



Independent Environmental Monitoring Agency

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July 27, 2007

Violet Camsell-Blondin
Chairperson
Wek'eezhi Land and Water Board
Box 32
Wekweti NT X0E 1W0

Dear Ms. Camsell-Blondin

Re: Comments on Section 2 of the Ekati Interim Closure and Reclamation Plan

The Agency is pleased to submit the following comments on section 2 of BHPB's Interim Closure and Reclamation Plan. The revised version of Appendix C, accompanied by the research and monitoring tables, represents a big improvement from previous efforts by the company. We would appreciate the company's responses to the comments raised in this letter and the attachments.

General Comments

It is difficult to follow how any one component will be addressed as the information is spread over four separate tables, the text in Volume 1 (sections 6.1-6.3) and parts of Appendix E. It might be more effective to have one table for each of the mine components that contains the closure objectives and criteria, options, research (based on the need for detailed criteria and risk assessments), and monitoring (see the attached Table 1 for a demonstration of how this might be done). It would also be helpful if BHPB updated the text in Volume 1 based on the outcomes from the Working Group and the WLWB.

There is some mixing of objectives and options for each of the mine components. Furthermore, some of the objectives conflict with each other. For example, minimizing access to open pits for wildlife, while at the same time leaving a pit ramp in place. It is not clear how community preferences were factored into, or reflected in, the objectives.

Closure criteria require a greater degree of specificity, where possible, or clearer links to reclamation research. Closure criteria need to be clear enough for a third party to conduct a field inspection and to determine whether a mine component's final condition meets the criteria or not.

General Mine Component Comments

Open Pits

There are two key, but related, issues with regard to closing the pits that we would like to draw to your attention.

Firstly, the issue of whether the pits should be made into some sort of functional habitat. We understand that BHPB had a fisheries habitat compensation agreement with Fisheries and Oceans, but this arrangement should not preclude the pit lake edges being returned to a condition that promotes fish use and for the overall pit lake to be safe for fish passage. It is premature for the company to put forward fish barriers as the closure option for the pits. This is not consistent with the overall closure goal and will, in all likelihood, require perpetual care and monitoring.

Secondly, what water quality standards should apply to the final condition of the pit lakes? The Agency's position is that the water quality should be protective of aquatic life and the onus should be on BHPB to prove whatever contaminant levels it may suggest, are indeed protective of aquatic life. It may well be that more stringent standards such as CCME guidelines for the protection of aquatic life may be more suitable.

We are also of the view that BHPB should conduct further community consultation to establish workable closure objectives and criteria for future human use of the pit lakes areas.

Underground Mines

The crucial issues for this mine component are the design and operation of effective pit plugs, and the need to effectively predict pit water quality and its effects on closure options and final water quality in the pit lakes.

Waste Rock Storage Areas

The Agency has not taken a position on BHPB's preferred closure option for the waste rock storage areas, which appears to be no sloping, no revegetation, and some wildlife access ramps. It is not clear to the Agency whether closure methods for the waste rock piles should encourage or deter future wildlife and human use.

The Agency would have liked to have seen a stronger indication of community preferences and consensus on future use of the rock piles. There is a need for further community consultation by the company to formulate closure objectives and criteria that reflect community wishes. We intend to discuss this further with the company prior to the Working Group meeting.

Other Comments

The Agency recognizes that the focus of our efforts on section 2 of the ICRP should be on the objectives, criteria and preferred closure options for the selected mine components. While reviewing the research and monitoring tables for these mine components, we have identified

some issues that we would like to bring to the early attention of BHPB and the WLWB in the hope that these can be addressed before the Working Group examines these parts of the ICRP.

The research tables lack virtually all reference to when the research needs to be done. It is not clear how this research will feed into the next version of the ICRP. The WLWB, and all interested parties, need to be reassured that the research will be done in time to make such ICRP revisions as are appropriate. The Agency recommends that BHPB be required to add timelines to the reclamation research plan and discuss how the research will be coordinated with future revisions to the ICRP.

The "research methods" appear to be vague - more like general objectives than like methods. BHPB may wish to retitle this column and then provide further details on specific methodologies and timelines as part of the overall reclamation research plan.

The monitoring reference section of Table 21 and the monitoring plan Table 49 generally does not include trigger points or thresholds for implementation of contingency measures including remediation or mitigative actions. These are required to formalize an adaptive management strategy for closure. The Agency urges BHPB to set triggers or thresholds for implementing contingency measures, wherever possible, and link them to research where necessary. It is also not clear how monitoring frequency or duration was determined. Do the figures in Tables 55-57 reflect best practices, a risk-based approach and are they comparable to programs at other closed mines?

