A VALUATION OF THE

TILLICUM MOUNTAIN PROJECT

FOR

COLUMBIA GOLD MINES LTD.

JUNE 1994

PREPARED BY:

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EXECUTIVE SUMMARY

Ross Glanville & Associates Ltd. ("Glanville") was commissioned by Mr. John Brock, President of Columbia Gold Mines Ltd.[1] ("Columbia") to determine the Fair Market Value of the Tillicum Mountain Property as of June 1994. For this purpose, Fair Market Value means the highest price, expressed in money, obtainable in an open and unrestricted market between knowledgeable, prudent, and willing parties dealing at arm's length, who are fully informed and not under compulsion to transact.

The determination of the Fair Market Value of the Tillicum Mountain Property was based on geological, mining, and economic assessments, together with an analysis of "comparable" gold properties. Although a great many methods have been utilized to value mining properties (see Appendix II where several methods are briefly described), four methods were considered to be appropriate for valuing the Tillicum Mountain Property. These methods are listed below and described in more detail in this report:

- Adjusted discounted cash flow projections
- Dollars per ounce of gold contained in reserves
- Adjusted past expenditures
- Comparable properties

The Tillicum Mountain Property is situated in the Arrow Lakes region of southeastern British Columbia, 11 miles by road east of the village of Burton. The property consists of 208 metric grid claim units, 21 two-post claims, and six crown granted mineral claims, and covers an area of approximately 6,000 hectares (15,000 acres). Columbia Gold Mines Ltd. owns a 100% interest in the property, subject to advance royalties (advanced against a 1% to 3% variable net smelter return royalty from future production) of $80,000 per year. Royalty payments are capped at $6.0 million.

The Tillicum Mountain Property is an advanced mining property since it has substantial probable and possible[2] reserves, underground development (adits and raises) in place, and many good targets to explore via extensions of existing adits and drilling from underground and surface (where other vein systems have been indicated). During the period 1980 to 1993, over $11.2 million dollars has been spent on exploring and developing the property.

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[1] Formerly Esperanza Explorations Ltd. prior to the rollback of shares and name change to Columbia Gold Mines Ltd.

[2] "Probable" is equivalent to "Indicated", while "Possible" is equivalent to "Inferred".

Three gold zones have been explored within the property; Heino-Money, Grizzly, and East Ridge. Reserves within the Heino-Money have been partially mined, the Grizzly is at an early stage of exploration, while the East Ridge deposit contains the majority of presently defined gold reserves. Reserves for the East Ridge Deposit have been calculated by Columbia Gold Mines Ltd. to be as follows:

Deposit	Reserve Category	Tons[3]	Grade[4]	Contained Ounces
East Ridge	Drill Indicated	299,100	0.34	101,700
East Ridge North Extension	Drill Indicated	163,800	0.26	42,600
East Ridge North Extension	Drill Inferred	709,300	0.22	156,00
	TOTAL	**1,172,200**	**0.26**	**300,300**

The East Ridge Deposit remains open along strike and to depth, and there is good potential of adding to reserves with additional drilling and/or underground development[5].

The Grizzly Zone, located approximately 3,000 feet to the southeast of the East Ridge deposit, represents a large mineralized system, with attractive gold grades, that requires further drill testing. Although there are additional targets in the Heino-Money Zone (which was mined in 1993) and some potential in the Arnie Flats Zone and Silver Queen Zone, these are lower priority. However, the property is very large, and exploration for additional targets is warranted.

Utilizing the valuation methods as previously listed in this Executive Summary (and described in more detail in this report), the indicated Fair Market Values (as determined by the various valuation methods) are summarized below:

Valuation Method	Indicated Fair Market Value
Adjusted discounted cash flow	$8.4 million
Dollars per ounces of gold in reserves	$6.2 million
Adjusted past expenditures	$7.0 million
Comparable properties	$7.5 million

Based on a review of the foregoing, it is Glanville's' opinion that the Fair Market Value of the Tillicum Mountain Property is approximately $7.0 million, with a range of between $5.0 and $9.0 million. Such an apparent wide range is not inconsistent with the risks inherent in exploration and development, as well as the uncertainties related to external factors such as the price of gold.

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[3] At a cutoff grade of 0.15 ounces of gold per ton.
[4] At a cutoff grade of 0.15 ounces of gold per ton.
[5] See article in Appendix III regarding reserve factors.

INTRODUCTION AND TERMS OF REFERENCE

Ross Glanville & Associates Ltd. (Glanville) was commissioned by Mr. John Brock, President of Columbia Gold Mines Ltd., to determine the Fair Market Value of the Tillicum Mountain Property as of June 1994. To accomplish this assignment, Glanville reviewed a variety of reports, documents, and data sources, including those set out below[6]. Portions of some of the reports have been incorporated into this report. Glanville also estimated capital and operating costs for a mining operation of 300 tons per day based on previous experience and costs of comparable operations.

1. Report on the 1993 Program of Mining and Exploration at Tillicum Mountain, by M. Tindall, B.Sc., P.Geo., of Bethlehem Resources Corporation, November 1993.
2. Summary Report of the 1989 Exploration Program on the Tillicum Mountain Property, by Barry D. Devlin and Wayne J. Roberts, November 1989.
3. Preliminary Economic Feasibility of the Heino-Money Gold Deposit, by C.R. Saunders, P.Eng., November 30, 1989.
4. Ore Reserves for the Tillicum Mountain Project by C.R. Saunders, P. Eng., and D.R. Budinski, P.Geo., November 15, 1989.
5. Tillicum Mountain Gold Project, Burton, British Columbia, by Columbia Gold Mines Ltd., September 1989.
6. Summary Report, 1987 Exploration Program, Heino-Money Deposit (Volumes I, II and III), by Dave Tupper and Wayne Roberts, April 1988.
7. Plans and Sections of underground workings.
8. Drilling results (and drill core logs).
9. Records of limited production.

A field examination of the Tillicum Mine Property was not made at this time, although Glanville has previously been on the property. Glanville did not check the title to the claims, as this is best done by legal counsel.

The attached report has been prepared for Columbia gold Mines Ltd., and is based partly on information provided to Glanville and partly on Glanville's experience in

[6] Glanville also met with Mr. John Brock and Mr. Wayne Roberts of Columbia Gold Mines.

valuing comparable properties. While care has been taken with the compilation of this report, Ross Glanville & Associates Ltd. hereby disclaims any and all liability arising out of its use or circulation. Although it is believed that the information contained herein is reliable under the conditions and subject to the limitations contained herein, Ross Glanville & Associates Ltd. does not guarantee the accuracy thereof, and the use of this report or any part thereof shall be at the user's risk.

VALUATION METHODOLOGIES

Although a great many methods have been utilized in the past to value mining properties (see Appendix IV where a variety of methods are briefly described), most of the methods are not appropriate for valuing the Tillicum Mountain Property. The most appropriate valuation methods in this case are the "adjusted discounted cash flow projections", "dollars per ounce of gold reserves", "adjusted past expenditures", and "comparable properties". These methods are described after the following brief summary of the discounted cash flow method.

Discounted Cash Flow

The discounted cash flow (DCF) method is the most commonly used, and most widely accepted, method of valuing mining operations. In addition, it is the usual method for valuing mineral properties that have been advanced to the stage at which a feasibility study could commence.

Mines and mineral properties are usually exchanged at a purchase price which reflects the results of the DCF method of establishing value. This method is also utilized by mining companies to determine if mineral properties should be placed into production. In addition, other financial organizations such as banks and investment dealers use the DCF method as part of their financial analyses.

The discounted cash flow method gives recognition to all cash inflows (revenues) and outflows (or expenses) such as operating costs, capital costs, and income taxes. It also takes into account risk, inflation, and the cost of money (interest). The discounted cash flow method is forward looking (that is, past expenditures are irrelevant) and is general in application.

Adjusted Discounted Cash Flow

For properties that are not yet at the feasibility stage, or where additional reserves are projected, one can use a combination of the discounted cash flow method and a probability application (the adjusted disconnted cash flow method). This probability is based on a judgment of the likelihood and timing of achieving the projected reserves (and other input parameters and/or assumptions) and proceeding to profitable production. With mining properties, both the quantity and quality (tons and grade of reserves) are only partially determined at a particular point in time. Thus, a valuator must make reasonable judgments as to expected tons and grade of reserves based on available data on the property, results at other "comparable" mining properties, and the experience and expertise of the valuator.

Dollars per Ounce of Gold Reserves

A review of actual transactions of gold properties (at the stage of Tillicum Mountain) provides data on "dollars per ounce of contained gold in reserves". Although the "dollars per ounce" figures can sometimes vary considerably, most of the numbers fall in a reasonable range, and can therefore be used as an indicator of value.

Adjusted Past Expenditures

Although past expenditures (adjusted upwards for exploration success, or downwards for less attractive results) can provide a guide to value, one must be careful in their application. Nevertheless, potential vendors and purchasers of exploration properties often consider past expenditures when negotiating option terms.

