



March 8, 2013

Mr. Willard Hagen, Chair  
Mackenzie Valley Land and Water Board  
Box 2130, 7th Floor, 4922 - 48th Street  
Yellowknife, NT X1A 2P6

Dear Mr. Hagen:

**Responses to Review Comments – Water Licence Application MV2012L8-0010**  
**Roaster Complex Deconstruction and Underground Stabilization**

Please find enclosed our response package addressing the draft water licence conditions put forward by staff of the Mackenzie Valley Land and Water Board (the Board) and review comments provided by the Department of Fisheries and Oceans, Environment Canada, the Yellowknives Dene First Nation and Alternatives North. The response package consists of five components as identified below:

1. **Cover letter** – Addresses major topics including the use of Section 119 of the Mackenzie Valley Resource Management Act to address emergencies on site.
2. **Section 119 Comment Summary Table**
3. **Water Licence Comment Summary Table**
4. **Attachment A** – Contains our responses that exceed the space provided in the Water Licence Comment Summary Table.
5. **Draft WL Conditions – Suggested Changes** – Our suggested revisions to the draft water licence conditions put forward by Board staff are shown in blue text. Rationales for our recommendations are embedded within the document.

The Giant Mine Remediation Project Team (Project Team) remains committed to addressing emergency conditions at the Giant Mine this summer. These emergency conditions were identified through sound risk assessment and advice by independent engineers. Procurement processes are advanced, with the award of the roaster contract expected to occur by the end of March 2013 and the underground stabilization contract expected to be awarded in June 2013.

The application materials and supplemental information in this response package demonstrate that current site conditions meet the “emergency” requirements of Section 119(b) of the *Mackenzie Valley Resource Management Act (MVRMA)*, and that it would be ill-advised to allow those risks to continue any longer. Additionally, the evidence shows that our planned approach to roaster deconstruction and underground stabilization is well engineered, environmentally sound, and above all is protective of fresh water.



While we are aware that some Parties continue to have questions, we believe that we have provided appropriate responses to every technical question or concern that falls within the mandate of the Board. We have agreed with the majority of the recommendations made by the Parties and the draft conditions put forward by Board staff. Going forward we will continue working with Parties within the Board's process and outside of the Board's process. Plan approval processes will provide further opportunity for discussion.

Further details on major topics are provided below.

### **Emergency Evidence and Request to Use Section 119 of the MVRMA**

The Project Team's water licence application package included stamped letters from independent engineering firms, AECOM and Golder Associates, dated December 17, 2012. These letters detail the environmental and human health and safety risks associated with the roaster and underground workings at the Giant Mine site and support the urgency of dealing with these risks as soon as possible.

The environmental assessment of the Giant Mine Remediation Project is in an advanced stage. However it is clear that the process will not be completed with sufficient lead time to permit site stabilization to occur in summer 2013. Warmer temperatures are required for proper functioning of safety gear used in deconstruction and for successful delivery of tailings paste to the underground workings. The *MVRMA* contemplates that in emergency situations, developments may proceed in advance of, or without, the completion of an environmental assessment. Given the urgency of addressing the risks at site, and the need to conduct the work in the summer, it is both appropriate and crucial that the Board process this application in time to allow mobilization to site to occur in mid-May 2013.

### ***Roaster Complex Deconstruction***

The report from AECOM makes it clear that the decaying structural integrity of the roaster complex poses a serious and immediate risk to the environment and the health and safety of both workers on the Giant Mine site and the residents of Yellowknife. The following provides a description of the current state and ongoing risks related to the roaster complex:

#### **Buildings**

- Exterior asbestos paneling on walls of roaster building are not securely fastened as a result of fastener corrosion.
- Roof panels are corroded or missing.
- Interior catwalks are not structurally sound.

#### **Flues**

- Continued corrosion of the flues will result in a release of arsenic dust.
- Continued movement of flue footings and columns will trigger a collapse.
- Asbestos-containing pipe insulation is falling off the flues.



### Stack

- Erosion is visible in the exterior and interior masonry of the stack.
- Steel cap at the top of the stack is being separated from the mounting bolts.
- A portion of the steel cap is missing from the stack.

AECOM concludes that:

“The current base care and maintenance program is designed to keep the Giant Mine site “as is” until such time that the Type A licence is in place. The roaster complex, which is highly contaminated with arsenic and asbestos dust, is a high risk element that is considered to be in a state of emergency. It is in very poor condition and needs to come down in order to prevent a sudden collapse of any part of the complex.”

AECOM goes on to make it clear that the result of such a collapse “would be the release of arsenic dust and asbestos fibres into the air and into the surface drainage system” and strongly recommends that “demolition work needs to start in spring 2013”.

### ***Underground Stabilization***

The deteriorating stability of a number of the underground workings poses exactly the same type of emergency as the roaster complex does. Stabilization measures need to be undertaken immediately in order to prevent an event which could release arsenic dust into the mine, the mine water pool and, potentially, the environment. The Golder Associates letter, dated December 17, 2012, makes it clear that the survey measurements conducted in the vicinity of two of the arsenic stopes “indicate ongoing subsidence” and that “surface cracking in the vicinity of several of the arsenic stopes has been observed over the last several years”. “This may be a pre-cursor to the complete collapse of one or both of these stopes”. The Golder Associates report continues to point out that “surveys of the B1 pit access road over arsenic stope B2-12/13/14... indicate that the ground over this stope has subsided, again potentially indicating progressive deterioration of the stopes below that could lead to a complete collapse or failure of the crown pillar”.

The Golder Associates report concludes “that the probability of failure of the crown, sill, and rib pillars bounding some of the arsenic stopes and chambers and the near surface non-arsenic stopes is high” and that “work should be initiated as soon as practically possible so that these priorities can be addressed during the summer of 2013.”

The consequences of a failure of an underground working are severe and include:

- Potentially jeopardizing the Frozen Block Method due to the release of arsenic contaminated material deeper into the mine workings.
- Development of subsidence features such as sinkholes resulting in a significant safety hazard to members of the public and the project workers who access the area.
- Potential release of arsenic dust to the environment.



- Depending on which stopes fail, Baker Creek could enter the mine through a collapsed crown pillar resulting in flooding of the mine.

### ***Conclusion***

The realistic possibility of such a failure occurring at this time, together with the potentially catastrophic consequences of a collapse of any portion of the roaster complex or the underground workings of the mine, makes both of these situations emergencies by definition. Ultimately, these are unacceptable risks that must not be allowed to persist. To do so would be to irresponsibly endanger the environment and health and safety of both the workers on the Giant Mine site and the residents of the City of Yellowknife, N'Dilo and Dettah.

### **Licensing Process and Timing**

For safety and performance optimization reasons, roaster deconstruction and underground stabilization need to occur in the warmer months. The safety equipment required during the deconstruction of highly contaminated buildings such as the roaster complex requires warmer temperatures for proper functioning. The delivery of backfill materials, especially tailings paste, will be more efficient and effective when temperatures are above freezing.

Due to the seasonal nature of the work, mobilization and site preparation have to begin in the spring 2013. We believe that sufficient information is included in the application materials and in this response package for issuance of a license in late March / early April, the current timing indicated by Board staff. The majority of the Parties' recommendations are reasonable and we support their inclusion in the license (e.g., water containment design and transport plan; MSDS sheets for wetting agents; dust mitigation and monitoring; spill reports that describe clean up actions and any preventative actions that will be incorporated into daily operations). We believe that these additions to the licence, and the Board approval processes to which they will be subject following license issuance, will address any concerns remaining related to the use of water and disposal of waste during the proposed work.

### **Engagement**

Going forward, we are committed to fulfilling the engagement and communications activities set out in the Site Stabilization Communications Plan provided in the application package. These communication and engagement efforts will build upon previous engagement with the Parties on a number of fronts. Roaster deconstruction and underground stabilization continue to be subject to the ongoing environmental assessment for the Giant Mine Remediation Project and were part of the discussions with the Environmental Management System Working Group. The Giant Mine Community Alliance was established to facilitate communications with the public regarding all activities at the Giant Mine site.

Specific engagement efforts on the proposed work were initiated in October 2012. As a means of initiating discussion, a draft water license application package was prepared and circulated with a request for comments. This review period of the written documentation was followed by a site tour, a technical workshop, and public forums in Yellowknife and N'Dilo. These events provided the Project



Team with a significant amount of useful and thoughtful feedback along with recommendations that led to the development of a second draft of the application package. The second draft application package was also circulated for review and comment prior to the application package being finalized and submitted to the Board. Complementing the preparation and review of draft documents were ad hoc meetings and correspondence with individual groups that were a mechanism for discussing specific questions and the bi-lateral sharing of specific information.

The Project Team will continue, as any responsible developer would, to assess and monitor the site as a whole and specifically the deconstruction of the roaster complex and underground stabilization. Technical information related to the assessment, monitoring, progress and status of the site stabilization work will be provided to Parties throughout its duration in accordance with the SSP Communications Plan and the reporting requirements set out in the licence. We have requested that reporting be increased from an annual cycle to a six month cycle in the water licence so that Parties can be informed more regularly.

Requiring an additional Engagement Plan is duplicative and unnecessary as the SSP Communications Plan includes providing monthly summaries of the outcome of air quality monitoring to a wide target audience.

#### **Public Hearing Request – Air Quality**

A public hearing was suggested as a means to address concerns related to dust management and air quality monitoring. A public hearing is unnecessary because the concerns have been or are being addressed through other mechanisms, including the following:

- i. ***Application Materials*** - The application materials describe the dust control mechanisms and air quality monitoring requirements as follows:
  - o Roaster Deconstruction - Proactive dust control will occur through the creation of a negative air pressure seal around the active work area (Section 2.4.2, Item b in the Roaster Deconstruction Detailed Project Description) and the use of recycled water to wet down materials (Section 2.3.5 in the Roaster Deconstruction Detailed Project Description).
  - o Underground Stabilization – Proactive dust control will occur through the use of an exhaust air management system. The purpose of the exhaust air system is to maintain the arsenic filled stopes and chambers under negative air pressure capture, and to capture and treat air exhausted during backfilling through a filtering system in order to achieve ambient air criteria at both the worker spaces as well as at the property boundaries (Section 2.3.2, Item c in the Underground Stabilization Detailed Project Description).
  - o Air quality monitoring requirements, action levels and responses to action level exceedances are outlined in the air quality plans provided under Tab 7 in the application package.



- ii. **Draft Water License** – The draft water licence put forward by Board staff includes a requirement to submit for approval dust mitigation and monitoring plans for roaster deconstruction.
- iii. **Involvement of GNWT Air Quality Specialists** – Air quality specialists from the Government of the Northwest Territories have been involved in reviewing the air quality monitoring program development for roaster deconstruction and underground stabilization.
- iv. **Mines Inspector Oversight** – The industrial hygiene aspects of air quality monitoring are overseen by the Workers' Safety and Compensation Commission Inspector of Mines under the Mine Health and Safety Act and Regulations.

### Closing

We appreciate the opportunity to review draft conditions along with review comments and recommendations. If you have any questions about our response package, please contact the undersigned by telephone at 780-497-3865 or by email at [Mark.Palmer@pwgsc-tpsgc.gc.ca](mailto:Mark.Palmer@pwgsc-tpsgc.gc.ca).

Sincerely yours,

Mark Palmer  
Senior Advisor  
Giant Mine Remediation Project

Copied to: Mackenzie Valley Environmental Impact Review Board

### Attachments:

- Section 119 Comment Summary Table
- Water Licence Comment Summary Table
- Attachment A to the Water Licence Comment Summary Table
- Draft WL Conditions – Suggested Changes

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
1	DFO	Not Applicable	As noted in the comment summary table attached to the "Community Engagement Log" of the LUP application (pdf pg 31-33), DFO has reviewed a draft application and provided comments to the Giant Mine Remediation Team on October 24th, 2012. It is DFO's position that our comments have been adequately addressed.	Not Applicable	Not Applicable	Not Applicable	Not Applicable
2	EC	General	All mitigation measures identified by the Proponent should be strictly adhered to. This will require awareness on the part of the Proponent's representatives (including contractors) conducting operations in the field.	EC recommends that all field operations staff be made aware of the Proponent's commitments to the mitigation measures and provided with appropriate advice / training on how to implement the measures.	Please see Attachment A under Comment 2 - Environment Canada.		
3	EC	Giant Mine Roaster Complex Deconstructions – Waste Management Plan, Page 21	On Page 21 of the Waste Management Plan for the Giant Mine Roaster Complex Deconstructions it is stated that "All waste water generated during deconstruction of the roaster complex will be captured and contained in a system to be designed by the contractor" and "the contractor will determine the appropriate means of transporting the ...water to the Northwest Tailings Pond." EC would like the opportunity to review and comment on the design of this system prior to it being implemented.	EC recommends that the design of the system for waste water collection and transportation of such waste water be submitted to the Board for approval prior to work commencing.	The Project Team agrees with Environment Canada's suggestion and has proposed the following item for inclusion in the Deconstruction Plan under Schedule 2, Item 1(i):  <i>i) Design of the recycled water collection and transport system, and related spill prevention measures.</i>		

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4	YKDFN	Roaster	<p>We would have preferred that there were additional clarity in terms of the criteria that will be met during tear down, but given the nature of the situation, we trust that the Board will employ standards protective of the very high use of the receiving environment.</p> <p><b>FOR FURTHER INFORMATION PLEASE SEE COMPLETE LETTER FROM YKDFN DATED FEBRUARY 15, 2013.</b></p>	Not Applicable	Please see Attachment A, Comment 4 - YKDFN for the full response.		
5	YKDFN	Objectives and Criteria	<p>YKDFN are concerned that the Objectives and Criteria presented as part of this plan* are lacking. While YKDFN have accepted that the proposed reclamation plan is the best approach at this time, we still want to have a clear understanding if the work being done has met expectations.</p> <p><i>*Site Stabilization Plan</i></p> <p><b>FOR FURTHER INFORMATION PLEASE SEE COMPLETE LETTER FROM YKDFN DATED FEBRUARY 15, 2013.</b></p>		Please see Attachment A, Comment 5 - YKDFN for a full response.		
6	Alternatives North	MVLWB Draft WL Conditions	<p>The draft conditions are not complete. We request that the MVLWB make a complete draft of the license available comment given the public interest in this undertaking, the confused and inconsistent engagement by the applicant and the potential for significant adverse environmental and human health effects. Further rationale is provided in the covering letter.</p>	The MVLWB make a full draft license with schedules available for comment.	We appreciate that a draft license was circulated to encourage focused discussion. We note that a number of Parties, including Alternatives North, provided comments on the draft, and we have incorporated many of their suggestions into our proposed revisions to the draft license. Our proposed revisions to the license are embedded within the draft water licence conditions included in our response package.	<p>Board staff prepared the water license (WL) draft in such a way as to generate discussion and as an initial attempt at the conditions that should be contained within it. Reviewers were welcome to suggest changes and additions on this draft that was sent out with the WL application.</p> <p>If another draft will be circulated for review is dependant on what the Board decision is regarding s.119 and this application in general.</p>	

