

Avalon provides update on re-development plans for the East Kemptville Tin-Indium Project, Nova Scotia

written by Raj Shah | June 29, 2018



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– [Avalon Advanced Materials Inc.](#) (TSX: AVL) (OTCQX:

AVLNF) ("Avalon" or the "Company") is pleased to provide an update on its plans for small-scale re-development of the past-producing East Kemptville tin mine, Yarmouth County, Nova Scotia (the "Project"). Over the past year, the Company has developed a new model involving tin concentrate production from a large stockpile of historically-mined low grade tin ore, supplemented by limited mining of near-surface higher grade tin resources. This re-development model will result in full rehabilitation of the site, while supporting economic recovery of tin concentrates for at least 15 years.

Avalon is now in the process of applying for the necessary permits and approvals, including a mineral lease, and negotiating the transfer of existing surface tenure to allow it to proceed with final feasibility study work and Project financing. The Company is presently preparing a Preliminary Economic Assessment ("PEA") for filing with the mineral lease application along with a site closure plan. The PEA is scheduled to be released by mid-July, 2018. Once all approvals are in place, financing is secured and feasibility work completed, the operation could be brought to initial production in just 12-16

months.

East Kemptville Resource Update

In conjunction with preparing the PEA on the new small-scale re-development model, an updated mineral resource estimate for both the Main and Baby Zone tin-indium deposits has been prepared to include results from a 2015 in-fill drilling program. Total estimated Measured and Indicated Mineral Resources are now 22.97 million tonnes at 0.153% Sn, with an additional Inferred Resource estimate of 14.25 million tonnes at 0.139% Sn at a cut-off grade of 0.1% Sn (see Table 1 below). While the total deposit tonnage and grade did not change significantly, the proportion classified as Measured and Indicated increased by some 24%, implying an increase in the overall confidence level in the resource.

Following the previously-released East Kemptville mineral resource estimate ([NR 14-13, October 31, 2014](#)), Avalon completed a drilling program in 2015 which totalled 4,514 metres in 22 holes. Nine of these holes were in the Main Zone, eight in the Baby Zone and five in the Duck Pond Zone. Results from the 17 in-fill holes in the Main and Baby Zones are included in the updated resource. The main objectives of the drill program were to increase confidence in the resource and explore the poorly drilled northeast extension of the Main Zone. Both of these objectives were achieved. At this time, the indium, zinc and copper grades of the updated resource have not been re-estimated. This will be completed over the next two months.

The methodology for this updated resource is described in the footnotes to Table 1 below. Separate block models were prepared for the Main Zone and Baby Zones, which allowed for a more detailed resource model in the Baby Zone. The resource is based on improved geological models and utilizes an improved

interpolation method. The addition of the 2014 and 2015 drill holes increased the estimated Measured Resources by 0.58 million tonnes.

Note that the updated Mineral Resource estimate described above only applies to in-ground mineral resources and does not include the Inferred Resource contained in the Low Grade Stockpile, which totals 5.87 million tonnes at 0.112% Sn (See [Annual Report on Form 20F](#) for the year ended August 31, 2017).

PEA Project Development Model

The small-scale re-development model as conceived for the PEA contemplates processing 2,400 tonnes per day of ore to produce an average of 1,500 tonnes per year of tin concentrate for at least 15 years using a gravity concentration process. Demand for conflict-free tin concentrates remains strong, as new markets emerge in clean technology applications such as lithium ion batteries. With growing demand, production could potentially be increased and operational life extended by accessing additional tin resources at depth or in other mineralized zones, such as Duck Pond. There is also potential to recover by-product zinc-indium and copper concentrates in the future.

Interest from a potential development partner in the Project has also led to further testwork to evaluate the use of ore-sorting technology to reject waste and create a higher grade of feed material for a smaller (lower cost) gravity concentrator. Similar work conducted previously on a sample of material from the Low Grade Stockpile indicated that ore-sorting technology could be successfully applied at the Project. This current ore-sorting testwork includes drill core from both the Main and Baby Zones and results are expected by the end of July.

