

The attached scoping study is an up-date of a study completed by Echo Bay Mines in 1996. Current costs are used in the study but it relies on resource estimates and metallurgical recoveries used by Echo Bay in 1996. This scoping study is preliminary in nature. It is based on indicated and inferred resources that are considered too speculative geologically to have economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the preliminary assessment will be realized.



## MINE DEVELOPMENT ASSOCIATES

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### MINE ENGINEERING SERVICES

May 8, 2004

Mr. Norm Burmeister  
Kilgore Minerals Ltd.  
Suite 2100, 1177 W. Hastings St.  
Vancouver, British Columbia V6E 2K3  
Canada

Dear Norm:

Mine Development Associates (MDA) has completed a scoping level update of the August, 1996 Initial Engineering Assessment of the Kilgore, Idaho project. The original study was completed by Echo Bay Mines (Jean Claude Placquet and Dieter Krewedl).

#### **Cases**

Echo Bay studied the economics of five cases:

- Base Case – 1.5 million tonnes per year, 10.1 million tonnes total, crush all material to 1.9 cm
- Run of Mine Case – 1.5 million tonnes per year, 10.1 million tonnes total, crush only sulfide materials to 1.9 cm, Oxide and Mixed ROM.
- Increased Recovery Case – 1.5 million tonnes per year, 10.1 million tonnes total, crush all materials to 1.9 cm, Optimistic Gold Recovery
- 3 million tonnes per year, 20.2 million tonnes total, crush all material to 1.9 cm.
- 3.65 million tonnes per year, 24.2 million tonnes total, crush all material to 1.9 cm

MDA was requested to update the 1996 study to present day costs, however, since there was no engineering backup to the study it was not possible to evaluate the detailed individual cost components. MDA did utilize the Echo Bay costs and costs we are aware of for similar operations to update the study.

#### **Geology**

A large epithermal gold deposit is hosted in the volcanic and sedimentary rocks on the Kilgore property. The resource is hosted within quartz stockwork developed in the volcanics and in silicified sedimentary rocks. The highest gold grades are typically associated with minor pyrite and are near lithologic contacts or along structural zones. The mineralization is present in oxide, mixed and sulfide forms, however the oxide materials make up the smallest percentage. The project area is largely unexplored and was considered to be highly prospective by Echo Bay.

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## **Resource**

A total 95 reverse circulation drill holes and 41 core holes have been completed on the property totaling 83,700 ft of drilling. A total of 19 of these 136 holes were drilled outside the resource area. Seven of the 117 drill holes within the resource area were removed from the database due to apparent drill hole contamination. Echo Bay estimated a resource that totaled 15.8 million tonnes averaging 0.90 g Au/t, with 496,500 contained ounces

## **“Potentially Movable Materials”**

Echo Bay did not calculate a reserve for the property. They did, however, use what they described as an “estimate with high confidence, the potential movable part of the resources” based on a 0.6 g Au/t cutoff grade. Echo Bay estimated that the “potential movable” portion totaled 10.097 million tonnes averaging 1.28 g Au/t, containing 417,000 ounces of gold. Echo Bay estimated the stripping ratio of this “potentially movable material” to be 2.7:1.

## **Metallurgy**

Echo Bay estimated recovery from several scenarios:

- Base Case - Crush all of the material to 1.9 cm
  - Oxide - 85% Recovery
  - Mixed - 80% Recovery
  - Sulfide – 65% Recovery
  
- Run of Mine (ROM) Case – Do not crush oxide and mixed material – Crush only the Sulfide Material to 1.9 cm.
  - Oxide – 80% Recovery
  - Mixed – 75% Recovery
  - Sulfide – 65% Recovery

Additional metallurgical testing was recommended by Echo Bay. Some of the tests indicated higher than normal cyanide consumption. The capital and operating costs estimated by Echo Bay for crushing, processing, and pad construction are higher than similar size operations of which we are aware. This was taken into consideration when estimating updated costs.

## **Mining**

MDA used a 50 tonne truck fleet for estimating costs for the base case operation, and a 100 tonne truck fleet for double the base case and the 1 million oz case.

## **Capital Cost Estimate**

Table 1 compares the Echo Bay and MDA estimates for capital costs of the different scenarios.



