

**Technical Report Update,  
Brisas Project, Venezuela**

*Prepared for*

*Gold Reserve, Inc.*

**March 31, 2008**

**34424**





**pincock  
allen &  
holt**

*Consultants for Mining and Financial Solutions*

165 South Union Boulevard, Suite 950  
Lakewood, Colorado 80228-2226

303-986-6950  
Fax 303-987-8907

[www.pincock.com](http://www.pincock.com)

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Prepared by

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***Richard Addison, P.E.  
Richard J. Lambert, P.E.  
Susan R. Poos, P.E.  
Barton G. Stone, C.P.G.***

## 1.0 EXECUTIVE SUMMARY

The Brisas Project is a gold-copper deposit located in the Kilometer 88 mining district of Bolivar State in southeast Venezuela. Before its acquisition by Gold Reserve Inc. (GRI) in 1992, local owners and also illegal miners worked the property on a small scale. Shallow pitting and hydraulic methods were used to mine the upper saprolite zone, and coarse gold was recovered by gravity concentration. GRI has carried out a major exploration drilling program on the concession, resulting in the definition of a large, gold-copper deposit.

The operating plan proposes a large open pit mine containing proven and probable reserves of approximately 10.2 million ounces of gold and 1.4 billion pounds of copper in 482.7 million tonnes of ore grading 0.66 grams of gold per tonne and 0.13 percent copper, at a revenue cutoff grade of \$3.54 per tonne for hard rock and \$3.74 for saprolite. The revenue cutoffs were based on a gold price of \$470 per ounce and a copper price of \$1.35 per pound. The project anticipates utilizing conventional truck and shovel mining methods with the processing of ore at full production of 75,000 to 68,000 tonnes per day, yielding an average annual production of 457,000 ounces of gold and 63 million pounds of copper over an estimated mine life of approximately 18.25 years.

This Technical Report is based on the Brisas Project Feasibility Study dated January 2005, with the following Updates:

- A new resource model was developed by Pincock, Allen & Holt (PAH) with the addition of 84 new drill holes in late 2004 and new variograms and search parameters in 2007. The information is presented in the PAH report "Update of Resource Model, Brisas del Cuyuni Gold Project, Southeast Venezuela," dated June 2007.
- A new capital cost estimate with minor modifications to the process flowsheet was developed by SNC Lavalin to further update the feasibility costs to 4<sup>th</sup> Quarter 2007 costs. The information is presented in the SNC report "Basis of Update Control Estimate for the Brisas Project," dated February 2008.
- An update to the pit slopes geotechnical parameters was completed by Sergio Brito Consultoria Ltda (SBC) and Vector Colorado LLC (Vector). The information is presented in the SBC report "Brisas Pit Stability," dated July 2007.
- A new mine design and production schedule based on new project costs was developed by Marston & Marston, Inc. (Marston). The information is presented in the Marston report "January 2008 Mine Plan Update," dated January 2008.
- A new project economic model was developed by GRI and validated by PAH. This model uses updated capital and operating costs and was used for the economic information presented in this Technical Report.

This Technical Report assumes an economic base case utilizing a gold price of \$600 per ounce, copper price of \$2.25 per pound, and silver price of \$11.00 per ounce. The Base Case is near the three-year rolling average for gold and silver metal prices and between the three-year and five-year rolling averages for copper metal prices as of February 2008. At such prices, total cash operating costs (net of copper byproduct credits) are estimated at \$142 per ounce of gold and total costs per ounce, including operating costs and initial and sustaining capital would be \$277 per ounce of gold. Initial capital costs are currently estimated at \$731 million with another \$53 million in working capital, critical spares and initial fills. All amounts are in U.S. dollars.

## **1.1            *Location***

The Brisas Project is located in the Kilometer 88 mining district of Bolivar State in southeast Venezuela at Latitude 6° 10' North and Longitude 61° 28' West. The property is approximately 3.5 kilometers west of the Kilometer 88 marker on Highway 10. Las Claritas is the closest town to the property.

The project site is located in the Guyana region, which covers approximately one-third of Venezuela's national territory. The main nearby large city is Puerto Ordaz, with approximately 1.4 million inhabitants, situated on the Orinoco River near its confluence with the Caroní River. Puerto Ordaz has major port facilities accessible to ocean-going vessels from the Atlantic Ocean via the Orinoco, a distance of about 200 kilometers. There is regularly scheduled airline service to Puerto Ordaz from various cities within Venezuela.

Highway 10 provides paved access from Puerto Ordaz, which is 373 kilometers northwest of the property, to within 3.5 kilometers of the project site. Unpaved roads provide the remaining 3.5 kilometers of access. Upgrading the unpaved roads is part of the infrastructure improvements planned for the project area.