Comparable Properties

In addition to the foregoing valuation methods, one can also get an indication of values by looking at the values of comparable properties (based on actual transactions), with appropriate adjustments for various differences. The market capitalization of a public company whose major interest is the property (or a portion of the property) can also be used as a guide to value. If there are other significant net assets or liabilities (such as working capital, debt, and other substantial exploration properties, etc.) one should make adjustments for these.

LOCATION/ACCESS/INFRASTRUCTURE/TOPOGRAPHY

The Tillicum Mountain Property is situated in the Arrow Lakes region of southeastern British Columbia, 11 miles by road east of the village of Burton (see attached map). The property overlies Tillicum Mountain, on the western limits of the Valhalla Range, within the Slocan Mining Division. The approximate coordinates for the centre of the claim group is latitude 49°49'N and longitude 117°43'W; N.T.S. (82F/13 and 82K4). Elevations on the property range from 2,950 feet to 7,550 feet.

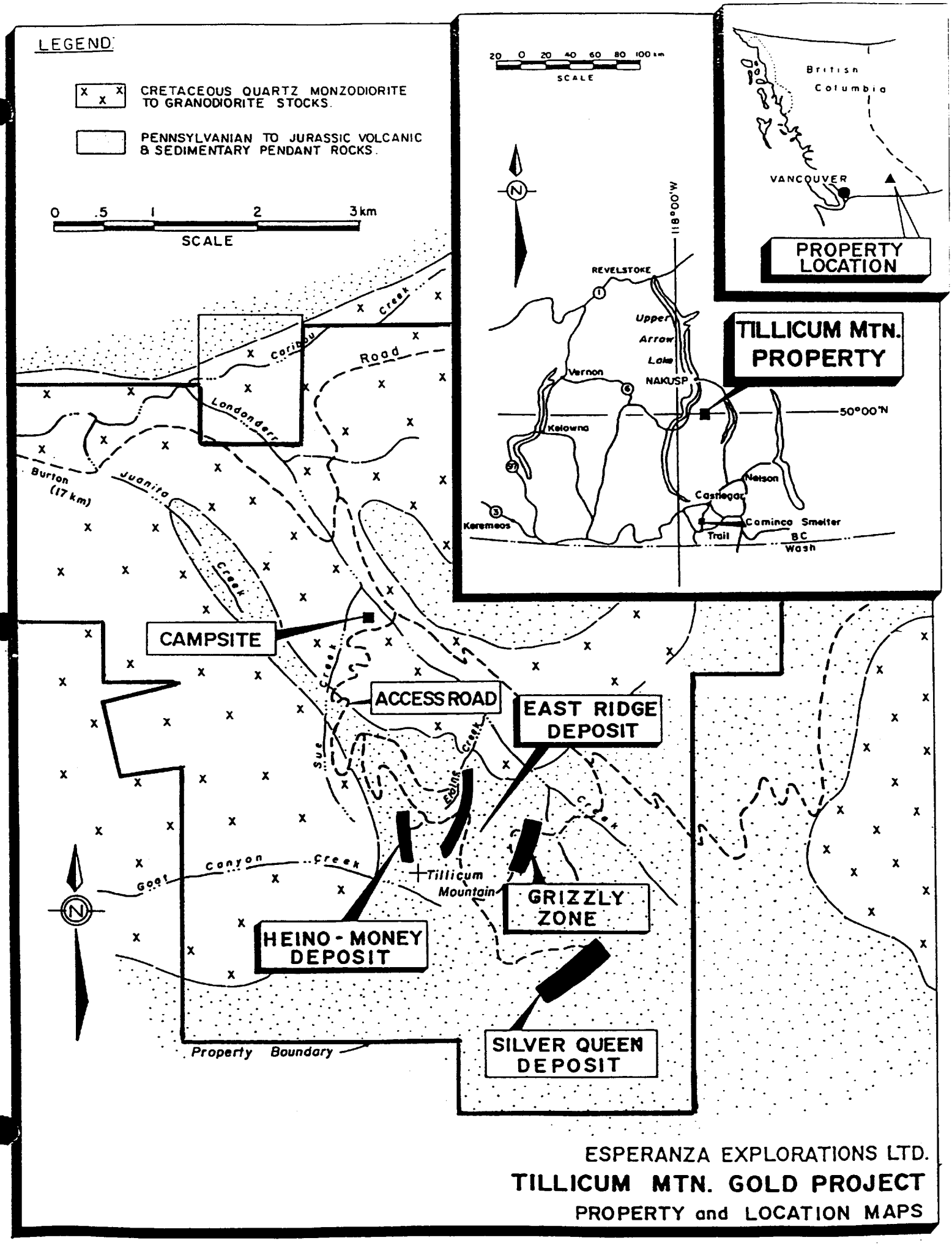
Access to the property is from Burton via a network of logging and mine access roads up Caribou and Londonderry Creeks. Total distance by road from Burton to the Heino-Money portal is 17 miles. The road is passable by 2-wheel drive truck to the central part of the property, then by 4-wheel drive to the various mineral zones.

Full service facilities, including housing, exist at Burton and the nearby town of Nakusp, located 36 miles north of Burton. Water, sufficient for diamond drilling and underground development is available below 6,250 feet in elevation from either Elaine or Sue Creeks, which drain the northern slopes of Tillicum Mountain. Snow clearing programs in the winter months allow underground and surface exploration programs to be conducted throughout the year.

The terrain is rugged, with steep to precipitous slopes which are eovered by a thin veneer of overburden. Bedrock exposure is generally confined to ridge crests, and comprises approximately 5% of the surface area of the claims. Coniferous forest extends to within 300 feet of the mountain peaks, with alpine vegetation on the peaks and ridges. Rainfall in the region is moderate, with precipitation common at all times of the year. Snowfall rarely exceeds 3 metres; however, drifts to 6 metres have been reported from the mine site in mid-winter.

CLAIM STATUS

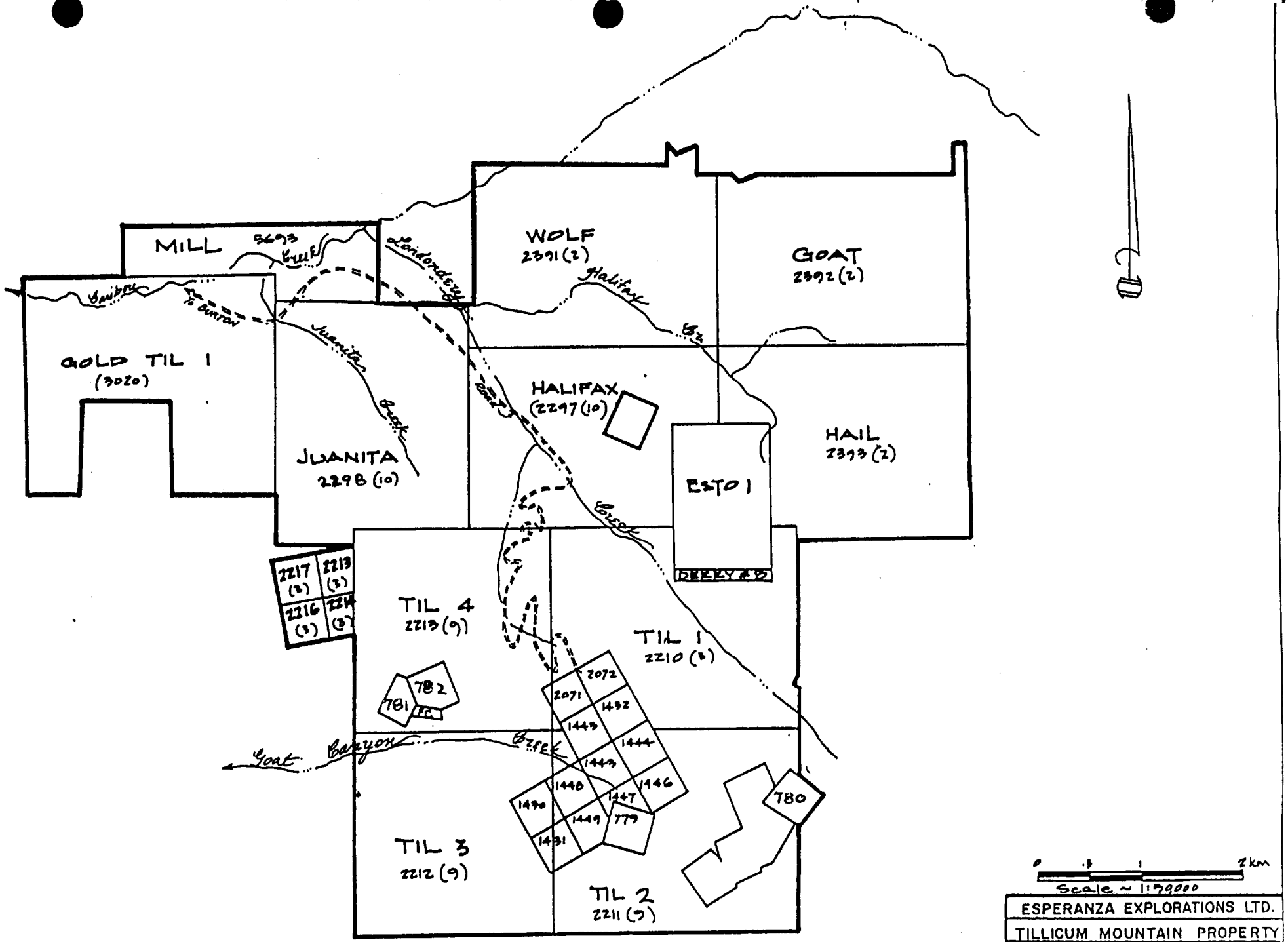
The Tillicum Mountain Property consists of 208 metric grid claim units, 21 two-post claims and six Crown granted mineral claims (see attached claim map).



