameters, could it be possible that the TCA effluent quality limits should not have included this item and it should have been under the sewage lakes (part D, item 8) section to begin with. Even if some fuels made it to the TCA, the volume would have to be significant for it to show up at any detectible level within Pond No.2.

a?) **Standardization of licence limits**; good thinking here, however there was no rationale given for lowering of the lead limit for the TCA to be the same as that for the Sewage lakes. As well, there was no rationale provided for the lowering of the limit on TSS for the sewage lakes to match the TCA limits. The sewage lakes TSS can fluctuate considerably depending on the state of health of the sewage ponds and whether there are any natural biological releases (eg. daphnia, algae).

Suggestion; write up one table of parameters for both releases with one set of quality criteria, however under the SNP, place requirements for **sampling and analyses** only for those parameters required .

Under the rationale provided in this section, the statement "*Arsenic limits cannot be combined however, as each discharge stream is near the current limit*." is incorrect. The release from the TCA has, in the past licence term, been at least one order of magnitude lower (ie. 0.05 mg/L) than the effluent quality limits.

b?) **Acid Rock Drainage**; identification of potentially acid generating sites should be part of the abandonment and restoration planning. Very little if any waste rock is now brought to the surface for future use. The last set of data available was on material used on the airstrip for grading purposes. Any major use of waste rock on surface could be preceded by sampling and assessment.

Permafrost formation monitoring in the covered areas of the TCA is ongoing. Thermistors have been installed and monitored since 4th quarter 1995. Data must be compiled and assessed.

Coarse kimberlite tailings cover? There was only a minor amount of coarse kimberlite tailings disposed of in Cell No.2 of the TCA (approx. 6,000 tons). It was not necessarily put there as a cover but had been placed there for disposal. The majority of material has been graded to below that of the current cover material on that cell. Esker is planned to be used as a final cover.

The use of coarse kimberlite as an additional source of cover material will be investigated prior to any placement for closure purposes. If kimberlite processing becomes a reality at Lupin, the current idea is that there would still be esker used as a final "cap" on the kimberlite layer.

c?) **Surface contamination**; This recommendation should be included as part of the "Final Abandonment and

Restoration Plan" and implemented prior to closure.

d?) **Abandonment and Restoration Plan**; Which are the concerns that were identified in the review of the 1996 Plan (that had not been addressed?).

e?) **Tailings dams geotechnical monitoring**; Thermistors have not been operating in the Pond No.2 dams for several years. The focus has been on the reclamation thermistors and, as the water levels have been maintained low in the Pond, it had not been a concern of the geotechnical engineer conducting past inspections. Water levels are expected to be low in Pond No.2 again following the 2000 summer decant.

Tailings Pond Capacity; This is an operational aspect of the TCA and will be reviewed with regard to maintaining adequate capacity for the requirements of the mine/mill process. Keeping the footprint to a minimum is also a desire of the company which results in the reclamation requirement being kept to a minimum. Surveys of both Cell No.3 and 5 were completed in the fall of 1999. This has provided information for the Company which is most up-to-date.

f?) Data from the 1992 spill from the TCA is available (although infrequent over the past two seasons) and can be compiled for the NWB.

g?) **Licence Term**; The licence term requested of 8 years is in line with the current life of mine plan and extrapolated geological data. It is realistic and represents a steady planned production over five years and decreasing production for the following three year period. This would coincide well with the proposed requirement to submit a final closure plan three years prior to depletion of reserves. It is expected that if satellite ore bodies or diamond processing is to be considered, then a review of some of the licence terms for amendment may be considered.

h?) **Security deposit**; Echo Bay Mines Ltd. feels the current security deposit is adequate to demonstrate the requirement of a security and need for the Company to continually maintain the liability at the Lupin Mine as low as possible through progressive reclamation practices. Initial security amounts were $400,000. It was increased in 1995 to $1,000,000 to reflect the changes in standard security amounts being requested of the licencee. Echo Bay Mines Ltd. has an excellent 35 year operating history in the north with an equally impressive compliance record at Lupin over the past 15 years. Given that 5 years have passed since the last increase in security amount, it would be reasonable to believe that a similar increase could be included in the 2000 renewal.