Conclusion

While BHPB has demonstrated some progress in the conceptual approach to closure of several of the mine components, further refinements and consultations are recommended.

We would like to thank the Board for the opportunity to work together on improving the ICRP. Should you have any questions about our comments, we would be pleased to work with your staff and the other interested parties.

Sincerely,

-ORIGINAL SIGNED BY-

Bill Ross
Chairperson

cc. Society Members
Helen Butler, BHPB
Bruce Hanna, DFO
Anne Wilson, EC
Jason Brennan, DIAND

IEMA Comments on BHPB ICRP (Section 2)

Open Pits—Tables 21, 43, 49, 55

The Agency supports pump flooding, rather than natural filling of the pits, provided there are no significant effects on source lakes. The Agency also supports putting permanent and effective plugs into Panda and Koala to allow them to be two different lakes again.

The major issues with regard to this mine component, relate to the following:

1. What measures of water quality should apply to water in the pit lakes of discharges or flows from the pit lakes; and
2. Whether the pit lakes should become biologically productive ecosystems.

The Agency remains concerned that back filling pits with kimberlite tailings does not appear to receive serious consideration as an option for pit closure. Since pump flooding of Beartooth is scheduled to start before the next revision of the ICRP, it appears that pump flooding is the only option. This point reinforces the Agency concern about the need for specific timelines for the reclamation research. Note that the Life of Mine Plan (Volume 1, pg. 76) has Beartooth being mined until 2010, whereas on page 111 BHPB says Beartooth open pit completion will be in 2009. These timing differences may be crucial in planning progressive closure of that pit.

Land

1. Closure Criteria—It is not clear how slumping or erosion might be measured other than through a physical inspection. Will there be a standardized inspection report or form with clear criteria for remedial or mitigative measures? For example, if 5% of the pit walls experience some sort of failure, then further blasting or reinforcement might be undertaken. Would TSS sampling in the pit lakes provide any indication of slumping or erosion?
2. Closure Objective—The stated objective is really an option. The objective might be better stated as ‘making the land around the pits safe for future uses’.
3. Closure Criteria—Does BHPB see any role for GNWT’s November 2003 Environmental Guideline for Contaminated Site Remediation (see <http://www.enr.gov.nt.ca/library/pdf/eps/siteremediation.pdf>)?
4. and 5. Objectives—The use of indigenous vegetation for rehabilitation work is an option, not an objective, that is, a means of meeting the goal for the open pits. While the Agency tends to agree that it is better to use indigenous species for revegetation, it is not clear what areas in and around pits will be revegetated other than the pipeline routes for pit filling (see Tables 23-29 in Volume 1, and Table 33 Biological Stability and Closure Activity cell in Volume 1). Does BHPB intend to revegetate pit shorelines or berms? If so, there may be a need for metal uptake toxicity risk assessment for revegetation in these areas. The Agency understands that BHPB is

undertaking a revised risk assessment for revegetation that should include riparian areas and species.

BHPB has proposed reclaiming the pit refilling pipeline roads the same way as for the minesite roads, which implies removing berms and culverts, but nothing else. This should be clarified. To reduce the footprint of the mine, BHPB should consider complete removal and reclamation of these pump roads or complete avoidance of footprints by using existing road beds for the pipelines.

6. Closure Criteria—We understand that there was an extreme pit flooding event last summer at Ekati. The Agency would like to ensure that this event would fit within the proposed closure criteria of design for a 1:100 year storm event.

Monitoring Reference—It is not clear who would inspect the remaining operational engineered structures and how often this would take place. There are no monitoring provisions spelled out for this closure objective in Table 49.

Water

2. Objective—This objective should also include an indication that the pits should stay filled within some variation of natural seasonal levels. Drainage between the lakes should occur in natural channels not be subject to regular blockages of flooding. It may also be desirable to make trade-offs amongst a number of conflicting effects so as to balance loss of raptor nesting, minimize sedimentation during refilling, and minimize groundwater infiltration into the pits.

The current objective may appear to suggest that plugs will not be used. The use of plugs or not, are two options and the consequences of each need to be assessed and understood. If the plan is to use plugs, research should look at the consequences of failure and the design of appropriate plugs to minimize this outcome.

