



Alternatives North

Richard Edjericon
Chairperson
Mackenzie Valley Environmental Impact Review Board
Box 938
Yellowknife NT X1A 2N7

March 8, 2012

Dear Mr. Edjericon

Re: EA0809-001 [2008] Round Two Information Request Responses

Alternatives North (AN) has participated in good faith in the ongoing Environmental Assessment of the Giant Mine Remediation Project. We were pleased to be part of the five-day Technical Sessions held in October 2011 and felt that significant progress had been made in resolving a number of difficult technical areas and that there was a commitment to work together on some of the outstanding issues including monitoring, oversight, perpetual care and other matters.

We have reviewed the Round Two Information Request (IR) Responses filed by the Developer, specifically the Responses to the Round Two IRs filed by AN. We are alarmed at these Responses as most do not respond to the questions posed. In many cases, a series of new questions or issues are raised including the exemption of significant parts of the development from the Environmental Assessment. We have serious doubts regarding the Developer's commitment to complete and comply with the ongoing Environmental Assessment.

Analysis of the Round Two Information Request Responses to AN

The Developer provided no answers or partial answers to many of the AN IRs (see Table 1 and Appendix 1). Of the 55 questions we posed in our 26 IRs to the Developer, in our view 16 were not answered or partially answered. For example:

- AN #1 question 1—not all commitments were compiled (for example, to make all audits public);
- AN #1 question 2—there are no timelines provided for commitments;
- AN #3 question 2—the Developer confuses environmental components for mine components;
- AN #5—Table provided does not compile all perpetual care requirements and no information provided on tools, equipment and skills required for the work;
- AN #11—no information provided on potential institutional land use controls;
- AN #12 question 2—Developer did not prepare a cost estimate for remediation that would allow for proposed end land uses for the townsite area by the City;

- AN #19 question 2—a summary of the May 4, 2011 Oversight Committee was not provided; and
- AN #22—Developer did not provide an explanation as to why commitments to cover independent oversight in the Developers Assessment Report were not fulfilled.

Well over half of the responses provided by the Developer to the AN IRs raise new questions, including:

- AN #2 question 1—Developer did not provide a copy of the Site Stabilization Plan (see below);
- AN #7 question 1—Developer did not provide any specific effluent levels for application of off-the-shelf Best Available Technology for various parameters. With the design of the water treatment not yet complete, the Developer still draws a conclusion that there will be no significant adverse environmental effects;
- AN #8—Developer will not commit to pay for any incremental municipal water treatment costs caused by the project and does not provide any information on the Claims Against the Crown process;
- AN #10—far field modelling of water quality in Back Bay and Yellowknife Bay yet to be completed but Developer concludes that effects will not be significant;
- AN #19 question 3—Developer does not provide any details on how future Oversight Committee meeting summaries will be made public;
- AN #23 question 4—Developer appears to be backing off its previous commitment to conduct 3D modelling for freezing the arsenic chambers which would be crucial to determining measures of success and early warning of melting; and
- AN #27—Developer appears to be open to the frozen shell option for freezing of the arsenic chambers which should then be within the scope of this Environmental Assessment.

Significance of the Issues Raised in the Round Two IRs

Several key pieces of research, design or other work are still missing and essential for the Review Board to assess the significance of the environmental effects of the development and possible measures that should be imposed. These matters were discussed in the Technical Sessions and many were covered again in the IRs (further detail is found in Table 1 attached to this letter).

- CALPUFF modelling essential for a proper cumulative effects assessment of potential air emissions caused by the development which the Developer already admits will be above accepted standards at some publicly accessible locations along the Ingraham Trail highway. The Developer committed to submitting this information to the Review Board during the Technical Sessions in February 2012 (see Technical Sessions Transcripts Day Four, pg. 5). This information is not yet filed.
- There has been no thermal modelling or field tests conducted on the thinning of ice in the winter along a 29 m swath above the diffuser in Back Bay.
- Research on the effects on water quality in Back Bay and Yellowknife Bay from the diffuser effluent has not been completed so the aquatic effects remain unknown.