## **1.2            *Ownership***

The main mineralized area at the Brisas Project is contained within the 500-hectare (1,235 acre) Brisas Del Cuyuni alluvial and hardrock Concession. The Concession measures 2,500 meters (1.5 miles) north-south and 2,000 meters (1.25 miles) east-west. GRI also controls several other concessions either adjacent to or near the Brisas Concession.

According to GRI, mineral ownership consists of Brisas alluvial production concession originally granted in 1988 and acquired by GRI in 1992 with the acquisition of Compania Aurifera Brisas del Cuyuni S.A. The hardrock production concession immediately below the alluvial concession was applied for by GRI in 1993 and was ordered to be issued by the Ministry of Energy and Mines (MEM) in December 1997. The concession was granted to GRI in early 1998 and the official record of "veta" (hard rock) rights was published in the "Gaceta Oficial De La Republica De Venezuela" on March 3, 1998. The combined alluvial concession and hardrock concession are referred to as the Brisas Concession.

Other applications for mineral rights have been submitted for small tracts of land immediately adjacent to the Brisas Concessions. These include the 15-hectare NLNAV1 to the north, the 21-hectare NLEAV1 to the east and the 32-hectare NLSAV1 to the south. GRI has received the contract for mineral rights on NLEAV1 and NLSAV1 and has applied for the rights to NLNAV1.

Additionally, in 1999, GRI acquired the 1,433-hectare (3,541 acres) El Pauji Concession and contracts with Corporation Venezolana de Guyana (CVG) for the 4,950-hectare (12,232 acres) Barbara property, the 847-hectare (2,162 acres) Zuleima property and the 1644-hectare (4,062 acres) Lucia property. Early in 2004 Gold Reserve obtained contracts for the 499-hectare (1,232 acres) Esperanza and the 50-hectare (123 acres) Yusmari properties. Barbara is located approximately 2.6 kilometers (1.6 miles) south of the Brisas Concession and will be the site for tailings storage facilities. Esperanza, El Pauji, and Zuleima are located west and south of the Brisas Concession and will be used for waste rock disposal. The Yusmari property is adjacent and located on the northeast corner of the Brisas Concession and is within the ultimate pit boundary. The Lucia property is located 7.8 kilometers southwest of the Brisas Concession and its use for the Project is yet to be determined.

In 2005, GRI was granted the rights to explore and develop a rock quarry in the 400-hectare Barbarita concession. This concession is located totally within the Barbara property in the northeast corner.

### **1.3 Geology**

The Brisas Project is within the Guayana Shield in northern South America. The shield covers easternmost Colombia, southeastern Venezuela, Guyana, Suriname, French Guiana and northeastern Brazil. The Venezuelan portion of the shield is subdivided into five geological provinces with different petrological, structural and metallogenic characteristics. The provinces are, from oldest to youngest, Imataca, Pastora, Cuchivero, Roraima, and Parguaza. Only the Imataca, Pastora and Roraima provinces are found in the vicinity of the Brisas deposit.

The Brisas Concession itself lies within a portion of the lower Caballape Formation volcanic and volcanic-related sedimentary rocks. The units present are: (1) andesitic to rhyolitic tuffaceous volcanic beds, (2) related sedimentary beds, and (3) a tonalitic intrusive body. All rocks have been tilted and subjected to lower greenschist facies metamorphism. In the main mineralized trend, moderate to strong foliation is oriented N 10 E and dipping 30° to 55° NW. This foliation appears to be parallel to the original bedding and tends to be strongest in the finer-grained rocks. A much weaker foliation orientation appears in outcrop exposures, striking NNW and dipping to the SW.

Dikes and quartz veins cut the lower Caballape Formation. The strata and intrusive rocks are cut by N30W striking mafic dikes emplaced at regular intervals (200 to 600 meters), some of which have displacement on the order of tens of meters. Quartz veins populate the concession and have been noted both in outcrop and in drill intersections. The most common are sets of thick, boudinaged, and en echelon vein structures that follow foliation/bedding orientation. They are thought to relate in part to movement of quartz during metamorphism. Other quartz veins exist in various orientations within the property.

## **1.4 Mineralization**

There are four distinct types of Au and Cu mineralization present in the concession, defined by geometry, associated minerals, and the Au/Cu ratio. These zones are the Blue Whale body, disseminated gold+pyrite ( $\pm$  Cu), disseminated high Cu, and shear-hosted Au.