3. and 4. Closure Objective—It is not clear what is meant by “stable” lake stratification. Is there a timeline involved and what is the contingency if this does not happen? What happens if the water quality does not meet discharge criteria?

The Table suggests that “water licence criteria are met” as closure criteria. Does BHPB intend to use the discharge criteria shown in Table 15 of Volume 1 of the ICRP to measure acceptability of water quality in the pit lakes? The Agency generally supports the establishment of water quality closure criteria that will protect aquatic life, as is consistent with the overall mine closure goal of establishing viable and self-sustaining ecosystems.

The Agency has prepared Table 2 showing the original baseline conditions in Koala, Fox and Misery Lakes in 1994, the discharge limits from various water licences covering mining at Ekati, and the relevant CCME guidelines for the protection of aquatic life (see attached table). It should be noted that CCME guidelines are generally stricter for most of the regulated variables.

The Agency is not suggesting that the pit lakes be returned to their original condition or that CCME water guidelines be used for discharge from pit lakes or for final pit lake water quality.

CCME water guidelines for the protection of aquatic life might serve as a starting point to ensure safe water quality for the pit lakes at closure, with the onus on BHPB to research and prove that higher levels of potential contaminants of concern are protective of aquatic life. The Agency is of the view that at closure, the water quality in the pit lakes should be adequate for the protection of aquatic life to encourage the return of a self-sustaining ecosystem. At closure, there will be no receiving environment as all the mine components, including the pit lakes, will be a part of the receiving environment.

The list of variables regulated under the current water licence and the proposed discharge criteria in Volume 1, Table 15 of the ICRP, may be insufficient to ensure that water quality is adequate for the protection of aquatic life. Not all contaminants of concern are currently regulated through the water licences. We note that there are rising levels of chlorides from pit water and levels of molybdenum in discharges from the LLCF are approaching CCME guideline limits. This is why CCME guidelines can be helpful in providing further guidance for variables not regulated under the water licences.

Part of the difficulty in establishing pit lake water quality closure criteria at this point, is the need to complete the pit lakes studies and the Adaptive Management Plan (AMP) required under the main water licence. These two studies should provide predictions on pit lake water quality and appropriate trigger or threshold limits for unregulated water variables that may become an issue. The AMP is required under the main licence but will be an important document where BHPB begins to set out trigger points for action for a broader set of variables than those already regulated in the water licence. The AMP may also contain or lead to further research to set these trigger points based on toxicological effects of various contaminants on aquatic life, possibly including new research related to northern species of interest.

The LLCF water quality study may also be important in that the quality of pit water is likely to be predicted as an input into LLCF water quality predictions. The Agency urges BHPB to submit both the LLCF water quality study and the Adaptive Management Plan as soon as possible to enable both the ICRP Working Group and the WLWB to better understand the proposed ICRP.

Wildlife

1. Objective—This objective (fish barriers) is not consistent with the overall site closure goal and is more of an option than an objective. Although further research may be needed to establish expected pit water quality, it would be premature to say that fish should be kept out of the pit lakes. This may not even be possible in the long-term without some sort of perpetual care regime to ensure that effective fish barriers remain in place.

What is needed is a determination of whether restoring the pits to self sustaining ecosystems is practicable, how long this may take using various methods of pit filling, and whether fish barriers may be necessary temporary structures until acceptable water quality is established. This is what Task 7 of the Pit Lakes Study is supposed to do and should be referenced in Table 43.

2. and 3. Objectives—These objectives appear to conflict with one another. Objective 2 states “minimize access to protect wildlife safety”, while Objective 3 is to “allow emergency access and egress from flooded pits”. The closure criteria may well work against each other: berms versus pit ramps? How is this to be rectified?

Under "application of results" in Table 43, there is a suggestion that the berms are for the flooding period and not, perhaps, in perpetuity. Temporary berms may be necessary in the interest of safety, during refilling. Permanent berms are not compatible with promoting wildlife use of the pit lakes. If there are stable sides and shorelines with relatively stable water levels, is there really a need for permanent berms? Lack of permanent berms would also be more consistent with Health and Safety Objective 5 - continuation of human land use activities.

Reclamation research for Objective 3 should also include a risk assessment for metal uptake in revegetated areas, including shorelines. Lessons learned here could benefit from the Cell D studies undertaken some time ago. These studies determined that kimberlite makes an acceptable medium for underwater vegetation to grow.