- A risk assessment for Baker Creek has apparently been redone but not yet submitted to the Review Board. It is unclear whether North Diversion is still on the table for further discussion.
- The wetting process for the frozen block technique has not been researched or field tested and it is unclear whether it can be made to work. The Developer has now suggested that the Frozen Shield method may still be used for the underground arsenic chambers.

A number of issues related to public concern with the proposed development have not been concluded to date. Without progress on these matters, significant public concerns with the development will remain. These issues were discussed with the Project Team following the Technical Sessions where a helpful and optimistic atmosphere prevailed but little progress has been made on anything except oversight. A list of these issues is presented below along with some comment on their current status:

- Environmental Management System including the structure and organization of environmental management plans. *A half day workshop has now been scheduled for March 5, 2012.*
- Independent Oversight. *Workshop on Oversight at Giant Mine already agreed upon for March 6-7, 2012 and funded through a contribution agreement with Alternatives North. There was agreement to set up a working group with a facilitator to continue to work on this issue.*
- Perpetual Care Requirements at Giant Mine including communicating with future generations (site markers, management of historical and current records), long-term funding options, site designations (including institutional land use controls). *No specific progress but a workshop including a guest speaker from the Office of Legacy Management (see <http://www.lm.doe.gov/home.aspx>) may prove helpful.*
- A formal apology from the federal government, possible compensation and a commitment to do better with prevention of perpetual care and overall mine site closure and reclamation. *Subject to further discussion between the Yellowknives Dene First Nation and Aboriginal Affairs and Northern Development Canada.*
- A land use plan for end use of the site. *Possible workshops and public meetings jointly between Aboriginal Affairs and Northern Development Canada and the City of Yellowknife*

Site Stabilization Plan

There has been no consultation with stakeholders or parties to the Environmental Assessment on exempting parts of the development from the Environmental Assessment other than a brief mention of some short-term priorities at the Technical Sessions (see Technical Sessions Transcripts Day Four pg. 227-230 and 232-236).

The Site Stabilization Plan appears to have been developed in secret over a substantial period of time. The Plan has apparently already been approved by the Minister as a response to emergency situations at the site (see Round Two AN IR #2 Response pg. 2). Ministerial approval would require a substantial amount of time and effort. If this IR had not been filed or responded to, it is not clear how or when the Developer intended to notify parties to the Environmental Assessment of this matter.

There is no indication if or how these portions of the development will be exempted from the ongoing Environmental Assessment, perhaps pursuant to the *Mackenzie Valley Resource Management Act* s. 119. It is unclear who would have the authority to make such a determination. We are curious to know whether there have been any consultations with the Review Board or the Mackenzie Valley Land and Water Board on this subject and we request that any records related to such consultations be made public as soon as possible.

The Developer has offered little or no evidence to substantiate claims that all of the proposed measures in the Site Stabilization Plan constitute a response to an emergency. For example the site-wide soil sampling and drilling (see Item 12 in Round Two AN IR #3 Response, pg. 6) could hardly constitute or be considered an emergency. There has been no previous public indication that the entire roaster complex is in an emergency situation that requires immediate demolition. Note there was no mention of the complex during the Technical Sessions discussion on short-term priority work (see Technical Sessions Transcripts Day Four pg. 227-230 and 232-236) or from the most recent meeting summary of the AANDC-GNWT Giant Mine Oversight Committee meeting held in October 2011 (see Round Two AN IR #19, pg. 3-4).

We are very concerned about any Environment Assessment or regulatory exemption of the Giant Mine roaster complex, the most contaminated and dangerous structure on the surface of the mine. An exemption could mean no environmental terms and conditions for this part of the project as no land use permit or water licence may be required. This could also mean no regular inspections by AANDC inspectors.