ESPERANZA EXPLORATIONS LTD.

TILLICUM MTN. GOLD PROJECT

PROPERTY and LOCATION MAPS


MILL
5693
WOLF
2391 (2)
GOAT
2392 (2)
GOLD TIL 1
(3020)
JUANITA
2298 (10)
HALIFAX
(2297 (10)
HAIL
2393 (2)
ESTO 1
DERBY #2
2217 (3)
2213 (3)
2216 (3)
TIL 4
2213 (9)
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ESPERANZA EXPLORATIONS LTD.
TILLICUM MOUNTAIN PROPERTY
CLAIM MAP
SLOCAN MINING DIVISION, B.C.

Columbia owns 100% interest in the claims subject to advance royalty payments to local prospectors.

LIST OF CLAIMS			
Name of Claim	**Claim Units**	**Assessment Record No.**	**Due Date**
Age	4	2214-2217	Sept. 29, 1997
Black Bear	1	780	Aug. 08, 1997
Golden Hope	1	779	Aug. 08, 1997
Hugh	1	2072	July 29, 1997
Little Joe Molly Fr.	1	781	Aug. 08, 1997
Molly	1	782	Aug. 08, 1997
Near 1 - 7 incl.	7	1446-1452	Sept. 20, 1997
Sandy Too 103 incl.	3	1443-1445	Sept. 20, 1997
Til 1 - 4 incl.	72	2210-2213	Sept. 29, 1999
Wolf	1	2071	July 29, 1997
Halifax	20	2297	Oct. 28, 1995
Juanita	20	2298	Oct. 28, 1997
Esto #1	6	4031	July 29, 1997
Derry #8 Fr.	1	5214	Feb. 19, 1998
Mill #1	10	5693	May 17, 1997
Goat	20	2392	Feb. 12, 1995
Hail	20	2393	Feb. 12, 1995
Wolf	20	2391	Feb. 12, 1995
Gold Till 1	20	3020	Aug. 27, 1997
Sub-total	229 Claims		

LIST OF CROWN GRANTS		
Name of Claim	**Claim Units**	**Grant Number**
Grey Wolf	1	D.L. #2204 Crown Grant
Grey Wolf Fraction	1	D.L. #2209 Crown Grant
Red Fox	1	D.L. #2205 Crown Grant
Black Fox	1	D.L. #2206 Crown Grant
Black Fox Fraction	1	D.L. # 2207 Crown Grant
Black Bear Fraction	1	D.L. #2582 Crown Grant
Sub total	6	Grants
TOTAL	**235**	**Claims**

EXPLORATION AND MINING HISTORY

The town of Burton, founded in 1895, was originally a gold mining camp. There are reports of numerous placer gold operations within the Caribou Creek system during the early 1900's. The Caribou Creek basin also contains several abandoned workings that saw intermittent small-scale mining activity during the period 1896 to 1930.

Within the Tillicum Mountain area during the period 1925 to 1960, prospectors staked and worked the old Gold Hope, Tribune and Tillicum claims, but failed to find the "source" of placer gold in many of the creeks draining this rusty coloured peak. However, in 1980, local prospectors discovered gold in what is now known as the Heino-Money Zone, on the north side of Tillicum peak.

In the fall of 1980, Esperanza Explorations Ltd. optioned the property and initiated an exploration program that sparked a district wide staking rush. From 1981 to 1988, Esperanza completed 87,406 feet of surface diamond drilling and 12,681 feet of underground diamond drilling for a total of 100,087 feet in 362 holes. Over 80 percent of the drilling was carried out on the Heino-Money and East Ridge deposits, with limited drilling on the other zones. During the same period, underground drifting, totalling 4,570 feet, was conducted on the Heino-Money deposit. A total of 1,347 feet of drifting, with limited raising, was completed in the upper portion of the East Ridge deposit.

During 1985 and 1986, the underground drifting programs and surface trenches at Heino-Money produced a 3,500 ton bulk sample which was processed in nearby custom mills. Use of a standard crushing, grinding, gravity and floatation circuit resulted in 92% recovery of gold. A total of 3,200 ounces of gold was produced from the metallurgical testing program.

In 1989, a program of surface drilling was completed on both the Grizzly and East Ridge Zones. Four holes, totalling 2,068 feet, on the Grizzly Zone outlined a large sulphide-gold mineralized system over a strike length in excess of 1,700 feet. A total of 4,700 feet of drilling in 10 holes within the northern extension of the East Ridge Gold Zone developed continuity of mineralization within an area previously tested by widely spaced holes.

In early 1993, Bethlehem Resources Corporation and Goldnev Resources Inc. optioned the Tillicum property from the owner, Columbia Gold Mines Ltd. Permitting for a mining program at Tillicum Mountain began in the spring of 1993. Rehabilitation of the camp, mine road and underground workings on the property took place in July and early August. Mining commenced in mid August and was completed in late October, Mining was contracted to Procon Mining and Tunneling Ltd. The project was operated by Bethlehem Resources Corporation.

REGIONAL GEOLOGY

The Tillicum Mountain gold property covers a portion of a roof pendant at the northwest end of a 150 mile-long arcuate belt of Rossland Group volcanics. This belt is host to several gold mines and prospects, with total recorded production over the past 80 years in excess of four million ounces of gold.

The property is underlain by a sequence of Upper Paleozoic Milford Group volcano-sedimentary rocks that are overlain by Jurassic Rossland Group andesitic flows and tuffaceous siltstones. Intruded into the above succession are stocks and sills of syenite to diorite porphyry. All units have been metamorphosed to lower greenschist facies and intruded by Cretaceous-age granodiorite of the Goat Canyon and Halifax Creek botholiths. Late lamprophyre dyke swarms intrude Jurassic and older assemblages.

PROPERTY GEOLOGY

Pennsylvanian to Triassic Milford Group forms the base of the statigraphic succession on the property and consists of siltstones, quartzites and limey sediments which have been regionally metamorphosed to hornfels, schists and gneisses. The Milford succession underlies much of the south and eastern portion of the claims and is host for the stratabound silver mineralization at the Silver Queen Zone.

Milford Group metasedimentary rocks are overlain by metamorphosed volcanic and volcaniclastic rocks that correlate with the Elise Formation of the Lower Jurassic Rossland Group. In the Tillicum Mountain area, the Elise Formation is comprised of massive basaltic-andesite flows which are both overlain by and

locally interbedded with mafic tuff and shale. The Elise Formation can be further subdivided into massive flows, breccia and tuffs of the Lower Elise Formation, which are overlain by pyroclasitc, epiclastic and minor flows of the Upper Elise Formation.

Porphyritic rocks intrude into the Milford-Rossland Group succession, forming dykes and sills to 600 feet in thickness. These intrusives pre-date the Cretaceous stocks and occur in two northeast trending belts that host all known gold-silver skarn mineralization. Composition of the porphyry rocks varies from quartz monzodiorite at Tillicum Mountain to quartz monzonite at Hailstorm Ridge. The intrusive bodies have cores with medium grained crowded porphyritic texture, gradational into margins that are fine grained and granular. Intense alteration and recrystallization of the sedimentary units adjacent to larger porphyry bodies has produced a dioritized unit unique to the district.

Faulting is dominated by moderate to steep angle, normal and reverse structures. Most faults have minor offsets; however, several faults with major displacements divide the property into fault bounded blocks. Within fault bound blocks, little evidence of folding exists. The metamorphic fabric of the rock closely parallels the bedding planes, with minor or parasitic folding only very rarely observed.

The two northeast trending belts of porphyry sills and stocks host all known potentially economic gold-silver skarn mineralization in the district. These belts average 3,000 feet in width and have been traced for a strike length of 3 miles.