## Type B WL - AANDC- Giant Mine, NT

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
7	Alternatives North	MVLWB Draft WL Condition B7	The Licensee is required to keep a copy of the license at the site at all times. All approved plans pursuant to the license should also be kept at the site to ensure that operators, contractors and staff have access to and carry out all approved plans.	Amend B7 by inserting "and all approved plans under this License" after the work "License".	The Project Team agrees with Alternative North's suggestion and has proposed the following wording change to Condition B7:  <i>"The Licensee shall ensure a copy of this License and all approved plans under this License are maintained at site operation at all times."</i>		
8	Alternatives North	MVLWB Draft WL Condition F1c	A report on unauthorized waste discharge is helpful but does not necessarily deal with prevention and any requirements for clean-up.	Amend F1c to include a requirement that the report indicate whether any clean-up is necessary, how it will be carried out and preventative measures to avoid any further unauthorized discharges.	The Project Team agrees with Alternative North's suggestion and has proposed the following wording change to Condition F1c:  <i>c. Submit to an Inspector a detailed report on each occurrence not later than 30 days after initially reporting the event that includes a summary of clean-up actions and preventative measures to avoid any further unauthorized discharges as applicable.</i>		
9	Alternatives North	MVLWB Draft WL Condition H1	This clause requires the submission a detailed deconstruction plan within 60 days of beginning the work. In other words, only AFTER the work has begun. Given the potential for significant adverse environmental and human health effects, the lack of details on the how the undertaking will be carried out, mitigation measures and management plans, we believe it is essential that this plan be approved at least 30 days BEFORE any work begins, and that the plan be subject to WVLWB approval with an opportunity for public comment. Further rationale provided in the covering letter.	Amend H1 to state that there is a requirement for an approved detailed deconstruction plan at least 30 days before any work can begin on the roaster complex.	We agree that the plan should be submitted for approval prior to starting deconstruction work.  The condition needs to be written such that mobilization to site, site preparation and other activities required as preparation for the physical act of deconstruction are permitted prior to plan approval. This distinction is important because, to finalize the information requested in Schedule 2, the contractor needs to be installed at the site.  <i>Suggested wording for condition H1: "The Licensee shall, 60 days prior to starting deconstruction of the Roaster Complex, submit to the Board for approval a detailed deconstruction plan. This plan shall contain the items as listed under Schedule 2, item 1."</i>		

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10	Alternatives North	MVLWB Draft WL Condition H2	Same comment as above on the timing of approval for the detailed Stabilization Plan, given the potential for arsenic trioxide emissions from openings to the underground and during the work.	Amend H2 to state that there is a requirement for an approved detailed stabilization plan at least 30 days before any work can begin on the stabilization.	<p>We agree that the plan should be submitted for approval prior to starting stabilization work.</p> <p>The condition needs to be written such that mobilization to site, site preparation and other activities required as preparation for the physical act of backfilling and bulkhead reinforcement/repair are permitted prior to plan approval. This distinction is important because to finalize the information requested in Schedule 2, the contractor needs to be installed at the site.</p> <p>Suggested wording change for condition H2: <i>"The Licensee shall, 60 days prior to starting backfilling of stopes or chambers, construction of new bulkheads or repair of existing bulkheads, beginning work in the Underground Work Stabilization Area, submit to the Board for approval a detailed stabilization plan. This plan shall contain the items as listed under Schedule 2, item 2."</i></p>		
11	Alternatives North	MVLWB Draft WL Condition H	The Roaster Complex Detailed Project Description (page 16) mentions that wetting agents may be used to control dust. MSDS sheets for such agents should be submitted and the agents only used after MVLWB approval, similar to other water license requirements for approval of drilling muds.	Add condition H6 that requires approval by the MVLWB of any wetting agents prior to use in the deconstruction of the roaster complex.	<p>The Project Team agrees with Alternatives North's recommendation and have incorporated a new condition into the WL (Condition H3):</p> <p><i>3. The Licensee shall, 30 days prior to the use of any wetting agents during decontamination, submit to the Board for approval the Material Safety Data Sheet(s) for the wetting agents.</i></p>		

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12	Alternatives North	MVLWB Draft WL Condition Schedule 1, 1d	While a list of unauthorized discharges is helpful, it would be important to know if any remedial actions were taken and what if any preventative measures have been implemented. This will ensure that there is a better opportunity for adaptive management.	Amend Schedule F1d to include reporting on remedial measure with respect to any unauthorized discharges including clean-up and prevention.	The Project Team agrees with Alternatives North's recommendation and recommends the following wording for Schedule 1, 1d:  <i>d. A list of unauthorized discharges, including any clean-up actions taken and preventative measures implemented to prevent future discharges;</i>		
13	Alternatives North	MVLWB Draft WL Condition Schedule 1, 1f	Given the confused and inconsistent communications from the applicant with regard to this application and the entire Giant Mine Remediation Project as detailed in the covering letter and attachments, we believe that it is appropriate that there be a license requirement for an approved Public Engagement Plan, similar to the requirement in the NTPC Taltson water license MV2011L4-0002 (condition B7). At the Giant Mine EMS Working Group AN has made suggestions about public live reporting of the roaster deconstruction air quality monitoring program similar to GNWT ambient air quality monitoring stations, and for live internet webcams at the site during the summer months when deconstruction activities are to be carried out.	Include a license condition that requires the Licensee to submit Public Engagement Plan for MVLWB approval at least 60 days prior to commencement of any work commencing.	Please see Attachment A, Comment 13 - Alternatives North for the full response.		
			<i>(comment 13 continued)</i> Although the applicant has undertaken to consider these ideas, we prefer that there be a Public Engagement Plan submitted to the MVLWB for approval with an opportunity for public comment.				

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14	Alternatives North	MVLWB Draft WL Condition Schedule 2, 1a	We strongly support the inclusion of this condition that covers workers at the site. Given the close proximity of the site to the Ingraham Trail with its vehicular, pedestrian and bicycle traffic and the nearby recreational use of Back Bay by boaters, we suggest that this condition be expanded by adding the general public.	Amend 1 a by adding the words "and general public" after the word "workers" in the current draft condition.	<p>We request that the referenced condition be removed from the WL for the following reasons:</p> <ul style="list-style-type: none"> <li>• A number of regulators are charged with regulating the same aspects at site for different purposes (for example, hazardous substances). While deconstruction methods are within the jurisdiction of the Board to the extent appropriate to deal with waters and related waste issues, we respectfully suggest that regulating the deconstruction for the purpose of protecting worker safety and others in proximity to the worksite be attended to by the WSSC under the Mine Health and Safety Act.</li> <li>• The Emergency and Spill Response Plan outlines the training, equipment needs and procedures for responding to a variety of incidents, including arsenic trioxide releases, tailings releases and petroleum hydrocarbon releases, among other incidents. Any new information or changes to the existing spill response information requires approval by the Board under Part F and Schedule 2.</li> </ul>		

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15	Alternatives North	MVLWB Draft WL Condition Schedule 2, 1f	It is important to know and understand what the packaging and storage procedures will be for both the non-hazardous and hazardous waste. A definition of hazardous and non-hazardous wastes should be included in the deconstruction plan, including specific thresholds and contamination criteria. Presumably arsenic trioxide is considered a hazardous waste but this should be clearly defined in the plan.	Amend 1f to require a definition of hazardous and non-hazardous wastes with contamination criteria, and that both hazardous and non-hazardous waste are included in the requirement for details on size reduction, stacking, packaging type and quantities.	<p>Non-hazardous and hazardous wastes are defined in the waste management plan (see Section 2.1, items 3 and 4 in the Roaster Complex Deconstruction Waste Management Plan). Under the hazardous waste definition (item 4), arsenic trioxide is clearly listed as a type of hazardous waste in the first 7 items in the bulleted list.</p> <p>The Project Team supports the inclusion of the condition put forward by the MVLWB in the draft WL that requires the submission of details on size reduction, stacking, packaging, and storage procedures for non-hazardous waste. We also support the inclusion of arsenic-containing hazardous waste into the condition.</p>		
16	Alternatives North	MVLWB Draft WL Condition Schedule 2, 2e	There are no requirements in this condition for reporting of leachability testing of any paste using tailings, especially for arsenic and its impact on water treatment capability and capacity. Similarly, there is some potential for arsenic trioxide emissions from surface openings during backfilling operations and there should be details provided on how this will be mitigated and monitored. the final design of the paste backfill and performance criteria should be submitted to the MVLWB for approval prior to the work taking place.	Amend 2 e to require submission of leachability investigations and testing for any proposed paste backfill using tailings, submission of final design of the backfill mix and its performance criteria, and details on mitigative measures and monitoring for any arsenic trioxide emissions during backfilling operations.	Please see Attachment A, Comment 16 - Alternatives North for the full response.		

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17	Alternatives North	AECOM Dec. 17, 2012 Letter	This letter states that "demolition specifications" have been completed. Given the lack of detail provided in the application supporting materials on the exact methods to be employed, it would be helpful to see the specifications at this point.	The applicant should be directed to submit the detailed demolition specifications to the MVLWB now as part of this application process.	<p>The two phase procurement process entered into for the procurement of the Roaster Contractor does not permit the release of the tender specification documents until after the award of the contract. Tender specification documents will be available following contract award.</p> <p>Project details provided in support of the Water License application incorporate requirements set out in the tender specification documents. The application materials already filed provide a significant basis to safely assess the project for purposes of licensing. The detailed plans required in the water license will also be subject to Board approval.</p>		
18	Alternatives North	Water License Application section 9	The description of other persons or properties affected by the undertaking does not indicate that the work take place just metres away from the Ingraham Trail used by vehicles, pedestrians and cyclists, or the townsite area where the NWT Mining Heritage Society has an interest, the boat launch and the Cruising Club has a marina. We expect that there will be disruptions to all of these activities given the need for project-related traffic and possible dust control management responses.	AANDC should amend the application to clearly indicate the other adjacent users of the Ingraham Trail and the townsite areas as potentially affected parties by this undertaking.	Please see Attachment A under Comment 18 - Alternatives North.		

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19	Alternatives North	Water License Application section 12	This section of the license application does not contain all the items referenced or submitted as part of the application. For example, the AECOM and Golder letters of Dec. 17, 2012.	The applicant should update the license application to ensure it contains current information on the studies undertaken and any further information available on the contracting.	The list provided in Section 12 of the application form is complete and is supplemented by the application materials which included the Dec. 17 letters.		
20	Alternatives North	Roaster Complex Deconstruction Detailed Project Description pages 16-17	There is no information provided on the specifications for the temporary storage units to be used for toxic or hazardous materials, including arsenic. We are concerned as to whether the containers will be air tight and the anticipated length of time for the temporary storage.	AANDC should amend the project description to indicate whether the containers for temporary storage will be air tight and how long they will be stored temporarily.	Please see Attachment A, Comment 20 - Alternatives North for the full response.		
21	Alternatives North	Roaster Complex Deconstruction Detailed Project Description s. 2.3.6 page 18	section 2.3.6 states that sewage from the work site will be disposed of at a "licensed facility such as the City of Yellowknife". Please provide details of any discussions and agreement with the City of Yellowknife to accept such waste. This waste may contain arsenic and require treatment.	Please provide evidence that the City of Yellowknife has agreed to take such waste and what level of arsenic is expected in the waste water.	Please see Attachment A, Comment 21 - Alternatives North for the full response.		

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22	Alternatives North	Roaster Complex Deconstruction Detailed Project Description s. 3 Table 1	The mitigation measures and monitoring set out in this table are general and vague as many details are apparently being left to a contractor.	If AANDC cannot specify with any clarity what the exact mitigation measure and monitoring will be, contract specifications should be submitted and/or the contractor should be filing the application as has been done for other remediation projects such as Tundra and Colomac. If AANDC is not prepared to accept this option, then the detailed plans for mitigation and monitoring should be approved by the MVLWB a minimum of 30 days in advance of any work at the site.	Please see Attachment A, Comment 22- Alternatives North for the full response.		
23	Alternatives North	Giant Mine Roaster Complex Deconstruction Waste Management Plan s. 1.3	Federal and Territorial policies and legislation are listed but not municipal.	This plan should be amended to include applicable City of Yellowknife legislation and policy including the Building By-law, Emergency Measures By-law, Solid Waste Management By-law and others.	The Water License draft clearly states that "Compliance with the terms and conditions of this Licence does not absolve the Licensee from the responsibility for compliance with the requirements of all applicable federal, territorial, and municipal legislation." (Part A, Item 3). The list of applicable legislation and policies provided in Section 1.3 of the Roaster Complex Waste Management Plan is not meant to be an exhaustive list of all legislation related to the project as a whole. The presence or absence of an item in this listing has no effect on the compliance obligations of the project.  Likewise, the list is not final. The potential application of other legal requirements will be explored with other regulators before finalization of the project plans. With specific reference to municipal regulation, the Project Team will be applying for the appropriate permits from the City of Yellowknife in March. This will provide a useful opportunity to explore this issue in detail prior to plan finalization.		

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24	Alternatives North	Giant Mine Roaster Complex Deconstruction Waste Management Plan s. 2.1	There are no specific criteria provided for the various waste types and details on how segregation will be accomplished. In plain language, how do we know when something is contaminated with arsenic or not and will it be handled as hazardous material or not, and how. See for example the details provided on water treatment in Table 2 but nothing comparable for solid waste.	AANDC should amend the plan to include specific criteria for each of the waste types and provide details on how segregation will be carried out.	Please see Attachment A, Comment 24-Alternatives North.		
25	Alternatives North	Draft Environmental Management Plan for the Giant Mine Roaster Complex Deconstruction	This Plan reads more like instructions to a contractor than a document that serves the needs of the public or regulators in understanding how environmental effects will be managed. It bears little resemblance to other management plans routinely submitted to and approved by Land and Water Boards. The current document should be combined with part of the project description and perhaps the contracting specifications to provide an appropriate level of details on: <ul style="list-style-type: none"> <li>• objectives (organized around closure of various mine components);</li> <li>• potential environmental effects and mitigation measures;</li> <li>• measureable performance or closure criteria (measures of success);</li> </ul>	The MVLWB should provide clear direction on expectations for management plans for the roaster complex and request that AANDC resubmit the plan prior to a decision on this application.	Please see Attachment A under Comment 25 - Alternatives North.		