The Blue Whale mineralized body is a discrete, sharply bounded, flattened, cigar-shaped feature that trends more or less parallel to the local schistosity and plunges about 35° SW along foliation. It is 20 meters in diameter at its widest point, and tapers off at depth. It is volumetrically a small fraction of the economically mineralized ground in the Brisas Project, but it possesses the highest Au and Cu grades.

The bulk of ore mineralization occurs in disseminated, coalescing, lensoid bodies high in Au and in most cases low in Cu. These bodies lie almost exclusively in the lapilli-rich, rapidly alternating sequence of tuffaceous units and are clearly aligned along foliation. Together, these lenses form a generally well defined mineralized band which mimics the dip of the foliation/bedding and remains open at depth. It remains at a similar thickness from the northern concession boundary for a distance of 1.4 kilometers south, after which it tapers rapidly. Alteration minerals characteristic of these lenses are epidote, chlorite, secondary biotite, and sericite.

The Au in the stratiform lenses is highly disseminated but only roughly associated with high occurrences of pyrite. Fine-scale sub-sampling of 3-meter assay intervals indicates good correlation between Au and small (<1 cm) calcite/quartz veins. Correlation also exists with zones of high occurrence of epidote and in lapilli-sized lithic fragments that have been partially to completely replaced by epidote and sulfides. Sub-sampling evidence also suggests that Au is more evenly distributed through the rock near the center of the large mineralized lenses than it is near the margins.

Stratiform lenses of high Cu (with or without high Au) parallel and underlie the Au+pyrite lenses described above. These lenses outcrop in the northern part of the deposit, and plunge to the south along the bedding/foliation in a manner similar to the Blue Whale and high Au/low Cu lenses. Rock in the mineralized zones is characterized by a high degree of lapilli and crystal replacement by chalcopyrite, and in some cases, by bornite and covellite. High chalcopyrite in the rock matrix is often accompanied by high chlorite, secondary biotite, and in some cases molybdenite.

Shear-hosted gold occurrences exist in the southern part of the concession, running parallel to the foliation as with mineralization further north. Stratigraphically, they occur above the large disseminated lenses previously described. The gold grades are erratic and localized, up to 100 g/t Au over a 3-meter core interval. There is a high degree of correlation between chalcopyrite and Au grade, though Cu grades in these shears are sub-economic.

## **1.5 Exploration**

GRI began exploration activity in late 1992 and continued various drilling programs through the present time. A total of 977 drill holes with a total drilled length of 207,751 meters have been completed by GRI

at Brisas as of September 2006. Of these holes 802 representing 189,985 meters of drilling were drilled specifically for exploration on the Brisas Concession. The remaining holes were drilled for hydrologic, geotechnical, and metallurgical testing. In some cases the test holes were assayed and used in modeling.

Drill hole spacing within and around the planned pit area is about 50 meters or less. Drill hole spacing in the Disseminated High Cu/Low Au and Blue Whale areas is about 25 meters. The majority of the exploration drilling was performed using standard diamond core-barrel recovery techniques although some auger drilling was carried out at the beginning of the exploration campaign. Auger holes (A holes) are generally very shallow and are scattered throughout the project area and in between later-drilled core holes; many auger holes are outside the pit area. Also, about half of the auger holes were deepened using regular core hole drilling techniques (AD holes). Auger holes were included in the resource estimation process.

The resource/reserve estimate presented in this report includes drilling results up to hole D845 drilled in March 2005. A summary of drilling at the Brisas Project from 1993 through 2007 is shown in Table 1-1. The drilling also included drill holes for metallurgical, geotechnical, hydrological testing, and independent verification. Condemnation drilling has been performed in the waste dump areas, and to a limited extent, in the tailings dam area. None of the drill results in the tailings dam area has yielded geological or geochemical information suggestive of potential ore deposits.

**TABLE 1-1**  
**Gold Reserve, Inc.**  
**Brisas Project, Venezuela**  
**Technical Report Update**  
**Drilling Summary**

Year	Auger Drilling		Auger- Diamond Drilling		Diamond Drilling		Total		Comments
	Holes	Meters	Hole	Meters	Hole	Meters	Holes	Meters	
1993	14	404	3*	77	36	5,120	50	5,601	
1994	57	1,528	59	12,649	5	422	121	14,600	
1995	-	-	9	1,926	99	18,997	108	20,923	
1996	-	-	-	-	252	50,221	252	50,221	
1997	-	-	-	-	219	67,946	219	67,946	
1999	-	-	-	-	13	5,726	13	5,726	
2003-2004	-	-	-	-	126	34,670	126	34,670	
2005	-	-	-	-	20	2,291	20	2,291	Non-Exploration Not in Model
2006	-	-	-	-	68	5,775	68	5,775	Non-Exploration Not in Model
2007	-	-	-	-	-	-	-	-	
<b>Total Drilling</b>	<b>71</b>	<b>1,932</b>	<b>68</b>	<b>14,652</b>	<b>838</b>	<b>191,168</b>	<b>977</b>	<b>207,751</b>	

Note: \* Auger completed but not counted until diamond portion completed in 1994.