Permitting and Environmental Studies

The Species at Risk Act study was initiated at the Project with the completion of the spring bird survey. Engagement continues by meeting with regulators, NGOs and local communities with continued strong support for the Project. With the update of the mine plan, permitting is well advanced with the mineral lease and Crown Land transfer planned for submission in the next 30 days. The closure plan is being updated to incorporate changes to the mine plan. The overall objective of full site rehabilitation on closure remains feasible and a key objective for Avalon.

Sustainability

As with Avalon's other advanced-stage projects, the Company's focus is on materials that enable clean technology, including solar and wind power. In order to do this sustainably, Avalon designs its operations to minimize environmental impacts and greenhouse gas emissions, while planning for rehabilitation and productive use of the land post closure. The Company also now applies a staged-development approach to its cleantech materials projects, which involves starting production at a modest scale, to minimize project footprint and potential risks to environment, while also reducing investment risk and creating opportunities for its Indigenous business partners.

The technical information contained in this news release has been reviewed and approved by Dave Marsh, FAusIMM (CP), Senior Vice President, Metallurgy and Technology Development and Dr. William Mercer, P. Geo (Ont), Vice President, Exploration; qualified persons for the purposes of National Instrument 43-101.

About Avalon Advanced Materials Inc.

Avalon Advanced Materials Inc. is a Canadian mineral development company specializing in niche market metals and minerals with

growing demand in new technology. The Company has three advanced stage projects, all 100%-owned, providing investors with exposure to lithium, tin and indium, as well as rare earth elements, tantalum, cesium, niobium, and zirconium. Avalon is currently focusing on its Separation Rapids Lithium Project, Kenora, ON and its East Kemptville Tin-Indium Project, Yarmouth, NS. Social responsibility and environmental stewardship are corporate cornerstones.

This news release contains "forward-looking statements" within the meaning of the United States Private Securities Litigation Reform Act of 1995 and applicable Canadian securities legislation. Forward-looking statements include, but are not limited to statements that the re-development model will result in the full rehabilitation of the site while supporting economic recovery of tin concentrates for at least 15 years, that the PEA is scheduled to be released by mid-July, 2018, that the updated resource estimate for indium, zinc and copper grades will be completed over the next two months, that the operation could be brought to initial production in just 12-16 months, that results for the current ore-sorting testwork are expected by the end of July, that Avalon plans to submit the applications for the Mining Lease and Crown Land Transfer in the next 30 days. Generally, these forward-looking statements can be identified by the use of forward-looking terminology such as "potential", "scheduled", "anticipates", "continues", "expects" or "does not expect", "is expected", "scheduled", "targeted", "planned", or "believes", or variations of such words and phrases or state that certain actions, events or results "may", "could", "would", "might" or "will be" or "will not be" taken, reached or result, "will occur" or "be achieved". Forward-looking statements are subject to known and unknown risks, uncertainties and other factors that may cause the actual results, level of activity, performance or achievements of

Avalon to be materially different from those expressed or implied by such forward-looking statements. Forward-looking statements are based on assumptions management believes to be reasonable at the time such statements are made. Although Avalon has attempted to identify important factors that could cause actual results to differ materially from those contained in forward-looking statements, there may be other factors that cause results not to be as anticipated, estimated or intended. Factors that may cause actual results to differ materially from expected results described in forward-looking statements include, but are not limited to market conditions, and the possibility of cost overruns or unanticipated costs and expenses as well as those risk factors set out in the Company's current Annual Information Form, Management's Discussion and Analysis and other disclosure documents available under the Company's profile at www.SEDAR.com. There can be no assurance that such statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Such forward-looking statements have been provided for the purpose of assisting investors in understanding the Company's plans and objectives and may not be appropriate for other purposes. Accordingly, readers should not place undue reliance on forward-looking statements. Avalon does not undertake to update any forward-looking statements that are contained herein, except in accordance with applicable securities laws.