MINERALIZATION

Gold and/or silver mineralization occurs in shear-related calc-silicate quartz skarns developed in metasedimentary and metavolcanic rocks of both the Milford and Rossland Groups adjacent to or in close proximity to quartz monzodiorite porphyry sills. Skarn assemblages consist of quartz, plagioclase, sericite, tremolite-actinolite, clinozoisite, garnet, biotite and microcline. High grade "bonanza type" gold ore shoots are hosted within quartz-actinolite-chlorite assemblages. Skarns contain quartz-calc-silicate segregations, injections and veins

that vary from less than 1 inch to 10 feet thick. Skarn zones vary in thickness from 2 to 200 feet.

Native gold occurs within the skarn assemblages as 25 micron disseminations to 1 centimeter coarse flakes within and along the margins of the quartz calc-silicate segregations. Skarns also contain variable amounts of pyrrhotite, pyrite, sphalerite, and galena, as well as traces of chalcopyrite and tetrahedrite. The sulphides occur as fine disseminations oriented within the plane of the metamorphic foliation, or as coarse grained aggregates within the segregations. Petrographic studies of polished thin sections indicate that the gold is contemporaneous with pyrrhotite, pyrite, spahlerite, galena mineralization and predates arsenopyrite and tetrahedrite crystallization.

The silver content of the skarns is highly variable. Gold rich skarns commonly have silver-gold ratios that vary from 4:1 to less than 1:1. Silver rich skarns, such as the Silver Queen Zone, contain low gold values.

In summary, all know gold-silver skarns are spatially associated with swarms of quartz monzonite to quartz monzodiorite porphyry intrusions. The discovery of 10 gold-silver zones on the property has outlined the potential for both high grade underground and bulk tonnage low grade open pit reserves.

EAST RIDGE ORE RESERVES

The East Ridge Zone comprises a large gold mineralized system with a north-south strike length in excess of 3,500 feet. Multiple gold bearing skarn horizons occur within a calc-silicate altered succession of tuffaceous sediments and volcanics reaching a thickness of 250 feet, overlying a diorite porphyry intrusion. Diamond drilling to date has traced the mineralization to a depth of 1,200 feet. The zone dips at an average of 55 degrees to the west. The East Ridge Zone remains open along strike to the north and to depth.

To date, five gold bearing horizons within the East Ridge Zone have been identified by surface exploration and diamond drilling. High grade gold values are associated with quartz-pyrite-pyrrhotite mineralization with trace amounts of sphalerite and galena. Zones of high quartz-gold and sulphides appear to represent

a combination of alteration fronts associated with intense calc-silicate development and bedding plane structures that provided channelways for migration of ore forming fluids.

Native gold occurs as 30 micron grains to 2mm flakes and is intimately associated with translucent quartz. A number of branching quartz-rich structures associated with the four main horizons hold demonstrated potential for high grade gold shoots.

Exploration to date has resulted in the discovery of a significant gold deposit. Drilling at East Ridge has defined continuity of gold mineralization in the "main zone" or A-Zone and led to the discovery of four additional sub-parallel horizons. The horizons appear to be stacked at regular intervals throughout the calc-silicate altered sediment-volcanic package. Lower grade intervals range to 0.11 oz./ton gold over 33 feet and 0.08 oz/ton gold over 80 feet, with narrower higher grade horizons assaying to 0.66 oz/ton gold across 14.5 feet. Many drill holes have visible gold in the mineralized horizon.

Within the southern part of the East Ridge Zone a total of 54 drill holes, with roughly 100 foot spacing along a strike length of 1,000 feet and depth of 800 feet, has defined a drill indicated geological reserve of 350,000 tons grading 0.31 oz/ton gold. This reserve was calculated using a cutoff grade of 0.12 oz/ton gold. The comparable numbers at a cutoff grade of 0.15 oz/ton gold are 299,100 tons grading 0.34 oz/ton gold.

Wide spaced drilling to the north outlined an additional 2,500 feet of strike length, with intersections to a depth of 1,300 feet. Zone thickness varies from 3 to 14 feet, with an average thickness of 7.0 feet. All 21 holes intersected the main "A-Zone" skarn. The drill indicated reserves for this block are 228,000 tons grading 0.22 oz/ton gold at a 0.12 oz/ton cutoff, or 163,800 tons grading 0.26 oz/ton gold at a 0.15 oz/ton cutoff. The drill inferred reserves are 810,000 tons grading 0.21 oz/ton gold at a 0.12 oz/ton cutoff, or 709,300 tons grading 0.22 oz/ton gold at a 0.15 oz/ton cutoff.

A summary of the geological reserves calculated by Columbia Gold Mines Ltd. is provided on the next page:

Deposit	Reserve Categories	Cutoff Grade of 0.12 Oz/Ton		Cutoff Grade of 0.15 Oz/Ton	
		Tons	Grade	Tons	Grade
East Ridge	Drill Indicated	350,000	0.31	299,100	0.34
East Ridge North Extension	Drill Indicated	228,500	0.22	163,800	0.26
East Ridge North Extension	Drill Inferred	810,000	0.21	709,300	0.22

EXPLORATION POTENTIAL

East Ridge Zone

Diamond drilling of the north extension of the East Ridge deposit has defined continuity of gold mineralization within the A1 and A horizons. Gold mineralization in the B horizon was intersected in 4 out of the 10 holes drilled in 1989. Diamond drilling programs within the East Ridge deposit have provided data points at roughly 200 foot centres which define strike and depth continuity of gold grades. The deposit remains open along strike and to depth.

Future exploration work on the Tillicum Mountain Property should involve an underground drifting and raising program (along with drilling) on the East Ridge Zone. This is required to define continuity and grade of existing mineralization, as well as to add to reserves. The cost of such a program is expected to be approximately $2.5 million.

Grizzly Zone

The Grizzly Zone, located approximately 3,000 feet to the southeast of the Heino-Money and East Ridge deposits was previously outlined by geochemical surveys and prospecting. Mineralization occurs as massive pyrrhotite lenses, with minor sphalerite and galena in pelitic schists. The calc-silicate and silicious alteration zones range in thickness from 2 feet up to 49 feet.

The 1989 program on the Grizzly Zone outlined gold-/silver mineralization in similar volcano-sedimentary and intrusive units that host the Heino-Money and East Ridge deposits. Gold and silver mineralization occurs in shear related calc-

silicate quartz skarns, locally associated with irregular bands of pyrrhotite and pyrite. Gold skarn has been discovered in both the tuffaceous volcanic and footwall diorite hybrid units. The Grizzly Zone has been delineated through surface exposures and drilling for a strike length of over 1,500 feet. Mineralization remains open along strike and to depth.

Diamond drilling of four widely spaced holes over the strike length of 1,500 feet resulted in gold grades from 0.58 oz/ton gold over 3.5 feet to 0.15 oz/ton over 15 feet. The most northerly hole intersected a large mineralizing system with a 250 foot thick section of intense calc-silicate skarn associated with pyrite-lead mineralization structurally overlain by a 40 foot section grading 0.08 oz/ton gold. The Grizzly represents a large mineralized system with attractive gold grades that requires further drill testing.

Heino-Money Zone

The Heino-Money deposit is considered to be the vertical extension of the East Ridge gold zone that is offset to the west by a northeast striking, northwest dipping system of branching normal faults. The offset of the two deposits postdates the emplacement of the mineralizing diorite porphyry intrusion and appears to have occurred primarily along the well developed Aussie Fault. Gold-sulphide mineralization has been discovered along the Aussie Fault and associated shears.

The recognized high grade ore in the Heino-Money Zone on the Tillicum Mountain property was extracted during the 1993 mining program and trucked to Goldstream for milling. The amount of ore processed totalled 6,067 tons with a calculated head grade of approximately 0.578 oz/ton gold versus 13,244 tons grading 1.03 oz/ton gold in the proven and probable categories of the ore reserve estimate. Approximately 1,400 tons of low grade muck, with an estimated gold content of 0.142 oz/ton, was also mined during 1993. The low grade muck is stockpiled at the Tillicum property.

The 1993 exploration at Tillicum Mountain failed to outline any substantial additional, readily mineable, reserves of gold mineralization. It is believed that the potential is high for additional, small zones of high grade gold mineralization

within the Heino-Money trend. However, the cost of identifying and developing zones of this nature would, most likely, be high.

Arnie Flats Zone

The 1989 diamond drilling program outlined two sub-parallel shear-related calc-silicate skarn horizons dipping moderately to the southeast within the Arnie Flats Zone. Drilling also showed the target area to be underlain by the same volcano-sedimentary and intrusive rock units that host the gold-silver skarns of the Heino-Money, East Ridge and Grizzly Zones. Skarn mineralization in the Arnie Flats Zone consists of an epidote-bearing calc-silicate skarn mineralized with subhedral pyrite and possibly argentite or tetrahedrite. Gold values are generally low. High grade silver values previously obtained from surface trenches do not persist to depth. It is suggested that the surface high grade silver values obtained at surface are a result of supergene enrichment. No further work is recommended for the Arnie Flats Zone.

Silver Queen Zone

The Silver Queen Zone has the potential to contain several million ounces of silver. However, the grade is relatively low, and any additional exploration in this area should be delayed until there is a substantial inerease in the silver price.