We urgently request that the Review Board compel the Developer to submit the Site Stabilization Plan along with supporting evidence (including stamped engineering reports) and a legal rationale as to why portions of the development should be exempted from the Environmental Assessment.

Commitment of the Developer to Complete and Comply with the Environmental Assessment

The Developer has consistently resisted an Environmental Assessment of this project from the very beginning. The Developer did not accept the advice of its own Technical Advisor to make a voluntary referral of the Giant Mine Remediation Project for an Environmental Assessment (see Technical Session Transcripts Day One, pg. 103-104). This latest move to apparently remove significant portions of the project in a less than open and transparent fashion, raises serious doubts about the Developer's commitment to complete and comply with this Environmental Assessment.

This Environmental Assessment is now more than two years behind the initial workplan schedule released in May 2008. The Developer has requested delays and extensions 8 times for a total of 191 days. The Developer's Assessment Report itself was submitted almost two years behind the original submission date and a year later than the amended workplan following the scoping determination by the Review Board. It would appear that the Developer has not dedicated sufficient resources to fulfill its obligations during this Environmental Assessment. We wonder whether the time spent on the Site Stabilization Plan may have been better used to

fully engage in the Environmental Assessment process and with the community in building trust and confidence in the project.

Options for Dealing with Outstanding Issues

In addition to our above recommendation on the Site Stabilization Plan, AN would like to suggest some options for dealing with the remaining outstanding issues (as discussed above) that are crucial to a determination on environmental effects and public concern. The following come to mind as options for dealing with these outstanding issues:

- Do nothing and have the parties raise these matters as part of the public hearing;
- Review Board could encourage the parties to sort out the issues before the public hearing. Note that the parties other than the Developer do not have the funding or capacity to record and report back the results of any private meetings;
- Another round of Information Requests; and/or
- Another Technical Session

Any or all of the above may have the effect of delaying or prolonging the public hearing. This is clearly not our intention as we wish for a public hearing that is an effective and efficient session.

AN recommends that more work be done to attempt to resolve the outstanding issues beforehand. We do not believe that another round of IRs will resolve these issues as the Developer has already demonstrated a pattern of not fully responding. **We believe that another focused Technical Session would be of assistance and respectfully request that the Review Board schedule such a meeting.**

We would be pleased to discuss these matters with the other parties and your staff in an effort to resolve the outstanding issues in a constructive manner.

Sincerely,



Kevin O'Reilly
Alternatives North

Attachments—Table 1. Round Two AN IR Response Analysis and Appendix 1

cc. Chiefs, Yellowknives Dene First Nation
Adrian Paradis, A/Manager, Giant Mine Team, AANDC
Ray Case, Environment and Natural Resource, GNWT
Gordon Van Tighem, Mayor, City of Yellowknife
Bob Bromley, MLA Weledeh
Willard Hagen, Chair, Mackenzie Valley Land and Water Board