In addition, there have already been some discussion between the Company and DIAND with regard to security for the land leases held by Echo Bay. A letter was submitted by EBM in September of 1999 with an offer of security in a progressive manner, however there has been no response to date. The Company would be in a position to approach the security for water-related components (or combined) in a similar manner. *(Correction with submission - a response was received in Feb.'00 and followup)*

Indian and Northern Affairs Canada Intervention

Response to technical comments and recommendations

Lupin Operation - N7L2-0925

2.0 Licence Scope and definitions

These terms are in constant use, however an industrial definition would be helpful in meeting these requirements where suggested.

3.0 Conditions applying to water use

The freshwater use of 1.7 million cubic meters is seen as a logical volume to remain at as it is expected that water use will be reduced due to the lower tonnage planned to be processed through the mill. An increase in the total water volume used was agreed by Lupin staff to have been influenced by the introduction of the paste backfill process and a perceived need to flush the lines extensively after use. It is felt that an unnecessary volume of water was used during these periods.

The Lupin Mine has been in operation since 1982 and has undergone many changes. One major addition to the milling process was the introduction of process control instrumentation (1986-87). This helps not only in the area of chemical addition but in controlling water volumes being used in various areas of the mill. Water recycling within the milling and recovery process is optimized with the use of this instrumentation. Reducing the volume of freshwater used is a common goal as it also reduces the amount of water requiring treatment at the TCA. This is an ongoing process and will continue once the processes are fully operational in 2000.

4.1 Water quality

Table No.2 has incorrectly identified an Oil and Grease parameter. This item should be a Fecal Coliform parameter with the limit for discharge at 1000CFU/100ml.

Addition of Total Cadmium, alkalinity, hardness, and ammonia to stations 10, 14, 21, 22, 24, 25. Is the Department recommending addition of these parameters to the SNP sampling protocol simply for information purposes, or is there an effluent quality licence limit for discharge to be included as well. There is no mention of limits. Station 21 is a natural input stream to the unnamed lake prior to reaching Inner Sun Bay. Are these necessary for this station? All parameters would be at or near detection limits (too low to accurately measure). Alkalinity and hardness are not normally present in the natural waters of the area and the input volumes from the TCA influence these parameters in direct response to the mixing zone and dilution.

Addition of phosphorus, orthophosphorus, total nitrogen, nitrate, and nitrite to the sampling requirements of station 14. As above, if these parameters are to be added to the sampling requirements for station 14, is there also to be effluent quality limits placed on these parameters. It is expected that these parameters are low in the effluent, however it is unknown the consistency. The effluent at station 14 also flows through a considerable wetland area that flourishes with the continual water flow (and possibly nutrient input) throughout the summer. It is a regular stop for caribou, muskox, sandhill cranes (nesting) and countless numbers of waterfowl, shorebirds etc. The affect further downstream appears to be negligible possibly due to the considerable dilution of the small input source to Contwoyto Lake.

Station 15; Pond No.1 water *transfer* to Pond No.2. Firstly, the term “discharge” should not be used in describing this as the water is being transferred from one area of the TCA to another. The definition of “discharge” should possibly be included with the recommendation in section 2.0 as it can be misleading to the reader what is actually occurring.

This station was removed from the SNP as it was determined that movement of water within the TCA was not

of a concern to the Board (N.W.T.). The waters within the TCA are monitored on a regular basis by the Company in order to remain informed as to the status of the water quality within the TCA and possible treatment required.