## 1.6 Resource Modeling and Estimation

It has been observed for some time within the Brisas Project that the mineralization generally follows a structural trend that is sub-parallel to the rock units' trend present in the area. Therefore, the resource model is based on constructing separate mineral envelopes for Au and Cu that follow the general geologic trend and structural control of the Brisas zone and, in the case of copper, the weathering profile as well. The Blue Whale is modeled separately.

Variograms were run on the drill hole data to evaluate the spatial variability and lateral grade continuity through the deposit and provide limits for the search radius used in the grade interpolation process. PAH ran variograms for both Au and Cu downhole composites. Three-dimensional variograms were run for different orientations including strike, dip, and across the ore zones.

Gold and copper composite values were capped according to the statistical review of the data to prevent outlying values from unnecessarily influencing the model toward higher gold and copper values. PAH does not believe that the composite grade capping will have a great influence on the overall model, but it could locally prevent grade overestimation.

The gold and copper grade interpolations for the mineral envelopes only used the 6-meter down-hole composites that fell within the grade envelopes. Only blocks within the grade envelopes received an Au or a Cu grade. The ordinary kriging (OK) interpolation method was used for all runs.

Table 1-2 tabulates the measured, indicated and inferred resources at the Brisas Project and shows the tonnage/grade variability at various gold equivalent (AuEq) cutoff grades. Gold equivalent calculations are based on metal prices of \$400/ounce Au, and \$1.15/lb Cu, anticipated metal recoveries, and smelter costs.

**TABLE 1-2**  
**Gold Reserve, Inc.**  
**Brisas Project, Venezuela**  
**Technical Report Update**  
**Mineral Resource Estimate**

Category	AuEq Cutoff	k tonnes	Gold		Copper	
			gpt	k ozs	%	M lbs
Measured	0.3	298,973	0.647	6,218	0.113	743
	0.4	256,483	0.710	5,853	0.119	674
	0.5	209,330	0.791	5,320	0.127	586
	0.6	166,457	0.882	4,720	0.135	494
	0.7	131,124	0.979	4,127	0.142	410
Indicated	0.3	364,266	0.550	6,440	0.130	1,044
	0.4	300,367	0.620	5,986	0.134	888
	0.5	238,681	0.698	5,356	0.139	734
	0.6	182,932	0.787	4,627	0.145	583
	0.7	138,600	0.879	3,916	0.150	457
Measured + Indicated	0.3	663,239	0.594	12,659	0.122	1,787
	0.4	556,850	0.661	11,839	0.127	1,562
	0.5	448,011	0.741	10,676	0.134	1,320
	0.6	349,389	0.832	9,347	0.140	1,077
	0.7	269,723	0.927	8,042	0.146	867

Note: AuEq = Au (gpt) + Cu (%) \* 1.16

Category	AuEq Cutoff	k tonnes	Gold		Copper	
			gpt	k ozs	%	M lbs
Inferred	0.3	168,385	0.484	2,621	0.114	425
	0.4	121,067	0.585	2,278	0.118	316
	0.5	89,241	0.684	1,962	0.118	232
	0.6	63,110	0.798	1,619	0.116	162
	0.7	45,460	0.910	1,330	0.114	114

Note: AuEq = Au (gpt) + Cu (%) \* 1.16

(\*) Inferred resources include both within and outside the mineral envelopes.

The measured and indicated resource at a 0.4 AuEq cutoff grade is estimated as 556.9 million tonnes at a gold grade of 0.66 gpt and a copper grade of 0.13 percent. In addition, the inferred resource at the Brisas Project is estimated as 121.1 million tonnes at 0.59 gpt gold grade and 0.12 percent copper grade at a 0.4 AuEq cutoff grade. The inferred resources include the inferred mineralization both within and outside the mineral envelopes. This resource estimate is inclusive of the reserve estimate.

The resource estimate included in this report conforms to international standards such as the Canadian Institute of Mining (CIM) definitions as adopted by Canadian National Instrument NI 43-101, and the current drill hole database is sufficient for generating a feasibility level resource model.