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
			<p><i>Comment 25 continued</i></p> <ul style="list-style-type: none"> <li>• monitoring systems to track performance;</li> <li>• triggers or thresholds for specific actions; and</li> <li>• research and design work and a schedule to fill gaps, where there is uncertainty.</li> </ul> <p>Much of the detail is apparently being left to a contractor to design and carry out, but a management plan serves a different purpose in setting standards and direction to satisfy regulators and the public that there is a system in place to mitigate adverse effects and ensure adaptive management.</p>				
			<p><i>Comment 25 continued</i></p> <p>It is not clear what the relationship of this plan is to the Waste Management Plan and proposed Air Quality Monitoring Plan. It is our understanding that the applicant is prepared to revise this plan in light of input on structure, organization and content from the Giant Mine EMS Working Group.</p>				

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
26	Alternatives North	Draft Environmental Management Plan for the Giant Mine Roaster Complex Deconstruction	There is very little information in this document about public reporting of monitoring results and performance.	AANDC should incorporate public reporting of monitoring and management results into the plan. Alternatively, the MBLWB should require a Public Engagement Plan as a condition of the water license with strong public reporting requirements given the strong public interest in this work.	Reporting commitments are outlined in the SSP Communications Plan which was circulated for review and comment to the Parties as part of the engagement period (review of second draft of the application package initiated on November 28, 2012) and submitted to the MVLWB as part of the final application package. No feedback from Alternatives North on the SSP Communications Plan has been received either within or outside the Board's process. The SSP Communications Plan commits the Project Team to providing summaries of air and water quality monitoring on a monthly basis to a wide audience (emails and web updates).  In addition, the Project Team has recommended that the data report under Schedule 1, Item 1 be submitted to the MLVWB every 6 months rather than 12 months as proposed in the draft license as a means to keeping parties informed regularly.		
27	Alternatives North	Draft Environmental Management Plan for the Giant Mine Roaster Complex Deconstruction, pages 11-15 Monitoring	The few specifics for monitoring, for example, ponding of water on page 11, provide no specific locations or triggers (i.e. a puddle or pond of x metres in size will be pumped within 24 hours). All dead animals found on site should be reported (see monitoring on page 13) and may require necropsy to determine whether contamination contributed to the death. Are there any objective measures for "visible emissions of dust" (see page 15)?	AANDC should amend the plan to include specific performance criteria (including visible dust), reporting and necropsy of all dead animals found at the site.	Please see Attachment A, Comment 27-Alternatives North.		

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
28	Alternatives North	Draft Environmental Management Plan for the Giant Mine Roaster Complex Deconstruction, page 26 Record Keeping	Should the contracting authority not inherit all the documentation kept by the contractor and keep this for some minimum period of time, before archiving?	AANDC should amend the plan to clearly indicate what the record keeping requirements may be and that it retains all the records, some of which may be requirements for water license compliance and enforcement.	Please see Attachment A, Comment 28-Alternatives North.		
29	Alternatives North	Underground Stabilization Detailed Project Description, page 10 and 12 Engineering Review/Planning	There is no indication in this document whether there has been any leachability testing done on the use of tailings paste backfill. "Laboratory tests to determine the final paste mix design" is mentioned on page 12, but there is no reference to leachability.	AANDC should provide any results from leachability testing using Giant Mine tailings and indicate how it intends to inform the MVLWB and public about the final design of the paste mix and related performance criteria. The final design and performance criteria should be submitted to the MVLWB for approval in advance of the underground stabilization work being carried out and should be included as a condition of the water license.	Please see Attachment A, Comment 29 -Alternatives North.		

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
30	Alternatives North	Underground Stabilization Detailed Project Description, page 12 and 13 Exhaust Air Control and Treatment	There is no detail provided as to what the anticipated effects may be of the exhaust, what levels of arsenic trioxide might be expected and how it will be mitigated and monitored. Given the health effects and public concern, more details are necessary than simply leaving it up to a contractor. Note there are few details provided in Table 1, page 20 other than a specialized contractor is to design an exhaust air system. Details are provided on water treatment but there is nothing comparable on exhaust control or performance criteria.	AANDC should provide specific details on the anticipated effects of exhaust during the backfilling, what the mitigation and monitoring requirement will be. This information should be submitted in a revised plan before the license is approved.	Please see Attachment A, Comment 30 -Alternatives North for the full response.		

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
31	Alternatives North	Underground Stabilization Waste Management Plan, s. 1.3 Environmental Policy and Legislative Framework, pg. 5-6	Federal and Territorial policies and legislation are listed but not municipal.	This plan should be amended to include applicable City of Yellowknife legislation and policy including the Building By-law, Emergency Measures By-law, Solid Waste Management By-law and others.	<p>The Water License draft clearly states that "Compliance with the terms and conditions of this Licence does not absolve the Licensee from the responsibility for compliance with the requirements of all applicable federal, territorial, and municipal legislation." (Part A, Item 3). The list of applicable legislation and policies provided in Section 1.3 of the Roaster Complex Waste Management Plan is not meant to be an exhaustive list of all legislation related to the project as a whole. The presence or absence of an item in this listing has no effect on the compliance obligations of the project.</p> <p>Likewise, the list is not final. The potential application of other legal requirements will be explored with other regulators before finalization of the project plans. With specific reference to municipal regulation, the Project Team will be applying for the appropriate permits from the City of Yellowknife in March. This will provide a useful opportunity to explore this issue in detail prior to plan finalization.</p>		

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
32	Alternatives North	Underground Stabilization Waste Management Plan, s. 2.1 Waste Types, pg. 7-9	There are no specific criteria provided for the various waste types and details on how segregation will be accomplished. In plain language, how do we know when something is contaminated with arsenic or not and will it be handled as hazardous material or not, and how. See for example the details provided on water treatment in Table 2 but nothing comparable for solid waste.	AANDC should amend the plan to include specific criteria for each of the waste types and provide details on how segregation will be carried out.	<p>This same comment was made on the roaster waste management plan. Sound waste management is a key activity for roaster deconstruction and testing is required to classify waste according to very specific criteria. The waste management program for the underground stabilization work is much more straight-forward because very little waste will be generated and the wastes that are generated are typical for the mine site. Waste types that will be generated include domestic refuse (food); sewage and greywater; and used consumables such as paper, wood and plastics; minor amounts of tailings bleed water; and used oil filters and rags. Spills of hydrocarbons, tailings, and arsenic dust may occur and the resulting contaminated soils will be managed in accordance with the Emergency and Spill Response Plan and the Waste Management Plan.</p> <p>These waste materials can be classified easily using visual means, making it unnecessary to set criteria for the underground stabilization work in any greater detail than that already in the Waste Management Plan.</p>		

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
33	Alternatives North	Draft Environmental Management Plan for the Giant Mine Underground Stabilization	<p>This Plan reads more like instructions to a contractor than a document that serves the needs of the public or regulators in understanding how environmental effects will be managed. It bears little resemblance to other management plans routinely submitted to and approved by Land and Water Boards. The current document should be combined with part of the project description and perhaps the contracting specifications to provide an appropriate level of details on:</p> <ul style="list-style-type: none"> <li>• objectives (organized around closure of various mine components);</li> <li>• potential environmental effects and mitigation measures;</li> <li>• measureable performance or closure criteria (measures of success);</li> <li>• monitoring systems to track performance;</li> </ul>	The MVLWB should provide clear direction on expectations for management plans for the underground stabilization and request that AANDC resubmit the plan prior to a decision on this application.	This comment is the same as that provided under Comment 25. For our response, please refer to Attachment A under Comment 25 - Alternatives North.		

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
			<p><i>Comment 33 continued</i></p> <ul style="list-style-type: none"> <li>• triggers or thresholds for specific actions; and</li> <li>• research and design work and a schedule to fill gaps, where there is uncertainty.</li> </ul> <p>Much of the detail is apparently being left to a contractor to design and carry out, but a management plan serves a different purpose in setting standards and direction to satisfy regulators and the public that there is a system in place to mitigate adverse effects and ensure adaptive management. It is not clear what the relationship of this plan is to the Waste Management Plan and proposed Air Quality Monitoring Plan. It is our understanding that the applicant is prepared to revise this plan in light of input on structure, organization and content from the Giant Mine EMS Working Group.</p>				
34	Alternatives North	Draft Environmental Management Plan for the Giant Mine Underground Stabilization	There is very little information in this document about public reporting of monitoring results and performance.	AANDC should incorporate public reporting of monitoring and management results into the plan. Alternatively, the MBLWB should require a Public Engagement Plan as a condition of the water license with strong public reporting requirements given the strong public interest in this work.	This comment is the same as that provided under Comment 26. For our response, please refer to Attachment A under Comment 26 - Alternatives North.		

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
35	Alternatives North	Communications Plan for Duration of Site Stabilization Activities	<p>Although this plan was submitted with the application, we see little evidence that it has been implemented. AN has had to ask several times for updates on the contracting process, most recently at the Feb. 6 Giant Mine EMS Working Group meeting (see attachment 1 to the covering letter). The monthly meetings do not include Alternatives North, even though we have been a party to the ongoing Environmental Assessment. Although this is a helpful start on improving communications, we were not consulted in the preparation of this document. We have also made suggestions around public reporting of monitoring results (there should be live ambient air quality monitoring on the internet as carried out by GNWT)and live webcams.</p>	<p>Given the confused and inconsistent communications from the applicant with regard to this application and the entire Giant Mine Remediation Project as detailed in the covering letter and attachments, we believe that it is appropriate that there be a license requirement for an approved Public Engagement Plan, similar to the requirement in the NTPC Taltson water license MV2011L4-0002 (condition B7).</p>	<p>Please refer to Attachment A under Comment 35 - Alternatives North.</p>		
			<p><i>Comment 35 continued</i>                      Given the past track record of the applicant on engagement, our clear preference is that a formal Public Engagement Plan be prepared and submitted to the MVLWB for approval with an opportunity for public comment. In this way only, will the commitments for engagement be tracked and made enforceable.</p>				

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
36	Alternatives North	Requirements for the Ambient Air Quality Monitoring Roaster Complex Deconstruction	Dust management and related air quality monitoring is critical to successful mitigation and adaptive management for the roaster complex demolition. This is likely the single most important monitoring of any surface work that will take place at Giant Mine. Given the importance of this work and the potential risks involved, we had expected to see a very detailed monitoring plan with clear actions levels and well articulated rationale. This is not to be found in the documentation prepared to date as AANDC appears to be leaving most of the details to the contractor.	AANDC should be directed to submit a proper dust management and monitoring plan, either separately or as part of an overall detailed deconstruction plan and preferably combined with the required exhaust management and monitoring required of the underground stabilization plan to ensure consistency of approaches and results. This document needs to be for approval of the MVLWB with an opportunity for public comment, before any work at site commences.	Please see Attachment A, Comment 36 - Alternatives North for a full response.		

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
37	Alternatives North	Requirements for the Ambient Air Quality Monitoring Roaster Complex Deconstruction	<p>It appears that there are very few details for an air quality monitoring program at this point. AANDC states: "specific details will be provided once a contractor is in place, a detailed schedule for work completion has been obtained, and climate conditions under which monitoring will be required are clear. The contractor's reviewed and accepted Deconstruction Plan will also outline the specific mitigative methods that will be implemented to control dust". Given the significance to human health and the environment of arsenic control releases, and the significant public concern with this work, there needs to be a full dust management plan and monitoring program now.</p>	<p>AANDC should submit a full dust management plan and monitoring program with clear objectives, a rationale for the selection of the methods including selection of equipment and key indicators and any relevant standards selected for use from other jurisdictions. Thresholds and action levels should be identified with specific management responses. This document should be submitted to the MVLWB for approval as part of this application. If not as part of this application, the requirement for this plan should become a condition of the water license and require approval of the MVLWB (with an opportunity for public review) before any work starts at the site. No consideration appears to have been given to snow sampling as another method to establish baseline conditions, so this method should be evaluated.</p>	<p>Please see Attachment A, Comment 37 - Alternatives North for a full response.</p>		
			<p><i>Comment 37 continued</i>                      It should combine the overall site ambient air quality monitoring and environmental effects monitoring required of the roaster complex demolition and underground stabilization work. There should be a clear set of objectives, rationale for the methods including selection of equipment and key indicators (it appears that "live" monitoring of arsenic is not possible). Thresholds and action levels should be identified with specific management responses.</p>				

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
38	Alternatives North	Requirements for the Ambient Air Quality Monitoring Roaster Complex Deconstruction	No rationale is provided for the selection of PM10 as a surrogate or key indicator for arsenic in dust generated from the work at the Giant Mine site. No information is provide on past monitoring efforts and any relationship between PM10, PM2.5, TSP and arsenic. No information is provided on whether arsenic speciation of TSP results has been done to consider bioavailability and toxicity. Such work might be helpful in establishing baseline conditions at the site for comparative purposes and to possibly identify the source of windblown arsenic (tailing ponds, roaster demolition or other sources as each may have its own signature).	AANDC should provide a rationale for the selection of PM10 as a surrogate for arsenic, explaining why PM2.5 and TSP are not suitable. Data from the previous on-site air quality monitoring program that explains the relationship between PM10, PM2.5, TSP and arsenic should be provided. AANDC should provide information on whether it is possible to do arsenic speciation to determine the bioavailability and toxicity of the two valences for arsenic compounds and whether this can be considered in the design of the dust management plan and monitoring program, interpretation of the results and implementation of mitigative measures and management responses.	Please see Attachment A, Comment 38 - Alternatives North for a full response.		