VALUATION OF TILLICUM MOUNTAIN PROPERTY

The valuation of the Tillicum Mountain Property has been based on several approaches, as listed below and discussed in subsequent sections:

- Adjusted discounted cash flow projections
- Dollars per ounce of gold in reserves
- Past expenditures
- Comparable properties

Adjusted Discounted Cash Flow Projections

For properties that are not yet at the feasibility stage, or where additional reserves are projected, one can use a combination of the discounted cash flow method and a probability application (the adjusted discounted cash flow method). This probability is based on a judgment of the likelihood and timing of achieving the

projected input parameters and/or assumptions.

In any valuation of a gold mining property at the stage of the Tillicum Mountain Property, it is important to understand the known ore reserves to obtain an indication of the tenor of the grades. However, it is also important to make estimations or projections of expected ore reserves based on known information and experience at other mining properties. Such projections are a normal, prudent, and reasonable method of quantifying the expectations of geologists, mining engineers, and mining analysts. These projections, along with estimates of the probability of achieving the various projected ore reserve targets, are then utilized by the valuator to arrive at expected net present values. This process is commonplace, and is carried out by exploration groups, mining companies, mining analysts and mine valuators. Although there may be differences in opinions as to the precise probabilities of achieving various input parameters, there can be no doubt that this valuation process is utilized both explicitly (by, for example, stating projections of ore reserves combined with probabilities of achieving the projections) and implicitly (the market values of companies with exploration potential are often many multiples of the values derived from only the proven and probable reserves).

For underground gold mining properties, the ratio of "most likely reserves" to "stated reserves" can by many multiples (see Appendix III). Actual mine lives (based on what was produced plus the remaining reserves) are often many times the stated mine lives at the start of production. This result is because it is very costly to "prove up" reserves to such an extent that they would classify as proven and /or probable. It is generally more realistic to start production with a smaller amount of reserves and add to reserves with on-going development as production continues.

Although no feasibility study has been prepared for the East Ridge deposit, Glanville has prepared a preliminary economic evaluation. The assumptions in that evaluation (some of which may be optimistic, although achievable under good conditions), are provided below.

As stated earlier in this report, the in-situ geological reserves at a 0.15oz/ton gold cutoff were determined to be as follows:

Deposit	Categories	Tons	Grade	Ounces
East Ridge	Indicated	299,100	0.34	101,700
North Ridge	Indicated	163,800	0.26	42.600
North Ridge	Inferred	709,300	0.22	156,000
	TOTAL	**1,172,200**	**0.26**	**300,300**

After applying mining dilution and extraction factors to the foregoing, the mineable reserves (indicated and inferred only) have been estimated[7] to be approximately as follows:

Deposit	Categories	Tons	Grade	Ounces
East Ridge	Indicated	300,000	0.32	96,000
North Ridge	Indicated	160,000	0.24	38,400
North Ridge	Inferred	340,000[8]	0.24	81,600
	TOTAL	**800,000**	**0.245**	**196,000**

Other key input assumptions for the cash flow projections are as follows:

- Production rate of 100,000 tons per year
- Metallurgical recovery of gold of 92% (by gravity and flotation)
- Gold price of US $400.00/ounce[9]
- Exchange rate of Cdn $1.00 equals US $0.72
- Operating costs[10] of $85 per ton ($94/metric tonne)
- Capital costs[11] of $15.0 million (including working capital)
- Discount rate of 5% (after-tax and after inflation)[12]

---

7 No detailed mineable reserve calculations have been made.

8 Only about one half of the inferred geological reserve has been assumed to be extracted (at a higher grade).

9 See Appendix IV for an article on the outlook for the gold price.

10 Operating costs should be relatively low due to the absence of cyanidation, low work index of ore, non acid-producint tailings and adit/decline access. The operating costs include the costs of treating the concentrate produced.

11 Capital costs should be relatively low due to the development already in place, the absence of a cyanidation plant, low work index of ore, non acid-producing tailings and adit/decline access. In addition, it may be possible to eliminate the capital cost of a mill by custom milling the ore.

12 See Appendix V, indicating that a 5% discount rate is appropriate.

Based on the foregoing, a preliminary cash flow projection was prepared, as can be seen on the following page. Although the cumulative net present value was calculated to be $14.1 million, Glanville believes this should be reduced substantially to reflect the following:

- No feasibility study has been prepared for the East Ridge deposit
- Production may not commence for several years until the gold price/exchange rate combination is more attractive than at present
- Additional exploration and development is required to:
  i) increase the confidence level of existing reserves
  ii) discover additional reserves

Applying a 50% discount factor to account for the foregoing uncertainties results in a value today of approximately $7.0 million. However, it should be emphasized that the $7.0 million value does not include the value of other mineralization already identified on the property or the exploration potential of these zones and other targets. Although it is obviously a "judgment call", Glanville believes that is would be reasonable to add at least 20% for this exploration potential. Consequently, the value of the whole property would be approximately $8.4 million.

CASH FLOW PROJECTIONS

	Yearly									
	-2	**-1**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Tons/year			100	100	100	100	100	100	100	100
Grade (ounces/ton)			.32	.32	.32	.24	.24	.24	.24	.24
Recovery			92%	92%	92%	92%	92%	92%	92%	92%
Recovered ounces			29,440	$29,440	$29,440	22,080	22,080	22,080	22,080	22,080
Payable ounces (98%)			28,851	28,851	28,851	21,638	21,638	21,638	21,638	21,638
Gold price (US $/ounce)			$400	$400	$400	$400	$400	$400	$400	$400
Revenue (US $ x 1,000)			$11,540	$11,540	$11,540	$8,655	$8,655	$8,655	$8,655	$8,655
Revenue (Cdn $ x 1,000)			$16,028	$16,028	$16,028	$12,021	$12,021	$12,021	$12,021	$12,021
Operating costs (000's)			8,500	8,500	8,500	8,500	8,500	8,500	8,500	8,500
Operating margin (000's)			$7,528	$7,528	$7,528	$3,521	$3,521	$3,521	$3,521	$3,521
Mining royalties			151	151	151	70	70	70	70	70
Property royalties[13]			-0-	-0-	-0-	120	120	120	120	120
Margin after royalties (000's)			$7,377	$7,377	$7,377	$3,331	$3,331	$3,331	$3,331	$3,331
Income tax payable (approx.)[14]			-0-	-0-	-0-	-0-	-0-	(500)	(1,000)	(1,700)
Capital costs	($3,000)	($12,000)	-0-	-0-	-0-	-0-	-0-	-0-	-0-	500
Net cash flow (000's)	($3,000)	($12,000)	$7,3777	$7,377	$7,377	$3,331	$3,331	$2,831	$2,331	$2,131
Present value factors	.952	.907	.864	.823	.784	.746	.711	.677	.645	.614
Present values (000's)	($2,856)	($10,884)	$6,374	$6,071	$5,784	$2,485	$2,368	$1,917	$1,503	$1,308
Cumulative Net Present Value =			**$14,070,000**							

[13] No royalties payable in early years due to advance royalties already paid.

[14] Assuming past expenditures of $11 million available as write-offs.

Dollars per Ounce of Reserves

The acquisition costs per ounce of in-situ gold can vary considerably, depending upon the stage of development (exploration, reserve development, feasibility, or operation), the size of the deposit, the type of deposit (underground[15] or open pit mining potential), the projected operating and capital costs, etc. However, for reserves development projects comparable to the Tillicum Mountain Property, acquisition costs[16] have been in the range of US $10 to US $20 per ounce of contained gold in reserves (including indicated and inferred reserves). Utilizing a figure of US $15 per ounce for the indicated reserves and US $10 per ounce for the inferred reserves, the value of the East Ridge Deposit would be as follows:

Deposit[17]	Category	Tons	Grade	Ounces	US $/Ounce	Value
East Ridge	Indicated	299,100	0.34	101,700	$15	US $1,525,000
North Ridge	Indicated	163,800	0.26	42,600	$15	639,000
North Ridge	Inferred	709,300	0.22	156,000	$10	1,560,00
	TOTAL	**1,172,200**	**0.26**	**300,300**		**US $3,724,000**

Assuming an exchange rate of Cdn $1.00 equals US $0.72, the US $3,724,000 equates to Cdn $5,172,000. Utilizing the same factor of 20% for the exploration potential, the resulting Fair Market Value would be $6.2 million (1.2 x $5,173,000).

Adjusted Past Expenditures

Although, as stated in Appendix II, past expenditures are not necessarily indicative of value, there is some correlation between past expenditures and value. In addition, purchasers or optionees often ask the amount that has been spent on exploration and/or development of a property. The past expenditures by Columbia Gold Mines Ltd. on the Tillicum Mountain Project have been as follows:

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[15] Underground reserves are usually valued higher than open pittable reserves due to the expectaction of developing substantially more underground reserves as mining progresses (see Appendix III).

[16] Based on actual purchases/sales of gold reserves.