Monitoring of the water being transferred from Pond No.1 to Pond No.2 has been done in-house in the past to assess the treatment efficiency of the chemical addition process when treating for elevated levels of arsenic. When this is done, special handling and processing of the sample is carried out to ensure that the flocculation is not disturbed and the sample is allowed to settle prior to obtaining the sample for analysis. Otherwise, erroneous levels of iron, arsenic and other metals that are removed in the process are measured which do not reflect the "treated" water quality entering Pond No.2. The pH result could also be misleading as lime is added on the downstream side of the syphons and may not be completely dissolved when the sample is obtained. **Monitoring of Pond No.1 in-house is preferred to monitoring only at the time of transfer to Pond No.2.**

If, as is stated in the intervention, that the Department is concerned with the possibility of oxidation having taken place during care and maintenance and the water quality having been negatively affected by it, then the waters being transferred from the active tailings cells should be considered.

ICP-MS Scan; this recommendation requests that Echo Bay perform an ICP-MS Scan of 24 metals at Station 925-14 (how did this get here, there is no mention of this station or rationale given in the previous text). This is the station at the second sewage lakes discharge.

Also a recommendation to include the ICP Scan for station 15 (water transfer from Pond No.1 to Pond No.2) on the first day of discharge. Again, there are other areas directly affecting the water quality of Pond No.1 that are monitored in-house. The water within Pond No.1 has been of excellent quality in comparison to Pond No.2 over the licence term (in-house monitoring) and the inclusion within the licence SNP places a requirement on the licencee to monitor the internal processes and management of the TCA which may not meet all needs regarding proper management.

4.2 **Tailings Containment Area (TCA)**

Tailings Capacity Report; Echo Bay does not feel this recommendation is necessary and is an operational concern with regard to which cells are utilized and when they are used (ie. whether the Company uses Cell No.4 for tailings deposition or increases the capacity of Cell 3 or 5 by raising the dykes).

Tailings compatibility studies; these types of studies are a necessity not only for closure planning but for ensuring that the performance of the TCA with regard to water quality continues.

4.3 **Dam and Dyke stability**

Recommendation to repair broken thermistors in Dam1a and 2.

The thermistor strings at Dam1a and Dam2 were installed in various stages from initial construction to 1990. During this period several types and methods of installation were used to prevent "failure" of the resistors used within the thermistor cables. These failures are usually the result of the string freezing within the dam structure and the minor movement of the soils within causing tension stress and breakage of the fine wires used within the cables.

In 1995, a new series of strings were installed in the covered areas of the TCA cells and within Dam4 (constructed in 1992). The strings within Dam4 are performing well, with little failure. The strings in the cells however, are showing signs of stress and the failure rate has increased in the past two years. This is due to the low slope of the cover surface and retaining of water within the cover (more subject to movement during the freeze/thaw process).

As water levels within Pond No.2 have been maintained well below the maximum operational elevation of the two dams in question, it has not been a priority to replace (not repair) the failed thermistors in the dams.

The success of the newer style thermistors was also being evaluated. (Note: since installation in 1995, newer more durable strings have been made available through manufacturers in B.C.).

Echo Bay is in agreement with the Department that newer thermistors should be placed in strategic locations to monitor the temperatures within the dams and foundations, however, this is an operational concern and should be addressed as such possibly as an ongoing study with regard to the Abandonment and Restoration Plan.

5.0 Conditions applying to Abandonment and Restoration

5.1 Waste rock generally has a total sulphur content of less than 0.5% and ore at Lupin usually contains up to 15% total sulphur. The lower total sulphur content of the Lupin tailings is due to the dilution of the ore with surrounding host rock (waste rock) during the mining process. So, with respect to the concern that there is not a clear division between the waste rock and ore, the mining process generally takes all the ore plus a small percentage of the waste rock.

Acidic drainage below Dam3; Waste rock is generally not used in the construction of the dams (esker material is used), but in the outer shell for protection against erosion. A reference was not provided for the statement regarding acidic drainage at the Dam3 location in 1996, however if it was present, it is unlikely that it would be the result of oxidation of the wasterock "rip rap" but possibly a result of esker cover pore water as the cover is currently not of sufficient thickness to maintain the underlying tailings frozen.

