



Indian and Northern  
Affairs Canada

Affaires indiennes  
et du Nord Canada

Water Resources Division  
Nunavut Regional Office  
P.O. Box 100  
Iqaluit, NU X0A 0H0

**NWB File: 2BB-MEL0709**  
**Our File: 9545-4-2.2BB.MELS**  
**CIDMS: 329339**

May 11, 2009

Phyllis Beaulieu  
Manager of Licensing  
Nunavut Water Board  
Gjoa Haven, NU X0B 1J0

**Re: 2BB-MEL, Meliadine West Exploration and Bulk Sampling Project, Kivalliq Region – Water Security Cost Estimate**

Please be advised that Indian and Northern Affairs Canada (INAC) has completed a cost estimate for security relating to water liabilities associated with the Meliadine West Exploration and Bulk Sampling Project operated by Comaplex Minerals Corporation.

The Meliadine West Exploration Project is operated by Comaplex Minerals Corporation and includes the exploration of gold deposits in the area. The project is located in the Kivalliq Region approximately 25 km Northwest of Rankin Inlet. The amended licence 2BB-MEL0709 was issued in July 2007 to allow for the use of water and the disposal of waste for this exploration and bulk sampling project.

This estimate for security as per Sec 76 of the Nunavut Waters and Nunavut Surface Rights Tribunal Act (NWNSRTA) is being provided in response to the Nunavut Water Board's (NWB) previous request for such, as part of an amendment to the 2007 licence which was issued July 31, 2007. The amendment was approved prior to the completion of our security review. In addition, this estimate should be considered as part of INAC's overall review comments with respect to the current renewal application for this water licence.

Recommendations/comments in the attached technical review memorandum are provided pursuant to INAC's mandated responsibilities pursuant to *NWNSRTA* and the *Department of Indian Affairs and Northern Development Act*.

If you have any questions or concerns, Please feel free to contact me at (867) 975-4568 or [Ian.Rumbolt@inac.gc.ca](mailto:Ian.Rumbolt@inac.gc.ca).

Sincerely,



*Original signed by*

Ian Rumbolt  
Regional Coordinator

Cc. Kevin Buck, Manager of Water Resources – Indian and Northern Affairs Canada,  
Nunavut Regional Office

## Technical Review Memo

To: Phyllis Beaulieu, Manager of Licensing, Nunavut Water Board

From: Ian Rumbolt, Regional Coordinator, Indian and Northern Affairs Canada - Water  
Resources Division

**Re: 2BB-MEL, Meliadine West Exploration and Bulk Sampling Project, Kivalliq  
Region – Water Security Cost Estimate**

The following information provides the basis for an estimate of the cost for decommissioning the “waters” component of the Meliadine West Bulk Sample Project. Due to the size and scope of this project any security required by the Nunavut Water Board (NWB) as a condition of a licence is held for the following purposes pursuant to the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (NWNSRTA);

1. To provide compensation to third parties, (Section 13 and 76(2) - NWNSRTA)
2. To cover the costs incurred by an inspector, (Section 87 – NWNSRTA) and
3. To cover the costs incurred by the Minister on closure or abandonment. (Section 89 – NWNSRTA)

### **Background**

The Type ‘B’ water licence amendment application submitted to the NWB for water use and waste disposal associated with the project on April 8, 2007 was reviewed to support the development of this cost estimate. Prior to completing our security assessment the water licence amendment was approved. INAC’s security assessment is based on documentation submitted to the NWB in support of the previous 2008 water licence amendment (documents relating to the camp & infrastructure and water balance could



not be downloaded from the ftp site, although these are not critical for the purpose of this assessment), select photographs of the site viewed on the Comaplex Minerals Corp. (Comaplex) website and a comprehensive photograph record compiled by INAC in July 2008.

It should also be noted that a site visit has not been conducted to support the cost estimate. A site inspection was planned for July 19, 2008. However access to the site was denied by Comaplex site personnel.

It is understood that Comaplex has posted a bond of \$950,000 with the KIA for disturbances and/or reclamation related to the undertaking. It is INAC's policy to estimate the total reclamation costs and to provide an estimate of water related reclamation liabilities to the Nunavut Water Board. The NWB will set the water related security amount that the INAC Minister will hold for water-related liabilities. This approach, which has been taken on numerous northern mining-related projects, is to determine the cost for the reclamation of the entire site, and then to segregate that amount into land and water related components. This methodology has been applied to this assessment.

The RECLAIM model has been used to develop this estimate. This model has been applied on numerous northern sites and incorporates unit costs derived from actual projects involving comparable work.