[17] As can be determined from this table, the indicated reserves calculated by Columbia Gold Mines Ltd. total 462,900 tons (299,100 tons plus 163,800 tons) grading 0.31 ounces of gold per ton. The comparable reserves calculated by Orcan Mineral Associates Ltd. were 484,800 tons (in the indicated and inferred categories) grading 0.29 ounces of gold per ton.

Year	Expenditures
1980	$28,000
1981	347,000
1982	320,000
1983	894,000
1984	460,000
1985	726,000
1986	682,000
1987	1,855,000
1988	4,145,000
1989	863,000
1990	310,000
1991	276,000
1992	207,000
1993	129,000
TOTAL to Dec. 31, 1993	**$11,242,000**

The foregoing total of $11,242,000 is equivalent to present day expenditures (after adjusting for inflation) of approximately $14.0 million. However, it is the opinion of Glanville that this figure should be reduced by 50% to account for the expenditures on the Heino-Money deposit, which has been largely mined out (although there is still exploration potential there). As a result, the value utilizing the adjusted past expenditures method is approximately $7.0 million.

Comparable Properties

One can obtain an indication of values by looking at the values of comparable properties (based on actual transactions), with appropriate adjustments for various differences. The market capitalization of a public company whose major interest is a comparable property can also be used as a guide to value. If there are other significant net assets or liabilities (such as working capital, debt, and other substantial exploration properties, etc.) one must make adjustments for these.

Based on past transactions of comparable (or similar) properties, or market capitalization of companies with similar properties, the range of value indicated for the Tillicum Mountain Property is between $5 and $10 million. Based on the

foregoing, Glanville believes that a $7.5 million value for the Tillicum Mountain Property is reasonable.

FAIR MARKET VALUE OF TILLICUM PROPERTY

The foregoing valuation methods, along with the indicated Fair Market Values, are summarized below:

Valuation Method	Indicated Fair Market Value
Adjusted discounted cash flow	$8.4 million
Dollars per ounce of gold in reserves	$6.2 million
Adjusted past expenditures	$7.0 million
Comparable properties	$7.5 million

Based on a review of the foregoing, it is Glanville's opinion that the Fair Market Value of Columbia Gold Mines. Ltd.'s interest in the Tillicum Mountain Property is approximately $7.0 million, with a range of between $5.0 and $9.0 million. Such an apparent wide range is not inconsistent with the risks inherent in exploration and development, as well as the uncertainties related to external factors, such as the price of gold.

APPENDIX I

CERTIFICATE OF ROSS GLANVILLE

CERTIFICATE OF QUALIFICATION

I, Ross Glanville, of 7513 Pandora Drive, Burnaby, British Columbia, Canada, hereby certify that:

1. I graduated with a B.A.Sc. (Mining Engineering) from the University of British Columbia.

2. I hold a Masters Degree in Business Administration (MBA) from the University of British Colnmbia (1974).

3. I am a registered member of the Association of Professional Engineers of British Columbia, and have been since 1972.

4. I am a registered member of the Certified General Accountants Association of British Columbia.

5. I am President of Ross Glanville & Associates Ltd., a company specializing in the valuations of exploration properties and mining companies.

6. I have been practicing my mining engineering profession since 1970 and have valued exploration and mining properties in many parts of Canada, the U.S.A., Australia, and Mexico, as well as in other areas of the world including Europe, Asia, South America and Africa.

7. I was formerly President of Giant Bay Resources Ltd. and Vice President - Valuations of Wright Engineers Limited, a large international mining, engineering, and consulting company. Prior to that I was a mining engineer and transportation manager with Placer Development Ltd., and a mining and project analyst with two major investment holding companies.

8. I have relied on the reports and other information as set out in the terms of reference of this report.

9. I have no interest, nor do I expect to receive any interest, either directly or indirectly, in Columbia Gold Mines Ltd. or its subsidiary or associated companies.

10. I herewith grant my permission for Columbia Gold Mines Ltd. to use this report for whatever purpose it wants, subject to the disclosures set out in the Terms of Reference.

Signed in Vancouver, British Columbia, on the 21st day of June, 1994.

Ross O. Glanville, B.A.Sc., P.Eng., M.B.A., C.G.A.

APPENDIX II

VALUATION METHODOLOGIES

VALUATION METHODOLOGIES

This section provides an introduction to valuation theory and a description of valuation methods utilized in the past.

Introduction

There are a variety of methods for valuing mineral properties depending upon the stage of the property from initial exploration through to production. Some of these stages are outlined below:

1) Regional Program
2) Claims staked (based on "hot" area)
3) Anomalies developed
4) Claims staked (based on anomalies)
5) Development of a model for a target deposit
6) Additional geological, geochemical or geophysical data
7) One or two drill holes in a mineralized zone
8) Three or more drill holes to define the geometry of mineralization
9) Additional drill holes to establishing inferred reserves
10) Exploratory development
11) Enough holes to define proven, probable and possible reserves
12) Preliminary feasibility study
13) Feasibility study
14) Construction of mine/mill
15) Producing mine

Some of the factors that affect the valuation of mining properties, especially at the earlier stages, are as follows:

1) Local geological controls (such as faults, or specific strata)
2) Size, type, and extent of anomalies (coincident?)
3) Presence of valuable minerals or metals (in situ, stockpiles, dumps, tailings, etc.)
4) Exploration history of the area
5) Comparison to similar geological settings elsewhere in the world
6) General activity in the area
7) Staked, leased, or freehold claims
8) Size of claim block

9) Mining history of the region
10) Infrastructure in place
11) Environmental sensitivities
12) Proximity to known reserves
13) Remoteness
14) Projected metal prices
15) General economic and political climate
16) Specific interests of a party bidding for the property

Valuation Methods

Many valuation methods have been utilized in the past, some of which are listed below. Several of these methods, however, cannot be applied to early-stage exploration properties, and several others are of little or no help in valuing any property.

1) Staking costs
2) Premium or discount on expenditures to date
3) Book value from financial statements
4) Statistical or probabilistic method
5) Option terms
6) Market capitalization of a company
7) "Comparable" Property
8) Historical costs plus budgeted expenditures for the next program
9) Gross contained metal value less a discount factor
10) Value per ton of "ore" in the ground
11) Discounted cash flow (DCF)
    - Net Present Value (NPV)
    - Internal Rate of Return (IRR)
12) Adjusted DCF method
13) Price/Earnings Multiple
14) Payback period
15) Replacement value of mine/mill/infrastructure
16) Dollars per ounce of annual gold production
17) Dollars per ounce of gold reserves
18) Options pricing model

Following are some brief comments on the valuation methods:

1. Staking Costs

- Staking costs per unit or per claim are often used as an indication of a minimum value
- However, staking costs do not necessarily reflect underlying value (for example, if remoteness is considered, there might be an inverse relationship between staking costs and value)

2. Premium or Discount on Costs Spent to Date

- This method says a property is worth what has been spent on it plus a premium if the results are good, or a discount if results are poor
- People often ask "How much have you spent on the property?"
- However, expenditures on a property may not be indicative of value
- In addition, any premium or discount is relatively arbitrary
- However, there is usually some correlation between costs and results
- As well, accountants like to see a way of recouping costs (even if that might be in many years) to avoid a write-off.

3. Book Value from Financial Statements

- For exploration companies that capitalize exploration costs until a production or abandonment decision, this method is of little value.
- You may not have abandoned a property, even though it may have little value (based on substantial exploration expenditures). This property would appear on your books as an asset based on costs incurred.
- Conversely, you may have spent very few dollars, but have a very valuable property.

4. Statistical or Probabilistic Method

- This method is based on a statistical analysis of the average value of an economic deposit (mine) and the chance of discoveries becoming economic and of anomalies (drill targets) becoming discoveries.
- The method is relatively subjective for valuing an individual property, but might have some validity in the case of a large portfolio of properties with similar targets.

5. Option Terms

- One can determine the committed future expenditures and cash payments by an optionee to earn an interest in a property.
- These expenditures and payments can then be discounted to present day dollars and adjusted for the percentage equity being earned in order to calculate the value to be ascribed to the optionor's remaining interest in the property.
- This is a minimum value, since there are often optional additional payments and/or expenditures to earn an interest. These additional payments or expenditures must be reduced by not only the discount rate to equate to present day dollars, but also by a probability of continuing with the program. The assignment of a number to this probability requires a subjective judgment.

6. Market Capitalization of a Company

- Market capitalization equals price per share multiplied by the number of issued shares
- Applicable if listed on a public share exchange
- Applicable if the company's major asset is all or a portion of the property to be valued
- The price of a few shares sold may not necessarily be reflective of what all the shares could be sold for
- Gives an indication of value, but is dependent on market conditions, promotional abilities, etc.

7. Comparable Properties

- Establish a value based on a known transaction price of a comparable (or similar) property
- In mining there are few comparable properties
- Each orebody is unique with regards to geology, costs, infrastructure, etc.
- However, similar properties can give an indication of value.