## **1.7      *Mine Design and Reserve Estimate***

The Brisas Project is an open-pit gold-copper mining project, which will utilize hydraulic shovels and 236-tonne trucks as the primary mining equipment. Based on the results of optimization analysis, an ultimate pit was designed. A production schedule was then developed based on a blend of the two hard-rock ore types. This schedule resulted in an average production rate of 25.2 million tonnes of hard rock ore and on average 59.2 million tonnes of waste per year over the 18.25 years of the project. During the first four years of the project, 8.4 million tonnes of oxide saprolite ore and 11.9 million tonnes of sulfide saprolite ore are mined. This saprolite material is stockpiled separately. The sulfide saprolite is fed to the crusher at a rate of 1.95 million tonnes per year (mtpy) for the first six years after which only minor amounts are mined and milled through year 11. Oxide saprolite is fed to the mill at a rate of 0.25 mtpy while the sulfide saprolite is processed. When milling of sulfide saprolite is completed, the oxide saprolite rate is increased to 0.70 Mtpy.

There are two hard rock ore types, which are referred to as North and South. Although the names imply a geographic relationship the two ores are actually defined based on the copper content. North ore is a gold-chalcopyrite-pyrite with a copper content greater than or equal to 0.05 percent. South ore is a gold-pyrite with a copper content less than 0.05 percent. In general the ore types split at 681,800 North coordinate; however, both occur on either side of this line.

Design of the ultimate pit was based on the results of a Whittle<sup>®</sup> Lerchs-Grossmann (LG) pit shell analysis. Whittle<sup>®</sup> is a software package that uses the LG algorithm to determine the approximate shape of a near-optimal pit shell based on applied cutoff-grade criteria and pit slopes. These shells are generated from the geologic grade models, and economic and physical criteria.

In the Whittle<sup>®</sup> analysis, for the ultimate pit design, the pit shells were allowed to cross the northern Brisas Concession boundary but not the diversion channel at the northern end of the pit. All of the material in this area was treated as waste rock. Allowing the crossover into the Cristinas Concession area maximizes the metal recovery on the Brisas Concession.

Since the Brisas Project has two primary metals, gold and copper, a cutoff grade based on a single metal does not account for the value provided by the other metal. As a result, the revenue cutoff grades of \$3.54 per tonne for hard rock and \$3.74 per tonne for saprolite were used to estimate reserves.

Revenue of this amount covers the costs for processing, general and administration, reclamation, stockpile re-handle for saprolite and selling. Mining costs are not included since an incremental cutoff assumes mining is a sunk cost.

Using the revenue per tonne cutoff grades of \$3.54 and \$3.74 based on metal prices of \$470 per ounce for gold and \$1.35 per pound for copper, reserves for the ultimate pit were calculated. Total proven and probable reserves for the Brisas Project are estimated at 482.7 million tonnes of ore at a gold grade of 0.66 grams per tonne and a copper grade of 0.13 percent. There are a total of 1.08 billion tonnes of waste in the pit resulting in a strip ratio (waste/ore) of 2.24. Table 1-3 summarizes these reserves by category.

**TABLE 1-3**  
**Gold Reserve, Inc.**  
**Brisas Project, Venezuela**  
**Technical Report Update**  
**Reserve Estimate Based on Revenue Cutoffs of \$3.54 for Hard Rock & \$3.74 for Saprolite (Jan 2008)**

Reserve Category	Tonnage (000's)	Au Grade g/t	Au grams (000's)	Au ounces (000's)	Cu Grade percent	Cu tonnes	Cu M pounds
Proven	237,657	0.71	168,865	5,429	0.12	291,570	643
Probable	245,050	0.61	149,288	4,800	0.14	338,545	746
Total Ore	482,707	0.66	318,153	10,229	0.13	630,115	1,389
Waste Total In-Pit	1,080,319 1,563,026		Strip Ratio	2.24			

Note: Revenue is based on metal prices of \$470/oz for gold & \$1.35/lb for copper.

PAH believes that the reserve estimate shown in Table 1-3 is reasonable and meets the definitions as stated by Standards for Disclosure for Mineral Projects, Form 43-101F1 and Companion Policy 43-101CP dated December 23, 2005.

The reserve estimate in Table 1-3 is based on the assumption that the pit backslope extends onto the Las Cristinas Concession, which will require a backslope agreement. GRI received approval of its operating plan from MEM in February 2003 and again in August 2005; which included the extension of the backslope onto the Las Cristinas Concession. Also in October 2006, GRI and Crystallex International Corporation (Crystallex) proposed to MARN to move a water diversion channel on the southern part of the Las Cristinas Concession, further northward, away from the Brisas pit. This proposal, if approved, should allow GRI to formalize a backslope agreement. Crystallex has been granted an operations contract to the adjacent Las Cristinas property (see section 15.0 Adjacent Properties).