Round Two IR #	Summary of IR	Summary of Response	Comment
AN #1-1	consolidated list of commitments and agreements	Tables show commitments made in Round 1 IRs and Technical Sessions	Not all commitments captured. Additional commitments identified in Appendix 1.
AN #1-2	who will carry commitments out, when commitments will be accomplished	Giant Team to carry out all commitments, subject to change as a result of design and implementation	No timelines provided.
AN #2-1	emergency measures that are necessary at the site prior to the conclusion of this Environmental Assessment	DIAND Minister has provided approval for actions listed in Site Stabilization Plan	Although activities are to take place over next 2-3 years, nothing about timing with regard to the EA. Some rationale provided, but nothing on exemption of these activities from the EA (see s. 119 MVRMA). No assessment of North Diversion as an alternative mitigation measure for Baker Creek related work. There was no discussion of taking the entire roaster complex down during the Technical Sessions. Item 12 (Design Support Testing) should not be considered an emergency measure. The entire Site Stabilization Plan must be complete and should be submitted to the Review Board.
AN #2-2	licensing and permitting requirements for emergency work	Ongoing discussions with regulators	No information provided on requirements for land use permits, water licences or City approvals.
AN #2-3	communicated to the parties and the general public	Public consultations to take place in first quarter of 2012	Not done to date.
AN #3-1	Commitment of developer to follow the joint AANDC-MVLWB mine closure guidelines	Guidelines will inform Giant Mine remediation	No clear unequivocal statement that AANDC will follow its own guidelines.
AN #3-2	provide the overall environmental management framework structure including a set of site-wide closure goals, component-specific objectives, measurable performance criteria (where known), and indicate where there are uncertainties	Partial response in text and Table 1	Developer confuses mine components (what should appear in the Table) with environmental components.
AN #4-1 and RB #6	committed to a collaborative approach to 10-year technology review that involves interested stakeholders and the public	Commitment to submit identified technologies to an Independent Peer Review Panel	No clear commitment to a collaborative process in identifying new technologies or evaluating them, only to discuss these items as part of the EMS development.

Round Two IR #	Summary of IR	Summary of Response	Comment
AN #5	prepare a detailed table and inventory showing the perpetual care requirements for the site	Partial response provided in Table 1	Table does not deal with specialized tools or equipment, skills required to carry out the work, financial requirements, or materials needed. Thermosyphon replacement and water treatment plan sludge disposal not covered. No detail provided on information management and communicating with future generations.
AN #6-1	standards used in the design of various components of the Remediation Plan and why	List of legislation, codes and standards provided	Specific standards used in the design not identified or explained.
AN #6-2	explain how any specified design criteria meet the perpetual care needs for the site	acknowledged that the components need to perform for a very long time with performance monitoring to provide early warning of poor component performance	No explanation of how standards used reflect perpetual care requirements.
AN #7-1	expected water effluent levels using best available technology (BAT)	Cannot be predicted and not available as subject to bench scale and pilot tests. Further water characterization studies are to be undertaken to determine if nitrates may be an issue.	Developer did not answer the question. BAT figures are available for a variety of parameters. Determination of significance not possible without some predictions of water effluent quality. While the developer may not believe this information is necessary during the EA, it will not suffice for the regulatory phase.
AN #7-2	Explain any variance between best available technology and "Existing Maximum Criteria"	Developer says that project already adopts best available practical technology.	Developer did not answer the question.
AN #8	commitment from the Developer to pay for any incremental water treatment costs for the City of Yellowknife should there be upset conditions with the water treatment system at Giant Mine or accidental water releases	Developer does not feel that it is appropriate to commit to pay for incremental water treatment costs.	Even if unwilling to pay, no commitment to work with the City should there be incremental water treatment costs. Response not consistent with the polluter pays principle. No information provided on the Claims Against the Crown process (see http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=15782&section=text and http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=17068&section=text).
AN #9	Commitment to pick up any incremental costs associated with its power demands at the Giant Mine to avoid any cost increases to other residential and business consumers	proponents plan to continue obtaining power from NTPC, a regulated utility	Developer did not answer the question other than saying that it is up to the Northwest Territories Power Corporation and the public Utilities to decide rates and capacities.

