



Avalon Rare Metals Inc.

**RESPONSE TO THE JANUARY 13, 2012 INFORMATION REQUESTS FROM
YELLOWKNIVES DENE FIRST NATION
FOR THE THOR LAKE RARE EARTH ELEMENT PROJECT
DEVELOPER'S ASSESSMENT REPORT**

**Submitted To:
MACKENZIE VALLEY ENVIRONMENTAL IMPACT REVIEW BOARD**

January 25, 2012

Avalon Rare Metals Inc. (Avalon) is pleased to provide the following responses to Yellowknives Dene First Nation's information requests provided via Mackenzie Valley Environmental Impact Review Board (MVEIRB) on January 13, 2012. Avalon's responses are found after each information request.

IR Number:	YKDFN #4
Source:	Yellowknives Dene First Nation
To:	Avalon Rare Metals Inc.
Subject:	Closure and Reclamation
DAR Section:	
TOR Section:	

Preamble

The Overview of the Closure and Reclamation section (11.1) states "Post-closure monitoring will be limited to evaluating the success of the re-vegetation effort". This statement leads one to believe that post-closure monitoring will not include water quality, tailings cap stability, etc. The company cannot unilaterally limit what they will monitor at this point. The need for post closure monitoring will be directed by regulators, consultation with First Nations, and most importantly, the final closure plan. Post closure monitoring must be designed to evaluate the success of the closure measures.

YKDFN Request #4

1. Avalon Rare Metals Inc. must, in its overview, clearly state what, at a minimum, they are committing to monitor post closure.

Avalon Response #4

The closure and reclamation strategy identified in Section 11 should be considered a starting point for the Thor Lake Project closure and reclamation plan. The plan is at a conceptual or preliminary stage. It should be treated as a living document that is regularly reviewed and updated throughout the life of the Project in order to adapt and incorporate any changes that may arise. It will be continually updated with the input of regulators, land users, stakeholders, and Aboriginal governments and organizations.

One of the overarching goals of the closure and reclamation plan is to "*establish conditions that lead to acceptable long-term physical and chemical stability in reclaimed areas*". Post-closure monitoring activities will focus on re-vegetation efforts, as well as surface stabilization efforts (such as the stability of the tailings cap), and sampling for surface and ground water quality.

In keeping with the intention that the closure and reclamation plan is a living document, Avalon anticipates that additional monitoring requirements may develop through the permitting and implementation phases of the Project and expects to build on and optimize the plan accordingly.

As stated in the DAR (p. 931), the closure and reclamation of all TLP site facilities will be conducted in accordance with the terms and conditions of the future MVLWB Land Use Permit and Water Licence and accepted mine reclamation practices in the NWT that are applicable (e.g., INAC 2007, 2002).

The following guidelines for post-closure monitoring from INAC's 2007 *Mine Site Reclamation Guidelines for the Northwest Territories* are relevant to the Thor Lake Project. These can provide an indication of the type of post-closure monitoring activities that may be included in the closure and reclamation plan as it evolves.

- Physical stability of residual and remaining earth structures
 - Check for slumping, erosion, deformations, etc.
 - Keep a consistent monitoring record from a constant point of observation from pre-mining through to post closure
 - Inspect the sealed access to underground
 - Check for surface expression (subsidence) of underground failure
 - Check the performance of erosion protection on embankment structures such as rip rap or vegetation
- Vegetation
 - Inspect re-vegetated areas periodically following initial planting until vegetation is successfully established and self-sustaining in accordance with the agreed criteria
 - Conduct soil analysis for nutrients and pH until the vegetation is successfully established and self-sustaining
 - Inspect vegetated areas that may be obscuring possible cracks and other problems on dams and embankments
 - Inspect for root systems that are penetrating protective covers or decaying/rotting providing tunnels for water to pass through protective covers
 - Identify excessive vegetation stress or poorly established areas and implement contingency measures if required
- Use of site to ensure mitigation measures are successful
 - Monitor wildlife/fish use of area
 - Monitor other land users access and activity in the area
- Water
 - Confirm that the predicted water quality and quantity is occurring
 - Inspect hydrogeology
- Communication
 - Record-keeping, including a photographic record of remediation activities
 - Performance assessment report to demonstrate that all, or the primary, reclamation objectives have been achieved. At this time the closure criteria, and any ongoing residual and/or environmental risks are re-assessed and the monitoring and maintenance plan is updated.
 - Reclamation Completion report

IR Number:	YKDFN #5
Source:	Yellowknives Dene First Nation
To:	Avalon Rare Metals Inc.
Subject:	Closure and Reclamation
DAR Section:	
TOR Section:	

Preamble

The Reclamation Strategy for the Tailings Management Facility (11.2.2) states that “Progressive reclamation will be implemented to the greatest degree possible”. YKDFN find this statement vague, unclear and not helpful in understanding what measures will constitute ‘progressive reclamation’ and lessen the environmental remediation required at closure.

