

TSX: AVL & OTCQX: AVLNF

The **Nechalacho Rare Earth Elements (“REE”) Project**, Thor Lake, NWT, Canada, is the most advanced large heavy rare earth development project in the world outside China, and is also host to substantial zirconium, beryllium, tantalum and niobium resources. With a completed Feasibility Study and approved environmental assessment, the Nechalacho REE Project is uniquely positioned to bring a new supply of critical raw materials to the marketplace.

## Location

Thor Lake is located approximately 100 km southeast of Yellowknife, Northwest Territories. The Nechalacho Deposit is directly accessible by barge in the summer, ice road in the winter and year-round by air transport.

## Project Development

Since acquiring the property in 2005, Avalon has invested over C\$100 million to further explore and develop the Nechalacho REE Project. This has included metallurgical, environmental and market studies and 120,197 metres of diamond drilling in 559 holes resulting in NI 43-101 compliant measured, indicated and inferred resources in a high grade sub-zone called the Basal Zone.

## Environmental Studies and Permitting

While permits for pre-construction work are already in place, the Company is continuing to progress the permitting process to obtain the Class A Water Licence and Land Use Permit authorizing mine construction, operation and closure activities. Once there is renewed investor interest, the process will be accelerated again with the expectation that it can be completed in approximately 4-6 months.

## Feasibility Study Production Model

The 2013 Feasibility Study contemplated production of a mixed rare earth precipitate and enriched zirconium concentrate (“EZC”) containing by-product tantalum and niobium from a hydrometallurgical plant originally conceived for Pine Point, NWT. An alternative hydrometallurgical process has been developed and an updated feasibility study will be produced to reflect this significant change to the development model once a new location for the plant is defined and the final pilot plant trial is completed. The new process would involve a different reagent suite designed to crack the EZC and requires additional infrastructure than is presently unavailable in the NWT. The Feasibility Study estimated combined production of 9,286 tonnes per annum (“tpa”) TREO, plus by-product zirconium niobium and tantalum.

## Location Map and Infrastructure



## Financial Analysis

*(As per Feasibility Study, April 2013)*

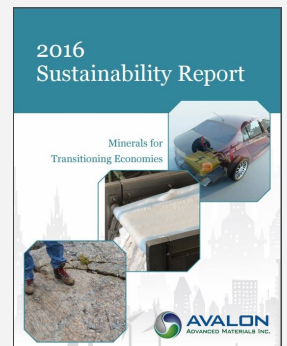
The 2013 Financial Analysis covered mining, mineral concentration, hydrometallurgical processing, refining and all related infrastructure. Results of the discounted cash flow analysis produced for the Feasibility Study yielded a pre-tax IRR of 22.5% and an NPV at a 10% discount rate of C\$1.35 billion, with a payback period of 4.3 years and a C\$1.575 billion capital cost.

## Operations Management Team

- Dave Marsh, FAusIMM (CP), SVP Metallurgy & Technology Development
- Bill Mercer, Ph.D., P.Geo., VP Exploration
- Mark Wiseman, B.Sc., MBA, VP Sustainability
- Pierre Neatby, BA, VP Sales & Marketing

## Sustainability Reporting

In November 2016, Avalon released its fifth Sustainability Report, which includes a self-assessment of sustainability performance in accordance to the Global Reporting Initiative G4 core level and the Mining Association of Canada’s Towards Sustainable Mining standards. The full report can be found on Avalon’s website.

