

27 October 2010

Ms. Phyllis Beaulieu Nunavut Water Board P.O. Box 119 Gjoa Haven Nunavut, X0B 0J0

<u>RE:</u> Water License 2BB-MEL0914: Final Response to INAC's Letter of October 22nd:Recalculation of Restoration Liability: Meliadine Gold Project: Agnico-Eagle Mines Limited

Dear Ms. Beaulieu,

I feel I must start with some basic geochemistry in responding to INAC's latest letter. The most common chemical equation expressing the chemical reaction that causes acid rock drainage is as follows:

$$2\text{FeS}_2(s) + 7O_2(g) + 2H_2O(l) \rightarrow 2\text{Fe}^{2+}(aq) + 4SO_4^{2-}(aq) + 4H^+(aq)$$

where (s) is a solid, (g) – gas,(I) - liquid, (aq) – aqueous, these are ions in water

Here I am using pyrite (FeS₂) to describe the reaction, it could just as easily be arsenopyrite or any other sulphide mineral. What is important to note about the left side of the equation is that it takes three compounds to create acid rock drainage: a sulphide mineral (FeS₂), air (O₂) and water (H₂O). If one of the three is missing, you can no longer have acid rock drainage. So if you:

- 1) Remove the sulphide mineral. All you have is air and water;
- Remove the air. This is commonly done by submerging the source of the sulphides under water such as in a flooded pit or by covering the sulphide minerals with an layer impermeable to air; or
- 3) Remove the water. In this instance the sulphide mineral would have to be kept dry. A desert may suffice in providing such a condition, something we do not have in Canada.

The above has been scientifically verified many times over and need not be done again. AEM is proposing to place all the potentially acid generating ore in the boxcut and subsequently cover it with approximately 2 metres of overburden and topsoil, this being impermeable to air reaching the ore. This immediately satisfies condition (2) in not exposing the potentially acid generating ore to air and thereby eliminating the possibility of acid rock drainage. This is not innovative, it is not new science; it simply applies what has been technically proven time and time again in many studies. Studies carried out by the Mine Environment Neutral Drainage (MEND) Program demonstrated this. This program involved Canadian mining companies and provincial/territorial and federal departments, including INAC. It was implemented to develop and apply new technologies to prevent and control acidic drainage. In excess of \$17 million dollars were spent over 8 years studying the problem of acid mine drainage in Canada and

suggesting corrective measures. AEM is simply using one of the most basic corrective measures to avoid acid rock drainage.

Getting back to the boxcut. I believe we can all accept that air cannot interact with the potentially acid generating ore after it is covered with 2 metres of overburden and topsoil. This is the first safeguard. With a 2 metre cover, the ore is removed from the active layer and will eventually be permanently frozen. This is the second safeguard. The boxcut started on a topographical high and the present topography is shown on the attached figure. Once the boxcut is full of ore and demolished buildings, a 2 metre cover is placed over everything to an elevation of approximately 68 to 70 metres, it will once again be a topographical high and would readily shed water. No water would be allowed to pond on the cover material. This is a third safeguard. However, in the eventuality the ore does not freeze and water leaks into the ore, all drainage will be down the decline and here 96,000 m³ of storage space is available. None of this water will make it to the surface. This is a fourth safeguard. AEM feels the combined safeguards are more than enough to ensure the ore is safely isolated from the surface environment and does not pose an unacceptable environmental risk. The cost of moving the 2007 – 2008 ore to the boxcut remains \$4 per cubic metre for an overall cost of \$52,260.

INAC still maintains the waste rock pad under the present ore piles needs to be excavated to ensure all the ore is collected and placed, in their case, underground. The amount of ore remaining on the surface of the waste rock pads would be insignificant relative to the total volume of waste rock present. The average net potential ratio for the different types of waste rock in the pad ranges from 24 to 80 with any value greater than 3 being acid consuming. The waste rock has 1 to 11 percent calcium carbonate by weight, a powerful acid neutralizing mineral. With such a high net potential ratio and a reactive carbonate in the form of calcite offering a high buffering capacity, any acid generated by the ore remaining on surface would quickly be neutralized by the waste rock.

