



INDEPENDENT ENVIRONMENTAL MONITORING AGENCY

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Jane M. Howe
Chief Environmental Officer, Permitting and Traditional Knowledge
BHP Billiton Diamonds Inc.
#1102, 4920 52nd Street
Yellowknife NT
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Dear Jane

Re: Agency Expectations for the Adaptive Management Plan

Thank you for your invitation to submit comments on our expectations with regard to the Adaptive Management Plan requirement in the new water licence for Ekati, as discussed during our Board meeting last month in Yellowknife.

The requirements for an Adaptive Management Plan in the new water licence, and the rationale as found in Mackenzie Valley Land and Water Board's Reasons for Decision, are excerpted in the attachment for ease of reference.

We strongly support the concept of adaptive management. We have urged BHPB several times to complete and submit two studies that we believe are critical to any informed decision on the AMP—namely the Tier II Risk Assessment for Chlorides and the Long Lake Containment Facility Water Quality Study. These two important pieces of work are essential in putting together and evaluating a meaningful AMP. The LLCF Water Quality Study in particular, is critical in terms of water quality modeling and predictions, and should be used to identify other potential contaminants of interest beyond the list found in Part H, item 7(b).

The Agency expects to see the AMP clearly lay out the contaminants of interest and specific thresholds for each that should consist of absolute trigger points but also early warning signals for action based on observed rates of change or trends in either water quality variables or aquatic biota. BHPB should apply the concept of tiered triggers that allow for some remedial actions and research before a problem would require more severe responses such as water treatment or shutting down outflows from or inputs into the LLCF.

The thresholds should clearly relate to the protection of the downstream aquatic environment in the Koala watershed and into Lac de Gras. The proposed thresholds should lead to the protection of the observed, most sensitive, downstream aquatic life species, including fish, plankton (both phytoplankton and zooplankton) and benthic organisms. For example, thresholds may involve:



- determining at what future point in time (year) a progressive rate of increase in a chemical variable will reach or exceed a CCME guideline or water license limit, so as to take mitigative action in the period prior to the reaching of that threshold (molybdenum is an example of a current parameter nearing a CCME guideline); and
- a biological threshold may be reached when indices (e.g., density, abundance or composition) of a biological community in an affected lake or stream reach a level some magnitude below a baseline minimum measurement, or stays significantly above or below baseline for a certain number of years (as seen in the *cladocera* of Moose Lake).

The Agency expects that the trigger points for action will be accompanied by some indication of available mitigation measures complemented with suitable research where necessary. The mitigation measures should include best available practices for materials handling, use of the available filtering and polishing capabilities of the LLCF (e.g. staying out of Cell D as long as possible), alternative flocculants and agents to promote better settling or polishing, and whatever other measures may be available. Water treatment should be viewed as a last resort, an expensive option that we are sure BHPB would rather avoid. It will be necessary to build in any potential mitigation measures into appropriate management plans including the Wastewater and Processed Kimberlite Management Plan in particular.

Should BHPB wish to pursue site-specific risk assessments for thresholds or trigger points, this should be accompanied by interim triggers and robust research within a defined timeline, with public reporting, and time for all interested parties to review the results and make their views known.

The last point about public reporting and time for interested parties to review results, applies to all of the work performed under the AMP and should be undertaken in a collaborative basis at least yearly. This will help build public confidence in BHPB's environmental management systems and is crucial to building good working relationships.

The monitoring undertaken as part of the AMP should complement the work under the AEMP. We are sure that BHPB will work hard to avoid duplication and to ensure that the two programs are coordinated and presented in a useful manner.

We would be happy to discuss this with you further at your convenience.

Sincerely,



Bill Ross
Chairperson

cc. Society Members
Sarah Baines, Wek'eezhi Land and Water Board

Excerpts from Water Licence MV2003L2-0013

Part H: Conditions Applying to Contingency Planning

7. Within twelve (12) months following the effective date of this Licence, the Licensee shall submit to the Board for approval an Adaptive Management Plan that shall include, but not be limited to, details pertaining to:
 - a) Monitoring and research program that is designed to meet the needs of the Adaptive Management Plan;
 - b) Identification of contaminants of interest for adaptive management planning to include, at a minimum, total arsenic, total cadmium, total chromium, total copper, total lead, total molybdenum, total phosphorous, total zinc, chloride, nitrate, nitrite, total suspended solids, turbidity, BTEX (as defined in the attached Surveillance Network Program) and total dissolved solids;
 - c) Derivation of numerical thresholds in the Receiving Environment for the contaminants of interest;
 - d) Appropriate triggers for the numerical thresholds referred to in part H, item 7(c);
 - e) Response procedures, mitigation measures and treatment options if triggers are activated;
 - f) Linkage with the Aquatic Effects Monitoring Program and other management plans as appropriate; and
 - g) Annual reporting to the Board.

Reasons for Decision, Water Licence MV2003L2-0013, Mackenzie Valley Land and Water Board

Part H: Conditions Applying to Contingency Planning

Appropriate and adequate contingency planning is needed to ensure that sudden, foreseen or unforeseen events can be dealt with in such a way that human safety is maximized and environmental impacts are minimized. This section has been expanded to include an AMP [Adaptive Management Plan] and Hydrocarbon contaminated Materials Management Plan.

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Part H, Item 7: The Board agreed with the statement made by DFO at the public hearing that “adaptive management is essential to an effective management program and it should be an integral part of the licence”. The Board also agreed with EC, DFO and DIAND that an AMP is a useful and appropriate mechanism through which monitoring of, and responses to, levels of specific parameters in the receiving environment can be undertaken. The AMP requires Board approval and will undergo review by members of the BHPB Distribution List.

The AMP will allow BHPB to develop site specific thresholds, and triggers specifically related to those thresholds that are protective of the receiving environment for at least the parameters listed under part H, item 8(b) [should read “7(b)”]. If monitoring indicates that

the triggers have been activated, BHPB is required to respond by undertaking further studies, by implementing mitigation or treatment methods or any other responses approved of in the AMP.

The Board requires a link between the AMP, the AEMP and other management plans because adaptive management is only effective if unacceptable changes on site result in corresponding changes to water and waste management. The Board emphasizes that the AMP is not a surrogate for all adaptive management BHPB currently practices at Ekati.

DIAND's suggestion that the Licence contain a condition that allows parameters to become regulated under Part F, item 13(a) was deemed unnecessary by the Board. The thresholds set under the AMP must be protective of the receiving environment and to remain in compliance with the Licence, BHPB must respond in a timely matter [should read "manner"] and exercise due diligence to prevent any impacts to the receiving environment if the triggers were activated.