MINE DEVELOPMENT ASSOCIATES
MINE ENGINEERING SERVICES

Technical Report Update on the Las Cristinas Project, Bolivar State, Venezuela

Prepared for

CRYSTALLEX INTERNATIONAL CORPORATION

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1.0 EXECUTIVE SUMMARY

1.1 Introduction and Property Location

Crystallex International Corporation (“Crystallex”) is exploring and developing the Las Cristinas project in southeastern Venezuela. Since 2003, Mine Development Associates (“MDA”) has been engaged to estimate and update the mineral resources and reserves for the property and was engaged in July 2007 to prepare this updated Technical Report for the purpose of reporting the most recent updated resources and reserves. The current report updates the 2003 Feasibility Study by SNC-Lavalin Engineers and Constructors Inc. (“SNC-Lavalin”) and their subsequent 2005 Technical Report. The total resource at Las Cristinas as reported herein represents a significant increase since the resource estimate reported in 2005.

The Las Cristinas property is located in southeastern Venezuela in the State of Bolivar. The project site is about 670km southeast of Caracas and 370km by road south-southeast of the city of Puerto Ordaz at approximately N 006° 12’ Latitude and W 061° 29’ Longitude. The village of Las Claritas lies 6km east of the property.

The Las Cristinas project consists of 3,885.6 hectares in four concessions: Cristina 4, 5, 6, and 7. On September 17, 2002, Crystallex and the public entity Corporación Venezolana de Guayana (“CVG”) signed a Mining Operation Agreement (“MOA”) for the development of a mine on the Cristina 4, 5, 6 and 7 concessions. The MOA provides Crystallex with the exclusive right to explore, design and construct facilities, exploit, process, and sell gold from Las Cristinas but does not transfer property rights to Crystallex. The term of the MOA is 20 years, subject to extension for up to 20 more years in two 10-year renewal terms. At a processing rate of 20,000 tonnes per day and current proven and probable reserve estimates, the expected mine life is 64 years. However, Crystallex has completed a study and intends to increase the capacity to 40,000 tonnes per day as soon as practicable, at which rate the current reserves would be depleted in about 32 years.

The Las Cristinas project consists of a large moderately dipping set of tabular mineralized gold zones. The project is designed for open-pit development at 20,000 t/d with planned expansion to 40,000 t/d. Metallurgical recovery of the gold is by cyanide-leach. There are four main mineralized areas at Las Cristinas: the Conductora area (including the Cuatro Muertos, Potaso and Conductora zones), the Mesones-Sofia area (including both the Mesones and the Sofia zones), the Morrocoy area and the Cordova area.

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1.2 Geology and Mineralization

Las Cristinas is located in a Proterozoic granite-greenstone terrain of eastern Venezuela, with stratigraphy in the district consisting of a west-dipping sequence of lower Proterozoic supracrustal metavolcanic and metasedimentary rocks. Mineralization at Las Cristinas is hosted by a mafic to intermediate-composition volcanic sequence. Three phases of intrusive rocks, including diorite stocks, an aplite dike, and diorite sills, occur on the Las Cristinas property. The diorite stocks and aplite dike are thought to be pre-mineralization, while the diorite sills appear to post-date mineralization.

A near-pervasive foliation (S_1) occurs in the Las Cristinas area where it varies in intensity up to very strong. The S_1 foliation is sub-parallel to bedding (S_0). Mapping of the orientation of foliation and bedding reveals the presence of a fold hinge whose axial trace strikes northeast with a plunge to the southwest, coinciding with the axial trace of a regional synform. A northeast-striking fault, located in the axial zone of the regional synform, passes between the Mesones and Sofia mineralized centers. This fault is believed to have cut through a single mineralized breccia complex and resulted in the displacement of the Mesones component of that body approximately 200m to the southwest of the Sofia remnant.

Weathering has had a critical effect on copper distribution at Las Cristinas and will have an impact on mine development. The copper has been leached from the oxide saprolite and redeposited in the sulfide saprolite.

The two most important types of gold mineralization at Las Cristinas in terms of the identified resource are stratiform bodies such as Conductora, Morrocoy, and Cordova and hydrothermal quartz-tourmaline breccias exemplified by Mesones-Sofia. About 95% of the identified gold resource comes from the stratiform deposits and 5% from the breccias. Mineralization in Mesones-Sofia is concentrated in the quartz-tourmaline-sulfide-calcite vein breccias and extends laterally into the adjacent country rocks. Pyrite and chalcopyrite occur as aggregates up to 5cm in diameter, as semi-massive replacements in the matrix of the quartz-tourmaline breccias, and as disseminations both in the breccias (in the matrix and in breccia clasts) and in the enclosing country rocks. In the Conductora-type stratiform mineralization, distribution of mineralization is controlled by the permeability of the host rocks – gold grade and alteration intensity typically decrease abruptly at the contact between permeable volcaniclastic units and impermeable lava layers. Pyrite and chalcopyrite are, again, the main sulfides. The majority of the gold resource at Las Cristinas is located within biotite alteration facies, and to a lesser extent within the tourmaline zone, while the distal chlorite-epidote-calcite alteration facies is essentially barren of significant gold mineralization.

1.3 Exploration Concept

The Las Cristinas mineralization has a number of features in common with porphyry gold-copper deposits, including hydrothermal quartz-tourmaline breccias at the core of the mineralized system, alteration zoning, and the metal association of gold with copper and minor molybdenum. However, unlike typical porphyry systems, there is no evidence of either a closely related porphyry intrusion or abundant quartz veins at Las Cristinas.

There is a strong relationship between mineralization and structure at Las Cristinas. Specifically most of the mineralization lies parallel to the foliation and is influenced by the stretching orientation defined by a mineral lineation. This structural information is consistent with mineralization being coeval with shearing over an interval in excess of a kilometer in width.

Recent drilling at Las Cristinas has been focused on extension of resources both laterally and down dip with more of a development focus rather than an exploration focus.

1.4 Exploration and Historic Resource Estimates

Most of the exploration work at Las Cristinas has been performed by Placer Dome Inc. ("Placer"), who worked on the property from 1991 to 2001. Placer completed line cutting, mapping, rock and soil sampling, geophysics, trenching, and drilling. Since acquiring the property in 2002, Crystallex has focused its exploration on drilling, with particular attention paid to the studies of the alteration, stratigraphy and structure of the deposit to define the controls on mineralization so as to improve confidence in the validity of correlating mineralized zones between adjacent drill-hole intersections.

The current database for Las Cristinas has 189,026m of trench and drill-hole samples from 108 individually named trenches and 1,321 drill holes. There are a total of 187,226 gold assays, 168,020 copper assays, 43,830 cyanide-soluble copper assays, and 145,021 silver assays. Drilling alone totals 187,165m. The average drill spacing over the entire modeled area at Conductora is roughly 70m, dropping to about 30m in the core area where economic mineralization is shallowest and where mining is planned to commence. The Mesones-Sofia area has an average drill spacing of 55m, while Morrocoy, a newly estimated deposit lying between Cordova and Mesones-Sofia, has a drill spacing of about 85m.