### **Project Description**

According to the above documentation, the project can be described as follows:

- A camp site which includes approximately 34 insulated tent structures of various sizes, up to about 6 x 20 m, most of which are connected by covered wooden walk-ways, diesel or stove oil heaters are common,
  - About 2.5 km of roads,
  - 3 bulk fuel storage areas, all using AST double walled tanks or fuel bladders lying within a lined containment area
  - A series of explosives storage huts,
  - Assorted lay down areas with waste debris and/or equipment inventory
  - A portal ramp leading to approximately 1060 m of decline, drifts and raises.
- 
- A surface waste rock storage pad for ore and waste rock. Ore processing (crushing) machinery is situated on the pad. A lined area for fuel-contaminated soil is located on the west side of the pad.
  - An unauthorized land farm facility for the treatment of hydrocarbon contaminated soils



Both the Waste Rock & Ore Storage Management Plan (Aug. 2007) and the Abandonment and Restoration Plan (Sept. 2007) are weak with respect to the geochemistry of the ore and waste rock (no acid base accounting (ABA) test data is provided).

The deposit is described as a “shear off of the Pyke Fault”. In a figure on the company's web site, the ore zone is shown as a series of co-planar layers that are bounded by splays off of the Lower Fault. Little information is provided concerning the determination of the expected volumes of ore and waste from the bulk sampling project. Given the complex geology that contains this deposit, it is possible that mixing of ore and waste will occur, with potentially greater quantities of PAG rock to be managed at the end of the project.

The bulk sampling project description refers to about 60 m of raises. It is assumed that these are not ventilation raises and do not go to surface. If these raises do go to surface then the cost of backfilling or placing a concrete cap should be added to the estimate presented here.

### **Description of Proposed Reclamation Measures**

Reclamation measures for the project are assumed to include the following:

- All hazardous materials (fuel, explosives, oil, batteries, etc) will be removed for off-site disposal,
- Fuel tanks will be shipped off-site
- Demolition and consolidation of buildings and inert industrial waste for disposal in the underground workings
- Relocation of PAG rock into the underground workings (assumed to be 8525 m<sup>3</sup> or 25% more than in the Comaplex plans to allow for mixing with non-PAG and removal of upper layer of the non-PAG pad below the stockpiles). This amount is more than appears to be situated on the pad at the time of the 2008 photographs; however it is assumed that ongoing exploration will result in the full amount of PAG rock being placed on the pad.
- Backfilling of the portal area to prevent access. The overburden slopes around the portal box cut are flattened to be stable when a pond ultimately forms at this location
- Loosening of compacted surfaces and flattening of side slopes on all elevated pads and roads
- Removal of all culverts
- Restore drainage patterns by creating cross-drainage as necessary.
- Seeding of disturbed areas

In addition to the above descriptions of the reclamation measures, the following assumptions have been incorporated into the estimate for decommissioning of the Meliadine project:



- Minor hydrocarbon contaminated soil will be present around the fuel dispensing station, the portal operations areas and within the camp area as well as any residual hydrocarbon contaminated soil in the unauthorized land farm facility (see Tech Review Memo comments for 2009 Water License Renewal Application attached to this e-mail). This will be cleaned up and disposed in the underground workings with the PAG rock.
- All of the work will be conducted by a local (Rankin Inlet) contractor
- Testing of contaminated soil and ARD residue on the waste rock pad will be conducted by an environmental consultant.

INAC policy is not to consider the potential salvage value of material or equipment. This is assumed here.

### **Estimated Reclamation Cost**

Table 1 presents a breakdown of the cost estimate for decommissioning of the Meliadine West Gold Project. The entire site is situated on Inuit Own Land (IOL) that is managed by the Kivalliq Inuit Association (KivIA). The estimated cost for reclaiming the site is approximately \$639,000. This estimate includes a segregation of potential reclamation liability into land and water-related components. The water related liability is estimated to be \$451,000. As stated previously, the purpose of water related security is to provide compensation to third parties (If necessary) as well as to cover cost incurred by an inspector or costs incurred by the Minister on closure and abandonment. Land leases and permits typically have no provisions for compensation to affected third parties.

### **Comparison with Meliadine Estimate**

The Meliadine submissions to the NWB include an estimate of the potential reclamation cost of the site. Three total reclamation numbers (\$413k + contingency, \$652k including contingency from two different contractors and \$738k including contingency from a consultant) are provided. There is no supporting detail for any of these estimates. Therefore, a meaningful comparison of those estimates with this one cannot be made.

### **Recommendation to the NWB**

It is recommended the NWB consider this estimate and impose security for this project. The proponent should be advised to provide such security as a condition on the amended water licence 2BB-MEL0709 and that the security must be in a form satisfactory to the Minister (Section 76(1) – NWNSRTA).