Round Two IR #	Summary of IR	Summary of Response	Comment
AN #10	provide a summary of the diffuser design study	Technical memo from Golder provides details on work done to date and remaining work	Far field modelling for mixing still needs to be carried out (see memo pg. 24) as well as many other research and field work tasks (see pg. 24-25). No mention of thermal modelling. Overall effects on water quality in Back and Yellowknife Bays not known, effects of stirring up sediments and impacts on ice thickness not determined at this point.
AN #11-1	provide a description and analysis of the various tools available for institutional land use controls	General discussion of lack of clarity on future land use	Developer did not answer the question. Municipal zoning, general plan designations not discussed. GNWT surface land reservation or withdrawal, zoning or other control mechanisms not presented or discussed. Federal subsurface land reservation or withdrawal not discussed (for example, the subsurface withdrawal at Giant Mine SI/2005-55, http://laws-lois.justice.gc.ca/PDF/SI-2005-55.pdf). None of the potential tools were evaluated.
AN #11-2	some analysis of the advantages and disadvantages of each tool and how the Developers will decide which to pursue	continuing dialogue can better confirm what may be possible/not possible	Developer did not answer the question
AN #12-1	how the Developers considered the City's 2006 land use plan for the Giant Mine townsite in preparing the Developer's Assessment Report	Plan was seen as conceptual	Developer did not provide adequate consideration of 2006 plan.
AN #12-2	estimated costs for the remediation of the City's lease area that would allow the proposed land from the 2006 land use plan to be achieved	Final remediation status of the town site may achieve residential standards in some areas. Ongoing dialogue with the City will occur to determine what incremental costs might be.	Developer did not answer the question.

Round Two IR #	Summary of IR	Summary of Response	Comment
AN #14	provide an assessment, with quantitative figures where possible, of any changes in arsenic loadings to Back Bay as a result on the North Diversion Contingency	North Diversion of Baker Creek is not currently being pursued as a contingency measure. Developer is conducting a review of the risks associated with Baker Creek in the short term up until the final Remediation Plan is in place. The Project Team will be pleased to share this information with the Mackenzie Valley Environmental Impact Review Board and the Parties to the Environmental Assessment prior to the Public Hearing.	Risk assessment for Baker Creek in short term not submitted but should be prior to the public hearing with enough time for meaningful review and comment.
AN #15-1	confirm that it is the intention of the Developers to fully comply with all municipal by-laws	Giant Mine Remediation Project Team (Project Team) will comply with City regulatory requirements as applicable	Developer does not specify whether it will comply with City of Yellowknife Building By-law (demolition and building permits).
AN #15-2	provide a list of all municipal permits, licences and authorizations that will be required to apply for the development as required in the ToR s. 3.2.4.17	Project Team is working with the City to determine municipal by-law use of land requirements for the Remediation Project development	Developer did not answer the question.
AN #17-1	describe the worst case scenario for a failure at the mine site prior to completion of the frozen block method	Scenario described	
AN #17-2	describe the environmental effects of the worst case scenario	combination of likelihood and severity give this scenario a 'High' risk rating, once in 30 years chance, capacity of underground to hold water unknown, arsenic levels predicted to exceed the Canadian water quality guideline in Back Bay and North Yellowknife Bay, effects on Great Slave water quality were interpreted to be small	Unclear how the Developer could conclude that the aquatic impacts would be small.

Round Two IR #	Summary of IR	Summary of Response	Comment
AN #17-3	outline the public communications that would be made and by whom in the event of the worst case scenario	northern media would be alerted of the situation via an emailed public notice, discussions with the Yellowknives Dene First Nations, the City of Yellowknife, and the Government of the Northwest Territories would have been initiated	
AN #17-4	describe what mitigation and contingency measures would be required in the worst case scenario and a timeline for their implementation	Some mitigation measures specified, timing to complete additional stability studies and develop schedules to implement the plans for the contingencies prior to the frozen block is by March 2013	Developer will put together contingency measures for flooding scenario only after the Environmental Assessment is finished.
AN #18-1	how the Developer sees future risk assessment exercises working for the development	Project Team has and will continue to conduct a number of FMECAs as the design process evolves	No firm commitment by the Developer to involve interested stakeholders and parties in future risk assessment.
AN #18-2	how stakeholders would be involved in risk assessment and what timeframes would be used given that the Remediation Plan is based on perpetual care	will be determined through the development of the Environmental Management System	No firm commitment by the Developer to involve interested stakeholders and parties in future risk assessment.
AN #18-3	how the precautionary principle and sustainability would be reflected in these future risk assessments	nature of the assessments is conservative where risks are overrated rather than underrated requiring further study to reduce the uncertainty in the assessment long-term nature of the remediation program sustainability of the remediation solutions are preferred over short-term solutions	Unclear how precautionary principle and sustainability is actually applied in Developer's risk assessment process. Lack of clarity around commitment to intergenerational equity, communications with future generations, how low maintenance or low energy alternatives would be evaluated (see principle of perpetual care paper submitted by Alternatives North http://www.reviewboard.ca/upload/project_document/EA0809-001_Principles_of_Perpetual_Care-Report_from_Alt_North_1329867038.PDF)