Placer drilled 1,174 drill holes for a total of 158,738m and excavated all of the 108 trenches; 77% of the holes had at least one down-hole survey. Placer tried several different drilling techniques in order to overcome the challenges of drilling in an intensely weathered tropical environment and chose triple-tube diamond drilling. They found that PQ tools provided the best recovery in saprolite, with HQ in bedrock. NQ was used systematically in bedrock during the infill-drilling phase and occasionally in difficult drilling situations. Placer's drilling was conducted in essentially three phases – shallow drilling to test saprolite, bedrock drilling and infill drilling in saprolite, and finally infill drilling of the pit area. Placer had a quality control program in place evaluating sampling and sub-sampling procedures and results.

Crystallex drilled 90 holes for a total of 28,427m from 2003 through early 2007, generally using HQ tools for saprolite and NQ for bedrock. Crystallex's 2003 drilling twinned selected Placer holes to independently evaluate a portion of the Placer drill-hole database and assay data. Crystallex's twin holes were drilled with smaller diameter core than Placer's had been, and Crystallex sampled with 2m continuous sample intervals in contrast to Placer's 1m sample intervals. Crystallex's subsequent drilling, conducted from 2004 through 2007, focused on increasing the reserve and resource through infill drilling, drilling down-dip extensions of the stratiform mineralized zone, and exploring strike extensions of the deposit. This drilling used blanks and pulp standards for quality control, and for their 2006-2007 drilling. Crystallex also conducted check assaying with a second assay lab. Checks on Placer's sample data verified the general tenor of grades reported by Placer.

Issues of variability and biased-low samples were addressed in a heterogeneity study. The high variability must be addressed prior to and during production to avoid massive misclassifications of ore and waste rock during production. This material heterogeneity or grade variability has negatively impacted the ability to make any resource estimate precisely reflect local estimated grades. Importantly, the style of mineralization and its natural variability are the likely causes of the underlying difference in grades between Placer data and Crystallex data, where Crystallex samples are both smaller and slightly lower grade than Placer's samples. It has been demonstrated that this is likely due to sample size. Taking this further, the entire sample database might be understating the mean grade of the deposit, even Placer's data. While this appears possible, there is no way to quantify this potential underreporting of grade or any way to incorporate this into the database or resource model.

1.5 Metallurgy

Several samples of saprolite oxide ("SAPO"), saprolite sulfide ("SAPS"), carbonate-leached bedrock ("CLB") and carbonate-stable bedrock ("CSB") ore from the planned Conductora pit area were examined in bench tests and pilot plant operations by SGS Lakefield Research ("Lakefield") from April 2003 through mid-2004. Samples of waste from the Conductora pit and four samples of Mesones ore were also studied. Sub-samples of Conductora ore were sent to McGill University for gravity recovery test work. Outokumpu Mintec Canada Ltd. ("Outokumpu") conducted pilot-plant settling tests on several samples. The various test programs were designed to confirm relevant data generated by Placer, determine the gold recovery and reagent requirements for the proposed gravity-leach flowsheet, and generate plant design data.

Grinding data are generally in accordance with data generated by Placer. Pilot-scale gravity concentration tests at Lakefield on Conductora ore show about 30% gold recovery from both a SAPO-CSB blend and a SAPO-SAPS-CLB-CSB blend at mass concentration ratios of about 4000:1. Preliminary data for Mesones show an even better response. Intensive cyanidation of the concentrates from Conductora gave ~99% leach recovery. Tests at McGill to determine the gravity-recoverable gold ("GRG") content of Conductora SAPO and CSB samples showed 39% and 46% GRG, respectively, which would translate into practical recoveries of about 25%.

Thirty-six hour bottle-roll leach tests on Conductora gravity tailings confirm that SAPO leaches very well to give about 99% overall (gravity + leaching) extraction and a 0.02 g Au/t tailing. With a 24 h leach time, tailings were 0.03 g Au/t corresponding to 98% extraction. CSB gives about 85% overall extraction (0.17 g Au/t tailing). Cyanide additions for SAPO and CSB have been less than 1 kg/t ore. Pure SAPS samples with cyanide soluble copper ("CNSCu") levels of 370 ppm or less have been tested and gave 85 to 88% extraction, albeit with cyanide additions of 1.7 to 1.9 kg/t. Mixtures containing SAPO, SAPS and CSB gave 85 to 90% overall extraction provided that sufficient NaCN was present. The NaCN addition varied with the CNSCu level in the ore.

An initial gravity-leach test on each of the four Mesones samples showed an average 85% overall gold extraction and modest reagent consumption. It is believed that higher extraction could be obtained with optimization of the leach conditions.

Duplicate bench-scale tests on a series of samples containing 20% CLB and 80% CSB and between 1 and 2 g Au/t yielded an average of 88.7% overall gold recovery (gravity and leaching) with no measurable dependency on head grade.

A 2 kg/h pilot plant was operated for three weeks in which batch-ground/gravity concentrated Conductora ore was subjected to carbon-in-leach ("CIL") processing. During the first 13 days (PP1), a blend of 20% SAPO and 80% CSB was leached with an addition of 0.7 kg/t of cyanide (0.3 kg/t consumed) to give a final overall gold extraction of 89.6% (tailings average of 0.15 g Au/t). A SAPO-SAPS-CLB-CSB blend was processed for the last week (PP2). The plant tailing was 0.15 g Au/t for an extraction of 89.3% with a cyanide addition of 0.8 kg/t (0.3 kg/t consumed).

Viscosity measurements by Lakefield indicated nothing problematical in the mixtures that will be handled in the Las Cristinas plant.

Outokumpu conducted high-rate thickening tests on nine sample blends, ranging from pure SAPO to pure bedrock, using its pilot-scale thickener. At 50% solids in the underflow, all blends containing 50% SAPO or less could be processed at 0.46 t/m^2/h or greater. Allowing for a 15% scale-up, the data showed that a 50m diameter thickener would give at least 47% solids in the underflow when processing up to 20,000 t/d of a 50% SAPO, 50% CSB mixture.

Natural degradation tests and continuous INCO Air/SO_2 cyanide destruction tests have been performed on pilot plant tailings. Natural degradation under Lakefield climatic conditions reduced weak-acid dissociable cyanide ("CNWAD") to below 20 ppm in about 40 d for pilot plant tailings from PP1 and 100 d for PP2 tailings. The INCO process then reduced CNWAD to <0.3 ppm and Cu to about 1 ppm under industry-typical operating conditions. INCO tests on naturally degraded PP2 tailings solution gave <0.1 ppm CNWAD and <0.5 ppm Cu.

1.6 Resource and Reserve Estimation

The total resource at Las Cristinas as reported herein represents a significant increase since the previous resource reported in 2005 and since Crystallex initially obtained the rights to production in 2002. The increase is the result of drilling that expanded Conductora (inclusive of Cuatro Muertos and Potaso) down dip, drilling that expanded and allowed for inclusion of Morrocoy, and the first-time inclusion of Cordova resources, located west of Mesones-Sofia, and Morrocoy.