PAH has not reviewed the GRI MEM approved 2003 operating plan or Crystallex's proposed diversion channel. According to GRI, Corporación Venezolana de Guyana (CVG) and MIBAM has indicated to GRI that a backslope agreement is probable. PAH believes that the backslope assumption is valid because backslope agreements are a common practice in the mining industry and the government agencies have been favorable toward an agreement. Also, the backslope agreement would allow Las Cristinas/CVG to

mine onto the Brisas Concession in the event its mine plan reaches the border area first. Discussions with MIBAM/CVG and Crystallex are ongoing. In the event an agreement is not reached, the reserve estimate will have to be reduced significantly.

## **1.8            *Development and Operations***

### **1.8.1        **Mine Plan and Operation****

A mine production schedule based on open-pit mining methods utilizing hydraulic shovels and 236-tonne trucks was developed. Additionally, the schedule targeted a 0.1 percent average copper grade to produce a 24 percent copper concentrate grade with a blend of the two hard rock ores. Overall the split between these two ore types is 61 percent northern hard rock and 39 percent southern hard rock. Because of this split the target was to have at least 50 percent northern hard rock. This target was achieved in all but three years and in 13 years out of 18.25 years the split was over 55 percent northern hard rock.

Both of the saprolite ores are stockpiled since they have to be mined at a rate that exceeds their milling rate in order to meet the hard rock ore production requirements. Oxide saprolite ore mining is completed in Year 8 but milling is not completed until Year 18. Mining of sulfide saprolite ore essentially ends in Year 6 but minor amounts are mined and milled through Year 11. Plans are for the hard rock to be dumped directly into the primary crusher, near the pit exit on the east side, to minimize stockpiling and re-handling.

All of the waste rock, except that used for tailings dam construction, will be disposed of in the waste rock dumps located to the south and west of the pit. There is the potential for the waste rock dump to be located over the downdip extension of the existing ore body. However, stripping requirements would likely prevent the pit from economically expanding into the waste disposal area.

Plans are for the Brisas Mine to operate two 12-hour shifts per day, 7 days per week for a total of 14 shifts per week. It is envisioned that mining of ore would occur on both shifts in order to minimize stockpiling and re-handling. Scheduled work time is 10.5 hours per shift which allows 30 minutes for meals, 30 minutes of delays, and 30 minutes lost during shift change.

### **1.8.2        **Plant Operation****

The plant will operate an estimated 360 days per year with 90 percent availability. Hard rock ore will be processed at nominal design rate of 3,240 dry tonnes per hour, or 70,000 dry tonnes per day. Production rates vary based on rock hardness and decreases from 75,000 dry tonnes per day early in the mine life to 68,000 dry tonnes per day after year 10. The hard rock blend will average 61 percent North and 39 percent South ore, equivalent to an average of 25.2 million tonne per annum. Additionally, 5,400 tonnes per day of sulfide saprolite and 2,000 tonnes per day of oxide saprolite will be processed until these resources are exhausted.

Average concentrate production over the life of the mine will be 125,000 tonnes per year at a grade of 24 percent copper and 85 g/t of gold and 99 g/t silver. The gold content of the concentrate averages 335,000 oz/yr. Gold recovered as gravity concentrate and as doré metal produced by cyanide leaching will average 122,000 oz/yr, silver in the doré will average 85,000 oz/yr.

Tailings will be stored in a 7.5-million-square-meter tailings pond. About 8 percent of the tailings will be from the cyanidation plant and will be subjected to Air-SO<sub>2</sub> cyanide destruction before being combined with the flotation concentrator tailings for discharge to the tailings pond.

### 1.8.3 Project Economics

A Base Case economic analysis was prepared for the Brisas Project using a gold price of \$600 per ounce, copper price of \$2.25 per pound, and silver price of \$11.00 per ounce. The Base Case is near the three-year rolling average for gold and silver metal prices and between the three-year and five-year rolling averages for copper metal prices as of February 2008. Results for the Base Case are summarized in Table 1-4. Table 1-5 provides a summary of some of the key assumptions and additional detail on the results of the analysis. Cash operating costs are presented for gold on a net of by-product credit basis. Capital costs are in Table 1-5. Project payback is 5.3 years.