8. Historical Costs plus Budgeted Expenditures for the Next Program

- This method assumes that the sum of historical costs plus the planned exploration expenditures for the next phase provides a value

- Although this method has often been used, because numbers are available, in my opinion it is not logical since it assumes that all past (and future) expenditures were (will be) rational and that there have been no major changes in direction in the program
- Adding the costs of the next phase before they are expended makes little sense
- However, an exploration program that has been funded and committed to may give a rough indication of the worth of the property to the owner (not necessarily to the company spending the money).

9. Gross Contained Metal Value Less a Discount Factor

- This method is of little value
- Value depends on the relationship between revenue and costs

10. Value Per Ton of Ore in the Ground

- This method is extremely arbitrary since the material in the ground may have little or no value unless the relationship between grade, recovery, metal prices, costs, etc. is such that a profit can be generated

11. Net Present Value (NPV) or Discounted Cash Flow (DCF)

- If cash flows can be estimated or projected with some degree of certainty, the DCF method is the preferred one.
- Yearly cash flows are discounted at an appropriate rate (considering the risk factors) to obtain a Net Present Value.
- DCF method considers the time value of money.
- DCF method considers the entire estimated life of the mine or ore body.

12. DCF Adjusted to Reflect the Probability of Success

- For properties at a sufficiently advanced stage such that grade and tonnage can be estimated or projected, one can use a combination of the discounted cash flow method and a probability application.
- This probability is based on a judgment of the likelihood of achieving a certain grade and tonnage, and, in addition, the chance and timing of proceeding to development.

13. Price/Earnings Multiple

- Estimate earnings and multiply by a Price/Earnings (P/E multiple)
- Only useful for an advanced property or producing mine or company
- Affected by book items, such as amortization and depreciation, which do not affect the cash flow
- Method is acceptable, but not as good as the discounted cash flow approach (which takes the mine life into account).

14. Payback Period

- Determines when all the investment is repaid
- Ignores the impact of cash flow in later years
- For example, one could invest 100 million and require a 3 year payback. However, the returns could be 30 million a year for 3 years (which doesn't payback in 3 years) and then 50 million a year for the next 5 years. The arbitrary application of the payback method would eliminate this good investment.
- In addition, payback method ignores the time value of money
- May be useful when investing in politically unstable areas.

15. Replacement Value

- What it costs to build a mine/mill complex is not relevant to the value of a particular deposit
- The mine/mill complex only has value insofar as it enables one to generate profit
- Only the salvage or disposal value is relevant if you cannot generate profit

16. Dollars Per Ounce of Annual Gold Production

- Often used by investment dealers/brokers
- Based on actual transactions or market capitalizations
- This method applies a certain dollar figure to each ounce of annual gold production
- Must be used with caution, because the method does not account for profitability of production, or mine life

17. Dollars per Ounce of Gold Reserves

- Often used by investment dealers/brokers

- Based on past transactions
- This method applies a dollar amount to each ounce of gold in reserves
- Must be used with caution, because value relates to profitable production over the life of the mine

18. Options Pricing Model

- The options pricing model treats a mine or property as an option, and as such the mine or property has a value greater than zero even if it is uneconomic at the present time. Some options are as follows:

For Exploration Properties:

- Option to explore, drop, or hold property
- Option to put into production
- Option to sell or lease

For Producing Properties:

- Option to increase or decrease production
- Option to shut down or re-open
- Option to hedge production
- Option to change cost structure (change cut-off grade)

- Because the above options have value, the discounted cash flow value is often a minimum value. For marginal properties, the option value is a significant portion of the total value.

APPENDIX III

RESERVE FACTORS

HOW TO COMPENSATE FOR INITIAL UNDERESTIMATION OF DISCOVERY SIZE

The precise dimensions of most mineral deposits are not known until they have been nearly mined out. The amount of ore that is ultimately recovered is, in many cases, considerably greater than the initial ore estimate at the time of discovery or even at the start of production. The reason is that the inadequacy of initial drill-hole information leads to underestimation of true deposit size. In an analysis of exploration success over time, such underestimation causes undeveloped discoveries to seem unduly small.

An approach was developed to compensate for this bias in an approximate but systematic way (Cranstone, 1980). An analysis was made of about 100 Canadian mines - some of which have been mined out, others of which are still in production. For each mine, account was taken of initial ore reserves when production began, historical year-by-year ore production, current ore reserves, and potential for additional ore. For each mine a multiplier was derived that, applied to the metal value of the initial ore reserve (when production began), gives the metal value of the total amount of ore that was ultimately produced (in the case of mined-out deposits) or that is likely to be ultimately produced (in the case of deposits still in production).

From this analysis, multipliers (applied to initial reserves to give total deposit size) were derived from four generalized deposit types:

> For open-pit porphyry-type copper, copper-molybdenum and molybdenum, a multiplier of 2 was derived; non-porphyry, non-vein base-metal sulphide deposits (excluding copper-nickel deposits). 2; vein-type deposits of gold, silver and other metals, 3; copper-nickel deposits other than those at Sudbury and the Thompson Nickel Belt (which were dealt with separately), 1.3.

While these deposit types do not cover all mineral deposits discovered in Canada since the start of 1946, the choice of appropriate multipliers applicable to other deposit types for which insufficient Canadian examples are available was influenced by the above. For uranium deposits a different approach was followed. Resource estimates made by the "Uranium Research Appraisal Group" of Energy, Mines and Resources (EMR) were used as a basis for estimating deposit sizes.

The multipliers derived for a generalized deposit type were applied to those discoveries of deposits yet to be mined for which not enough information was available to allow a better judgment. In regard to many producing mines, sufficient knowledge exists within EMR to permit reasonable estimates of how much ore beyond current reserves is likely to be produced from each mine; such knowledge has been taken into account.

In general these multipliers where chosen diliberately on the conservative side. In the effort to eliminate bias favoring developed discoveries through the use of multipliers, care was taken not to swing to the other side and create a bias favoring underveloped discoveries.

The Northern Miner Magazine
January 1988

APPENDIX IV

GOLD PRICE OUTLOOK

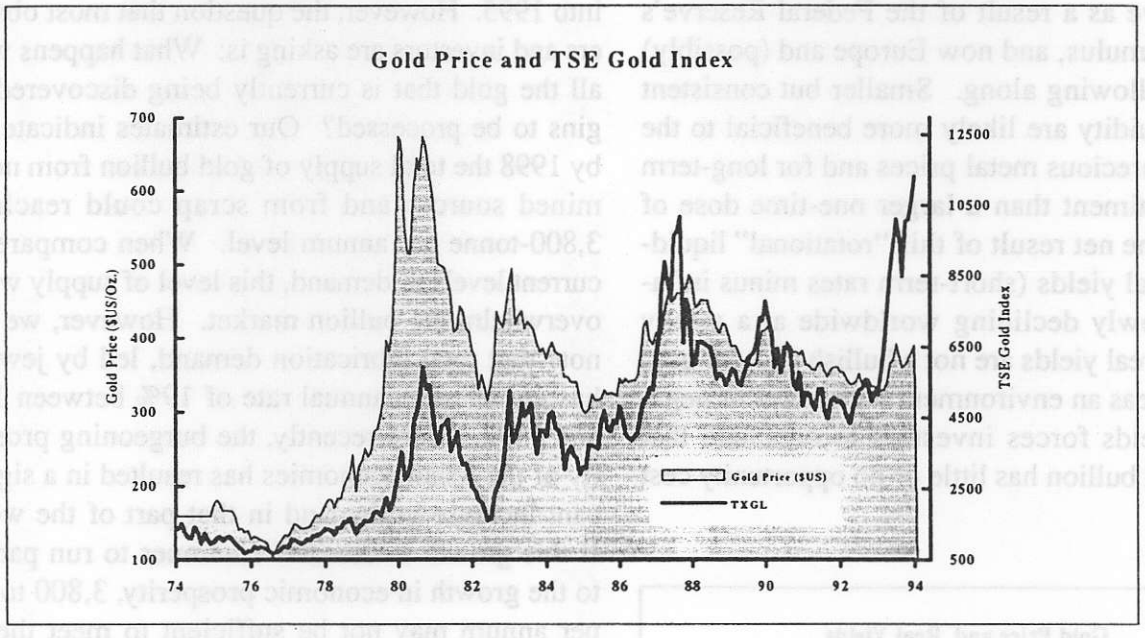
Nesbitt Mining Research

The Gold Pages

Egizio Bianchini

February 1, 1994

The Globalization of the Canadian Gold Mining Industry



- Continued positive supply and demand fundamentals, highlighted by a supply deficit, should continue to support gold prices. Lower real yields worldwide will negate the opportunity cost of holding gold. We suggest that as long as the current environment continues, the gold price could reach the US$450 per ounce level within the next 12 months.