The mineralized zones at Conductora were defined in 2002, but Crystallex's exploration and geological studies have yielded new insight into the gold distribution. The controls on mineralization are lithological with the more-favorable units having more primary porosity and permeability. In addition to lithology, alteration and sulfide content also correlate with the mineralization. Higher-grade zones can be visually identified by lithology, alteration, and sulfides.

Table 1.1 and Table 1.2 show the updated Measured and Indicated resources and Inferred resources, respectively, for the entire Las Cristinas project area. These resources are inclusive of the areas a) Conductora-Cuatro Muertos-Potaso ("Conductora"), b) Mesones-Sofia, c) Morrocoy, and d) Cordova. The deposit is bounded at the south by a property boundary and ends at Mesones-Sofia, Cordova and

Morrocoy in the north. The deposit is open at depth. This report is the first to disclose a resource estimate for Morrocoy and Cordova, the latter of which is classified as Inferred only.

Table 1.1 Las Cristinas Total Measured and Indicated Resources
(Including Reserves*)

Las Cristinas Measured and Indicated								(rounded)
Cutoff (g Au/t)	Tonnes	Gold (g/t)	Gold Ounces	Silver (g/t)	Copper (ppm)	CNSolCu (ppm)	Silver Ounces	Copper Kilograms
0.2	1,168,496,000	0.71	26,578,000	0.44	1,017	119	16,613,000	1,116,751,000
0.4	794,119,000	0.91	23,109,000	0.47	1,068	136	11,926,000	848,297,000
0.5	**629,383,000**	**1.03**	**20,761,000**	0.48	1,122	145	9,755,000	706,343,000
0.6	493,098,000	1.16	18,377,000	0.49	1,178	155	7,841,000	580,939,000
0.7	386,720,000	1.30	16,177,000	0.51	1,238	167	6,322,000	478,680,000
0.8	312,241,000	1.43	14,400,000	0.52	1,282	177	5,219,000	400,345,000
0.9	261,622,000	1.55	13,032,000	0.53	1,316	186	4,458,000	344,359,000
1.0	226,823,000	1.64	11,977,000	0.54	1,341	193	3,928,000	304,272,000
1.5	120,348,000	2.01	7,769,200	0.57	1,428	225	2,190,700	171,816,000
2.0	47,045,000	2.45	3,709,900	0.59	1,574	298	897,700	74,042,000
2.5	15,625,000	2.96	1,488,900	0.63	1,796	424	318,800	28,063,000
3.0	5,178,000	3.48	579,000	0.70	2,118	570	117,000	10,967,000
3.5	1,650,000	4.10	218,000	0.81	2,716	736	43,000	4,482,000
4.0	633,000	4.74	96,000	0.88	3,430	920	18,000	2,171,000
5.0	158,000	5.96	30,000	0.74	3,642	507	4,000	574,000
Note: inconsistencies between grade, tonnes, and ounces are due to rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

Table 1.2 Las Cristinas Total Inferred Resources
(Including Reserves*)

Las Cristinas Inferred								(rounded)
Cutoff (g Au/t)	Tonnes	Gold (g/t)	Gold Ounces	Silver (g/t)	Copper (ppm)	CNSolCu (ppm)	Silver Ounces	Copper Kilograms
0.2	626,333,000	0.51	10,334,000	0.29	666	54	5,869,000	398,760,000
0.4	322,410,000	0.73	7,594,000	0.29	680	54	3,051,000	219,361,000
0.5	**229,626,000**	**0.85**	**6,276,000**	0.30	691	52	2,206,000	158,773,000
0.6	167,940,000	0.96	5,194,000	0.30	707	50	1,641,000	118,772,000
0.7	121,631,000	1.08	4,240,000	0.31	721	48	1,219,000	87,746,000
0.8	89,339,000	1.21	3,467,000	0.33	748	46	954,000	66,848,000
0.9	64,278,000	1.35	2,788,000	0.37	783	45	758,000	50,337,000
1.0	49,247,000	1.47	2,334,000	0.39	815	44	617,000	40,115,000
1.5	17,659,000	1.98	1,126,700	0.48	918	43	270,700	16,215,000
2.0	5,718,000	2.53	464,900	0.42	918	46	78,100	5,247,000
2.5	1,636,000	3.37	177,300	0.30	880	46	15,600	1,439,000
3.0	548,000	4.72	83,000	0.21	765	30	4,000	419,000
3.5	288,000	6.07	56,000	0.15	687	24	1,000	198,000
4.0	192,000	7.25	45,000	0.04	672	6	-	129,000
5.0	122,000	8.82	35,000	0.05	649	7	-	79,000
Note: inconsistencies between grade, tonnes, and ounces are due to rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

It is important to note that since the first estimate was made of the Las Cristinas deposit resources by Crystallex in 2003, all new drilling done in 2004 (18 holes), 2005 (14 holes), and 2006-2007 (46 holes) has supported the model in that the defined zones needed little modification even at a drill-hole spacing of over 100m, *i.e.*, the high-grade/high-sulfide and low-grade/low-sulfide zone gradational contacts needed only minor changes to fit the new drill-hole data. This fact is a testament to the predictability of the Las Cristinas deposit in general, but Conductora particularly, where most of the drilling took place.

The economic and design criteria used to determine the reserves in this report were derived from existing reports. MDA believes that there is enough information in prior reports concerning the appropriate mining, processing, economic and other factors to support Proven and Probable reserves. The work undertaken by MDA in 2007 consisted of updating mining costs using factors and estimates provided by Crystallex, developing Lerchs-Grossmann ("LG") ultimate pits using current economics, redesigning the ultimate pits, and reporting reserves. Because the updated economic data have not been rigorously verified by MDA, the 2007 work should be considered pre-feasibility level. The Proven and Probable mineral reserve estimates by area are given in Table 1.3. Along with the reserves reported, within the boundaries of the pit design there are an additional 1.6M contained ounces of Inferred material. These are shown in Table 1.4 below.