Round Two IR #	Summary of IR	Summary of Response	Comment
AN #19-2	provide copies of any more recent meeting summaries past the July 9, 2010 as submitted in response to the above mentioned IR	Summary of October 12, 2011 Oversight Committee meeting provided.	Summaries of any meetings between July 9, 2010 and October 12, 2011 not provided. Note that there is a reference to a May 4, 2011 meeting in the summary of the October 12, 2011 meeting. Note that there was a discussion on October 12, 2011 of site stability and there was no mention of the need to take down the entire roaster complex.
AN #19-3	continue to make meeting summaries for the Oversight Committee available to the public	meeting summaries from the Oversight Committee will continue to be made public	No indication of how the meeting summaries will be made public. There were apparently no meetings of the Oversight Committee between October 12, 2011 and February 2012?
AN #22	explain why the Developers did not carry through with their commitment to cover independent oversight experience and case studies in the Developer's Assessment Report	Project Team is committed to working with the Parties to improve the proposed monitoring of Giant Mine and will be actively involved in the Oversight Workshop hosted by the Yellowknives Dene First Nation and Alternatives North	Develop did not answer the question.
AN #23-2	instrumentation reliability and data reliability have become issues during the FOS, how do the Developers propose to ensure long-term monitoring capability and success	design criteria for instrumentation will be re-evaluated in future design phases	Develop did not answer the part of the question related to data reliability.
AN #23-3	provide a written response on lessons learned from the FOS	List of technological and methodological lessons learned listed. Lessons learned related to spill reporting, management, and monitoring are presented in the response to Alternatives North Round 1 Information Request #18.	Developer indicated that a "lessons learned session" was held. Please provide a copy of the report or summary of this session. Response to AN IR #18 does not deal with management and monitoring of the FOS. An access to information request also revealed that an external review of operating procedures was conducted.

Round Two IR #	Summary of IR	Summary of Response	Comment
AN #23-4	As the 3D model for freezing is developed will it incorporate new information, and will there also be an effort to more rigorously model the energy balance at the ground surface?	3D model of the FOS is not yet producing reliable results as efficiently as the simpler models, learning curve of the FOS team is responsible for some of the inefficiency. FOS team plans to rely more on 2D modelling for parameter estimation and calibration. Fully three-dimensional modelling may be useful later in the design process for examining ground freezing in complex geometries, like the system of crosscuts and draw points at the base of some of the arsenic containing stopes.	Commitment of Developer to develop and use 3D models now in question.
AN #23-5	Will the estimated durations for thawing in the event of system failure also be revised, in light of the findings from the FOS? Are there any other lessons learned from the FOS that have implications for the reversibility of the frozen blocks?	freezing of the ground will be faster than expected. A deliberate thawing of the ground would also proceed faster. As long as a sufficient number of thermosyphons remain in operation, the overall heat balance will be negative. The increased thermal diffusivity could lead to surface temperatures propagating further into the rock each summer, but the overall negative heat balance will counteract that effect each winter.	AN would like to ask further questions of the Developer on these points.
AN #23-6	From both the installation phase and now the operating phase of the FOS, what is the impact on the estimated cost of implementation of the frozen block alternative on this development?	higher thermal conductivity will in theory reduce the number of freeze pipes required, but many other factors need to be taken into account before a cost estimate is available	Developer did not answer the question. When will a revised cost estimate be available and how has the FOS assisted?