YKDFN Request #5

1. Avalon Rare Metals Inc. must describe what is meant by ‘progressive reclamation’, providing clear examples of how (and when) they intend to implement this over the course of the mine’s life.

Avalon Response #5

Reclamation is an improvement of the environment disturbed by mining to a state that is acceptable by land users, regulators, and other stakeholders. Usually that means a safe and healthy self-sustaining ecosystem that also supports human activities.

Progressive reclamation means that disturbed sites are reclaimed as soon as they are no longer used for mining operations, rather than wait until the final closure of the mine.

Avalon has been reclaiming the Thor Lake site during the exploration phase of the project. Avalon has reclaimed infrastructure and waste from Highwood Resource’s exploration activities.

- Historic waste rock piles - Avalon removed over 6,000 cubic metres of historic waste piles for use in Avalon’s completed airstrip.
- Trailer camp - Parts of the trailer camp have been removed and disposed off-site, while others have been refurbished and utilized for current camp and office facilities.
- The company has undertaken extensive general clean-up of material left from previous exploration utilizing First Nations labour.
- Underground access - Access to the underground workings has been barricaded and the mine workings allowed to flood. Warning fencing has also been installed around the ramp entrance.
- 60,000 gallon tank farm - The diesel fuel remaining in the tank farm has been consumed during Avalon’s recent exploration activities and the six 10,000 gallon tanks will be re-purposed for future operations.

Avalon has also practiced progressive reclamation of its own drilling activities at site, including filling all drill holes with cement (Photos 1 and 2). This program will continue in the 2012 drill programme.

The nature of Avalon's project provides limited opportunities for progressive reclamation during the operations phase of the project. Avalon has used conscientious planning to keep the footprint of the project small, minimize the amount of waste created, and identify ways to reclaim historic mining activities. The following progressive reclamation will occur during operations.

- **Waste Rock at Nechalacho** – Decline ramp development activities will generate approximately 400,000 tonnes of waste rock. Over 375,000 tonnes of waste rock will be used for surface construction activities, specifically for dam building for the tailings management facility, extension of the existing airstrip and road upgrading. The unused waste rock will be diverted to stopes for use as fill. The temporary waste and ore stockpile area will be progressively reclaimed by loosening exposed, compacted soils, and applying a cover of overburden or stockpiled organics in preparation for re-vegetation. This activity is expected to be completed within the first year of operations.
- **Paste Backfill at Nechalacho** – Beginning in year two of operations the paste plant will operate on a continuous basis to progressively fill the voids created by the mined primary stopes. This will reduce the amount of tailings directed to the tailings management facility on surface and reclaim the underground environment.
- **Nechalacho Tailing Management Facility** – The downstream face of the embankments will be reclaimed as the final downstream slope is constructed.
- **Hydrometallurgical Tailings Facility** – Active treatment of tailings through lime neutralization throughout the operations phase.
- **Hydrometallurgical Tailings Facility** – The facility will be located inside an historic open pit (L-37 pit). The use of an old open pit for hydrometallurgical plant tailings will ultimately permit this historically impacted area to be rehabilitated to productive habitat on closure. It will also return the pit to the flat terrain that is more aesthetic and compatible with the surrounding landscape.
- Avalon will evaluate the applicability and suitability of reclamation techniques by developing test plots in different ecosystem types.

The majority of reclamation will be carried-out at closure. The details of final closure will be addressed in a closure and reclamation plan. In accordance with INAC's 2007 *Mine Site Reclamation Guidelines for the Northwest Territories* this plan will be updated within a timeframe that does not exceed 5 years.



Photo 1. Drill site before reclamation activities (July 2009).



Photo 2. Drill site after reclamation activities (August 2010).

IR Number:	YKDFN #6
Source:	Yellowknives Dene First Nation
To:	Avalon Rare Metals Inc.
Subject:	Closure and Reclamation
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Preamble

The Reclamation Strategy for the Tailings Management Facility (11.2.2) states that “Post-closure monitoring will include an annual inspection of the TMF for a prescribed period to confirm the completed closure measures are meeting expectations”.

YKDFN Request #6

1. Avalon Rare Metals Inc. must describe for what period of time they are committed to annually inspect and manage potential issues.

Avalon Response #6

Avalon currently anticipates that post-closure monitoring activities will occur for a five year period. However, this is partially dependent on the achievement of licensed criteria and closure goals that will be established for the Project. If the closure criteria are not being met, corrective action will be taken and the monitoring period may be extended.