Table 1.3 Las Cristinas Gold Reserve Estimate

Summary of Proven Reserves (Tonnes, Grams, and Ozs in Thousands)				
	Total Ore			
	Tonnes	gAu/t	Grams Au	Ounces Au
Conductora	112,761	1.24	139,423	4,483
Mesones/Sofia	-	-	-	-
Morrocoy	-	-	-	-
Total Proven	**112,761**	**1.24**	**139,423**	**4,483**

Summary of Probable Reserves (Tonnes, Grams, and Ozs in Thousands)				
	Total Ore			
	Tonnes	gAu/t	Grams Au	Ounces Au
Conductora	317,662	1.10	349,906	11,250
Mesones/Sofia	27,556	1.10	30,216	971
Morrocoy	6,383	0.77	4,910	158
Total Probable	**351,601**	**1.10**	**385,032**	**12,379**

Summary of Proven & Probable Reserves (Tonnes, Grams, and Ozs in Thousands)							
	Total Ore				Total	Total	Strip
	Tonnes	gAu/t	Grams Au	Ounces Au	Waste	Tonnes	Ratio
Conductora	430,423	1.14	489,329	15,732	595,380	1,025,803	1.38
Mesones/Sofia	27,556	1.10	30,216	971	34,624	62,180	1.26
Morrocoy	6,383	0.77	4,910	158	9,915	16,298	1.55
Total Probable	**464,362**	**1.13**	**524,455**	**16,862**	**639,919**	**1,104,281**	**1.38**

Table 1.4 Las Cristinas Inferred Gold within Pit Design

In Pit Inferred Summary (Tonnes, Grams, and Ozs in Thousands)				
	Total Ore			
	Tonnes	gAu/t	Grams Au	Ounces Au
Conductora	46,985	0.97	45,569	1,465
Mesones/Sofia	1,651	0.65	1,080	35
Morocoy	3,103	0.73	2,252	72
Total Proven	**51,739**	**0.95**	**48,901**	**1,572**

1.7 Development and Production

It is estimated that the total capital cost of the project has increased from $293 million dollars as reported in 2005 to approximately $356 million in the third quarter of 2007 (Table 1.5). Crystallex has spent, through August 2007, approximately $112 million on items included in the revised cost estimate of US$356 million.

Table 1.5 Comparison of 2005 Estimate and 2007 Update

DESCRIPTION	2005	2007	% Increase
Total Direct Costs	218.7	238.3	8.9%
Indirect Costs	30.4	66.4	118.4%
Owner's Costs	24.9	27.5	10.4%
Contingency	19.0	23.8	25.3%
TOTAL PROJECT COST	**293.0**	**356.0**	**21.5%**

In addition, operating costs have changed since 2005 as shown in Table 1.6.

Table 1.6 Operating Cost Estimates

Item	Operating Cost/t Ore (Aug 2005)	Operating Cost/t Ore (Oct 2007)	Operating Cost /oz Gold (Aug 2005)	Operating Cost /oz Gold (Oct 2007)
Mining	$2.68	$3.22	$72	$101
Processing	$4.45	$5.86	$119	$183
G & A	$0.52	$0.72	$13	$22
TOTAL	**$7.66**	**9.80**	**$204**	**$306**

Note: Does not include any off-site costs or royalties

Since the 2005 update to the 2003 feasibility study, there have also been some changes in plans for mining and processing.

The increase of reserves is the result of additional drilling defining additional resources downdip. The consequence is a larger and deeper ultimate pit design. The current 2007 ultimate pit is designed to be approximately 1,250m wide, 3,100m long, and up to 490m deep. Mining is planned using truck and shovel methods. Current plans include processing 20,000 t/d with a variable strip ratio averaging 1.38 and ranging from 0.30 to 3.29 tonnes of waste per tonne of ore mined.

Water flow into the pit has been determined to be greater than what was estimated in the 2005 study. MDA has not addressed the potential flow increase in detail, but given the significance of dewatering to the project, more detailed analyses and engineering are needed. Dewatering costs are estimated at $0.185 per tonne mined, and the dewatering cost estimate is thought to be within accuracy for pre-feasibility work. Nevertheless, MDA cautions that the practical aspects of dealing with the extra volume of water will be challenging. If these costs increase significantly, the economics of the deeper reserves may be affected.

There has also been a change with regard to cyanide destruction. The cyanide destruction process is air/SO_2 using sodium metabisulphite as the source of SO_2. Originally it was envisioned that the excess reclaim water from the tailings management facility ("TMF") would be treated; however, it is now Crystallex's intent to treat the entire stream of CIL tailings.

Delays in acquiring the environmental permits allowing construction to commence have impacted the overall project startup. It is now expected that project start up completion will be achieved approximately 24 months following the receipt of the full permits and the mobilization of the early works-construction contractors.

1.8 Conclusions and Recommendations

Since signing the MOA for Las Cristinas, Crystallex has successfully increased both the estimated resources and reserves. Las Cristinas presents a well-defined resource that has undergone extensive engineering and economic studies. The project is waiting for government permitting to begin production of the defined reserves.

At this stage, while waiting for final government permission to begin construction, multiple tasks in differing disciplines should be accomplished to optimize expected production. Crystallex should continue with at least a) exploration, b) geological studies, c) sub-sampling evaluation for production samples, d) metallurgical testing, e) water flow studies, f) detailed engineering work, and g) optimizing the production schedule.

Analysis of the drilling results has further defined controls on mineralization in the various portions of the property and will aid in future exploration. To potentially continue the expansion of reserves, MDA recommends that two areas deserve attention in the near term. Infill drilling is needed immediately south of the Sofia area, beneath the Quebrada Amarilla, to upgrade the Inferred resource there. It is recommended that three holes totaling about 1,200m be drilled in this area. The second area with an Inferred resource that needs to be upgraded is Cordova. A lack of continuity of gold zones demonstrated by Placer's drilling may actually reflect intense folding. Detailed stratigraphic analysis, perhaps combined with lithogeochemistry to attempt to distinguish volcanic units, should be followed by about 1,500m of drilling in five holes.

MDA is not reporting copper resources or reserves because CVG, who has granted mining rights to Crystallex, currently only has the rights to the gold in Las Cristinas. Since copper has a negative effect on cyanide recovery of gold in the saprolite sulfide material, MDA has modeled copper.

MDA believes that the single most important factor influencing mining will be the amount of water entering the pit. As the detailed engineering stage of project development proceeds, MDA recommends an aggressive program of testing under the guidance of groundwater hydrologists. Capturing as much water as practical on upper benches and channeling it to sumps in the upper elevations of the pit can reduce pit-pumping requirements.

The acid-generating material management plans require mining of saprolite-sulfide waste material which must be encapsulated within waste dumps to prevent the production of acid drainage, requiring detailed short-term planning to ensure that potential acid-generating material being dumped is properly managed.

Due to the increase in reserves, additional work is needed for the increased dump size and TMF. It is strongly recommended that a geotechnical investigation program be carried out to confirm the subsurface conditions under the proposed new dump location and stability analysis undertaken to verify design recommendation provided above. Should the option to expand the TMF footprint be carried forward, substantial dam alignment optimization and geotechnical field investigation would be required for the detail design and due to the height increase to about 100 m, additional field investigation and tests are required to confirm the analysis. Recommendations presented in 2005 design report regarding site preparation, construction and monitoring should be still followed.

The expanded pit, which is a result of the increase in reserves, is now within about 30m of the project's primary crusher. Consideration should be made to minor relocation of the crusher. This would provide a cushion against any future modifications to pit designs based on slope reconfigurations or further expansion of reserves.