BHPB proposes a 5-year period to conduct a Wildlife Effects Monitoring Program for all closure monitoring programs. Given that much of the monitoring will relate to how wildlife (especially caribou, but also bears and other VECs) will adapt over time to the physical structures left (e.g., roads, pits, LCCF, WRSAs, wildlife ramps), and what the permanent impacts will be, a 5-year monitoring period seems far too short to address these issues. Many of the effects of the Mine observed with wildlife were not evident until more than 5 years of data were obtained (WEMP 2005). BHPB should consider a minimum 10-year closure WEMP, consistent with the Aquatics Effects Monitoring Program and other monitoring.

4. Objective—It may be better to consider wildlife habitat and use of the lake periphery and shorelines including possible waterfowl use of the pit lakes. Things such as possible contaminant loads in submergent or emergent vegetation used as food by geese or ducks should be taken into account by research on revegetation metal uptake (see discussion above under Land 4 and 5).

The closure criteria for Objective 4 (wildlife using the area) are vague and difficult to quantify (wildlife observed using the area adjacent to the pit lake). Something more detailed such as “observance of wildlife species similar to other control sites” or some other measure may be more appropriate.

The research for Objective 4 in Table 43 does not identify specific work that may be required for natural hydrocarbon contamination that occurs in Sable pit rock as identified as item #9 in the Appendix E Risk Assessment.

Health and Safety

1. Actions/Measurements—Another option to minimize access to open pits might be to make access roads impassable.

2. Research Monitoring Reference—No measures are specified to quantify or monitor use of the pit ramps. The temporary closure of the Misery pit would seem to offer a good opportunity for reclamation research to test whether pit ramps may be used by wildlife or humans.

5. Closure Criteria—For pit lakes, it will be important to ensure that winter travel over lake ice is safe for human use into the future. Ice thickness measurements might be useful as an indicator of safe travel.

Community

1. Closure Criteria—It is not clear how traditional land use or TK has been used to set closure criteria that promote safe community use of pit lakes. Future uses may include travel routes, camping and/or fishing. Closure criteria should be developed around these potential uses (for example, ample ice thickness for safe crossings, potable water quality variables, safe fish) and specific monitoring programs should be in place to measure achievement of these criteria.

While the Agency generally supports pump flooding of pit lakes, to fully develop closure criteria, there is a need for BHPB to consult with Aboriginal communities to reach some level of consensus of desired end uses for all mine components, and in this case for the pit lakes. Once the desired end uses are identified, proper closure objectives and criteria can be developed related to future community use that demonstrate the application of TK.

As mentioned above (see Wildlife Objectives 2 and 3), permanent berms are not conducive to future community land use in and around pit lakes.

Underground Mines—Tables 21, 44, 50, 56

Land

2. Closure Criteria—It is not clear how “significant slumping or subsidence” would be measured. As similar concern is raised above in the Pit Lakes land 1 closure criteria.

Water

1. Research—The Agency has urged BHPB to make the LLCF water quality study available on many occasions and reiterates that call here.

Under “Lessons Learned”, BHPB claims that TDS from underground will increase only "marginally" in future. Beartooth pit water show TDS concentrations at 300 mg/L (May 2007 SNP data) and RESCAN used 800 - 1000 mg/L as the basis for discussing possible meromixis in pit lakes. However, RESCAN stated in the Pit Lake Task #2 study (pg. 2-3) that 8000 mg/L is likely and this concentration has already been "observed in existing Ekati pits". The claim of future marginal increases does not appear to be consistent with these facts. We need a better understanding of this matter.

Research on the pit plug failure and pit filling without put plugs, may be important in determining water quality in the underground mines but is not mentioned in the reclamation research Table 44.

No specific monitoring of underground water is mentioned in Table 45, yet this may be important in determining overall pit lake water quality and whether meromixis will take place.

Health and Safety

1. Closure Criteria—See the point under Land, closure criteria for objective 2.

Waste Rock Storage Areas—Tables 23, 45, 51, 57

The Agency has been under the impression that the salvaged soil areas were to be used for revegetation materials but BHPB's current approach appears to be simple promotion of revegetation of these areas as part of the waste rock storage areas. Is this the best use for this material that was carefully separated and stored?

It is not clear whether BHPB has considered any separate or different closure criteria or actions for ore stockpile areas that may require different treatment (see Appendix E Risk Assessment, item 9).

Waste rock storage area Figures 46-50 and 55-57 in Volume 1 have no scale on them. This makes them hard to understand.

Air

1. Closure Objective and Criteria—BHPB should consider adding an objective such as avoidance of adverse effects from fugitive dust. This could be measured through appropriate closure criteria that relate to acceptability of surrounding vegetation for herbivore consumption and no significant loss of ground cover due to dust deposition.