Round Two IR #	Summary of IR	Summary of Response	Comment
AN #24-1	plan or contingency in place for the eventuality that climate change will overtake the capacity to maintain the frozen blocks with thermosyphons	Available contingencies (installation of more thermosyphons) already outlined in the DAR	AN has more questions for the Developer on its response. At some point there must be a theoretical maximum cooling power of thermosyphons. At what temperature would that be surpassed and is it within the range of current climate change predictions?
AN #24-2	current plan appears to intentionally pass the burden of a solution on to future generations to grapple with. Is this consistent with the principle of sustainable development, and more specifically, inter-generational equity?	question of inter-generational equity needs to include a balanced consideration of short-term and long-term risks. Project Team accepted the conclusions of the Technical Advisor and the Independent Peer Review Panel that the frozen block method is the best option for long-term management of the arsenic trioxide, both for this generation and future generations.	Issue of inter-generational equity was not explicitly recognized or analyzed by the Independent Peer Review Panel.
AN #25-1	Will interested stakeholders be involved in the session on B1 subsidence and Baker Creek icings and will there be a report?	design engineer is preparing a report which will describe the analysis that was conducted and determine whether or not the risk profile has changed scope and schedule for a workshop is still being developed	At the first opportunity to involve stakeholders and interested parties in risk assessment, the Developer did not do so. Was this internal risk assessment used in any way to develop the Stabilization Plan or serve as the basis for concluding that the B1 subsidence and Baker Creek icings constitute an emergency?
AN #25-2	report from this risk assessment to be filed with the Review Board?	A revised Failure Modes Effects Criticality Analysis will be submitted to the Review Board should a change occur	Developer did not answer the question. Appears that the Developer does not intend to file the report from the B1 subsidence and Baker Creek icings risk assessment with the Review Board.
AN #26-1	provide a list of remaining tasks and a schedule for their completion for the Tailings Cover trial	List of tasks provided until the end of 2012	AN would like to confirm that field trial work will be completed by the end of the 2012.
AN #26-2	How has the work to date advanced the cover design or assisted with identification of cover objectives and performance criteria	trials did not provide any information that indicated that a change to the objectives and performance criteria in the Remediation Plan or DAR is required	AN would like to confirm that the cover design has already been completed and that performance criteria are now available.

Round Two IR #	Summary of IR	Summary of Response	Comment
AN #27-1	Will the arsenic wetting research include an assessment of the feasibility and desirability of the frozen block method versus a frozen shell option?	prior work has shown that the wetting step is feasible in principle, the Project Team is only now beginning a more detailed study of wetting methods and associated risk management costs. Should those studies identify other combinations or sequences of wetting and freezing that present cost or risk advantages in the short term, without impacting long-term performance, they will also be evaluated.	Developer now indicates that the frozen shell option is still part of the design considerations and should be considered within the scope of this Environmental Assessment.
AN #27-2	What degree of saturation is necessary to carry out the frozen block method? Is wetting versus saturation sufficient?	dust does not need to be uniformly saturated in order to provide the additional thermal inertia that distinguishes a frozen block from a frozen shell response to Review Board Round 1 Information Request #02 addressed a similar question, and more fully explained the distinction between “wetting” and “saturation”.	Alternatives North may have additional questions for the Developer.
AN #27-3	What are the plans for consultation and review of the arsenic wetting research?	The Project Team is committed to sharing information with interested parties on the progress of this effort.	Developer did not indicate how or when this information will be made available.