2.0 INTRODUCTION

2.1 Introduction

Crystallex International Corporation ("Crystallex") is exploring and developing the Las Cristinas project in southeastern Venezuela. Mine Development Associates ("MDA") has been engaged in estimating and updating the mineral resource and reserves for the property since 2003. In July 2007, MDA was contracted to prepare this Technical Report for the purpose of reporting the most recent updated resources and reserves. This report also describes the property as known by prior exploration and provides an update on the 2006-2007 drilling, new information gained from that exploration, and results of continuing data verification. The 2006-2007 drilling that has led to the updated mineral resource and reserve estimates in this report was designed to bring the Morrocoy area into a defined resource and to increase resources and reserves down dip in the Conductora area. It was successful in both tasks. This most recent update also includes the first time reporting of Inferred resources at Cordova. The current report updates the 2003 Feasibility Study by SNC-Lavalin Engineers and Constructors Inc. ("SNC-Lavalin") and their subsequent Technical Report (SNC-Lavalin, 2005a). The total resource at Las Cristinas as reported herein represents a significant increase since the previous resource reported in 2005 (Ristorcelli, 2005; SNC-Lavalin, 2005a). The current reported reserve has a production rate of 20,000 t/d with an option to expand to 40,000 t/d.

Crystallex is a Canadian corporation listed on the Toronto Stock Exchange ("TSX") and the American Stock Exchange ("AMEX"). This report was written in compliance with disclosure and reporting requirements set forth in the Canadian Securities Administrators' National Instrument 43-101, Companion Policy 43-101CP, and Form 43-101F1. The mineral resources and reserves reported in Section 17.0 were classified to the standards and requirements stipulated in Canadian National Instrument 43-101. It is intended that this report may be submitted to those Canadian stock exchanges and regulatory agencies that may require it. It is further intended that Crystallex may use it for any lawful purpose to which it is suited.

MDA prepared two previous 43-101 Technical Reports on the Las Cristinas project for Crystallex (Ristorcelli, Hardy, and Prenn, 2002; Ristorcelli and Hardy, 2003) as well as reports that were not filed. The 2002 report described historic work on the property and results from previous operators. The 2003 report presented the first resource and reserve estimations of Crystallex's tenure on the property, which are included in this report in the section on historic resources and reserves (Section 6.4.2). These reports form the basis for much of this report to which more recent information has been added, principally from new co-authors.

2.2 Terms of Reference

The resource estimates for this report have been prepared by Steven Ristorcelli, P. Geo, Principal Geologist, Mine Development Associates, principal author of the report. Thomas Dyer, P. Eng., Mine Development Associates was responsible for mine design, planning and mineral reserve estimates, and Dyer was assisted by MDA associate Scott Hardy, P.Eng. Richard Spencer, PhD, P. Geo., of Crystallex provided updated information on geology, mineralization, and exploration by Crystallex, ran the exploration at Las Cristinas and had overall supervision and planning responsibility for those programs, and had significant input to this report. Mr. John Goode, P.Eng., independent metallurgist, has been involved with Las Cristinas and Crystallex since 2003 and has written, compiled and interpreted the metallurgical data for this project. Mr. David Evans, P. Eng., of SNC-Lavalin, was heavily involved in previous feasibility work on this project and has taken the lead role in this recent work on behalf of SNC-Lavalin, principally in coordinating SNC-Lavalin's work on capital and operating costs. Ms. Ljiljana Josic, P.Eng, of SNC-Lavalin, was responsible for the geotechnical study of the deepened open pit. Mr. Henri Sangam, P. Eng, was responsible for evaluating the geotechnical aspects of the tailings management facility and waste dumps. Ms. Helen Jackson, P. Geol, was responsible for the mine dewatering section. Each of these co-authors is a qualified person under Canadian Securities Administrators' National Instrument 43-101 for their area of responsibility. Certificates of these qualified persons are provided in Section 24.0.

2.3 Sources of Information

MDA has relied almost entirely on data and information derived from work completed by Placer Dome Inc. ("Placer") and given to MDA by Crystallex. Crystallex acquired the Placer database in electronic form and received ~99% of the known drill data. Hard copies of the assay data and drill logs are not available. This is one aspect of the project that may never be able to be audited or checked. Validation drilling and re-assaying of pre-existing samples permit MDA to present a conclusion under Data Verification of adequacy, reasonableness and accuracy for the underlying database. Furthermore, an additional 12 twin drill holes completed in 2003, 18 drill holes completed in 2004, 14 drill holes drilled in 2005, and 46 drill holes in 2006-2007 have further verified the location and tenor of the mineralization. Though MDA has reviewed much of the available data, made site visits and taken independent samples, these tasks and data validate only a portion of the entire data set. MDA therefore has made judgments about the general reliability of the underlying data. Where deemed either inadequate or unreliable, the data were either eliminated from use or procedures were modified to account for lack of confidence in that specific information. Underlying this assessment on data quality and integrity is a level of confidence instilled in the project data and work completed because of the technical ability of the company involved with the project during the 1990s. In general, Placer's work appears to meet or exceed industry standards.

In addition, the scope of this study included a review of pertinent technical reports and data provided to MDA by Crystallex relative to the general setting, geology, project history, exploration activities and results, methodology, quality assurance, interpretations, drilling programs, and metallurgy. For this report, MDA relied heavily for background information on its prior technical reports described above and on the feasibility report and its updates by SNC-Lavalin described above. Prior reports that the authors used in preparation of this report are listed in Section 22.0. In addition to the company data and documents, public domain information has been gathered from a number of sources. The authors have also had numerous conversations with employees and management of Crystallex, who have provided information used in this report.

2.4 Personal Inspection by the Authors

MDA's mandate required on-site inspections at Las Cristinas and to that end Mr. Ristorcelli has visited the property on numerous occasions since 2002. In addition, MDA associate, Mr. Greg Maynard, has been to the site, and Mr. Trevor Nicolson of Nicholson Analytical Consulting, independent sampling consultant, spent 29 days on the project during the 72-day 2006 and 2007 drilling campaign. Mr. David Evans and Henri Sangam have been to the project site but only in relation to their specific endeavors.

2.5 Effective Date

The resource and reserve estimates reported here were completed in August and September 2007, respectively. The results of these estimates were made public on September 24, 2007. The date of this report as shown on the cover page and in the authors' certificates is the date on which writing of the report was completed and is the effective date of this report.

2.6 Note on Language, Terminology and Definitions

Unless otherwise indicated, all references to dollars ($) in this report refer to currency of the United States. This is a technical report, and the use of some technical terms is unavoidable.

2.7 Definitions

Some frequently used acronyms and abbreviations that appear in this report are listed below.