**Table 1 Kilgore Capital Cost Estimate (\$ Millions)**

CAPITAL COST SUMMARY	Echo Bay Base Case	MDA Base Case	Echo Bay Run of Mine	MDA Run of Mine	Echo Bay 3 M Tpy	MDA 3 M Tpy	Echo Bay 3.6 M Tpy	MDA 3.6 M Tpy
ITEM								
Mining Equipment	\$7.50		\$7.50		\$12.00		\$13.50	
100 Tonne Trucks		\$1.65		\$1.65		\$2.40		\$2.40
16 cy Front Shovel		\$2.00		\$2.00		\$2.00		\$2.00
22 cy Loader		\$1.00		\$1.00		\$2.00		\$2.00
Drill - 45,000 lbs		\$0.63		\$0.63		\$0.63		\$0.63
Drill - Hydraulic		\$0.43		\$0.43		\$0.43		\$0.43
Loader - 50 hp		\$1.20		\$1.20		\$1.20		\$1.20
Grader - 16 ft		\$0.38		\$0.38		\$0.53		\$0.53
Water Truck - 7,000 gal		\$0.35		\$0.35		\$0.35		\$0.35
Other Mobile Equipment		\$0.50		\$0.50		\$0.75		\$0.75
Processing								
ADP Plant	\$0.88	\$0.90	\$0.88	\$0.90	\$1.41	\$1.50	\$1.68	\$1.70
Heap and Ponds	\$7.17	\$6.50	\$7.17	\$6.50	\$11.47	\$11.50	\$12.91	\$12.50
Crushing and Stacking	\$5.75	\$4.50	\$5.75	\$4.50	\$9.20	\$8.00	\$11.36	\$10.00
Infrastructure, Power, Water	\$2.95	\$3.00	\$2.95	\$3.00	\$4.72	\$5.00	\$5.31	\$5.50
EPCM	\$4.84	\$2.24	\$4.84	\$2.24	\$7.74	\$3.90	\$8.71	\$4.46
Owner's Capital		\$1.50		\$1.50		\$2.00		\$2.00
Permitting		\$2.00		\$2.00		\$2.50		\$2.50
Reclamation Bond	\$3.91	\$4.00	\$3.91	\$4.00	\$5.85	\$7.00	\$6.24	\$7.50
<b>Totals</b>	<b>\$33.00</b>	<b>\$32.77</b>	<b>\$33.00</b>	<b>\$27.59</b>	<b>\$52.40</b>	<b>\$52.09</b>	<b>\$59.71</b>	<b>\$56.84</b>

MDA reduced the Echo Bay capital cost estimate of the valley fill heap estimate based on MDA's experience.

### Operating Cost Estimate

Table 2 summarizes the estimated operating cost for the project.

**Table 2 Kilgore Operating Cost Estimate**

Operating Cost Summary	Echo Bay Base Case	MDA Base Case	Echo Bay Run of Mine	MDA Run of Mine	Echo Bay Optimistic	MDA Optimistic	Echo Bay 3 M Tpy	MDA 3 M Tpy	Echo Bay 3.6 M Tpy	MDA 3.6 M Tpy
Item										
Mining										
Ore - Per tonne ore	\$0.80	\$1.00	\$0.80	\$1.00	\$0.80	\$1.00	\$0.80	\$0.90	\$0.80	\$0.85
Waste Per tonne waste	\$0.80	\$0.90	\$0.80	\$0.90	\$0.80	\$0.90	\$0.80	\$0.80	\$0.80	\$0.75
Total - Per tonne ore	\$2.94	\$3.41	\$2.94	\$3.41	\$2.94	\$3.41	\$2.94	\$3.04	\$2.94	\$2.86
Processing										
Crushing and Stacking	\$1.25	\$1.25	\$0.59	\$0.59	\$1.20	\$1.25	\$1.20	\$1.10	\$1.20	\$1.10
Heap Leach	\$1.85	\$1.40	\$1.85	\$1.19	\$1.55	\$1.40	\$1.55	\$1.30	\$1.55	\$1.30
General and Administrative	\$1.10	\$1.15	\$1.10	\$1.15	\$1.10	\$1.15	\$1.10	\$0.80	\$1.10	\$0.70
<b>Totals - per tonne of ore</b>	<b>\$7.14</b>	<b>\$7.21</b>	<b>\$6.48</b>	<b>\$6.34</b>	<b>\$6.79</b>	<b>\$7.21</b>	<b>\$6.79</b>	<b>\$6.24</b>	<b>\$6.79</b>	<b>\$5.96</b>

MDA believed that the Echo Bay cost estimates for mining were on the low side for the lower production rates. Echo Bay projected an \$0.80 per tonne mining cost for all of the cases. MDA also believed that the plant operating costs may be on the high side, but this is dependent on the cyanide consumption of the material. Echo Bay used a constant general and administrative cost per tonne ore for all production rates. MDA believes that this cost will remain constant in total dollars, but vary in cost per tonne.

### Economics

Table 3 summarizes the economics of the different alternatives for the project evaluated at a gold price of \$375 per ounce of gold.