Recommendation for a survey of ABA characteristics of waste rock used; waste rock was not used in the construction of dams but in the armoring of the external portion of the upstream dam slopes. The downstream sides (with the exception of Dam3 along Boomerang Lake) have not been armored. Waste rock used in the crown pillar backfill should not be considered as it has been placed within the upper 27 metres and capped with natural overburden. It is expected to be permanently frozen within the host rock.

Recommendation to sample currently exposed tailings; Echo Bay agrees with the Department in that exposed areas of the tailings facility provides an opportunity for oxidation to take place and contaminate pooled water on the surface.

This information has been made available to the Department through work already taking place at Lupin by Echo Bay. Remedial measures (operational changes) have been incorporated into the management of the TCA which reflect this work. Examples of these measures are in the construction of Mdam (controlling runoff from Cell 5), placement of fresh tailings overtop oxidized tailings to prevent further oxidation and limit transportation of oxidation products and the pumping (and treatment if necessary) of the water from these areas to areas where further treatment can be provided (ie Cell 5 to Cell 3).

The sampling of specific "pools" of water on these tailings would only serve to identify areas of concern. In order to track oxidation rates and developing loads within the TCA, considerable effort would have to be expended in measuring water volumes transferred and the contaminants within this water. As the cells will be in constant use, fresh tailings water will also be present, adding to the difficulty in isolating these product streams.

Echo Bay remains in the position that these areas of concern are of an operational nature and as such are handled internally, outside of the water licence. Echo Bay strives to continually improve the water quality of the TCA and must incorporate sampling where and when necessary to do so, not just to comply with a licence requirement.

Recommendation to monitor mine water; The temporary closure of mine does not necessarily "allow an extended period over which the workings are exposed". During the operating period, air flow (along with oxygen) is provided to allow for use of underground equipment and operating personnel. This airflow is reduced during the care and maintenance as no diesel powered equipment is being used underground.

During a permanent closure, air flow would be cut off, limiting the amount of oxygen present in the underground workings (that are not yet flooded). The upper levels of the mine workings would eventually

freeze, limiting oxygen transfer through the water.

The mine water is currently handled through discharge to either the Sewage Lakes system or to the TCA through the current tailings line. Each of these systems have effluent quality limits in place that are designed to protect the receiving environment. **The monitoring of current mine water quality should be done in-house to ensure that the water quality of either system is compromised.**

Thermal analyses and modeling; "*The rationale for flooding portions of the TCA is not clear*". Flooding (maintaining water levels at 484.5m) of the TCA will provide a water cover to the tailings ponds 1,2 and Cell No.4 ensuring that any tailings solids (or subsequently precipitated solids) will remain under an adequate water cover and be limited to activity regarding potential oxidation and re-suspension within the water column. This is necessary as it is not feasible to cover the entire TCA with esker material upon closure.

Dam structures that may be affected by the increased water levels are expected to be of adequate thickness to offset the latent heat of the water held within the ponds. This would require demonstration through modeling prior to final abandonment.

Tailings beaches are used to keep water away from the structure by providing added distance and usually a finer material that restricts water movement. At Lupin, tailings beaches have only been used along dams that are containing tailings solids (ie Cell 3 kDam divider dam and potentially Dam4 if to be used for tailings). Use in other area would have the potential to jeopardize water quality. Impermeable liners have also been used in most dams as an initial protection against water movement. The frozen core being the long term solution.

5.2 **Recommendation to install additional thermistors in Cell No.1**; Station TC1-4 was installed nearest the centre of Cell No.1. Station TC1-5 was installed adjacent to Dam3d and is most likely in the greatest tailings solids depth. Station TC1-5 has been plagued with sensor failures and requires replacement.

Placement of additional thermistors has been discussed, however additional placement of esker material in Cell No.3 has also been considered and the installation of new thermistors been delayed. Monitoring of the thermistors is currently done bi-weekly and when manpower is available, weekly. Obtaining readings on a monthly basis has not been found adequate as the peak warming or cooling time may be missed. By obtaining readings more frequently, it has been found that warming of the ground at depth continues well into the winter months.