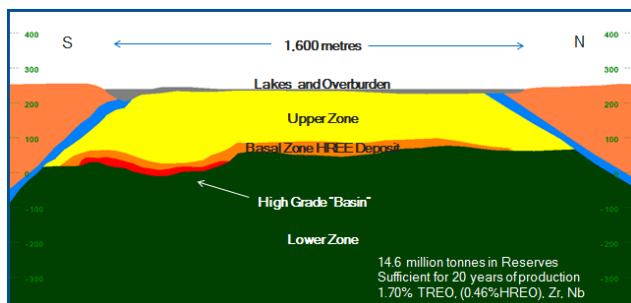


## Measured and Indicated Resources in the Basal Zone at Various NMR Cut-Offs As at August 15, 2013

| Basal Zone   | Tonnes (millions) | % TREO | % HREO | % HREO/TREO | % ZrO <sub>2</sub> | % Nb <sub>2</sub> O <sub>5</sub> | % Ta <sub>2</sub> O <sub>5</sub> |
|--|-------------------|--------|--------|-------------|--------------------|----------------------------------|----------------------------------|
| <b>US\$345 NMR Cut-Off (Reflects entire Basal Zone)</b>                |                   |        |        |             |                    |                                  |                                  |
| Measured   | 12.56             | 1.71   | 0.38   | 22.50       | 3.20               | 0.405                            | 0.0404                           |
| Indicated  | 49.33             | 1.62   | 0.35   | 21.27       | 3.07               | 0.405                            | 0.0398                           |
| <b>US\$800 NMR Cut-Off (Approximately Reflects High Grade "Basin")</b> |                   |        |        |             |                    |                                  |                                  |
| Measured   | 5.11              | 2.20   | 0.58   | 26.17       | 4.23               | 0.52                             | 0.0544                           |
| Indicated  | 16.15             | 2.20   | 0.55   | 24.87       | 4.13               | 0.52                             | 0.0542                           |
| <b>US\$1,000 NMR Cut-Off (Selected parts of High Grade "Basin")</b>    |                   |        |        |             |                    |                                  |                                  |
| Measured   | 2.49              | 2.49   | 0.68   | 27.38       | 4.77               | 0.59                             | 0.0620                           |
| Indicated  | 6.99              | 2.52   | 0.66   | 26.03       | 4.66               | 0.58                             | 0.0614                           |

## NECHALACHO DEPOSIT VERTICAL CROSS SECTION

Looking west at 416200E



## MINERAL RESERVES IN THE BASAL ZONE

| Proven and Probable Mineral Reserves in the Basal Zone As at April 2013 |            |       |       |           |
|---|------------|-------|-------|-----------|
|   | Tonnage    | TREO  | HREO  | HREO/TREO |
| Proven  | 3,682,347  | 1.73% | 0.47% | 27.26%    |
| Probable  | 10,917,653 | 1.69% | 0.45% | 26.61%    |
| Proven and Probable   | 14,600,000 | 1.70% | 0.46% | 26.78%    |

Refer to Avalon's news release of April 17, 2013 "Avalon Announces Results of Positive Feasibility Study for the Nechalacho Rare Earth Elements Project" for reserve figures of the individual REE.

The fully diluted Proven and Probable Mineral Reserves estimate includes planned internal dilution averaging 8.5% over the LOM from Inferred Mineral Resources added at zero grade and Measured and Indicated Mineral Resources that are below the NMR cutoff of US\$320/tonne added at estimated grade. Additional external dilution of 5% was added to tonnage in secondary stopes, about half of all stopes, for an average of approximately 11% total dilution.

**NOTES:** CIM definitions were followed for Mineral Resources. A cut-off NMR value of C\$345 per tonne was used for the Base Case. NMR is defined as "Net Metal Return" or the in situ value of all payable metals, net of estimated metallurgical recoveries and off-site processing costs. Prior to August 2013, and for the reserves quoted here, formulae for rare earth oxides utilized in resource and reserve estimates were for HREO comprising Y<sub>2</sub>O<sub>3</sub>, Eu<sub>2</sub>O<sub>3</sub>, Gd<sub>2</sub>O<sub>3</sub>, Tb<sub>2</sub>O<sub>3</sub>, Dy<sub>2</sub>O<sub>3</sub>, HO<sub>2</sub>O<sub>3</sub>, Er<sub>2</sub>O<sub>3</sub>, Tm<sub>2</sub>O<sub>3</sub>, Yb<sub>2</sub>O<sub>3</sub> and Lu<sub>2</sub>O<sub>3</sub> and TREO grade was comprised of all HREO and La<sub>2</sub>O<sub>3</sub>, Ce<sub>2</sub>O<sub>3</sub>, Pr<sub>2</sub>O<sub>3</sub> and Sm<sub>2</sub>O<sub>3</sub>. For the August 15, 2013 resource estimate onwards, this was changed to HREO comprising Y<sub>2</sub>O<sub>3</sub>, Eu<sub>2</sub>O<sub>3</sub>, Gd<sub>2</sub>O<sub>3</sub>, Tb<sub>2</sub>O<sub>3</sub>, Dy<sub>2</sub>O<sub>3</sub>, Ho<sub>2</sub>O<sub>3</sub>, Er<sub>2</sub>O<sub>3</sub>, Tm<sub>2</sub>O<sub>3</sub>, Yb<sub>2</sub>O<sub>3</sub>, and Lu<sub>2</sub>O<sub>3</sub> and TREO grade was comprised of all HREO and La<sub>2</sub>O<sub>3</sub>, CeO<sub>2</sub>, Pr<sub>2</sub>O<sub>3</sub>, Nd<sub>2</sub>O<sub>3</sub> and Sm<sub>2</sub>O<sub>3</sub> which is common industry practice.