**Table 3 Kilgore Project Economics - Summary**

Case	Annual Tonnes Ore	Daily Total Tonnes	Ave Grade g Au/t	Contained Oz Au	Recovered Oz Au	Ave Recovery	Capital Cost (Initial)	Operating Cost	Cost/Oz Au	NPV (5%)	IRR
Base	1,524,000	15,134	1.28	417,026	321,344	77.06%	\$32,765,000	\$7.21	\$226.4	\$3,881,000	7.79%
Base (Metallurgical Recovery)	1,524,000	15,134	1.28	417,026	301,495	72.30%	\$32,765,000	\$7.21	\$241.3	(\$1,417,000)	3.87%
Base (Oxide, Mixed ROM)	1,524,000	15,134	1.28	417,026	304,500	73.02%	\$27,590,000	\$6.34	\$210.1	\$7,748,000	11.44%
Base (Increase Recovery)	1,524,000	15,134	1.28	417,026	344,299	82.56%	\$32,765,000	\$7.21	\$211.3	\$10,656,000	12.51%
Double Base Production	3,048,000	30,268	1.28	834,052	642,688	77.06%	\$52,085,000	\$6.24	\$196.0	\$36,030,000	19.99%
1 Million Ounce Case	3,637,000	36,321	1.28	1,000,845	771,211	77.06%	\$36,840,000	\$5.96	\$187.1	\$33,856,000	24.97%

Table 3 indicates that the project is not likely to be economic until additional drilling is completed, however if additional minable material is developed by drilling, the project has a reasonable chance of becoming viable. The sensitivity of the base case and double the base case are shown in Figures 1 and 2.