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
39	Alternatives North	Requirements for the Ambient Air Quality Monitoring Roaster Complex Deconstruction	As we understand it, the action levels identified in Table 1 relate to the acute and chronic health effects of PM10 and not arsenic. Without knowing what the relationship may be amongst PM10, PM2.5, TSP and arsenic, workers at the site and the general public may be exposed to levels of arsenic in the dust from the site, that could be hazardous to health. No rationale was provided for the selection of the Ontario standard that was developed in the 1970s. Is it truly protective of human health and the environment? Although this standard appears to have been recently reviewed, what conclusions were reached and on what basis?	AANDC needs to develop a proper dust management plan and monitoring program with action levels related to exposure to arsenic and not simply PM10. A clear rationale for the thresholds, action levels and specific actions needs to be provided before any work takes place at the site.	Please see Attachment A, Comment 39 - Alternatives North for a full response.		
			<p><i>Comment 39 continued</i></p> <p>Roaster complex demolition is likely a very rare and special occurrence and should this standard be applied to this work? There appears to be some commitment from AANDC to improve these thresholds and action levels from the February 6 Giant Mine EMS Working Group meeting (see attachment 1 to the covering letter), but there is no clear timeline. It is not in the public interest to leave this critical work to a contractor to develop at some unspecified date, possible after work has begun at the site.</p>				

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
40	Alternatives North	Requirements for the Air Quality Monitoring Plan Industrial Hygiene Roaster Complex Deconstruction	Dust management and related air quality monitoring is critical to successful mitigation and adaptive management for the roaster complex demolition. This is likely the single most important monitoring of any surface work that will take place at Giant Mine. Given the importance of this work and the potential risks involved, we had expected to see a very detailed monitoring plan with clear actions levels and well articulated rationale. This is not to be found in the documentation prepared to date as AANDC appears to be leaving most of the details to the contractor.	AANDC should be directed to submit a proper dust management and monitoring plan, either separately or as part of an overall detailed deconstruction plan and preferably combined with the required exhaust management and monitoring required of the underground stabilization plan to ensure consistency of approaches and results. This document needs to be for approval of the MVLWB (and perhaps the Workers Safety and Compensation Commission) with an opportunity for public comment, before any work at site commences.	Please see Attachment A, Comment 40 - Alternatives North for a full response.		
41	Alternatives North	Requirements for the Air Quality Monitoring Plan Industrial Hygiene Roaster Complex Deconstruction	It appears that there are very few details for an industrial hygiene monitoring program at this point. AANDC states: "the selected contractor will be required to develop and execute an air quality monitoring plan for the purposes of ensuring safe industrial hygiene". Given the significance to human health and the environment of arsenic control releases, and the significant public concern with this work, there needs to be a full industrial hygiene plan and monitoring program now. It should combine the overall site ambient air quality monitoring and environmental effects monitoring required of the roaster complex demolition and underground stabilization work.	AANDC should submit a full industrial hygiene management plan and monitoring program with clear objectives, a rationale for the selection of the methods including selection of equipment and key indicators and any relevant standards selected for use from other jurisdictions. Thresholds and action levels should be identified with specific management responses. There should be tiered action levels. Plain language rationale for the selection of any methods, standards, action levels and specific actions should be provided. This document should be submitted to the MVLWB for approval as part of this application.	A number of regulators are charged with regulating the same aspects at site for different purposes (for example, hazardous substances). While deconstruction methods are within the jurisdiction of the Board to the extent appropriate to deal with waters and related waste issues, we respectfully suggest that regulating the industrial hygiene aspects of deconstruction for the purpose of protecting worker safety be attended to by the WSSC under the Mine Health and Safety Act.  Additional details regarding the industrial hygiene monitoring program were included in our responses to Alternatives North questions on the first draft of the application package (see page 11 in our Responses to Alternatives North's Questions - First Draft of the SSP WL Application Package provided under Tab 8 in the application). In addition, revised air quality plans were also submitted to the MVLWB with the application package.		

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
			<p><i>Comment 41 continued</i>                      There should be a clear set of objectives, rationale for the methods including selection of equipment and key indicators (it appears that "live" monitoring of arsenic is not possible). Thresholds and action levels should be identified with specific management responses. The only action level identified in this document appears to be a "stop work".</p>	<p>If not as part of this application, the requirement for this plan should become a condition of the water license and require approval of the MVLWB (with an opportunity for public review) before any work starts at the site.</p>			
42	Alternatives North	Ambient Air Quality Monitoring Plan Underground Stabilization	<p>Same concerns as noted above on the roaster complex demolition in terms of vagueness of the current plan and leaving too much to contractors (items 36-39). Same issues regarding the action levels identified and the lack of clear actions at anything below a stop work response. Unclear what will be reported and if any of the results will be made public. Same concerns about the lack of rationale for use of the Ontario arsenic criterion for air quality.</p>	<p>See comments above in items 36-39.</p>	<p>Please refer to the responses provided under Comments 36-39 in Attachment A.</p>		

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
43	Alternatives North	Site Stabilization Plan for the Giant Mine Remediation Project	This plan was secretly developed and approved by the Minister of Aboriginal Affairs and Northern Development. AN is concerned that this is the real remediation plan for Giant Mine and that there will be little else that will actually ever get done. There are still very significant redactions made to this document, which is most unusual for a supporting material for a water license application. While we can understand the need not to disclose budgeted costs for work not yet tendered, these redactions should be limited in nature (i.e. \$XX,XXX) rather than whole blocks of text (for example, see page 8). We suspect that other reasons may be behind such large redactions. Given the public interest in this project and public concern, there should be limited redactions to this document.	The MVLWB should direct AANDC to reconsider the redactions made to the document in an effort to provide full public disclosure of risks and considerations for the work proposed.	As per the Board's request on January 7, 2013, AANDC submitted a new version of the Site Stability Plan on January 22, 2013. The only change to the document was the removal of all redactions except for the specific dollar-cost estimates.	RO notes that this document was re-submitted to the Board as per a directive from MVLWB. However, the document itself was not included on the website at the time of the review period. It has since been re-posted.	
44	Alternatives North	Failure Mode Effects Criticality Analysis (FMECA)	The MVLWB should know that there was no involvement from interested parties in the development or application of risk assessment criteria. Parties have requested numerous times during the Environmental Assessment that AANDC and GNWT begin to include the interested parties in the assessment and evaluation of risk at the site.	The MVLWB should include a requirement in the water license for prior approval of a Public Engagement Plan, that should include engagement of interested parties in risk assessment and evaluation and other matters.	Please see Attachment A under Comment 44 - Alternatives North.		

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
45	Alternatives North	Hazardous Building Materials Assessment Report Roaster Complex Giant Mine Site (Golder 2012), page 12	Page 12 states "Additionally a large portion of the samples collected had leachable concentrations of arsenic above the leachable criteria of 2.5 mg/L provided to Golder by the Client as the Site's arsenic disposal criteria." This is the first time we have seen this criterion for waste and this begs the question of what other criteria has AANDC developed for the waste streams that will come from the roaster complex demolition.	AANDC should provide a full list of its waste criteria and rationale, for the roaster complex demolition.	Please see Attachment A, Comment 45- Alternatives North for a full response.		

## **ATTACHMENT A – RESPONSES TO REVIEW COMMENTS**

### **Comment 2 - Environment Canada**

The contractor, as part of its contract with Public Works and Government Services Canada, is required to develop plans and procedures that align with mitigation measures identified in the water license application documents, and to develop and deliver related training programs. As required by Schedule 1, Item 1e in the draft water licence, we will provide a summary of the spill response training carried out in the annual reports. Note that we've recommended that annual reports be submitted every 6 months (bi-annual report) rather than annually as suggested in the draft water licence in recognition of the public's request for regular reporting.

The training programs that will be delivered include:

- 1) Worker Orientation Seminar – This seminar is to be delivered to the contractor's employees in English and local dialect(s) as required. Course material will describe the activities at the site, and provide instruction for the applicable health, safety, and environmental regulations, policies and requirements as related to the site work activities.
- 2) Emergency Response Orientation Seminar – This seminar is to be delivered to the Mine Manager and local emergency response authorities. Course material will describe the work being completed, the hazardous materials involved and potential exposure scenarios, and the access restrictions associated with work areas.
- 3) Task Specific Training – Workers performing specific tasks will need to undertake task-specific training related to the safe work procedures, emergency and spill response, personal protection equipment requirements and use, and other training as necessary. One example is that any worker expected to enter a work area contaminated with arsenic or asbestos has completed a related course approved by the Northwest Territories Workers Safety and Compensation Commission.

### **Comment 4 - YKDFN**

The Giant Mine Remediation Project Team (Project Team) very much understands the complexity associated with deconstructing the highly contaminated roaster and has employed an intense procurement process to ensure only the most qualified contractor will undertake the work. In addition, the work specifications provided to potential contractors were conservative. A selection of some of the limitations put on the contractor is provided below but the limitations are more fully described in our application package.

Permits from the City of Yellowknife and the Government of the Northwest Territories are also being sought and the WSCC Mines Inspector will be required to authorize health and safety aspects of the project prior to initiation of work.

A selection of some of the conservative limits placed on the contractor is as follows:

- 1) There is no discharge of waste water to the receiving environment. Waste water generated during roaster deconstruction will be captured, filtered to remove asbestos fibres and treated to remove hydrocarbons and discharged only to the Northwest Tailings Pond. See page 15 of the Roaster Complex Waste Management Plan provided with the licence application.
- 2) All arsenic-contaminated hazardous wastes will be stored in Transportation of Dangerous Goods (TDG) approved containers (see Comment 20 – Alternatives North). The final disposal, including disposal criteria, of the stored materials will be subject to review and approval through the Type A licensing process for the greater Giant Mine Remediation Project.
- 3) Criteria to ensure that materials are sufficiently decontaminated to be deemed non-hazardous, and therefore safe to be placed in the non-hazardous waste stream, are provided on page 11 of the Roaster Complex Waste Management Plan.
- 4) Air quality plans and related criteria are provided under Tab 7 of the application package.

#### **Comment 5 – YKDFN**

As there wasn't enough space in the table to include Yellowknives Dene First Nation's complete comment, we provide it here so that it can be easily referenced.

**Part Three: Objectives and Criteria**

YKDFN are concerned that the Objectives and Criteria presented as part of this plan are lacking. While YKDFN have accepted that the proposed reclamation plan is the best approach at this time, we still want to have a clear understanding if the work being done has met expectations.

The documentation provided to date, particularly in the case of the underground stabilization, fails to provide a clear picture on what will be done as the 'proposed activities' are concatenated to the results carried out under MV2012S0019. Essentially the project is proposing that this board authorize SOMETHING in response to a non emergency situation, and they aren't clear what the work will do beyond broad statements. Lastly, there is no discussion on how the parties or the board will know if the risk has been mitigated.

The Project Team believes that the information provided in the application package and the information that will be provided as part of the post-licence issuance submittals (e.g., plans and ongoing reporting) to the Mackenzie Valley Land and Water Board will together demonstrate that the work will meet the highest standards.

YKDFN appear to be particularly concerned with the objectives and criteria related to underground stabilization. As described in the underground Stabilization Detailed Project Description provided under Tab 3 in the application package, the premise of the work is to fill the voids in the chambers and stopes with material to provide support to the overlying and adjacent ground (crown and sill pillars). Cavity Monitoring Survey (CMS) equipment (e.g., cameras) and other technology will be utilized throughout the backfilling process to ensure the voids are being filled properly (page 12 in the Underground Stabilization Detailed Project Description).

To confirm that the risk has been mitigated, the contractor is required to submit an “As-Built Statement of Risk Mitigation” upon completion of backfilling each target stope. This letter is to be stamped by a Professional Engineer and essentially state that the risks associated with collapse of the crown/sill pillar in the target areas has been mitigated.

The Project Team proposes that the stamped letters be submitted to the MVLWB as they are completed as part of the reporting requirements in Schedule 1, Item 1(m).

### **Comment 13 – Alternatives North**

The Project Team has committed to assess the possibility of tying/streaming real-time air quality monitoring data into the GNWT Air Quality Monitoring Network Website. This assessment will be conducted in Spring 2013 once specific monitoring instruments and data acquisition systems are selected. However, setting these reporting mechanisms as requirements is unreasonable.

While we appreciate that Alternatives North is not satisfied with past communications, they have provided no feedback within or outside the Board's process on the SSP Communications Plan which forms part of the application package (Tab 6). The SSP Communications Plan has been in their possession with a request for comments since November 28, 2012.

The SSP Communications Plan includes providing monthly summaries of the outcome of air quality monitoring to a wide target audience that includes Alternatives North. In addition, we have recommended that formal reports be submitted to the MVLWB every 6 months rather than every 12 months as identified in the draft WL circulated by MVLWB staff in recognition of the fact that reporting is important. An additional Engagement Plan is duplicative and unnecessary.

### **Comment 16 – Alternatives North**

Leachability investigations are not required because very little water is expected to "bleed" from the tailings paste as it cures. As described in Section 2.1, Item 5 of the Underground Stabilization Waste Management Plan, any "bleed" water that is generated will be captured in the underground water management system and brought to surface for treatment in the existing effluent treatment plant.

As described in Section 2.3.2, Item c in the Underground Stabilization Detailed Project Description, the backfill process will utilize an exhaust air management system to seal exhaust air released from surface openings during backfilling operations. The intent of the exhaust air system is to capture and treat exhaust air through a filtering system in order to achieve ambient air criteria at both the worker spaces as well as at the property boundaries.

As set out in the air quality monitoring plan provided under Tab 7 in the application package, air quality monitoring will be completed during backfilling operations for both arsenic and particulate matter. There are two sets of criteria that need to be met which include occupational health and safety and ambient (environmental) air quality. The monitoring will be completed continuously during construction

activities to ensure Occupational Health and Safety requirements of the NWT are being achieved (Draft Occupational Health and Safety Regulation - Safety Advisory Committee, Northwest Territories, 2012). Real time monitoring will be used as a construction management tool to implement further mitigation as appropriate to help protect worker health. In addition time-weighted 8 hr averages of arsenic will be monitored in worker zones. The ambient air monitoring program will include monitoring for both arsenic and particulate matter in a fashion similar to the methods to be utilized for the Roaster Deconstruction program.

#### **Comment 18 – Alternatives North**

Sections 2.4.2 and 3.0 (Table 1) in the Detailed Roaster Project Description acknowledge the potential risks to people travelling the highway. The Site Stabilization Plan (SSP) Communications Plan also acknowledges that a wide target audience, including all citizens of Yellowknife, Dettah and N'Dilo, must be provided with information regularly given the proximity of the mine site to boating areas, the highway and other recreational areas.

No lengthy road closures during normal operations are expected for roaster deconstruction or underground stabilization. If heavy equipment needs to cross Highway 4, flag persons will direct public traffic as required.