**TABLE 1-4**  
**Gold Reserve, Inc.**  
**Brisas Project, Venezuela**  
**Technical Report Update**  
**Reserve Case and Base Case Economic Evaluation**

	Reserve Case	Base Case
<b>Gold Price (\$/troy oz)</b>	<b>\$470</b>	<b>\$600</b>
<b>Copper Price (\$/pound)</b>	<b>\$1.35</b>	<b>\$2.25</b>
<b>Silver Price (\$/troy oz)</b>	<b>\$0.00</b>	<b>\$11.00</b>
<b>Project Economics – Pre-Tax (\$ millions)</b>		
Cash Flow	750	2,772
NPV @ 5%	151	1,289
NPV @ 10%	(119)	578
IRR	7.3%	20.5%
<b>Project Economics – After Tax (\$ millions)</b>		
Cash Flow	521	1,854
NPV @ 5%	16	767
NPV @ 10%	(205)	255
IRR	5.3%	15.0%
Cash Operating Cost (\$ per oz Gold) <sup>1</sup>	\$254	\$142
Payback (years)	10.6	5.3

(1) Net of copper by-product credit and includes production taxes.

**TABLE 1-5**  
**Gold Reserve, Inc.**  
**Brisas Project, Venezuela**  
**Technical Report Update**  
**Base Case Key Economic Assumptions and Results**

<b>Base Case Assumptions</b>	
Daily Mill Throughput	75,000-68,000 tonnes/day
Mine Life	18.25 Years
<b>Gold Price</b>	<b>\$600/troy ounce</b>
<b>Copper Price</b>	<b>\$2.25/pound</b>
<b>Silver Price</b>	<b>\$11.00/troy ounce</b>
<b>Metallurgical Recovery</b>	
Plant Recovery – Gold	82.7%
Plant Recovery – Copper	86.9%
Net Payable Metal – Gold	81.6%
Net Payable Metal – Copper	83.3%
<b>Life of Mine Production</b>	
Payable Gold	8.35 million troy ounces
Payable Copper	1,156 million pounds
<b>Average Annual Production</b>	
Payable Gold/year	457,000 troy ounces
Payable Copper/year	63 million pounds
<b>Initial Capital Cost <sup>1</sup> (in millions US 4Q 2007 \$)</b>	
Mine	\$59.0
Mill	\$314.7
Tailings	\$38.3
Infrastructure	\$67.8
Owner's Costs	\$63.4
Pre-Production Development	\$16.7
Indirect Costs (includes EPCM and Camp)	\$127.6
Contingency	\$43.8
<b>Total Initial Capital</b>	<b>\$731.3</b>
<b>Initial Working Capital (incl. spares &amp; first fills)</b>	<b>\$53.0</b>
<b>Capital Costs (in millions US 4Q 2007 \$)</b>	
Initial Capital + Working Capital	\$784.3
Sustaining Capital	\$269.1
Reclamation Expenditure	\$52.4
Working Capital Returned at end of Project	(\$53.0)
<b>Total Capital</b>	<b>\$1,052.8</b>
<b>Cash Operating Costs Per Ore Tonne (in US 4Q 2007 \$)</b>	
Mining and Dewatering	\$2.68
Processing	\$3.00
G & A	\$0.43
Transportation & Freight	\$0.43
Smelting & Refining	\$1.08
<b>Total Cash Operating Cost/Ore Tonne</b>	<b>\$7.62</b>
<b>Cost Per Ounce of Gold</b>	
Cash Operating Costs <sup>2</sup>	\$120
Exploitation Tax	\$22
Capital Cost (initial and sustaining)	\$135
<b>Total Costs<sup>3</sup></b>	<b>\$277</b>

(1) A value added tax (VAT) of 9% or \$54 million, is not included in the initial capital as it should be recovered within the first few years of construction and mining.

(2) Net of copper by-product credit.

(3) Net of copper credit and includes costs incurred to date of approximately US \$70 million.

Development of the project yields a pre-tax discounted cash flow rate of return of 20.5 percent and a net present value of \$1.29 billion (5 percent discount rate) at a gold price of \$600/oz, a silver price of \$11.00/oz, and a copper price of \$2.25 per pound. Total pre-tax cash flow is \$2.77 billion.

Likewise, the Brisas Project yields an after-tax discounted cash flow rate of return of 15.0 percent and a net present value of \$767 million (5 percent discount rate) at a gold price of \$600/oz, a silver price of \$11.00/oz, and a copper price of \$2.25 per pound. Total after-tax cash flow is \$1.85 billion.

The total initial capital is approximately \$731 million, with an additional \$53 million in initial working capital which includes critical spares and initial fills, and \$269 million of sustaining capital required over the 18.25 year mine life. The cash operating cost per gold ounce produced is \$142 after by-product credits and including production taxes. When capital costs are added, total cash and non-cash costs (fully-loaded) are \$277 per ounce.