In the criteria specified in Table 23, does BHPB see any role for GNWT's December 2002 Ambient Air Quality Standards (see http://www.enr.gov.nt.ca/eps/pdf/ambient_airquality.pdf)?

Land

1. Closure Objective—The stated objective is really an option (encapsulation). A better objective may be to prevent problem drainage from the waste rock piles escaping into the receiving environment.

2. Monitoring—The monitoring period for revegetated sites should begin after effects of any fertilization have fully dissipated.

6. Research—This section should address those portions of the waste rock storage areas that do not appear to be freezing (the coarse kimberlite rejects).

15. Closure Criteria—It is not clear how “significant thermokarst erosion or subsidence” will be measured or monitored, and what triggers there may be for contingency measures.

Water

1. Closure Criteria—Here, the relevant water quality criteria ought to be protection of aquatic life, not current licence criteria (see the discussion above on Pit Lakes water closure criteria). See page 2 of this response for discussion regarding the water quality criteria.

Wildlife

1. Closure Objective—The Agency has not taken a position on the need for or number of wildlife ramps related to waste rock piles. We are of the view that BHPB needs to conduct more effective community consultation to properly obtain a consensus on desired future land uses and preferences for the waste rock pile. There are also key pieces of outstanding research required to help determine whether wildlife should be attracted to or deterred from using the waste rock piles. The metal uptake risk assessment for revegetated areas is needed, along with observations on possible wildlife use of these areas. Properly designed monitoring studies using the temporary closure of the Misery waste rock piles would be a good start to examine wildlife use.

BHPB proposes building numerous wildlife access ramps on to the 50 m high WRSAs “for safe caribou passage and travel” and “to allow wildlife access and exit from the piles”, assuming caribou will want to migrate across these unvegetated areas. “The locations and design are to be defined based on consultation with local communities and their understanding of caribou migration pathways” (Volume 1, pg. 176). The company also proposes further research to “determine location, number, dimensions and slope of access ramps” (pg 192). Does BHPB have evidence that caribou will cross these piles on migration or use them at other times of the year (could suitable evidence be gathered from Misery while this operation is in temporary closure)? Will use of these piles be greatest during migration (presumably spring/northern migration), or during the post-calving and summer seasons? Is it better for the caribou to discourage use of these piles by not building access ramps; i.e., is the objective the wrong one to propose? Will there be an increased risk of injury to caribou from use of these piles? These piles should form habitat for summer insect relief, but will they also form areas of higher predation and risk of injury? BHPB should address these questions.

Health and Safety

2. Closure Criteria—There is an error in this section as it refers to “pit lakes”.

Community

1. Closure Criteria—See the discussion above for pit lakes and their future human use.

Are there any “Lessons Learned” from how the Colomac or other northern mine closures have treated waste rock piles?

Table 1. Closure Objectives, Criteria, Preferred Option, Research and Monitoring for Mine Component X

Valued Ecosystem Component--XX

Closure Objective	Closure Criteria	Preferred Closure Option and Methods	Research and Further Actions	Monitoring
Describe the desired end state of the particular VEC	List the desired measurable outcomes of reclamation actions. If not possible, describe the links to further research or actions.	Describe the preferred option or methods for closure of this mine components.	List the relevant research questions and further specific actions (e.g. community consultation, risk assessment) that will allow for the development of closure criteria. [Provide links to the specific pages of the research plan that layout, in a consistent manner, research purpose, methodology, timing, and how the results will be incorporated into future ICRP revisions.]	Describe what is to be monitored, frequency and duration, to measure whether the closure criteria have been achieved. [Provide links to the specific pages of the monitoring section that describe roles and responsibilities, design and rationale for monitoring programs (e.g. comparison to best practices, monitoring at other closed mines), specific triggers for adaptive management, and links to other parts of the ICRP.]
Example of BHPB’s Objectives and Related Information (Open Pits—Land Objective 5) [taken from Tables 21, 43, 49 and 55]				
5. Disturbed sites enhanced to encourage vegetation colonization	Vegetation cover (%)	Routine monitoring and sampling	Identify locations and methods for enhancing vegetation colonization on open pit disturbed sites	Inspection and monitoring of transects at reference and reclamation sites, once a year for five years
Agency Revision of Objectives and Related Information				
Reduce erosion around pit lake edges. Encourage wildlife use of pit lake edges.	Successful revegetation of pit lake edges. % cover and cover type to be developed through research.	Disturbed sites around pit edges revegetated.	Determine specific areas that will be revegetated and reference sites. What local species can and should be used for revegetation. How to measure successful revegetation through comparisons with reference areas (e.g diversity, rate of growth, coverage), and to provide a stable surface.	Monitoring of reference and revegetated sites on an annual basis during revegetation and for at least five years after the any soil amendments are used.