As part of emergency response planning for roaster deconstruction, the contractor will be hosting a meeting in April or May with emergency response agencies and the GNWT-DOT to develop a coordinated emergency response protocol. In the event of an emergency, Parties identified on the Emergency Response - External Notification Chart, which includes Alternatives North, YKDFN, the Tlicho Government, North Slave Métis Alliance, and others (see Tab 6 in the application package) will be notified.

Dust control and air quality monitoring measures to protect workers and others in proximity to the work site are outlined in the air quality plans provided in the application package.

#### **Comment 20 – Alternatives North**

As summarized in Section 2.4.2, item d and g in the Roaster Detailed Project Description and expanded upon in the Roaster Waste Management Plan, deconstruction debris will be containerized and stored for different time periods as follows:

- Non-hazardous waste will be stacked and stored at the Temporary Waste Storage Area until such time that final disposal is approved through the Type A licensing process for the greater Giant Mine Remediation Project.
- Non-arsenic containing hazardous waste will be packaged in Transportation of Dangerous Goods (TDG) approved containers and transported off-site in accordance with the Transportation of

Dangerous Good Regulations. These wastes will be shipped off-site to licensed facilities during the term of the roaster and underground water licence.

- Arsenic containing hazardous waste will be stored in TDG approved containers at the Temporary Waste Storage Area in accordance with the Guideline for the General Management of Hazardous Waste in the NWT until such time that their final disposal is approved through the Type A licensing process for the greater Giant Mine Remediation Project.

Under TDG and NWT regulations and guidelines, containers must to be sound, sealable, and not damaged or leaking; and all containers must be designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of dangerous goods that could endanger public safety.

Containers come in many different styles and sizes; however, they must be designed and manufactured in accordance with recognized UN standards (such as, but not limited to CAN/CSSB-43.146-2002, CSA B621-00). Additional details on containers will be provided in the submittal to satisfy the item in the draft water licence requiring information on size reduction, stacking, packaging, and storage procedures for wastes (currently Schedule 2, item 1f).

#### [Comment 21 – Alternatives North](#)

As described in Section 2.3.6 in the Detailed Project Description and Section 2.1 in the Waste Management Plan for Roaster Complex Deconstruction, the only sewage wastes that are being proposed to be disposed of off-site are the sanitary sewage that would be collected in onsite portable toilets. Workers will be wearing PPE to protect them from exposure from arsenic, and toilets will not be located in the contaminated work area of the Roaster. Therefore, the arsenic levels in the sewage should be similar to the levels in the sewage collected from Yellowknife residences. All greywater collected from any washing/shower facilities will be collected, filtered and disposed of in the Northwest Tailings Pond.

On November 20, 2012, a letter was sent to the City of Yellowknife providing notice that sewage from the portable toilets will need to be disposed of off-site. This notification also indicated that it is the responsibility of the contractor following contract award to confirm the disposal facility, but that the contractor was likely to approach the City given its close proximity to the Giant Mine.

Since contract award is expected by the end of March, the contractor will likely confirm the sewage disposal location in April.

#### [Comment 22 – Alternatives North](#)

Before addressing the recommendation, two points need to be made:

1. The tendering processes are ongoing and to prevent these processes from being compromised, specification documents cannot be released at this time.

2. Alternatives North is incorrect in stating that the contractors filed the applications for Tundra and Colomac. The water licence applications were prepared and submitted by INAC-CARD.

Application materials, as supported by our responses in this submission, provide a sufficient basis to safely assess the project for the purposes of licensing. The detailed plans to be submitted following licence issuance will also be subject to Board approval. Where specific concerns or questions have been raised about these plans the Project Team has provided detailed responses.

#### [Comment 24 – Alternatives North](#)

The Roaster Complex Deconstruction Waste Management Plan describes how wastes will be categorized and segregated but is repeated here for reference purposes. Figure 1 below displays the same information, just in a decision tree format.

All material inside the Roaster Complex is considered impacted by arsenic dust, friable and dispersible material until it has been properly decontaminated. Testing for decontamination completion will follow the same procedures and criteria for high risk (level 3) asbestos abatement as set out in the GNWT's General Guidelines for Asbestos Removal and Disposal, but with inclusion of testing for arsenic in addition to asbestos. Criteria for decontamination completion are based on aggressive air quality testing and require that final air monitoring results indicate asbestos fibre levels of less than 0.01 fibres per cubic centimeter and arsenic levels of less than 0.001 mg/m<sup>3</sup> for all samples taken before the containment system can be dismantled. These criteria are stated on page 11 of the Roaster Complex Waste Management Plan. In addition, visual inspection of the surfaces of the material will be conducted by the contractor and quality assurance consultant to confirm surface decontamination prior to the air monitoring for decontamination completion and dismantling of the containment system. Once decontamination of all dusts, friable and dispersible materials is completed, the material will be further evaluated against hazardous or non-hazardous criteria under the Transportation of Dangerous Goods Act, Canadian Environmental Protection Act, and GNWT Guideline for the General Management of Hazardous Waste.

If the above referenced criteria are exceeded, then the materials will be treated as hazardous waste and stored on-site if it is arsenic hazardous waste or shipped off-site if it is non-arsenic hazardous waste (e.g., PCBs). If decontamination can remove asbestos and arsenic to below the above levels and the waste is not considered hazardous under the Transportation of Dangerous Goods Act, Canadian Environmental Protection Act, and GNWT Guideline for the General Management of Hazardous Waste, then the materials will be considered non-hazardous waste. Non-arsenic containing hazardous materials will be disposed off-site at approved facilities during the term of the roaster and underground stabilization WL. Final disposal of the arsenic containing hazardous and non-hazardous wastes will be assessed and approved through the Type A licensing process for the greater Giant Mine Remediation Project; any subsequent plan approvals required in the Type A licence; and any additional regulatory approvals required through the City and GNWT.

Under the SSP water licence, the Project Team is only requesting approval to store non-hazardous and arsenic contaminated materials on site, not to dispose of them on site.

The Project Team supports the inclusion of the condition put forward by the MVLWB in the draft water licence that requires the submission of details on size reduction, stacking, packaging, and storage procedures for non-hazardous waste. We also support the inclusion of arsenic contaminated hazardous waste into the condition.

### Figure 1 – Decision Tree for Waste Classification and Storage

All materials, whether solid or liquid, within and making up the roaster complex are considered arsenic containing prior to the start of decontamination. The decision tree is then used to classify and segregate waste.

1. Is material aqueous, semi-processed ore/calcline, or other waste?
  - If aqueous, filter for asbestos, treat for hydrocarbons<sup>1</sup> and transport to NW Tailings Pond.
  - If semi-processed ore/calcline, go to #2.
  - If other waste, go to #3.
2. Is semi-processed ore/calcline coated with arsenic dust?
  - Yes → Go to #3.
  - No → Transport to NW Tailings Pond for disposal.
3. Can material be safely or feasibly<sup>2</sup> decontaminated of arsenic dusts, friable and dispersible materials?
  - Yes → Go to #4.
  - No → Go to #8.
4. Decontamination of material (bulk removal of all dusts, friable and dispersible materials). Is the material visually free of dusts and other surface contamination?
  - Yes → Go to #5.
  - No → Re-clean material (repeat step #4).
5. Decontamination testing of material by interior aggressive air sampling<sup>3</sup> following the WSCC Code of Practice for Asbestos Abatement and an additional criterion for arsenic completed prior to the removal of any containment. Do the tests confirm that the material is at or below the decontamination criteria?
 

Decontamination Criteria: 0.001 mg arsenic /m<sup>3</sup>  
0.01 asbestos fibre per cm<sup>3</sup>

  - Yes → Go to #6.
  - No → Re-clean material (repeat step #4).
6. Is material a hazardous waste or dangerous good as defined by Transportation of Dangerous Goods Act, Canadian Environmental Protection Act, and GNWT Guideline for the General Management of Hazardous Waste
  - Yes → go to #7.
  - No → go to #10.
7. Does the material contain leachable arsenic >2.5 mg arsenic / litre<sup>4</sup> as determined by the Toxicity Characteristic Leaching Procedure?
  - Yes → go to #8.
  - No → go to #9.
8. Containerize Material as per TDGR, decontaminate exterior of container as required, and store in Temporary Materials Storage Area (Arsenic Containing Hazardous Waste).
9. Containerize Material as per TDGR, decontaminate exterior of container as required, and ship for offsite disposal at appropriate facility (Non-arsenic Containing Hazardous Waste).
10. Consolidate with like material, stack and store in Temporary Materials Storage Area (Non-Hazardous Waste).

**Notes:**

<sup>1</sup>Criteria are those from the former water license: 5.0 mg/l in any grab sample.

<sup>2</sup>Materials that cannot be cleaned include the following:

- Arsenic trioxide dust
- Asbestos containing insulation coated with arsenic trioxide dusts
- Asbestos containing wall and ceiling insulation and exterior siding coated with arsenic trioxide dust
- Asbestos containing pipe and process vessel insulation coated with arsenic trioxide dust
- Asbestos containing floor products coated with arsenic trioxide dust
- Sodium cyanide dusts co-mingled with arsenic trioxide dust
- Wooden building materials and process equipment contaminated with sodium cyanide and arsenic trioxide
- Refractory brick contaminated with arsenic trioxide
- Personal protective equipment (PPE) coated with asbestos and arsenic trioxide dusts

<sup>3</sup>Aggressive air sampling as defined in the WSCC Code of Practice for Asbestos Abatement. Aggressive air sampling is a procedure developed to assess that surfaces have been remedied of dispersible and friable material to an extent that the containment can be removed. If the final air test fails, the containment cannot be dismantled.

<sup>4</sup>Criterion is set in the Transportation of Dangerous Good Regulations and Government of the Northwest Territories Guidelines for the General Management of Hazardous Waste in the NWT (February 1998).

### Comment 25 – Alternatives North

The roaster complex deconstruction and underground stabilization environmental management plans were prepared for inclusion in the tendering packages to provide specific direction to bidders as they prepare their proposals. The Project Team provided the environmental management plans to the Board and Parties in lieu of the detailed specification documents that could not be released publicly, as confidentiality is an important part of the tendering process.

We respectfully request that the Roaster Environmental Management Plan (EMP) not be included as a plan requirement in the water license as it was not drafted to serve that function. The EMP is an umbrella document that overlaps with the more detailed, topic specific management plans included in the application package and/or to be submitted as required by the water licence (e.g., waste management plans, MSDS sheets, water containment and transportation designs, spill contingency plans, dust control and air quality monitoring plans). These topic-specific plans are designed to address the same issues as the EMP but do so in a format more operational and useable. We respectfully suggest that requiring plans that duplicate information or cover similar matters in different words would create administrative and compliance complications as well as potential confusion that could create environmental risks at the site. Therefore, we would prefer to provide to the Board integrated but individual, topic specific plans rather than the EMPs.

### Comment 27 – Alternatives North

Alternatives North raises concerns about criteria related to ponding water, visible dust and the reporting and necropsy of dead animals. Criteria are presented in the draft application documents, will be expanded upon in the plans required under the licence, or addressed through other regulatory avenues as follows:

- a) Ponding water – Other than potable water for drinking and showering, all water used will be sourced from the Polishing Pond. This recycled water will be used for dust control and decontamination and the contractor is required to design a water containment system that captures all water. Recycled water containment design and transportation, and spill prevention measures will be provided to satisfy the water licence requirement proposed by Environment Canada and supported by the Project Team. This proposed requirement is set out in Schedule 2, item 1(i) and requires that design of the recycled water collection and transport system, and related spill prevention measures be provided to the Board for approval.
- b) Visible dust – Criteria, action levels and response actions for visible dust are provided in Table 1 in the Ambient Air Quality Monitoring Plan for Roaster Complex Deconstruction provided under Tab 7 in the application package. Visible dust is dust that is visible by the naked eye and monitoring for the releases of visible dust will be part of the duties of the independent QA/QC monitor and the contractor as set out in Section 2.4.2, Item i in the Roaster Detailed Project Description. Observations of visible dust will trigger the need to wet down the work area or other measures.

- c) Reporting and necropsy of dead animals – In accordance with direction from GNWT wildlife officers, dead animals found in the work areas are to be provided to the wildlife officers who will arrange for necropsies to be completed. The SSP Communications Plan includes provisions for monthly reporting to Parties of the outcome of environmental inspections. Occurrences of dead animals would be part of the monthly reporting. It should be noted that a dead animal does not necessarily equate to an impact caused by roaster deconstruction, and there may be no way to either prove or disprove a causal link as the Giant site is already heavily contaminated.

Other criteria are identified in the water license application documents (see response to Comment 4 – YKDFN for examples).

As stated in our response to Comment 25, we respectfully suggest that requiring approval of the environmental management plan, which is an umbrella document, as well as the more detailed, topic specific plans (e.g., waste management, ambient air quality monitoring, spill contingency planning, water containment designs) would create administrative and compliance complications and potentially environmental or safety risks due to their overlapping content. These plans Therefore, we would prefer to provide individual, topic specific plans that are more detailed in nature rather than the umbrella EMP document.

#### [Comment 28 – Alternatives North](#)

Public Works and Government Services Canada, as the contracting authority, is the owner of all data related to sampling, monitoring and environmental management collected by the selected deconstruction contractor throughout the term of the contract. PWGSC will retain these records and share them with AANDC as the site custodian.

Records will be retained for a minimum of 5 years prior to their archival but the Environmental Management Systems Working Group is developing record management procedures that will ensure records can be retrieved for use by future generations.

#### [Comment 29 – Alternatives North](#)

The comment covers two different topics which are addressed separately below:

Leachability tests – Leachability investigations are not required because very little water is expected to "bleed" from the tailings paste as it cures (analogous to curing cement). As described in Section 2.1, Item 5 of the Underground Stabilization Waste Management Plan, any "bleed" water that is generated will be captured in the underground water management system and brought to surface for treatment in the existing effluent treatment plant.

Paste mix design and performance criteria – Backfill material has been categorized into 2 groups and the performance criteria for both is material strength: Bulk Fill (250 kPa strength) and Structural Fill (600 kPa). Two levels of verification will ensure that the appropriate strengths have been met. The

contractor will be required to conduct quality control measures throughout the project to verify and document that these strengths have been met. An independent engineer will verify the contractor's results through an independent QA/QC program. This is a standard process in any construction project requiring specific strengths.

To confirm that the stability risk associated with each stope and chamber has been mitigated, the contractor is required to submit an "As-Built Statement of Risk Mitigation" upon completion of backfilling each target stope. This letter is to be stamped by a Professional Engineer and essentially state that the risks associated with collapse of the crown/sill pillar in the target areas has been mitigated.