AA	atomic absorption spectrometry
Ag	silver
Au	gold
CIM	Canadian Institute of Mining, Metallurgical, and Petroleum
Conductora	Used to denote the entire Conductora-Cuatro Muertos-Potaso deposit
Cu	copper
DMT	dry metric tonnes
d	day
FA/AA	fire assay with an atomic absorption finish
gpm	gallons per minute
g/t	grams per tonne
kg	kilograms
km	kilometer
kPa	kilopascal
kVA	kilovolt-ampere
kWh/t	kilowatt-hours per tonne
lb	pound (2000 lbs to 1 ton, 2204.6 lbs to 1 tonne)
MDA	Mine Development Associates, Inc., the authors of this technical report
m	meters
mm	millimeters
µm	micrometers
m/s	meters per second
MW	megawatt
NSR	net smelter return
oz	Troy ounce (12 oz to 1 pound, 1 troy oz = 31.10348 grams)
QA/QC	quality assurance and quality control
RC	reverse-circulation drilling method

RQD	rock-quality designation
SNC-Lavalin	SNC-Lavalin Engineers and Constructors Inc.
tonne	metric ton
tpd	metric tonnes per day
tph	metric tonnes per hour

3.0 RELIANCE ON OTHER EXPERTS

The authors wish to make clear that they are qualified persons only in respect of areas in this report identified in their Certificates of Qualified Persons submitted with this report to the Canadian Securities Administrators. The authors have relied, and are unaware of any reason not to have relied upon the following individuals and companies who have contributed the sample quality control, engineering, legal, environmental, administration, taxation and financial information stated in this report, as noted below:

Mr. Trevor Nicholson, Independent Consultant, 2006-2007 drill program data and sample quality control and reliability;

Mr. Scott Hardy, P. Eng., associate to MDA, engineering for reserves;

SNC-Lavalin for historic work on feasibility study issues and environmental; and

Crystallex staff and legal counsel on environmental issues, permitting, taxation, finance and contract rights.

Crystallex has provided its opinions and opinions of its legal counsel regarding the status of mining rights to the property. MDA is not qualified for assessing the validity of these issues and therefore presents its opinions for completeness and without comment. The classification of reserves is given by MDA from a technical standpoint, while Crystallex's legal work for mining rights and contractual issues provides the information for contractual rights' obligations for resource and reserve classification.

MDA did not investigate the environmental issues associated with the property, and none of the authors is qualified for environmental issues in Venezuela. However, Crystallex did address environmental and permitting issues updating historic work.

MDA is of the opinion that each of the other contributors to this report represented as a Qualified Person ("QP") is a QP with respect to the work for which such QP is taking responsibility. Except as may be stated in this report, none of the QPs coauthoring this Technical Report has taken steps to verify data identified as having been prepared by or under the supervision of another QP identified in this report. The reason for not verifying such data is that another QP has stated that it was prepared by or under the supervision of that QP.

4.0 PROPERTY DESCRIPTION AND LOCATION

All information in this Section 4.0 is derived from others, and MDA has relied entirely on Crystallex to update the environmental Section 4.4 (unless otherwise specifically noted) from SNC-Lavalin (2005a). Crystallex is entirely responsible for Sections 4.2 and 4.3. MDA is not qualified to assess mineral rights, contract law, or environmental law or regulations in Venezuela and therefore cannot and does not give any opinion on the information given in Section 4.0 but presents this information to fulfill requirements of Canadian Instrument 43-101.

4.1 Location

The Las Cristinas property is located in the southeastern part of Venezuela in the Municipality of Sifontes in the State of Bolivar. Bolivar is the largest of the three states comprising the Guyana Region, the remaining states being the Amazonas and Delta Amacuro. The project site is located approximately 670km directly southeast of Caracas, 30km west of the border with Guyana, and 200km north of the border with Brazil (Figure 4.1). The property is 6km west of the village of Las Claritas. The project's approximate geographical coordinates are N 006° 12' Latitude and W 061° 29' Longitude.

The name "KM 88" for the district came from the area being located near kilometer 88 marker of the road linking El Dorado with the Brazilian border.

4.2 Land Area

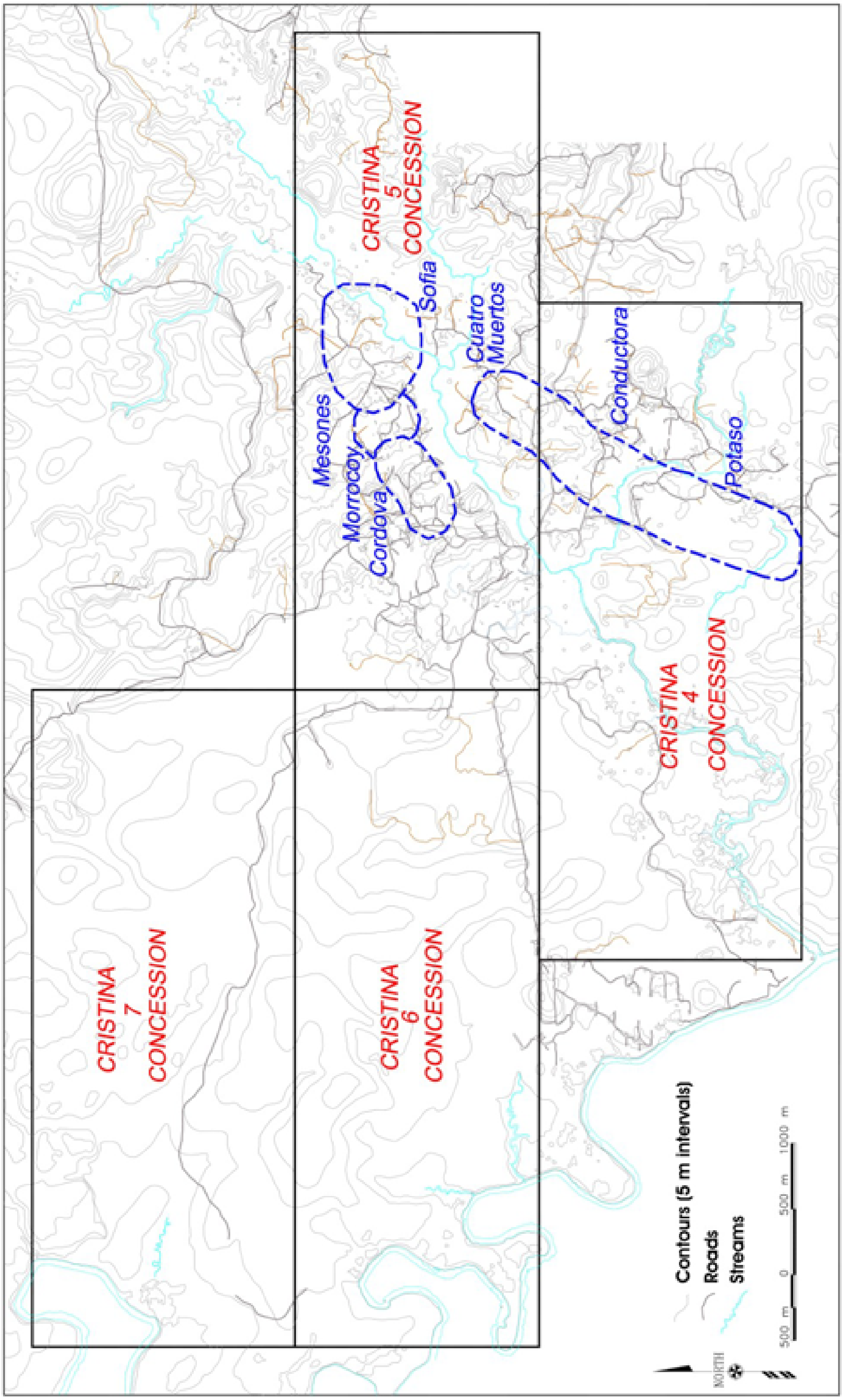
The property consists of 3,885.6 hectares in four concessions (Table 4.1). Although Crystallex has not legally surveyed the property, the concession boundaries are presented in the underlying agreement between Crystallex and Corporación Venezolana de Guayana ("CVG") (Appendix A). Figure 4.2 shows the general outline of the concessions and includes an outline of mineralized areas. Details of these four concessions are given in Appendix A, including surface area and corner coordinates given in UTM (Universal Transversal Mercator) coordinates using the "Canoas" datum. There are four main mineralized areas at Las Cristinas: the Conductora area (including the Cuatro Muertos, Potaso and Conductora zones), the Mesones-Sofia area (including both the Mesones and the Sofia zones), the Morrocoy area and the Cordova area.