The technical information contained in this document has been reviewed and approved by Bill Mercer, Ph.D., P.Geo. (ON), P.Geo. (NWT), Vice President Exploration of Avalon and Donald Bubar, P.Geo. (ON), President and CEO of Avalon, the qualified persons for the purposes of National Instrument 43-101. For additional information on the Nechalacho Rare Earth Elements Project, see the technical report entitled "Technical Report Disclosing the Results of the Feasibility Study of the Nechalacho Rare Earth Elements Project," dated May 31, 2013 and effective April 17, 2013.

**FORWARD LOOKING INFORMATION:** This document contains or incorporates by reference "forward looking statements" within the meaning of the United States Private Securities Litigation Reform Act of 1995 and applicable Canadian securities legislation, which may not be based on historical fact. Readers can identify many of these statements by looking for words such as "believe", "expects", "will", "intends", "projects", "anticipates", "estimates", "continues" or similar words or the negative thereof. Statements that are not based on historical fact contained in this presentation, including through documents incorporated by reference herein, are forward-looking statements that involve risks and uncertainties that could cause actual events or results to differ materially from estimated or anticipated events or results reflected in the forward-looking statements. Such forward-looking statements reflect the Company's current views with respect to future events and include, among other things, statements regarding targets, estimates and/or assumptions in respect of reserves and/or resources, and are based on estimates and/or assumptions related to future economic, market and other conditions that, while considered reasonable by the Corporation, are inherently subject to risks and uncertainties, including significant business, economic, competitive, political and social uncertainties and contingencies. These estimates and/or assumptions include, but are not limited to: grade of ore; rare earth and by-product commodity prices; metallurgical recoveries; operating costs; achievement of current timetables for development; strength of the global economy; availability of additional capital; and availability of supplies, equipment and labour.

## Strategic Advantages

- The Nechalacho Deposit is exceptional among hard rock rare earth deposits for its **large size and enrichment in the heavy rare earths** (greater than 20% of total rare earth oxides or "TREO").
- Flat lying deposit geometry with low permeability, good rock mechanics and shallow depth make the Nechalacho Deposit amenable to **low-cost underground bulk mining methods**.
- Large size of the Nechalacho Deposit offers the potential for creating a **multi-generational, scalable business**.
- Thor Lake is **accessible** by air transport, barge in the summer and ice roads in the winter. Hay River is a port with an existing barging terminal and the Hay River railhead is accessible year round by an all-season highway.
- A proposed expansion of hydro power generation and transmission capacity in the NWT, potentially offers Nechalacho a low-cost alternative to diesel generated power at the site. Mine and processing facilities are designed to **significantly minimize impacts to water, land and air** and reduce the Project's carbon footprint.

## Project Summary

(As per Feasibility Study, April 2013)

**Products:** Separated rare earth oxides with by-products of tantalum, niobium and zirconium (all as oxides)

**Development Stage:** Feasibility Study and Report of Environmental Assessment approved

**Estimated Mine Life:** 20 years based on the 14.6 million tonnes of proven and probable mineral reserves defined for the Feasibility Study. The 65.83 million tonnes of measured and indicated mineral resources in the deposit would potentially support production for many more years.

**Estimated Capital Cost:** C\$1.575 billion (including sustaining capital) for construction of 2,000 tonnes per day underground mine, concentrator, hydrometallurgical processing plant, and a rare earth refinery with a 10,000 tonnes per annum capacity of separated rare earth oxides.

**Average Operating Cost:** C\$362/tonne mined

**Average Revenue:** C\$885/tonne mined



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