Table 1: East Kemptville In Situ Unmined Mineral Resource Estimate, Main and Baby Zones, Based on Percentage Tin Cut-off Grade, as at May 7, 2018

Classification	Cut-off grade	Main Zone NE		Baby Zone		Total	
		Tonnes [Mt]	Sn [%]	Tonnes [Mt]	Sn [%]	Tonnes [Mt]	Sn [%]

Measured	0.08	0.40	0.173	0.22	0.241	0.61	0.197
	0.10	0.38	0.177	0.20	0.251	0.58	0.203
	0.12	0.32	0.188	0.19	0.259	0.51	0.214
Indicated	0.08	27.89	0.133	1.72	0.194	29.61	0.137
	0.10	20.91	0.148	1.48	0.211	22.39	0.152
	0.12	14.84	0.163	1.27	0.228	16.11	0.168
Measured + Indicated	0.08	28.28	0.134	1.93	0.199	30.22	0.138
	0.10	21.29	0.148	1.68	0.216	22.97	0.153
	0.12	15.16	0.164	1.46	0.232	16.62	0.170
Inferred	0.08	18.54	0.125	0.90	0.153	19.43	0.126
	0.10	13.56	0.137	0.69	0.172	14.25	0.139
	0.12	8.11	0.156	0.51	0.193	8.62	0.158

Notes:

1. CIM Definition Standards for Mineral Resources, 2014, were followed.
2. The independent Qualified Person for this mineral resource estimate update is William Mercer, P. Geo., of Avalon Advanced Materials Inc.
3. The mineral resource estimate is based on 194 drill holes totalling 21,456 m drilled between 1979 and 1991 by previous operators and 23 holes totalling 4,190 m drilled by Avalon in 2014 and 2015.
4. Drill data were organized in Maxwell DataShed and for estimation purposes were transferred to the Geovia GEMS 6.8.1 software, wherein the block model was developed.
5. Resources were estimated by interpolating composites within block models of 24 m by 24 m by 12 m blocks in the Main Zone and 6 m by 6 m by 6 m in the Baby Zone. Interpolation used the inverse Ordinary Kriging method.
6. In the Main Zone, Measured material was defined as blocks

interpolated with a search ellipse with radii of 40x20x15 m using 18-36 samples, corresponding to 3-6 drill holes, indicated material with a 120 x 40 x 18 m search ellipse and the same number of samples, and inferred material with a 315 x 85 x 18 m search ellipse using 12-24 samples corresponding to 2-4 drill holes. In the Baby Zone, Measured material was defined as blocks interpolated with a search ellipse with radii of 30 x 20 x 8 m using 6-12 samples, corresponding to 3-6 drill holes, Indicated material with a 48 x 33 x 12 m search ellipse and the same number of samples, and Inferred material with a 95 x 65 x 24 m search ellipse using 4-8 samples corresponding to 2-4 drill holes.

7. Prior to compositing, the assays were capped at 1% Sn, which corresponds to the 99th percentile of the tin assay data, reducing the length-weighted mean of the tin assays by 9.4%.
8. Mean density values of available data of 2.728 t/m³ and 2.784 t/m³ were used for the Main and Baby Zones, respectively.
9. The resource estimate has been constrained using the Whittle pit described previously (Avalon News Release 15-02, February 25, 2015)
10. Several possible cut-off grades are reported in this resource estimate. Based on past mining practice at East Kemptville, a cut-off grade of 0.1% Sn is reasonable and preliminary cost and revenue values at the time of estimation also suggest this is reasonable.
11. Mineral resources do not have demonstrated economic viability and their value may be materially affected by environmental, permitting, legal, title, socio-political, marketing or other issues.