- Canadian gold mining companies are becoming global players. The focus has shifted to West Africa, South America and Latin America. Other regions are not far behind. The junior and mid-cap companies were the first to take advantage of the globalization trend. Our view is that in 1994 the smaller companies will outperform the large-cap companies.

- One of our top mid-cap and junior recommendations in the sector is **Greenstone Resources (C$2.40)**. **Lac Minerals (C$11.63)** is the most inexpensive stock among the senior producers.

All prices as of January 28, 1994 unless otherwise indicated.

Gold Price

Our view is that gold prices are likely to remain buoyant through the rest of 1994. Both the macroeconomic and supply and demand fundamentals are positive for bullion prices.

Over the past two years, world economies have experienced large doses of liquidity which have resuscitated economic activity and have literally jolted many of these economies out of their recessionary slumber. Furthermore, unlike many previous similar awakenings, this one has not occurred in worldwide unison. North America was the first region to come alive as a result of the Federal Reserve's monetary stimulus, and now Europe and (possibly) Japan are following along. Smaller but consistent doses of liquidity are likely more beneficial to the fortunes of precious metal prices and for long-term investor sentiment than a larger one-time dose of liquidity. The net result of this "rotational" liquidity is that real yields (short-term rates minus inflation) are slowly declining worldwide at a steady pace. High real yields are not a bullish sign for gold prices, whereas an environment with lower or negative real yields forces investors to conclude that holding gold bullion has little or no opportunity cost (Figure 1).

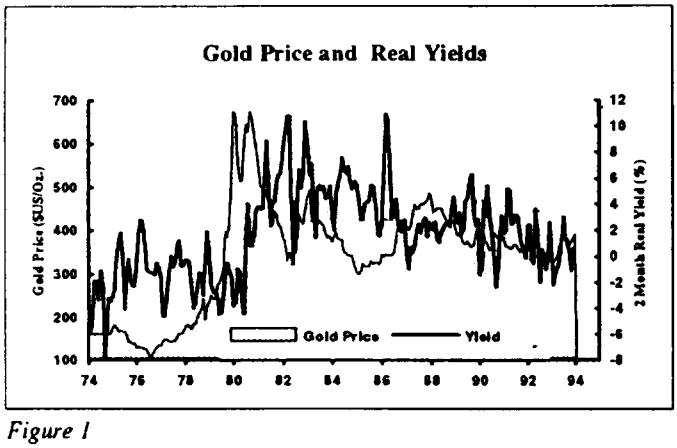


Figure 1

The worldwide trend is towards lower real yields. When real yields approach zero, a situation is created where gold becomes a form of insurance, but with no premium. As long as this environment continues, the speculative demand for bullion should rise and gold prices should continue to move upwards.

The supply and demand fundamentals have been well documented. In Table 1 on the following page, we review the past trends and our current forecasts. Note that we continue to forecast a supply deficit into 1995. However, the question that most observers and investors are asking is: What happens when all the gold that is currently being discovered begins to be processed? Our estimates indicate that by 1998 the total supply of gold bullion from newly mined sources and from scrap could reach the 3,800-tonne per annum level. When compared to current levels of demand, this level of supply would overwhelm the bullion market. However, we also note that total fabrication demand, led by jewelry, has grown at an annual rate of 19% between 1990 and 1992. More recently, the burgeoning prosperity of the Asian economies has resulted in a significant increase in demand in that part of the world. If this growth in demand continues to run parallel to the growth in economic prosperity, 3,800 tonnes per annum may not be sufficient to meet the demand. At this point, it is too early to tell what the fundamentals will look like in 1998. We do not see a dramatic rise in primary supply on a year-over-year basis until the latter part of the decade.

Table 1

Global Supply and Demand For Gold

	Tonnes					
	1990a	**1991a**	**1992a**	**1993e**	**1994e**	**1995e**
Primary Supply						
Mine Production	2,132	2,160	2,231	2,269	2,314	2,383
Old Gold Scrap	508	419	453	508	540	575
Total Primary Supply	2,640	2,579	2,684	2,777	2,854	2,958
Primary Demand						
Fabrication						
Jewellery	2,127	2,298	2,675	2,493	2,568	2,710
Electronics	217	205	174	176	195	230
Other	276	303	270	282	295	315
Total Fabrication	2,620	2,806	3,119	2,951	3,058	3.255
Bar Hoarding	248	251	288	195	200	190
Total Primary Demand	2,868	3,057	3,407	3,146	3,258	3,445
Supply (Deficit)/Surplus	**(228)**	**(478)**	**(723)**	**(369)**	**(404)**	**(487)**
Other Non-Primary Items						
Net Official Sales (Incl. Central Banks)	188	149	582	440	302	150
Net Gold Loans	5	(45)	(85)	(70)	(62)	(41)
Forward Sales and Options	230	130	241	118	102	150
Total Other Non-Primary Items	423	234	738	488	342	259
Net (Shortage)/Surplus of Gold	**195**	**(244)**	**15**	**119**	**(62)**	**(228)**
Investment Demand	195	0	15	119	0	0
Net Disinvestment	0	244	0	0	62	228

Sources 1990-1993: *Gold Fields U.S. Mineral Services, January 1994 update and CRU*
1994/1995: *Nesbitt Thomson Estimates*

In the meantime, the gold supply deficits need to be funded. In the past, it was the Russians, the producers, and the Central Banks which took turns funding the deficit. These sources of gold supply appear to be declining. It is now up to investors to sell their gold. However, we believe that these investors appear to require higher prices.

Our analysis leads us to believe that the current environment is suitable for gold prices to increase to US$450 per ounce some time over the next 12 months.

The Globalization of the Mining Industry

It's very likely that we will look back at the 1990s as the decade where the mining industry became truly global. The first part of this decade has resulted in the fortunate convergence of two very powerful trends: deflation, and the explosion of liquidity. This confluence has resulted in perhaps one of the most significant financial opportunities that we have seen in mining since the discovery and development of the Witwatersrand gold deposits in South Africa towards the end of the nineteenth century.

Deflationary Trend

The final stages of the dramatic deflationary trend which began in the early 1980s were a major reason for the subsequent redrawing of the global geopolitical map. In the early 1990s, global capital became a scarce commodity. The lenders of the 1980s, the Japanese and the Germans, had their own new domestic requirements for capital in the early 1990s. At the same time, other traditional sources of capital were dwindling. Institutions such as the IMF and the World Bank became much more restrictive with their funds. In addition, the two superpowers became less willing and less able to fund their "foreign initiatives". The net result was that suddenly all the "sugar daddies" were gone. Dictators, revolutionaries and communists worldwide could no longer afford to promote their policies. The only hope for many of these leaders was to open up their countries to foreign investment. The mining companies were one of the first groups to invest. In a matter of a few short years, regions, countries and continents, which had not been explored and tested for several generations, had become open for exploration. North American, European, Australian and South African companies that had been once limited to exploring in areas which had been "picked over" for the past 100 years, now had new untested areas with much better potential to yield near-surface, rich deposits.

Explosion of Liquidity

However, exploration in these new areas required capital which was in short supply. This is where the second major trend plays an important role. At the same time as North American companies began looking abroad, the deflationary trend began nearing its end and liberal monetary policy led to an explosion of liquidity in the western capital markets. Mining and exploration companies of all sizes had the opportunity to tap this liquidity. Exploration successes were beginning to be recognized in Chile, Venezuela, Brazil and other previously undesirable places. Soon the views that South America, West Africa and Central America posed too much risk had nearly disappeared. Given the negative environmental, taxation and regulatory trends in North America, being elsewhere had become more desirable.

Development projects and operations in countries like Chile and Mexico might even garner a premium over projects in North America.

To date, relatively untested areas in South America and other previously undesirable parts of the world have yielded some major discoveries. **Placer Dome's Las Cristinas** and **Cambior's Omai Mine** are only two of many examples of recent successes in the third world. We believe that the trend towards offshore exploration will continue and the total number of exploration dollars spent away from North America will continue to grow. Some of the

APPENDIX V

DISCOUNT RATE FOR GOLD PROJECTS

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1. Gold loans typically carry interest rates of 1% to 3%.

2. The weighted average cost of capital (discount rate) for many gold mining companies is less than 5%.

3. Forward sales of gold can presently be made at price levels increasing at a rate of approximately 3% per year.

4. Discount rates now used by several major gold mining companies for gold properties at the feasibility stage are 5%.

5. Articles by mining analysts, academics, and mining executives suggest that discount rates of between 0% and 5% are appropriate.

6. The market capitalization of many of the major North American gold producers is greater than the net present value of the undiscounted (zero discount rate) cash flows.

7. Price/earnings multiples for many of the gold companies producing less than 200,000 ounces per year generally range from 15 to more than 25. A price/earnings ratio of 20, for example, implies a return of 5% (or 3% in constant dollars if a 2% inflation rate is expected).

8. The discount rate is after inflation and income taxes. For comparative purposes, a treasury bill paying 3% would yield about 2% after income taxes, and 0% after deducting a projected inflation rate of about 2%.