Reserve estimates were based on a gold price of \$470 per ounce, copper price of \$1.35 per pound, and no silver credits. Results from the economic analysis at these prices are shown in Table 22-3. Since an after tax total cash flow of \$750 million is achieved the economic criteria for the reserve statement are met.

## **1.9 Conclusions**

### **1.9.1 Adequacy of Procedures**

PAH and various other firms and independent consultants have reviewed the methods and procedures utilized by GRI at the Brisas Project to gather geological, geotechnical, and assaying information and found them reasonable and meeting generally accepted industry standards for a bankable feasibility level of study.

### **1.9.2 Adequacy of Data**

PAH believes that the Brisas Project has conducted exploration and development sampling and analysis programs using standard practices, providing generally reasonable results. PAH believes that the resulting data can effectively be used in the subsequent estimation of resources and reserves.

### **1.9.3 Adequacy of Feasibility Study**

This Technical Report is based on the Brisas Project Feasibility Study prepared by Aker Kvaerner Metals Inc., dated January 2005, the Project Scope and Definition Document prepared by SNC-Lavalin, dated April 2006, the July 2007 updated mineral resource model with new variograms and search parameters developed by PAH, the January 2008 Mine Plan Update prepared by Marston, the February 2008 Updated Control Estimate prepared by SNC-Lavalin, and the economic model prepared by GRI and validated by PAH. This report was prepared for disclosure of the results of the studies that have been completed since the October 2006 Brisas Project Update. PAH believes that the Feasibility Study and the supporting

documents were prepared using standard industry practices and provides reasonable results and conclusions.

#### **1.9.4 Compliance with Canadian NI 43-101 Standards**

PAH believes that the current drill hole database is sufficient for generating a feasibility level resource model for use in resource and reserve estimation. Recovery and cost estimates are based upon sufficient data and engineering to support a reserve statement. Economic analysis using these estimates generates a positive cash flow, which supports a reserve statement.

At a 0.4 AuEq cutoff grade the measured and indicated resource is 556.9 million tonnes at a gold grade of 0.66 gpt and a copper grade of 0.13 percent. Included in this resource is a proven and probable reserve of 482.7 million tonnes of ore at a gold grade of 0.66 grams per tonne and a copper grade of 0.13 percent based on a value cutoff of US\$3.54 per tonne for hard rock and \$3.74 for saprolite.

PAH believes that the resource and reserve estimates have been calculated utilizing acceptable estimation methodologies. PAH is also of the opinion that the classification of measured and indicated resources, stated in Table 17-9, and proven and probable reserves, stated in Table 17-14, meet the definitions as stated by Standards for Disclosure for Mineral Projects, Form 43-101F1 and Companion Policy 43-101CP dated December 23, 2005.

#### **1.10 Recommendations**

The Brisas Project Feasibility Study dated January 2005 provides reasonable results and conclusions and, in PAH's opinion, meets the requirements of a Feasibility Study. This Technical Report is based on the Feasibility Study, the Update of Resource Model by PAH in June 2007, the Mine Plan Update by Marston in January 2008, and the Basis of Update Control Estimate by SNC-Lavalin in February 2008.

As the project has moved from the feasibility stage into the design and construction phase additional information has been gathered. As the project continues to move forward, there are areas of the project that should be given additional consideration. Below is a list of recommendations to consider:

- PAH recommends additional testwork on the oxide saprolite ores to see if there is any detrimental effect on the sulfide ore flotation by adding the oxide ores to the flotation circuit. The oxide saprolite represents less than 2 percent of the total material processed through the flotation circuit. GRI recognizes that an independent circuit or heap leaching of the oxide saprolites are possible alternatives. PAH recommends conducting bench-scale batch grinding and flotation tests with the following ore blends:

	<u>Test 1</u>	<u>Test 2</u>
• Hard Rock, North ore	50%	51%
• Hard Rock, South ore	41%	42%
• Sulfide saprolite	6%	7%
• Oxide saprolite	3%	0%

PAH estimates these tests would cost \$20,000.

- PAH recommends GRI proceed with an updated copper concentrate marketing study. Recent changes in the world copper concentrate supply have significantly reduced treatment and refining charges for copper. The current economic model has a price participation cost assumption that could be overly conservative for existing market conditions. If smelter rates were updated, operating costs could potentially be reduced by \$20/oz of gold. PAH estimates this study would cost \$25,000.
- PAH recommends the construction of a new core shed outside of the current pit area footprint. PAH estimates the core shed construction costs at \$50,000.