The Project Team proposes that the stamped letters be submitted to the MVLWB as they are completed as part of the reporting requirements in Schedule 1, Item 1(m).

### [Comment 30 – Alternatives North](#)

During backfilling operations, there is the potential that exhaust air containing arsenic trioxide dust could be forced out of the chamber and be released into the atmosphere (see page 20 in the Underground Stabilization Detailed Project Description). In order to control the risk of such a release, the backfill process will utilize an exhaust air management system to seal exhaust air and to maintain the arsenic filled stopes and chambers under negative air pressure. The intent of the exhaust air system is to capture and treat exhaust air through a filtering system in order to achieve ambient air criteria at both the worker spaces as well as at the property boundaries. Due to these mitigations, we anticipate no effects as the risks will be controlled.

During backfilling operations, air quality monitoring will be completed for both arsenic and particulate matter. There are two sets of criteria that need to be met which include occupational health and safety and ambient (environmental) air quality. The monitoring will be completed continuously during construction activities to ensure occupational health and safety requirements of the NWT are being achieved (Draft Occupational Health and Safety Regulation - Safety Advisory Committee, Northwest Territories, 2012). Real time monitoring will be used as a construction management tool to implement further mitigation as appropriate to help protect worker health. In addition time-weighted 8 hr averages of arsenic will be monitored in worker zones. If criteria as set out in the air quality monitoring plans (Tab 7 in the application package) are reached, the identified actions will be taken, including stopping work. The ambient air monitoring program will include monitoring for both arsenic and particulate matter in a fashion similar to the methods to be utilized for the Roaster Deconstruction program. The air quality monitoring plan for the underground stabilization program is provided under Tab 7.

### [Comment 35 – Alternatives North](#)

Engagement efforts on the water licence application included the circulation of two draft application packages for comment, site tour, technical workshop and public forums. Alternatives North participated

in all of these engagement opportunities and the Project Team provided written responses to each of their submissions. Documentation of these efforts is provided under Tab 8 in the application package.

The SSP Communications Plan, which outlines how Parties will be kept informed and engaged with, was developed in response to comments heard during the review of the first draft of the application package in October 2012 and at the November public forums. All Parties had an opportunity to provide input on the draft version of the plan during the review of the second draft application package and through the Board's process once the application was submitted. Alternatives North has provided no feedback within or outside the Board's process on the SSP Communication Plan.

Requiring an additional Engagement Plan is duplicative and unnecessary as the SSP Communications Plan includes providing monthly summaries of the outcome of air quality monitoring to a wide target audience including Alternatives North. In addition, we have recommended that formal reports be submitted to the MVLWB every 6 months rather than every 12 months as identified in the draft WL circulated by MVLWB staff in recognition of the fact that reporting is important.

#### **Comment 36 – Alternatives North**

As described in Sections 2.4.2, Items b and f in the Roaster Complex Deconstruction Detailed Project Description, dust generation will be controlled through two means. The first means is through the establishment of negative air pressure within the immediate work area which will act as a seal to prevent the spread of dust. This seal will be continuously inspected to ensure that it remain intact. The second means of dust control is the use of water from the Polishing Pond to wet surfaces to prevent dust particles from becoming airborne.

Draft air quality monitoring plans were provided to parties during the review of the draft water licence application packages and to the Board under Tab 7 in the final water licence application package. These air quality plans set out the requirements for monitoring of air quality, action levels, and appropriate responses in the event that action levels are reached. Failure to meet standards will precipitate the shut-down of work and the correction of procedures or change in methodologies to bring the work back into compliance. In addition to monitoring conducted by the contractor, an independent QA/QC monitor will be on site for the duration of the roaster decontamination and demolition work as described in Section 2.4.2, Item (i) in the Roaster Complex Deconstruction Detailed Project Description.

GNWT-Environment and Natural Resources is working with Public Works and Government Services Canada to evaluate the air quality portions of the proposals received during the tendering process for the roaster deconstruction contract. Through this work, the air quality monitoring program requirements are being refined to ensure that the GNWT's requests are satisfied.

#### **Comment 37- Alternatives North**

Please refer to our response to Comment 36 as Comments 36 and 37 have similar recommendations.

Snow sampling: Public Works and Government Services Canada recognizes that snow sampling can be used as a method of assessing deposition levels in the environment. The method has its limitations,

however, is generally useful to track a plume's spatial extent and to assess trends in deposition over time. The needs of the current project are related to near-field, short-term monitoring averages in order to facilitate action levels to prevent the discharge of PM to the environment. As such, snow sampling will not be useful for this purpose.

#### Comment 38 – Alternatives North

PM<sub>10</sub> will be monitored during the roaster deconstruction work for the effects of particulate for health and nuisance effects as established for the physical nature of the parameter (i.e. not chemical nature). While TSP and the PM<sub>10</sub> fractions are parameters considered to be the most representative of dust that can be generated by earthworks, the PM<sub>10</sub> fraction is considered more protective of human health than TSP and therefore PM<sub>10</sub> has been selected as the most appropriate dust parameter to monitor in real-time.

Since the precise relationship between As content in PM is yet to be determined (no statistically valid correlation was found between As and PM on site from past monitoring activities), a baseline program will be designed with the objective of being able to use PM<sub>10</sub> as a surrogate parameter that can be readily measured and reported in a real-time format. If relationships cannot be established by this fashion, other techniques will be employed such as using source material concentrations and soil fractions to establish real time action levels and to apply dust controls. This initiative will be commenced in April such that finalized correlation information and real-time action levels can be incorporated into the Roaster Deconstruction Monitoring Plan prior to commencement of site works, and provided to the Parties for their information.

The Project Team agrees that arsenic speciation and/or arsenic bioavailability is an important consideration in assessing the potential risks from arsenic exposures. Considerable work has been done by researchers and government agencies over the last decade on arsenic bioavailability. *In vitro* methods that measure bioaccessibility as a surrogate for bioavailability have been developed and validated against animal methods. In addition, speciation and bioaccessibility testing has been done on environmental media at the Giant Mine. For instance, Bromstad (2011) measured ingestion and inhalation bioaccessibility of Giant Mine roaster-derived arsenic in soils and found 34% bioaccessibility for ingestion exposures and 18% bioaccessibility for inhalation exposures. The Project Team also notes that government-derived air criteria are based on toxicological criteria for different species of arsenic. For instance, the toxicological criteria for ingestion exposures are based on studies with soluble arsenic salts. However, the toxicological criteria for inhalation exposures are based on studies of workers in smelters, where the species of arsenic to which they were exposed were more complex species, and not soluble arsenic salts. Data on species and bioavailability will be considered when developing Action Levels for the real-time surrogate arsenic monitoring, as described above, for the Roaster Deconstruction air monitoring.

### Comment 39 – Alternatives North

Action levels established in Table 1 are for the effects of particulate for health and nuisance effects as established for the physical nature of the parameter (i.e. not chemical nature). The pending Site Wide Air Quality Monitoring Program will further develop action levels to consider the community health effects of any contaminants of concern as they are associated with the varying particulate fractions - for example TSP will have an emphasis on deposition considerations and PM<sub>10</sub> and/or PM<sub>2.5</sub> will have respiratory and health considerations, again as they also relate to contaminants of concern such as arsenic. The Site Wide Air Quality Monitoring Program will be developed by Spring 2013.

For worker safety and further to the above, every day during the hazardous material removal (abatement) activities, monitoring for arsenic, asbestos and hydrogen cyanide will be conducted inside in worker breathing space and immediately outside the entrance to the enclosed areas and an additional sample will be obtained for every 450m<sup>2</sup> of enclosure area. Work will stop if measurements outside of the Abatement Work area exceed 0.05 f/cc asbestos, 0.005 mg/m<sup>3</sup> arsenic, or if hydrogen cyanide is detected. In such cases corrective procedures will be implemented. The target values used for worker safety are established on industrial hygiene standards established and consistently used across North America through the National Institute of Occupational Health and Safety and American Conference of Governmental Industrial Hygienists (ACGIH).

In addition to the contractor's requirements above, QA samples for the Roaster project will also be obtained.

With respect to ambient criteria, the Project Team agrees that some regions Reference Exposure Limits to arsenic are lower than the Ontario Ministry of the Environment air quality criterion. However, Action Levels for the Giant Mine monitoring plans shouldn't be established by simply choosing the lowest values derived by any governmental or nongovernmental body. Acceptable levels in air are defined by different bodies for different purposes using different methodologies. In addition, some listed values were recently revised and others were derived many years ago. For instance, Alberta Environment lists values for arsenic that were derived by the Texas Council on Environmental Quality (TCEQ) in 2003, but TCEQ recently revised their values in 2012, so Alberta Environmental is citing and relying on outdated air criteria. Accordingly, the Project Team will critically evaluate and rationalize the selection of criteria, their timelines, and the toxicological effects upon which they are based as part of the Action Levels for real-time surrogate arsenic monitoring (as mentioned above) in the Roaster Deconstruction work and Site Wide Air Monitoring Program.

Extensive work has been done to characterize the risks associated with abating and deconstructing the roaster complex as well as conducting the underground stabilization works. In consideration of identified risk, specific objectives have been set to safeguard workers and the health of non-workers, including air quality standards for worker health. These requirements are reflected in the air quality plans submitted to the Board under Tab 7 in the application package. Work is being conducted in accordance with the stringent requirements of the NWT WSCC Code of Practice on Asbestos Abatement and the NWT Draft Occupational Health and Safety Regulations.

The Roaster Complex deconstruction is considered a one of many varying types of activities that comprises the remediation of the former Giant Mine site. The Roaster Complex deconstruction tender designed an air monitoring program specific to the initial hazard assessment associated with this activity, and further work is being done to augment that, including the initiative to develop real-time surrogate arsenic monitoring and associated Action Levels, as described above. This work will be commenced in April such that finalized surrogate levels and real-time action levels can be incorporated into the Roaster Deconstruction Monitoring Plan prior to commencement of site works, and provided to the Parties for their information.

Furthermore, the pending Site Wide Air Quality Monitoring Program is being designed to consider the varying site activities throughout the life of project. The overall objective of the Site Wide AQMP will be to have action levels for any fugitive dust from the site as they relate to potential environmental and community health effects. The implementation of the AQMP is to coincide with the activities related to the Roaster Deconstruction. The Site Wide AQMP will be finalized by Spring 2013 for implementation in Summer 2013.

#### **Comment 40 – Alternatives North**

As discussed in submittals to the Board (Tab 7 in the application package – air quality plans), exact daily monitoring locations at this perimeter will be subject to modification, depending on the exact location of work that day and wind direction. In addition there are specific monitoring requirements for collection of total suspended particulate and arsenic (and other metals as required) every three days. These are specific requirements and it is only the methodology details (such as the particular pieces of equipment being used) that are being left up to the contractor. Plans submitted by the contractor are subject to review and acceptance by the Project Team.

As it is not possible to monitor in real-time for arsenic as part of the roaster work, a baseline program will be designed with the objective of being able to use PM<sub>10</sub> as a surrogate parameter that can be readily measured and reported in a real-time format, with associated Action Levels. This work will be commenced in April such that finalized surrogate information and real-time action levels can be incorporated into the Roaster Deconstruction Monitoring Plan prior to commencement of site works, and provided to the Parties for their information

The pending Site Wide Air Quality Monitoring Program will develop action levels to consider the community health effects of contaminants of concern as they are associated with the varying particulate fractions – e.g. PM<sub>2.5</sub>, PM<sub>10</sub>, TSP. The action levels will aim to provide an early alert to ensure that ambient air criteria are not exceeded and also serve as a management tool for dust controls. The overall objective of the AQMP will be to have action levels for any fugitive dust from the site as they relate to potential community health effects. The strength of the AQMP will be in its scoping and screening of regulations, the scoping of varying site activities, the screening of contaminants of concern, and the development of consistent standards and protocols for all monitoring associated with the Giant Mine Remediation Project. The program will be reviewed on a regular basis to ensure ongoing

appropriateness. The Site Wide AQMP will be finalized by Spring 2013 for implementation in Summer 2013.

#### **Comment 44 – Alternatives North**

The referenced document is the product of the Project Team's internal risk assessment exercises for the roaster and underground. Parties were provided with the technical information on which the risk assessments were based during the environmental assessment process (July 2011) and during the engagement process for the water licence application (October-December 2012). Parties submitted comments and questions related to the material, including requests for clearer statements about the emergency status of the roaster and underground. The Parties' comments, along with our responses are set out in the engagement documents provided under Tab 8 in the application package. Going forward the SSP Communications Plan identifies how and when information is to be shared between the Parties and the Project Team.

The recommendation appears to go beyond the scope of the water licence application to the greater Giant Mine Remediation Project because the risk assessments that led to the development of the Site Stabilization Plan are completed. We respectfully suggest that conditions related to the greater GMRP are more appropriate for the Type A licensing process.

The Project Team maintains that there is a need to conduct internal risk assessments and other evaluations. However, we also recognize the need to seek input from the Parties as part of a sound engagement process. Parties will have opportunities to provide input on the greater GMRP during the development of the consolidated project description that will be prepared following completion of the environmental assessment.

#### **Comment 45 – Alternatives North**

The packaging and storage of non-hazardous and hazardous waste will be done in a manner that complies with applicable legislation and guidelines as identified in the Waste Management Plan.

The criterion for arsenic referenced by Alternatives North is criterion set in the Government of the Northwest Territories Guideline for the General Management of Hazardous Waste in the NWT (February 1998) document for the management, containerization and storage of hazardous wastes. This is the same criterion that is used under the Transportation of Dangerous Goods Regulations. The Guideline for the General Management of Hazardous Waste in the NWT document forms part of the Legislative Framework described in the Waste Management Plan, Section 1.3. All criteria for classification of waste as hazardous are consistent with existing legislation and guidelines.

Specific details on packaging, size reduction, stacking, and storage procedures will be provided to the MVLWB following licence issuance to fulfill any license condition that will require this submission.

Final disposal of waste will be subject to approval under the Type A licensing process for the greater Giant Mine Remediation Plan as at this time, we are only applying to store waste.

## Part A: Scope and Definitions

### Scope

1. This Licence entitles Aboriginal Affairs and Northern Development Canada to use Water and dispose of Waste for miscellaneous undertakings [limited to the deconstruction of the Roaster Complex and stabilization of the Underground Stabilization Work Area and associated activities as described in the application](#) located at the Giant Mine Site (62°28'54" N, 114°19'12" W and 62°32'38" N, 114°22'34" W), Northwest Territories.