Round Two IR #	Summary of IR	Summary of Response	Comment
AN #27-4	Given that this work is critical to the frozen block method and that the work is to be completed, AFTER the EA is completed, what assurances can the Developers provide now that the frozen block can be properly designed and implemented?	information presented in the DAR and in responses to Review Board Round 1 Information Request #02 demonstrates that wetting of the dust is achievable in principle. The Water Licensing process is expected to include a more detailed consideration of engineering designs and implementation methods for many components of the proposed Remediation Plan. The Project Team anticipates that further details of the proposed sequence of freezing and wetting process, including any variants that remain under consideration, will be available by that time	Developer now indicates that the frozen shell option is still part of the design considerations and should be considered within the scope of this Environmental Assessment.
AN #28	revised wording to s. 2.1.2 of the FMECA still does not properly explain that the risk assessment is a valid method for assessment of any 100 year period following the successful implementation of the frozen block method	the restriction to the “first 100 years” could equally correctly have been expressed as “any 100-year interval in the steady state period”. But our experience is that people do a better job assessing risks when they are asked to envisage a defined time period, so we adopted the simpler form Assessing risk beyond 100 years would not give an accurate assessment of risks that may be present and would not include lessons learned.	Developer should change the wording in the FMECA if it wants readers to understand what it is supposed to mean. Developer did not assess risks to the project beyond a 100 year timeframe even though this is a perpetual care situation.

Round Two IR #	Summary of IR	Summary of Response	Comment
RB #7-1	how the Giant Team has examined other perpetual care projects, what lessons have been learned, and how they will be applied to the project	Technical Advisor and the Project Team compiled lessons learned after reviewing the case studies discussed in the Alternatives North/Yellowknives Dene First Nation perpetual care workshop	Table 1 contains lessons learned about community engagement and communications from perpetual care sites, not perpetual care itself or communicating with future generations.
RB #7-2	approaches being considered for communication with future generations over the very long term	Three approaches outlined including deposit of records in archives, using TK, and lessons learned from other perpetual care projects.	Nothing about how documents will be properly inventoried and prepared for preservation, how TK will be gathered and used, or how lessons learned will be developed, shared or used. It would be interesting to know if the developer has actually discussed record management with the Library and Archives of Canada. Table 1 is not an example of lessons learned on perpetual care. It some highlights of community engagement, something the Developer has not done well for Giant, even compared to how it approached Colomac or Port Radium.

Note: AN IR #13 addressed to City of Yellowknife, AN #16 addressed to Environment Canada. Other AN IRs not addressed in this Table were considered to be adequately addressed.

APPENDIX 1

List of Commitment from Technical Sessions Not Covered in Round Two AN IR#01 Response

Reference	Commitment
Day One, pg. 33	Developer to communicate information gathered at Technical Sessions to appropriate officials at Aboriginal Affairs and Northern Development Canada.
Day One, pg. 115	Developer to carry out 3-D (three dimensional) modelling of arsenic chambers for freezing and thawing.
Day Two, pg. 108-110	Developer to carry out diffuser modelling and under-ice tests to measure effects on ice in Back Bay.
Day Two, pg. 245-255	Developer to work collaboratively with the City of Yellowknife on harbour and marina planning.
Day Three, pg. 35	Developer to carry out bench scale testing of the water treatment plant sludge to better characterize it and plan for its disposal.
Day Three, pg. 83	Developer to arsenic loadings if the North Diversion is used as a contingency.
Day Three, pg. 228	Developer to carry out demolition of roaster complex buildings only when weather conditions are favourable.
Day Four, pg. 5	Developer to submit CALPUFF air quality modelling to the Review Board in February 2012.
Day Four, pg. 241-242	Developer to consider how to involve stakeholders in risk assessment and risk management.
Day Five, pg. 22	Developer to work together with stakeholders on perpetual care scenarios and environmental management plan over the next few months.
Day Five, pg. 152	Developer to consult stakeholders about content of Annual Reports, specifically on financial reporting.
Day Five, pg. 208-210	Developer to work collaboratively on social acceptability criteria as part of the risk management system.

Day Five, pg. 212

Developer to ensure there is a ten-year re-evaluation forever, not just during implementation.

Day Five, pg. 225

Developer to make project audits public.