Table 2. Koala Lake Baseline Water Quality in 1994, Ekati Water Licence Discharge Limits, CCME Guidelines, and Proposed ICRP Discharge Criteria

Water licence parameter	Koala Lake mg/L*	Fox Lake mg/L**	Misery Lake mg/L***	Water Licence N7L2-1616 (1997-2005) mg/L	Water Licence MV2003L2-0013 (2005-2013) mg/L	Water Licence MV2002L2-008 (Sable, Pigeon, Beartooth) mg/L	CCME Guideline for the Protection of Aquatic Life– mg/L	Table 15 from ICRP – closure discharge and WRSA seepage water quality criteria proposed by BHPB mg/L
<i>Total ammonia-N</i>	<0.005	0.006	0.005	2 average 4 grab	2 average 4 grab	2 average 4 grab	Depends on temperature and pH but could be 0.019	2 average 4 grab
<i>Total aluminum</i>	0.00387	0.00022	0.00044	1 average 2 grab	1 average 2 grab	1 average 2 grab	Not readily available	1 average 2 grab
<i>Total arsenic</i>	0.000003	<0.000001	0.000003	0.5 average 1 grab	0.5 average 1 grab	0.05 average 0.1 grab	0.005	0.5 average 1 grab
<i>Total copper</i>	0.000016	0.000006	0.000006	0.1 average 0.2 grab	0.1 average 0.2 grab	0.02 average 0.1 grab	0.002-0.004 depending on hardness	0.1 average 0.2 grab
<i>Total cadmium</i>	<0.000001	<0.000001	0.000001			0.0015 average 0.003 grab	0.000017	
<i>Total chromium</i>	0.00003	<0.00001	0.00001			0.02 average 0.04 grab	0.0089-0.001 depending on species	
<i>total lead</i>	0.000023	0.00002	0.00001			0.01 average 0.02 grab	0.001-0.007	
<i>Total zinc</i>	0.00018	<0.00001	0.00001			0.01 average 0.02 grab	0.03	
<i>Total nickel</i>	0.000083	0.00001	0.00002	0.15 average 0.3 grab	0.15 average 0.3 grab	0.05 average 0.1 grab	0.025-0.150 depending on hardness	0.15 average 0.3 grab
<i>Nitrite</i>	0.008	<0.001	0.001			1 average 2 grab	0.06	
<i>Total suspended solids</i>	7	<1	1	25 average 50 grab	15 average 25 grab	15 average 25 grab	No guideline for total particulate matter	25 average 50 grab (15-25 for WRSA)
<i>Turbidity</i>	3.92	0.49	0.82			10 NTU average 15 grab	No guideline for turbidity	

<i>Total Phosphorus</i>	0.025	0.009	0.005			0.2 average 0.4 grab	Ultra-oligotrophic <0.004	
<i>Oil and Grease</i>	Not measured	Not measured	Not measured			3		
<i>Total petroleum hydrocarbons</i>	Not measured	Not measured	Not measured		3 average 5 grab	NA	Extremely low levels of various polycyclic aromatic hydrocarbons are contained in the guidelines but not 'total petroleum hydrocarbons'	
<i>Biochemical oxygen demand BOD5</i>	Not measured	Not measured	Not measured		40	NA	NA	
<i>pH</i>	5.95	6.55	6.89	6-9	6-9	6-9	6.5-9	6-9 (5-9 for WRSA)

*NWT Diamonds Project Environmental Impact Statement Volume II. Appendix II-A Water Quality from Koala and Adjacent Watersheds. Koala Lake Site 27 'A' replicate 0 m depth, July 3rd, 1994.

**NWT Diamonds Project Environmental Impact Statement Volume II. Appendix II-A Water Quality from Koala and Adjacent Watersheds. Fox 1 Lake Site 7 0 m depth, July 11th, 1994.

***NWT Diamonds Project Environmental Impact Statement Volume II. Appendix II-A Water Quality from Koala and Adjacent Watersheds. Misery Lake Site 48 0 m depth, September 7th, 1994.