*Explanation – Editorial changes to improve readability.*

2. This Licence is issued subject to the conditions contained herein with respect to the taking of Water and the depositing of Waste of any type in any Waters or in any place under any conditions where such Waste or any other Waste that results from the deposits of such Waste may enter any Waters. Whenever new Regulations are made or existing Regulations are amended by the Governor in Council under the *Northwest Territories Waters Act*, or other statutes imposing more stringent conditions relating to the quantity or type of Waste that may be so deposited or under which any such Waste may be so deposited, this Licence shall be deemed, upon promulgation of such Regulations, to be automatically amended to conform to such Regulations.
3. Compliance with the terms and conditions of this Licence does not absolve the Licensee from the responsibility for compliance with the requirements of all applicable federal, territorial, and municipal legislation.

### Definitions

In this Licence: **MV2012L8-0010**

“**Act**” means the *Northwest Territories Waters Act*.

“**Analyst**” means an Analyst designated by the Minister under subsection 35(1) of the Act.

“**Board**” means the Mackenzie Valley Land and Water Board established under Part 4 of the *Mackenzie Valley Resource Management Act*.

“**Inspector**” means an Inspector designated by the Minister under subsection 35(1) of the Act.

“**Licensee**” means the holder of this Licence.

**“Minister”** means the Minister of Aboriginal Affairs and Northern Development Canada.

**“Modification”** means an alteration to a physical work that introduces a new structure or eliminates an existing structure and does not alter the purpose or function of the work but does not include an expansion.

**“Polishing Pond”** means the retention structure downstream of the effluent treatment plant that is designed to receive treated minewater. Located at 62° 30' 43.146" N, 114° 20' 54.961" W. ~~means a component of the current water treatment infrastructure located at (RO note: need lat and long here and possibly better definition).~~

*Explanation - Wording suggestion provided in response to RO note.*

**“Roaster Complex”** means a group of industrial process buildings at the Giant Mine Site located south of the B 1 Pit on the south side of Highway 4 (Figures 13 and 14 in the Roaster Complex Deconstruction Detailed Project Description provided in the application package). Located at 62° 30' 7.099" N, 114° 21' 27.534" W.

**“Regulations”** means Regulations proclaimed pursuant to section 33 of the *Northwest Territories Waters Act*.

**“Underground Stabilization Work Area”** includes the underground stopes, chambers and bulkheads that are clustered near the ~~B1 and B2~~ B1 and B2 open pits; on the west side of the Mill near Highway 4; and at the north end of the roaster complex (as shown on Figures 3, 4a and 4b in the Underground Stabilization Detailed Project Description provided the application package).

*Explanation - Simple editorial change.*

**“Waste(s)”** means Waste as defined by section 2 of the Act.

**“Water(s)”** means any Waters as defined by section 2 of the Act.

~~“Water Use Fee” means a fee for the use of Water as defined by section 33 of the Northwest Territories Waters Act.~~

*Explanation – Remove definition as the Government of Canada is not required to pay water use fees which is reflected in the absence of any conditions related to water use fee payment in the body of the licence below.*

## **Part B: General Conditions**

1. The Licensee shall file a bi-annual reports with the Board as follows ~~not later than March 31 of the year following the calendar year reported~~ which shall contain the information as listed in Schedule 1, item 1:

Reporting Period	Bi-annual Report Submission Date
May 1 – October 31 each year	January 31 each year
November 1 – April 30 each year	July 31 each year

*Explanation - The Giant Team agrees with the parties that emphasized the importance of sound reporting in their review comments on the application package. As such, we suggest that reporting occurs twice a year rather than annually and have inserted "Bi-" into the condition. Corresponding changes have been made to Schedule 1.*

2. The Licensee shall comply with the terms of any plans approved pursuant to the conditions of this Licence and with any amendments to the plans as may be made from time to time pursuant to the conditions of this Licence and as approved by the Board.
3. Compliance dates specified in the Licence may be modified at the discretion of the Board.
4. The Licensee shall comply with the Schedules annexed to this Licence, and with any amendments to the Schedules as may be made from time to time pursuant to the conditions of this Licence and as approved by the Board.
5. Meters, devices, or other methods used for measuring the volumes of Water used and Waste discharged shall be installed, operated, and maintained by the Licensee to the satisfaction of an Inspector.
6. The Licensee shall post the necessary signage identifying the areas of the work for the Roaster Complex deconstruction and the Underground Stabilization Work Area. All postings shall be located and maintained to the satisfaction of an Inspector.
7. The Licensee shall ensure a copy of this Licence ~~and all approved plans under this Licence are~~ maintained at site operation at all times.

*Explanation – The suggested change has been incorporated as per Alternative North's recommendation number 7.*

### **Part C: Conditions Applying to Water Use**

1. The Licensee shall obtain all recycled Water from the Polishing Pond.
2. The Licensee shall obtain all fresh Water from on site storage tanks.
3. The quantity of treated minewater used for all purposes shall not exceed 300 cubic

metres per day.

#### **Part D: Conditions Applying to Waste Disposal**

1. The Licensee shall ensure that any unauthorized Wastes associated with the B Licence undertaking do not enter any Waters.
2. The Licensee shall abide by the approved Waste Management Plan for Roaster Complex Deconstruction.
3. The Licensee shall abide by the approved Waste Management Plan for Underground Stabilization.
4. The Licensee shall modify the Waste Management Plans referred to in Part D, items ~~1 and 2~~ 2 and 3 as necessary to reflect any proposed changes in operations. Any proposed changes shall be submitted to the Board for approval.

*Explanation - Simple editorial change.*

#### **Part E: Conditions Applying to Modifications**

*Intentionally left blank*

#### **Part F: Conditions Applying to Contingency Planning**

1. If, during the period of this Licence, an unauthorized discharge of Waste occurs, or if such a discharge is foreseeable, the Licensee shall:
  - a. Employ the appropriate contingency plan;
  - b. Report the incident immediately via the 24-hour NWT Spill Report Line. Currently the number is (867) 920-8130; and
  - c. Submit to an Inspector a detailed report on each occurrence not later than 30 days after initially reporting the event *that includes a summary of clean-up actions and preventative measures to avoid any further unauthorized discharges as applicable.*

*Explanation – Additional wording incorporated as the Giant Team agrees with Alternative North's recommendation 8.*

2. *The Licensee shall abide by the approved Emergency and Spill Response Plan.*
3. *The Licensee shall modify the Emergency and Spill Response Plan referred to in Part F, item 2 as necessary to reflect any proposed changes in operations. Any proposed changes shall be submitted to the Board for approval.*

*Explanation – Insertion of new Conditions 2 and 3 is recommended to close the loop on the plan approval process.*

## **Part G: Conditions Applying to Abandonment and Restoration**

*Intentionally left blank*

## **Part H: Conditions Applying to Construction**

1. The Licensee shall, ~~within~~ 60 days prior to starting deconstruction of the Roaster Complex, ~~beginning work on the Roaster Complex deconstruction~~, submit to the Board for approval a detailed deconstruction plan. This plan shall contain the items as listed under Schedule 2, item 1.

*Explanation – The suggested wording is provided to allow the contractor to mobilize to site; carry out preparatory work; and installation of supporting temporary infrastructure such as office trailers prior to plan approval being received. In order to finalize the information requested in Schedule 2, the contractor needs to be installed at the site.*

2. The Licensee shall, 30 days prior to the use of any wetting agents during decontamination for Roaster Complex deconstruction, submit to the Board for approval the Material Safety Data Sheet(s) for the wetting agents.

*Explanation – We recommend the inclusion of the above new condition as per Alternative North's request number 11.*

3. The Licensee shall, ~~within~~ 60 days prior to starting backfilling of stopes or chambers, construction of new bulkheads or repair of existing bulkheads, ~~beginning work~~ in the Underground Work Stabilization Area, submit to the Board for approval a detailed Stabilization Plan. This plan shall contain the items as listed under Schedule 2, item 2.

*Explanation – The suggested wording is provided to allow the contractor to mobilize to site; carry out preparatory work; and installation of supporting temporary infrastructure such as office trailers prior to plan approval being received. In order to finalize the information requested in Schedule 2, the contractor needs to be installed at the site.*

4. The Licensee shall implement the plans referred to in Part H items 1 and 3 as and when approved by the Board.

*Explanation – If the new MSDS requirement identified above is accepted by the Board, then the above editorial change is required.*

5. If not approved by the Board, the plans referred to in Part H items 1 and 3 shall be revised and resubmitted for approval as directed by the Board.

*Explanation – If the new MSDS requirement identified above is accepted by the Board, then the above editorial change is required.*

6. The Licensee shall modify the plans referred to in Part H items 1 and 3 as necessary to reflect any proposed changes in operations. Any proposed changes shall be submitted to the Board for approval.

*Explanation – If the new MSDS requirement identified above is accepted by the Board, then the above editorial change is required.*

**Part I: Conditions Applying to Operation and Maintenance**

*Intentionally left blank*

**Mackenzie Valley Land and Water Board**

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**Chair**

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**Witness**

## Schedule 1 – General Conditions

1. The Bi-Annual Report referred to in Part B, item 1 shall include, but not be limited to, the following information:

*Explanation - The Giant Team agrees with the parties that emphasized the importance of sound reporting in their review comments on the application package. As such, we suggest that reporting occurs twice a year rather than annually and have inserted "Bi-" into the condition.*

- a. The monthly and bi-annual quantities in cubic metres of fresh Water obtained from all sources;

*Explanation – Changed to bi-annual to reflect recommendation that reporting occur every 6 months.*

- b. The monthly and bi-annual quantities in cubic metres of recycled Water obtained from all sources;

*Explanation – Changed to bi-annual to reflect recommendation that reporting occur every 6 months.*

- c. The monthly and bi-annual quantities in cubic metres of each and all Waste discharged;

*Explanation – Changed to bi-annual to reflect recommendation that reporting occur every 6 months.*

- d. A list of unauthorized discharges, including any clean-up actions taken and preventative measures implemented to prevent future discharges;

*Explanation – Additional wording incorporated as per Alternative North's recommendation number 12.*

- e. An outline of any spill training and communications exercises carried out;

- f. A summary of any public engagement and consultation activities completed during the year and an outline of any activities anticipated for the next year;

- g. A summary of any revisions to the approved Emergency Response and Contingency Plans;

*Explanation – There may be a need to submit revisions to the referenced plans at any time during the year, not just every 6 or 12 months, so we respectfully request that the report contain a summary of revisions as approved under Condition F3.*

- h. A summary of any revisions to the approved Waste Management Plans for Roaster Complex Deconstruction and Underground Stabilization.

*Explanation – There may be a need to submit revisions to the referenced plans at any time during the year, not just every 6 or 12 months, so we respectfully request that the report contain a summary of revisions as approved under Condition D4.*

- i. Details of all work completed for the Roaster Complex and the Underground Stabilization Work Area and any anticipated activities for the upcoming 6-month period, including the sequence in which the structures of the Roaster Complex will be deconstructed;

*Explanation – “6-month period” was added in to reflect our recommendation for bi-annual reporting. The phrase regarding the deconstruction sequence was added in as per our comments on Schedule 2, Item 1(c).*

- j. Details on the types and quantities of hazardous materials removed from the Roaster Complex deconstruction;
- k. Details on the types and quantities of packaging used for storing waste at the Temporary Waste Storage Area, including non-hazardous and arsenic-containing hazardous waste; and

*Explanation – This is a new item added in as per our comments under Schedule 2, Item 1(f).*

- l. Details on the volume of each type of backfill material used in each stope or chamber during the reporting period; and

*Explanation – This is a new item added in as per our comments under Schedule 2, Item 2(b).*

- m. Completed “As-Built Statement of Risk Mitigation” letters stamped by a professional engineer that confirm the mitigation of risks associated with the Underground Stabilization Work Area.

*Explanation - This is a new item suggested to address YKDFN’s comment 5 that there is a need for the parties and Board to have evidence that the underground risks have been mitigated.*

- n. Any other details on Water Use or Waste disposal requested by the Board by November 1 of the year being reported.

## Schedule 2 – Conditions Applying to Construction

1. The Roaster Complex detailed deconstruction plan referred to in Part H, item 1 shall include, but not be limited to, the following:

~~a) An assessment of the potential risks to workers from chosen deconstruction methods and mitigating measures to address these risks, including, but not limited to, the potential generation of arsine gas;~~

*Explanation – We request that this item be removed for the following reasons:*

- A number of regulators are charged with regulating the same aspects at site for different purposes (for example, hazardous substances). While deconstruction methods are within the jurisdiction of the Board to the extent appropriate to deal with waters and related waste issues, we respectfully suggest that regulating the deconstruction for the purpose of protecting worker safety be attended to by the WSCC under the Mine Health and Safety Act.*
- The Emergency and Spill Response Plan outlines the training, equipment needs and procedures for responding to a variety of incidents, including arsenic trioxide releases, tailings releases and petroleum hydrocarbon releases, among other incidents. Summaries of spill contingency training and communications exercises are requirements of the Bi-Annual Report under Schedule 1 (item e) Any new information or changes to the existing spill response information requires approval by the Board under Part F and Schedule 2.*

~~b) The methodology and equipment proposed for deconstruction, and the advantages of the chosen method(s) over other alternative methods considered but not chosen by the Contractor;~~

*Explanation – We request that this item be removed for the following reasons:*

- The methodology and equipment that is required for deconstruction was outlined in the proposed application (Roaster Complex Detailed Project Description) and supplemental material (responses to Alternative North's questions on first draft of the SSP application package). These documents indicated that deconstruction methodologies were limited to a "piece by piece" deconstruction from the top down using cranes rather than demolition by the "wrecking ball" analogy. Piece by piece deconstruction provides for greater control including minimising dust generation and unplanned collapses.*
- Deconstruction of the roaster complex will be overseen externally by the WSCC mine inspector and City inspector, and internally by the independent QAQC consultant as described under Section 2.4.2, item i in the Roaster Complex Detailed Project Description.*

- ~~e) The sequence of deconstruction work within each structure of the complex to be taken down, including where decontamination work is required as part of structure deconstruction;~~

*Explanation - We suggest that this item be moved to the bi-annual reporting requirement in Schedule 1 as the sequence in which structures are taken down is an engineering decision based on observations as the work proceeds. In addition, Schedule 1, Item (1)(i) already requires a description of anticipated work for the upcoming reporting period. See suggested wording added to Schedule 1, Item (1)(i).*