Table 4.1 List of Las Cristinas Concessions

Concession	Hectares
Cristina 4	1,000.0
Cristina 5	939.4
Cristina 6	944.2
Cristina 7	1,002.0
Total	**3,885.6**

Figure 4.1 Location of Las Cristinas Property

Figure 4.2 Las Cristinas Project Area Location and Concessions



4.3 Agreements and Encumbrances

Under the Venezuelan constitution, all hydrocarbon and mineral resources belong to the Republic. The Mining Law of 1999 ("VML") regulates the exploration and exploitation of mineral resources (other than some industrial minerals not found on government lands). The Ministry of Basic Industries and Mining ("MIBAM") (formerly, the Ministry of Energy and Mines) is responsible for administering the VML. The VML permits the exploration and exploitation of mineral resources in several ways, including concessionary exploration and exploitation by private companies pursuant to mineral concessions granted by the MIBAM and direct exploration and exploitation by the Government of Venezuela.

The Government of Venezuela may reserve for itself through a decree the right to directly explore and exploit specific areas or some or all of the minerals within specific areas. Direct exploration and exploitation may be carried out either by the Government itself through the MIBAM or by a public entity such as CVG. The effect of such a reservation is to prohibit the granting of mineral concessions within the reserve area to private parties. If the Government of Venezuela has reserved direct exploration and exploitation of minerals for itself, the MIBAM or the public entity may enter into operation agreements with third parties with respect to the exploration and exploitation of the reserved minerals.

Crystallex's interests in the Las Cristinas deposits are derived from:

- a Presidential decree pursuant to which the Government of Venezuela reserved for itself, through the then Ministry of Energy and Mines, the direct exploration and exploitation of the gold located in the Las Cristinas deposits and granted to the Ministry of Energy and Mines the right to contract with CVG the activities required to carry out such exploration and exploitation;
- an agreement between the Ministry of Energy and Mines and CVG pursuant to which the Ministry of Energy and Mines granted to CVG the right to explore and exploit the gold mineral located in the Las Cristinas deposits and to enter into operations agreements with third parties for such purposes; and
- a mine operation agreement between CVG and Crystallex (Appendix A).

On September 17, 2002, Crystallex and CVG signed a Mining Operation Agreement ("MOA") for the development of a mine on the Cristina 4, 5, 6 and 7 concessions. The MOA provides Crystallex with the exclusive right to explore, design and construct facilities, exploit, process, and sell gold from Las Cristinas but does not transfer property rights to Crystallex. An official translated version of the MOA is included as an appendix to the Crystallex Annual Information Form and is available at www.sedar.com and in Appendix A. A summary of the agreement is presented below (italicized) in its original text from Crystallex.

CRISTINAS MINING OPERATION AGREEMENT – EXECUTIVE SUMMARY
(September 30, 2002)

The Corporación Venezolana de Guayana and Crystallex International Corporation on September 17, 2002, entered into a mining operation agreement whereby Crystallex has been granted the exclusive right to develop the Las Cristinas 4, 5, 6 and 7 deposits. A point form summary of the agreement follows…

1. *The agreement exclusively authorizes Crystallex "to make all the investments and works necessary to reactivate and execute in its totality the Mining Project of Cristina 4, Cristina 5, Cristina 6 and Cristina 7, design, construct the plant, operate it, process the gold material for its subsequent commercialization and sale, and return the mine and its installations to the Corporation (CVG) upon termination of the Contract".*
2. *The agreement is for an initial term of twenty (20) years with two (2) renewal terms, each for ten (10) years.*
3. *Crystallex will complete and present for approval within one (1) year from the date of signature of the agreement a financial and technical Feasibility Study which addresses the objectives of the agreement for the benefit of both parties.*
4. *Crystallex will present for approval with the Feasibility Study an investment and financing plan which supports the Feasibility Study.*
5. *Crystallex shall prepare and present to the CVG for approval annual production plans as well as plans of exploitation for the life of the Project. The plans will include volume of production and other pertinent aspects of development including environmental protection and security.*
6. *Crystallex's annual production commitment will be based upon the approved annual production plan.*
7. *Compensation to the CVG consists of an initial payment of US$15,000,000 for delivery of reports, data and existing infrastructure and a royalty calculated against the value of gross monthly production as follows:*
   (i) when the US$ troy ounce of gold is less than $280, a royalty of 1%;
   (ii) when the US$ troy ounce of gold is equal to $280 and less than $350, a royalty of 1.5%;
   (iii) when the US$ troy ounce of gold is equal to $350 and less than $400, a royalty of 2%; and
   (iv) when the US$ troy ounce of gold is greater than $400, a royalty of 3%.
   Crystallex will also pay to the Republic the Exploitation Tax established by the Law of Mines, currently 3%.
8. *Crystallex will provide for the year 2002 and throughout the contract certain special programs whereby they will create employment for the region and provide training programs, provide technical assistance to small miners, improve community health care facilities and make various infrastructure improvements to water and sewage systems as well as to the access road to the Project site.*
9. *Crystallex will be the sole employer of personnel at the Project site and will be responsible for compliance with labor laws. Crystallex will participate jointly with the CVG in permitting for the Project including explosive permits and any municipal, state or national permits required for operation. The CVG will be responsible for environmental and mining permits and Crystallex will supply the necessary technical information to support its applications.*
10. *Crystallex will supply performance bonds related to construction, labor obligations and compliance with environmental requirements.*
11. *Crystallex will provide technical assistance to groups of Small Miners identified in the agreement and installed only within the limited areas of the Project approved by Crystallex.*
12. *Should Crystallex fail to fulfill the daily production or grade average contemplated by the annual production plan for reasons other than as contemplated by the agreement (example: force majeure), Crystallex is simply required to compensate the CVG for lost profits (royalties)*

otherwise payable. The transition teams have been on site for the last several days completing inventory, reviewing data and finalizing the delivery of possession to Crystallex. The contract may be terminated unilaterally in the event of the inactivity of the Project for a period of one (1) year without just cause. Any breach by either party will require a written notice of breach invoking a ninety (90) day curative period.