**Figure 1 Base Case Sensitivity**

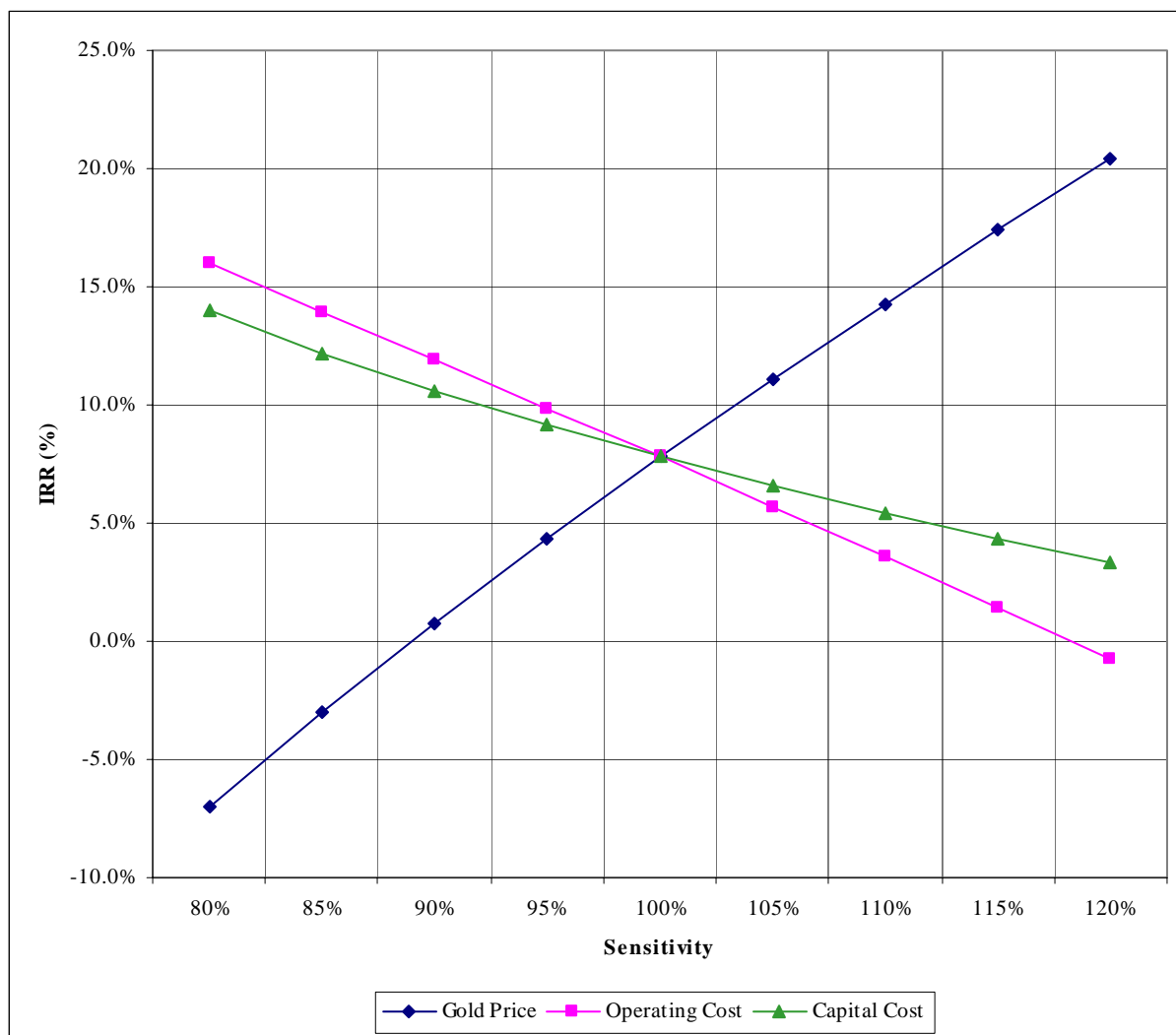
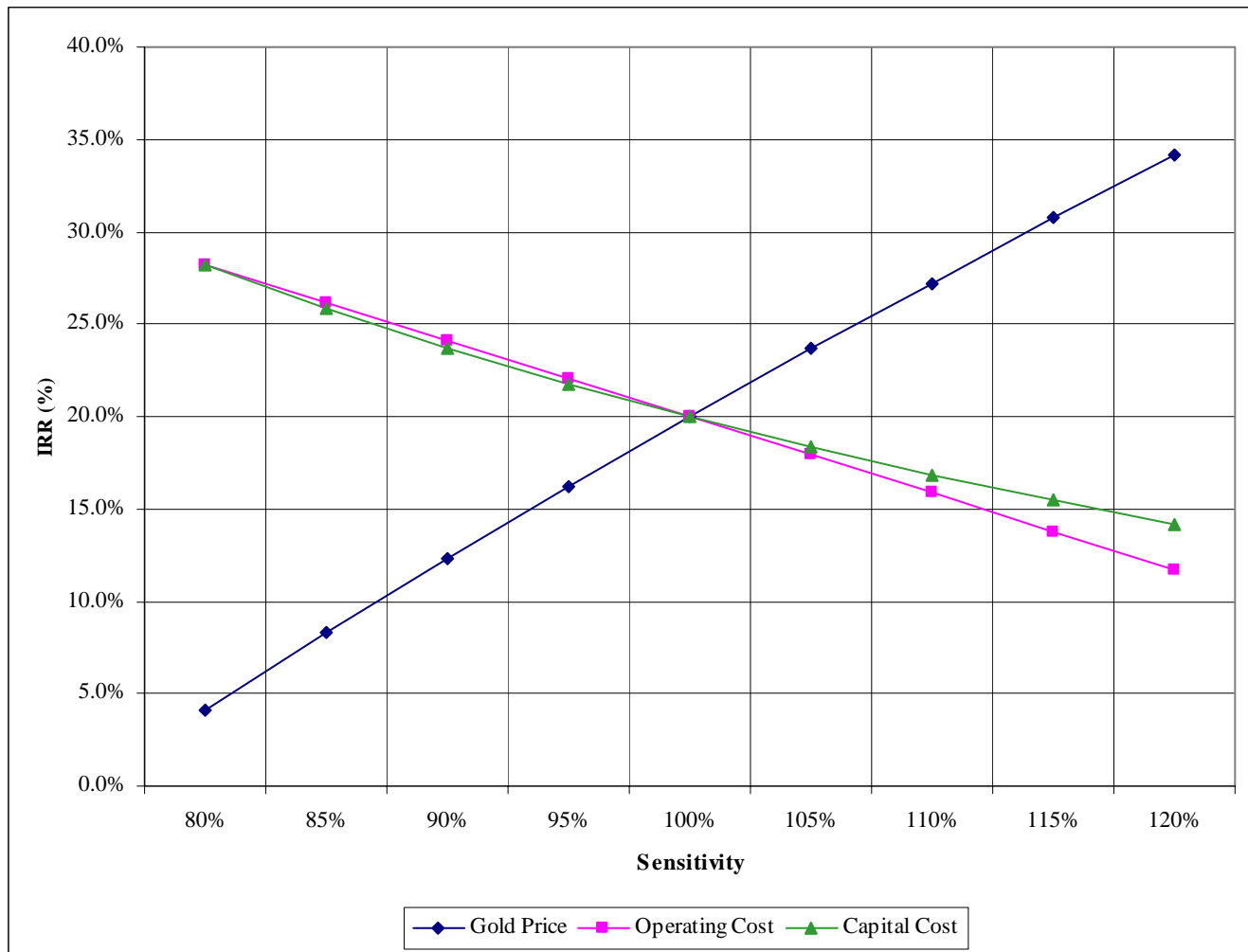




Figure 2 – Double Minable Tonnes Sensitivity



## Conclusions

The project appears to have reasonably attractive economics if the “potentially minable material” can be doubled at a \$375/ounce gold price.

Neil B. Prenn, P.E.

### Qualified Person

The report herein was conducted under the supervision of Neil B. Prenn, P.E. of Mine Development Associates. Mr. Prenn is the Qualified Person for the purpose of this report.