- ~~d) An assessment of the potential risks to the environment from chosen deconstruction methods and mitigating measures to address these risks;~~

*Explanation – We respectfully request that this item be removed as requesting a reassessment of potential risks in a specific plan is redundant to the Board's process as a whole. In addition, mitigating measures are described in the various submittals required as part of the application and/or licence: waste management plan, spill contingency plan, dust control and air quality monitoring, recycled water containment and transportation (see new item i below) and MSDS sheets (see new item in Part H).*

- ~~e) Access restrictions and traffic control during deconstruction work, with consideration of the proximity of the existing Highway 4;~~

*Explanation – We respectfully request that this item be replaced by the new condition we have proposed below (Schedule 2, item 1i) for recycled water management details which is to include a discussion of spill prevention measures (traffic control is one type of measure). We respectfully suggest that regulating access restrictions and traffic control be attended to by the GNWT Department of Transportation under the Public Highways Act.*

- f) The size reduction, stacking, packaging, and storage procedures for non-hazardous waste and arsenic-containing hazardous waste, and packaging type ~~and quantities~~ as applicable;

*Explanation –*

- i. Recommend addition of “and arsenic-containing hazardous waste” - We agree with Alternatives North’s recommendation 15 that this item should be expanded but we have limited it to arsenic-containing hazardous waste because it will be stored on site until such time that final disposal plans are approved through the type A licensing process. Non-arsenic containing hazardous waste will be removed from site in accordance with the Transportation of Dangerous Goods Regulations.*
- ii. We request that “and quantities” be removed from this item and instead included under the reporting requirements in Schedule 1 (see proposed wording in the*

*new item under Schedule 1, Item 1k). Providing the exact quantities of each type of packaging required is not possible prior to the start of any deconstruction. This type of information is better placed in the reporting requirements under Schedule 1.*

- g) ~~Spill contingency plans specific to Roaster Complex deconstruction if they align with deviate from or add to the November 2012 Emergency and Spill Contingency Plan prepared by the current Care and Maintenance Contractor, Nuna/Deton Cho Joint Venture; and~~

*Explanation – The change is requested because Nuna/Deton Cho is the Mine Manager as defined by the Mine Health and Safety Act for the NWT and their procedures, as provided in the application package, must be adhered to by all workers on site. The wording change would allow any additions or changes made to Nuna’s plan presented in the application package or procedures developed by the roaster contractor that differ from Nuna’s plan to be approved by the Board. The public will also have the opportunity to review clean up actions and lessons learned through the submission of bi-annual reports suggested by the Giant Team.*

- h) Mitigative measures to control the generation of dust, and the detailed plan for ambient air quality monitoring.

*Explanation - Air quality monitoring for industrial hygiene and ambient (environmental) purposes will be undertaken during roaster deconstruction. We have requested that the item be clarified to include only ambient air quality monitoring as we respectfully suggest that regulating industrial hygiene air quality monitoring, which is related to worker health and safety, be attended to by the WSSC under the Mine Health and Safety Act.*

- i) Design of the recycled water collection and transport system, and related spill prevention measures.

*Explanation – We recommend the inclusion of the above new item as per Environment Canada’s recommendation 3 that the design of the water collection and transportation system for the roaster be approved by the Board. Spill prevention measures will include traffic controls related to the transport of recycled water from the Roaster area to the Northwest Tailings Pond as described in the explanation for Schedule 2, Item 1e above.*

2. The detailed Stabilization Plan referred to in Part H, item 2 shall include, but not be limited to, the following:

- ~~a) Type of backfill material required which may be one or a combination of tailings paste, waste rock from mine development, or existing inert rock material on the surface (e.g., quarried rock);~~

*Explanation – Section 2.3.2 in the Underground Stabilization Detailed Project Description identifies the type of backfill materials that will be used. As none of the parties raised any*

concerns about the use of the proposed materials either during the engagement period or the review period, we suggest that the type of backfill material(s) used in each stope or chamber be provided in the bi-annual report identified in Schedule 1.

We recommend that this item be replaced by the following condition which could be inserted into Part H: "The Licencee shall only use tailings paste, waste rock from mine development, or existing inert rock material stockpiled on the surface to backfill the chambers and stopes unless otherwise approved by the Board."

~~b) Volume of each backfill material required;~~

*Explanation – We request that this item be moved to the reporting requirement under Schedule 1 (see proposed wording under Schedule 1, Item 1(I)). The backfill materials that will be used as part of the project are recycled materials (e.g., tailings, existing stockpiles of rock on site); no fresh rock on the surface will be quarried nor will any rock from the underground be brought to the surface. In addition, the application states that between 130,000-150,000 m<sup>3</sup> of tailings is required. Exact volumes of backfill material won't be known until backfilling is complete because the exact geometry of each open space in the chambers and stopes are not known.*

~~e) Detailed methodologies for carrying out backfilling of the chambers and repairing/reinforcing bulkheads;~~

*Explanation – We request that this condition be replaced with the following two new conditions under Part H of the WL because no concerns were raised about the proposed methodologies set out in the Underground Stabilization Detailed Project Description. Any changes would still require Board approval.*

- (a) The Licensee shall manufacture tailings paste using only a mixer truck based mobile system or a mobile modular paste plant system as described in the Giant Mine Underground Stabilization Detailed Project Description unless otherwise approved by the Board.*
- (b) The Licensee shall repair or reinforce bulkheads as described in the Giant Mine Underground Stabilization Detailed Project Description unless otherwise approved by the Board.*

~~d) Health and safety plans;~~

*Explanation – We request that this item be removed for the following reasons:*

- A number of regulators are charged with regulating the same aspects at site for different purposes (for example, hazardous substances). While deconstruction methods are within the jurisdiction of the Board to the extent appropriate to deal with waters and related waste issues, we respectfully suggest that regulating the deconstruction for the purpose of protecting worker safety and others in proximity to the worksite be attended to by the WSCC under the Mine Health and Safety Act.*
- The Emergency and Spill Response Plan outlines the training, equipment needs and procedures for responding to a variety of incidents, including arsenic trioxide releases, tailings releases and petroleum hydrocarbon releases, among other incidents. Summaries of spill contingency training and communications exercises are requirements of the Bi-Annual Report under Schedule 1, Item 1e.*

*Any new information or changes to the existing spill response information requires approval by the Board under Part F and Schedule 2.*

e) Detailed plans to mitigate potential effects to the environment and issues related to tailings excavation including:

~~o Effect on future tailings cover geometry and drainage;~~

*Explanation – We request removal of this item as the closure of the tailings ponds, including grading and tailings covers, will be dealt with under the Type A water licence for the greater Giant Mine Remediation Project.*

o Management of wet or frozen tailings if encountered;

o Ensuring acceptable grain size range of tailings as there can be no slimes used in making paste;

~~o Seasonal effects (during freshet and rainfall events water collecting in the excavated areas within the South and Central tailings ponds will need to be pumped away from the excavation to other areas of the tailings ponds);~~

*Explanation – We request that this item be replaced by a condition under Part D that states: “The Licencee, during excavation of tailings in the South and Central tailings ponds for paste manufacturing, shall pump ponded water in the excavated areas only to other areas within the South and Central tailings ponds unless otherwise approved by the Board.”*

o Operational dust control (wetting of tailings during excavation and paste production using treated minewater);

o Operational water management (treated minewater usage associated with dust control and wash down of equipment);

~~o Disposal of waste materials such as wood, barrels and scrap metal encountered in the tailings; and~~

*Explanation – Request that this item be removed as this has been addressed in the Underground Stabilization Waste Management Plan provided in the licence application.*

o Cross-highway transport of tailings to temporary stockpiles (trucked or piped); and;

f) Spill contingency plans specific to the Underground Stabilization Work Area ~~that align with~~ if they deviate from or add to the November 2012 Emergency and Spill Contingency Plan prepared by the current Care and Maintenance Contractor, Nuna/Deton Cho Joint Venture ~~(Tab 5 in the application package).~~

*Explanation – The change is requested because Nuna/Deton Cho is the Mine Manager as defined by the Mine Health and Safety Act for the NWT and their procedures, as*

*provided in the application package, must be adhered to by all workers on site. The wording change would allow any additions or changes made to Nuna's plan presented in the application package or procedures developed by the roaster contractor that differ from Nuna's plan to be approved by the Board. The public will also have the opportunity to review clean up actions and lessons learned through the submission of bi-annual reports suggested by the Giant Team.*

## Section 119 (b) Determination - AANDC- Giant Mine, NT

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
1	DFO	Sec 119	Regarding comments on the Giant Mine Remediation Team's request that the MVLWB proceed directly to licensing as per Section 119(b) of the MVRMA, it is DFO's understanding that this decision is solely within the mandate, and at the discretion, of the Board.	Not Applicable	The evidence before the Board demonstrates that the deteriorating condition of the roaster complex and the instability of the underground chambers and stopes constitutes an emergency. Technical evidence from independent engineers and the results of the Project Team's internal risk assessments were provided in the application package and summarized in the covering letter to our response package.	Not Applicable	
2	YKDFN	Sec 119 - Roaster Complex Deconstruction	The Yellowknives Dene have reviewed the application and are prepared to support the s.119 exemption for the Roaster, but not for the underground.  <b>FOR FURTHER INFORMATION SEE LETTER FROM YKDFN DATED FEBRUARY 15, 2013.</b>	YKDFN accept Mr. Schmidtke's experience and <i>[sic]</i> credentials as a qualified person and in no way wish to interfere with a response to this emergency.	The Project Team notes the support of the YKDFN with respect to roaster deconstruction.		
3	YKDFN	Sec 119 - Underground Stabilization	The Underground Stabilization Detailed Project Description provides no such declaration. YKDFN do not doubt that the site is deteriorating and there is some risk, but the evidence provided does not meet the threshold in the legislation.  <b>FOR FURTHER INFORMATION SEE LETTER FROM YKDFN DATED FEBRUARY 15, 2013.</b>	This part of the 'Site Stabilization Plan' does not meet the statutory test set out and cannot be severed from the EA.	The evidence before the Board demonstrates that the condition of the underground workings constitutes an emergency. Please refer to our covering letter for our response package and to the letters provided by AECOM and Golder Associates dated December 17, 2012 for a complete discussion on the evidence.		

## Section 119 (b) Determination - AANDC- Giant Mine, NT

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
4	Alternatives North	Sec 119	<p>Following the circulation in October 2012 of a draft water licence application and our comments of November 5, 2012 that questioned the evidence of an emergency situation at the Giant Mine, AANDC finally had its engineering consultants reassess the Roaster Complex and clearly state that it is in a "state of emergency" in the letter from AECOM dated December 17, 2012. We note that the memo from Golder Associates dated December 17, 2012 states that the underground work is needed "to avoid a failure and subsequent emergency situation". This is not the same as a response to an emergency and in our view, fails to meet the standard required for s. 119(b) exemption.</p> <p><b>FOR FULL DETAILS SEE LETTER FROM ALTERNATIVES NORTH DATED FEBRUARY 15, 2013 AND VARIOUS ATTACHMENTS.</b></p>	<p>- AN requests that should the MVLWB issue a water licence for this work, that a Public Engagement Plan similar to the Talston facility water licence MV2011L4-0002 – NTPC (Taltson) condition B.7 be required for the approval of the MVLWB for this undertaking....</p> <p>- We believe that is imperative to request more information of the applicant, particularly in relation to dust suppression and monitoring, for review and approval before any work begins at the site. It may be more reasonable to request that the contractor apply for the water licence as there will be more information available on the specific methods to be used for the work, mitigation and monitoring. It may also be advantageous to split the application into two parts giving higher priority to the roaster complex deconstruction....</p> <p>- We ask that in the absence of detailed dust management and monitoring plans for arsenic emissions, that the MVLWB consider a public hearing on this application.</p>	<p>Please refer to the covering letter for our responses to the use of Section 119; requirement for an Engagement Plan; and the request for a public hearing to address dust and air quality issues.</p> <p>As the custodian of the Giant Mine site, Aboriginal Affairs and Northern Development Canada must be the Licensee, not the contractors on site. Regulation of the site would be piecemeal if individual contractors applied for their own licenses, potentially resulting in increased risk to the environment and worker health and safety.</p>	NOTE THAT THESE STATEMENTS ARE EXCERPTS FROM ALTERNATIVES NORTH LETTER DATED FEBRUARY 15, 2013. PLEASE SEE COMPLETE LETTER/ATTACHMENTS FOR FURTHER DETAILS.	
5	Alternatives North	AANDC Dec. 19, 2012 Covering Letter  (Reviewer Comment Table - Row 15)	This letter does not clearly indicate whether the proposed undertaking is in response to an emergency at the Giant Mine site. No evidence is contained in the letter that the applicant intends to carry out the work forthwith.	AANDC and GNWT should clearly indicate, whether in their respective views, the proposed work is in response to an emergency at the Giant Mine site and provide evidence that the work is to be carried out forthwith with a clear schedule including details on contracting.	The evidence before the Board demonstrates that the condition of the underground workings constitutes an emergency. Please refer to our covering letter for our response package and to the letters provided by AECOM and Golder Associates dated December 17, 2012 for a complete discussion on the evidence.		

Section 119 (b) Determination - AANDC- Giant Mine, NT

#	Reviewer	Topic	Reviewer Comment	Reviewer Recommendation	Company Response	Board Staff Recommendation	Board Decision
6	Alternatives North  (Reviewer Comment Table - Row 17)	Golder Associates Dec. 17, 2012 Memo	This memo does not clearly state that the underground stabilization work is necessary in response to an emergency at the Giant Mine site. It states that the work is to "avoid a failure and subsequent emergency situation". We also understand that AANDC has contracted for drilling of some of these sites over this winter and that this work may now be complete, pursuant to land use permit MV2012S0019.	AANDC should provide any further evidence it has from the drilling done under land use permit MV2012S0019 to support its attempt to use s. 119(b) of the MVRMA for the underground stabilization part of the application.	The drilling program that took place this past winter investigated areas along Baker Creek to determine bank stability related issues under the Design Support Drilling & Testing and 2.3.3 A1, B1 & C1 Pit Channel Stability programs identified in the LUP application (sections 2.3.2 and 2.3.3 of the LUP project description). The stabilization contractor will complete the necessary drilling to support the underground stabilization program. This drilling information, once collected, will be used to plan the stabilization activities for individual underground workings. Completed and forecasted stabilization activities are to be reported on in the annual reports. Please note that we recommend that these reports be submitted every 6 months rather than 12 months as identified in our suggested changes to the draft WL conditions.		