In the paragraph above, I am using values from the Golder Report, "Static Test Results For Waste Rock And Tailings, Meliadine Gold Project, Nunavut, Canada, May 2010". INAC indicates that no analyses exist to support leaving residual of ore on the waste rock pad; this is not the case. This report has been distributed to the NWB and all regulatory agencies, including INAC. It can also be found on the NWB's ftp site in manageable 3 megabyte sections. It is consistent with INAC (1992) and MEND (2009) recommended methods. Sufficient data has been collected to support leaving a residue of ore on the waste rock pad.

Other parts of AEM's letter of September 7th were not addressed. The fact that different unit costs were used for the same activity, flying in cement when it can delivered via the winter road, and the RECLAIM costs pertain to 2013, not 2010 which was the basis for the June 8th, 2010 request to recalculate the reclamation security in the first place.

The table presented in our September 7th letter is reproduced below again for convenience. It shows where the INAC and AEM costs differ for various activities.

INAC Activity /	Quantity	Unit Cost	INAC	AEM	Reason for Change
Material			cost	cost	
Waste Oil Disposal	2000	\$1.12	\$2,240	\$0	Waste oil is delivered to a
fee					company in Rankin Inlet that
		4	4	4	uses it for heating.
Haul demolished	32	\$138	\$4,416	\$500	The buildings would be
buildings	scoops				disposed of in the box cut,
underground					not underground.
Haul 2007 – 2008	13, 065	INAC	\$336,213	\$52,260	AEM proposes to place this
ore underground	m ³	\$27.56/m ³			ore in the box cut, INAC
		AEM \$4.00/m ³			proposed it be placed
					underground
Haul 2011 – 2013	11,460	INAC \$27.56	\$294,911	\$171,960	AEM applied the lower unit
ore underground	m ³	AEM \$16.07			cost of \$16.07 for disposing
					ore underground. This is the
					same unit cost used for soil
					moved underground.
Fly in cement	8,000 kg	INAC \$2.00/kg	\$16,000	\$1,600	INAC proposes to use a
		AEM \$0.20/kg			helicopter to fly in the
					cement; AEM proposes to
					use the winter road.
Sub Total			\$653,780	\$226,320	
Indirect Costs (Eng.)		5% of total	\$32,689	\$11,316	
Project		5% of total	\$32,689	\$11,316	
Management					
Contingency		20% of total	\$130,756	\$45,264	
Grand Total			\$849,914	\$294,216	

The difference between the two calculations on major items is \$555,698. While INAC sees the 2013 security deposit being \$1,333,595, AEM feels a more reasonable bonding would be \$777,897 based on the above table.

Today only the ore to be placed in the boxcut needs to be considered; all the other costs in the table relate to 2013 and can be ignored for the moment. Moving the 2007 – 2008 ore into the boxcut would cost \$52,260, not \$263,143 as INAC feels the ore needs to be moved underground. AEM believes it has shown in sufficient detail that the ore can safely be disposed of in the boxcut. As a result, AEM still maintains that the 2010 security for the Meliadine Gold Project should be \$337,360 as set out in Comaplex's June 8th 2010 letter to the Nunavut Water Board, not \$639,000 as suggested by INAC.

Also, recognizing improvements can be expected to the Meliadine Gold Project over the next three years, the security deposit could be increased annually to the end of 2013, providing the extension of the underground amendment is approved by the Board and the program proceeds as planned. And the security deposit in 2013 should be \$777,897.

concer	requently repeated what was said in earlier letters but this proved necessary as some of AEM's ros remain unaddressed. If further clarification is required before the Board can make a decision, I reached at 819 277 5444 or jwitteman@agnico-eagle.com .
Yours	sincerely,
John W	Vitteman Vitteman
Cc.	Larry Connell, Agnico-Eagle Mines Limited