Indian and Northern  
Affairs Canada

Affaires indiennes  
et du Nord Canada

Reclaim Project: Meadowbank Laydown

1 MELIADINE WEST BULK SAMPLE PROJECT Sept. 08

ACTIVITY/MATERIAL	Units	Quantity	Cost Code	Unit Cost	% Cost Land	Land Cost	Water Cost
<b>A</b>							
consolidate & ship waste oil	l	1000	ORH	\$4.00	\$4,000	50%	\$2,000
waste oil disposal fee	l	1000	ORH	\$1.04	\$1,040	50%	\$520
consolidate & remove other haz mat'ls	each	1	#N/A	\$2,500	\$2,500	100%	\$2,500
remove barrel inventory	each	1	#N/A	\$2,500	\$2,500	100%	\$2,500
			#N/A	\$0	\$0		\$0
<b>B Camp buildings &amp; infrastructure</b>							
decommission piping & power dist'n	m-HRs	64	avelabl	\$45.48	\$2,910	100%	\$2,910
demolish camp buildings & load	hrs	24	C325h	\$178.50	\$4,284	100%	\$4,284
haul to portal	hrs	16	dumpl	\$80	\$1,280	100%	\$1,280
dispose underground	hrs	32	scoop1	\$138	\$4,416	100%	\$4,416
contour/scarify camp area	hrs	8	dozer1	\$173.40	\$1,387	100%	\$1,387
labour support	hrs	98	avelabl	\$45.48	\$4,455	100%	\$4,455
vegetate	ha	4	vhfil	\$1,627	\$6,508	100%	\$6,508
			#N/A	\$0.00	\$0		\$0
<b>C Portal buildings &amp; infrastructure</b>							
decommission piping & power dist'n	m-HRs	60	avelabl	\$45.48	\$2,728	100%	\$2,728
demolish camp buildings & load	hrs	60	C325h	\$178.50	\$10,710	100%	\$10,710
haul to portal	hrs	32	dumpl	\$80.00	\$2,560	100%	\$2,560
dispose underground	hrs	32	scoop1	\$138	\$4,416	100%	\$4,416
contour/scarify camp area	hrs	8	dozer1	\$173.40	\$1,387	100%	\$1,387
labour support	hrs	140	avelabl	\$45.48	\$6,365	100%	\$6,365
vegetate	ha	2	vhfil	\$1,627	\$3,254	100%	\$3,254
			#N/A	\$0.00	\$0		\$0
<b>Waste Rock &amp; Portal</b>							
groundsupport & ventilation, operate ventilation	allow	1		\$25,000	\$25,000	50%	\$12,500
haul PAG rock underground	m3	8525	scoops	\$27.56	\$234,949	0%	\$0
ARD sampling & reporting	allow	1		\$15,000	\$15,000	0%	\$0
doze till & rock into box cut, contour are	hrs	24	dozer1	\$173.40	\$4,162	100%	\$4,162
doze portal pond & waste rock pad	hrs	8	dozer1	\$173.40	\$1,387	50%	\$694
scarify road - camp to portal	hrs	8	dozer1	\$173.40	\$1,387	100%	\$1,387
vegetate road	ha	2.5	vhfil	\$1,627	\$4,067	100%	\$4,067
<b>E Fuel Facilities</b>							
decommission piping for 15 tanks	h-hrs	16	avelabl	\$45.48	\$727	50%	\$364
load & haul out 16 tanks	each	16	#N/A	\$1,000	\$16,000	100%	\$16,000
excavate contam soil, haul U/G	m3	150	scss	\$16.07	\$2,410	100%	\$2,410
soil testing	allow	1	#N/A	\$5,000	\$5,000	100%	\$5,000
	tonne		#N/A	\$0.00	\$0		\$0
	tonne		#N/A	\$0.00	\$0		\$0
	tonne		#N/A	\$0.00	\$0		\$0
<b>SUB-TOTAL</b>					\$376,789		\$110,763
<b>PERCENTAGES</b>						29%	71%
<b>F Winter Road</b>							
const. twice, equipment in, equipment o	km	50	WR1L	\$1,346	\$67,320		\$19,790
	m3		#N/A	\$0.00	\$0		\$0
camp support	m-days	300		\$75.00	\$22,500		\$6,614
Mobilization (dozer, hiab, dump, 2 scooq	allow	1	#N/A	\$25,000	\$25,000		\$7,349
					\$114,820		\$33,753
<b>H INDIRECT COSTS</b>							
Eng.	5%				\$24,580		\$7,226
Proj. Mgmt	5%				\$24,580		\$7,226
Contingency	20%				\$98,322		\$28,903
<b>Subtotal Indirects &amp; Winter Road</b>					\$262,303		\$77,108
<b>GRAND TOTALS</b>					\$639,092	29%	\$187,870
						Percent Land	Total Land Water