Recommendation to conduct a long-term study in Cell No.1; Is the permafrost in the Lupin area not "underlying" as opposed to "overlying" as is discussed in the rationale? Is it suggested that there is an unfrozen layer between the underlying natural ground (permafrost, 350m or more) and the frozen ground nearer the surface? Temperature data indicates frozen conditions down to 13m in the Cell No.1 area with the 1.5-1.75m active layer at the surface.

Any study of the nature proposed should be based on the opinions of experts in permafrost regions and the areas of study recommended. This may be a closure study and required only if temperature data (and possible future modeling) suggest the need.

5.3 Abandonment and Restoration Plan

Recommendation to submit a final reclamation plan three years prior to the end of mine life;The Company is in agreement with this recommendation and have been proactively investigating several of the suggestions of the Report prepared by Golder Associates Ltd. An annual review of the prepared interim plan is anticipated in order to maintain an up-to-date file on progress made.

6.0 Security Deposit

Closure cost estimates; the calculation of closure costs performed by Golder Associates Ltd. in conjunction with PCL was considered very detailed and accurate with respect to identification of areas of concern as well

as unit costs used. The requirement for a contingency should be based on the detail and accuracy of the estimate and not simply as assurance that the estimate will be less than the actual costs. A 10% contingency is reasonable given the detail of the estimating process.

Only areas that have been disturbed should be included in the estimate, not areas of potential use. With this in mind, the **inclusion of Cell No.4** in the estimate is inappropriate as the proposed water level to be maintained in the system will provide a water cover to tailings solids that are currently present in the cell.

Cover thickness of 1.75m; the revised estimate provided by Echo Bay used this thickness in cover as a basis for material required and contractor costs. The potential of using a lesser thickness of 1.5m was discussed.

Independent contractor rates; the rates used by Echo Bay in the revised estimate prepared by Mr. Mike Tansey were rates developed through previous construction work performed on site by an **independent contractor** and therefor include a profit margin, are considered to be accurate and reflect the costs of reclamation work at an isolated location such as Lupin.

Establishment of Security Deposit; Echo Bay Mines Ltd. has been in contact with the DIAND Lands Division since an initial meeting in March, 1999. A letter was issued (in August) by the Department with reference to the security, amount requested and proposed method of security. A response was submitted to the Department in September, 1999 which proposed a method of accruing the security deposit over a term. A response from DIAND has not been received to date. *(A correction was added to the submission with the Board in that a response had been received in Feb. '00)*

Duplication of Security; this appears to be a recommendation for the NWB and DIAND to discuss and should not be included as a recommendation in the intervention of the Lupin Water Licence.

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Prepared responses to technical comments and recommendations submitted by interveners during the Water Licence, Public Hearing process.

Environment Canada and DFO Joint Submission

Ulu Exploration Program - NWB2ULU9700

a) **Additional holding capacity for mine water**; The application suggests the construction of an additional holding pond utilizing East Lake to contain any excess mine water encountered during the "operating" phase of the mine, once exploration has indicated mining at Ulu would be feasible. As the resource is currently defined, the ore body remains within the permafrost of the region and any water encountered would be limited to water that has been trapped within the permafrost and subsequently released by the opening underground. This volume is expected to be minimal and handling would be accomplished using the constructed holding ponds (sumps) on surface.

The exploration program at Ulu is not likely to resume until The Lupin Mine is back into full production and there is a significant recovery in the price of gold. The Ulu Project is being pursued as a satellite ore body with milling and recovery to be done at the Lupin facilities.

It is requested by Echo Bay Mines that further investigation be postponed until the field season in 2001, allowing for a stabilization of operations at Lupin and potentially a rise along with stability in the price of gold.

b) **East Lake fish habitat**; The study reports completed by RL&L Environmental Services indicated in their findings that East Lake had a bathymetric profile that included depth to 6 metres, contrary to initial reports that the lake likely froze to the bottom during winter. Their findings also suggested that due to the size, location, lack of an adequate link (stream) to other fish habitat, it was highly unlikely that this lake supported fish. Investigation into oxygen levels prior to spring thaw may also give an indication as to the suitability for fish habitat without actually having to remove any fish, if present.

c) **Water use**; The drawdown of West Lake should have been specified as "over season" or spring thaw to spring thaw. Once recharge has been completed in the spring, the daily use of a maximum 100 m^3/day by the camp would result in an overall lowering of the lake water level by 0.19m prior to recharge again the following spring. A review of the bathymetric work may provide indication as to the amount of area affected and its effect on the littoral zone habitat.

d) **ARD issues**; periodic sampling of the material being extracted from underground should be carried out to provide the necessary data to predict any potential issues regarding acid generation potential. The ore material may be stored at the Ulu stockpile for up to an eight month period prior to being trucked to the Lupin Mine for processing (from April to December) and there should be some assurance that the material will not become acid generating within that period. Composition comparison of the ore could also be made.

e) **Development of Plans**; the exploration program at Ulu is still on hold and the return of activity is based on the start-up of Lupin and a recovery in the price of gold to the $340US range. With this in mind, it is unlikely that activity will resume at Ulu prior to 2001. The requirement for development of these plans within the original licence was intended to have the plans in place by the final stages of exploration/production mining start-up at Ulu.

f) **Addition of salinity and invoking the SNP**; there was no rationale given for adding salinity to the parameters to be measured at the settling ponds. The time frame for commencing the SNP sampling should be reviewed with regard to the current status of the exploration program. Unless there is renewed activity at the site, the only stations that would benefit from sampling are those such as the freshwater intake at West Lake and outflow of East Lake and Ulu Lake (sampled for background water quality).

Other

Unrelated to the intervention, however questioned of the Ulu Water licence, the SNP analysis requirements do not match the effluent quality limits set out in Part D, Item 4. There is a requirement to analyse for total cadmium and total mercury, however these are not included under the effluent limits. There are also effluent quality limits listed for parameters that are not listed under the analysis requirements.

Indian and Northern Affairs Canada Intervention

Response to technical comments and recommendations

Ulu Exploration Program - NWB2ULU9700

2.0 Licence scope and definitions

No comment on this section, similar to Lupin licence.

3.0 Waste Disposal

3.1 **Effluent quality; Addition of nutrients (TP, T-OP, T-N, Nitrate and Nitrite)**; Are these recommended additions of sampling requirements matched with any kind of effluent quality limits on the discharges from the sewage treatment? The reference to "**TCA**" in this section should possibly read "**sewage effluent discharge point**"?

3.2 The recommended handling of sewage sludge via burial in a sump can be accommodated. Perhaps the licence definitions should provide a specific definition for "sump" in order to meet this requirement. Burial on land was viewed as a appropriate measure as opposed to a location that might be subject to continual flushing with water during spring melt or rain events.

3.3 Hydrology; the estimated maximum drawdown of West Lake at 0.19 metres was determined by the estimated water use for the camp, the surface area of West Lake and no recharge in addition to that of spring melt. There is expected to be some recharge from rainfall events, however these were not taken into account due to the low volume of water to be used.

Additional hydrological work can be initiated to provide better estimates on the impact to West Lake, East Lake and other downstream water bodies.

3.4 **Acid Rock Drainage**; The coarse ore has been shown to not generate acid (and associated metal contamination) for up to 50 years. Field-column testing was begun in 1997, however with the suspension of the exploration program and then the subsequent shutdown of the Lupin Mine, this test program was also put on hold. As ore material is not expected to remain in stockpile for more than an eight to ten month period, the work that had been completed to date indicated that there should only be a concern if the composition of the ore changed with mining.

Intermittent testing of waste rock would be completed as directed under the Waste rock and ore storage plan (to be developed for operations). This would include waste rock used in construction as well as stockpiled for future use.

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