13. *The agreement contemplates the subsequent addition to the agreement of authorization for the "exploration, exploitation, commercialization and sale of the mineral of copper existent in the area Las Cristinas 4, 5, 6 and 7".*
14. *The parties through their transition teams will settle "a detailed inventory of the installations, assets, and equipment property of the Republic" within thirty (30) working days of signature of the agreement.*

The MOA has been entered into in accordance with applicable Venezuelan laws and under authority granted to CVG by the Ministry of Energy and Mines. A report in late February 2003 from the Commission of Energy and Mines of the National Assembly of Venezuela confirms the legal and administrative process by which the contract rights of MINCA, a previous partner with CVG, were terminated. The report also confirms the process by which the Republic of Venezuela acquired the related assets and by which the government, through CVG, entered into the MOA with Crystallex.

As described in the executive summary of the MOA, the term of the MOA is 20 years subject to extension by both parties for two renewal terms each of 10 years. At a processing rate of 20,000 tonnes per day ("tpd") the expected mine life, based on the current proven and probable reserve estimate, is 64 years, which exceeds the term of the Mine Operation Agreement. However, the process plant has been designed to accommodate an expansion to 40,000 tpd, and Mr. Robert Crombie, Senior Vice President, Corporate Development, for Crystallex reports that Crystallex intends to increase the capacity as soon as practicable. SNC-Lavalin completed a full feasibility study for a 40,000 tpd project in 2004 (SNC-Lavalin, 2004a), followed by a pre-feasibility expansion study in October 2005, which contemplated expanding from an existing 20,000 tpd operation to a 40,000 tpd operation (SNC-Lavalin, 2005e). At a processing rate of 40,000 tpd, the current reserves would be depleted in approximately 32 years.

4.4 Environmental Reports and Liabilities

Information in the following section was modified from SNC-Lavalin's (2005) development plan by Crystallex with updated information added where applicable. SNC-Lavalin has done no environmental work since their 2005 report.

Crystallex undertook an Environmental Impact Study ("EIS") (SNC-Lavalin, 2004b) for Las Cristinas at the same time as the 2003 feasibility study and submitted the EIS to the Ministry of the Environment (whose acronym was "MARN" at the time and has now changed to "MinAmb") for review in April 2004. The EIS was a new one, required as a result of the changes to the Las Cristinas project relating to Crystallex becoming the operator in 2002 and undertaking a fundamental re-design of the project. In addition, an Environmental Supervision Plan was prepared in September 2004. The EIS was formally accepted by MinAmb on May 16, 2007 in MinAmb document number 0000328.

4.4.1 Regulatory Framework

The Las Cristinas project is being designed to meet and exceed Venezuelan environmental laws and standards, as well as World Bank guidelines and targets. Together, these regulations and standards provide the framework for the environmental assessment and environmental design for the Las Cristinas project. Venezuelan Decree No. 1257 defined the environmental assessment requirements for the Las Cristinas gold-copper project development as envisioned by Placer. These requirements were modified somewhat by MinAmb as a result of changes in the scope of the project planned by Crystallex, such as the project now being gold only. The EIS that was submitted to MARN addressed the requirements defined in Decree 1257 as well as the additional requirements in various addenda to the original EIS document.

4.4.2 Existing Environment

As described in Section 5.0, the Las Cristinas site is located within the sub-equatorial tropical zone in a flat area with minor undulations, parts of which, under normal conditions, are subject to flooding. Although much of the site has been previously disturbed by small-scale mining, the area can generally be characterized as tropical rain forest with a distinct rainy season between May and September and a drier period from January to April. Despite the fact that the Las Cristinas area has been designated as a mining district, it lies within the boundaries of the Imataca Forest Reserve and therefore is subjected to more stringent environmental controls than areas outside of the Imataca Reserve.

A significant portion of the concession area (approximately 34% of total area of the concessions, and 53% of area required to develop the project) has been intensely disturbed by previous mining activities. Although the surficial laterite soils are not very productive, vegetation grows very quickly, and biological diversity of the area is high. Crystallex has updated air quality, soil, flora and fauna baseline studies of the area and continues to monitor water quality within the project area.

Ethnically the population is divided between indigenous and "*criollos*" (individuals of mixed blood). According to a national census in 2001, approximately 57% of inhabitants in the project's zone of influence are indigenous. *Artisanal* or small-scale mining is considered the most economically important activity in the area.

Updates to the Acid base accounting ("ABA") and humidity-cell tests was done by SNC-Lavalin. ABA and humidity-cell tests were conducted by SGS Lakefield Research Ltd. ("Lakefield") to determine the balance between acid-generating and acid-consuming components of mine waste as described in (SNC-Lavalin, 2005d). In March 2004, 103 samples containing ore and waste were submitted for ABA testing (SNC-Lavalin, 2005d). After the initial assessment of the ABA results, nine waste-rock samples and one ore sample were prepared for 21-week humidity-cell testing, of which five of the waste-rock samples were tested for additional time; four of the five were also submitted for net acid generation ("NAG") tests. Through the ABA, NAG, and humidity-dell testing, "*it was confirmed that waste rock samples of SAPO and CSB-C had very low potential for acid generation and actually they were acid consuming, whereas waste rock samples of CLB-C, SAPRK-CM, CSB-M and CLB-M had high potential to generate acid. Special attention will be focused on these samples during the operation to reduce or eliminate the acid leachate generation by implementing best management practices*" (SNC-Lavalin, 2005d). In addition, two tailings samples were also subjected to 25-week humidity-cell testing, which indicated that the sulfides in the samples were depleted at a much faster rate than the neutralizing materials, while maintaining neutral pH and low metal concentrations in the leachate. No concentrations of any elements in the leachate were measured at values higher than the limits specified by Venezuelan regulation or World Bank guidelines (SNC-Lavalin, 2005d).

4.4.3 Analysis of Alternatives

A comparative analysis was carried out to rank alternatives for infrastructure components, based on environmental, socio-economic, constructability and other technical issues, permitting, cost, and where applicable, safety. Briefly, the analysis determined:

Diversion Channel

Three alternatives were assessed to divert the watercourses that cross the project area. The alternative that diverts the waters through the southern border of the Las Cristinas concessions and discharges them into the Quebrada Amarilla channel (approved by MARN for the original project) was chosen for the following reasons:

- This would minimize the potential biophysical impact;
- Water would be contained within one watershed and would only affect either previously disturbed areas or areas planned for development of the mine;
- This would provide flooding protection up to a 1-in-200 year flood event;
- This does not require approval of third parties for its construction, operation and maintenance;
- It represents the shortest channel length and therefore the lowest impact to soils (less excavation and movement of soil overall) and vegetation; and
- The flow of the water within the channel makes use of the topography and the natural slope of the terrain, and therefore the water does not have to be pumped.

Since the completion of the feasibility study in 2003 (SNC-Lavalin, 2003), the design of the diversion channel has been modified and its length reduced from approximately 8.5 km to 6.9 km, as the Morrocoy Creek will no longer be included in the initial development of the channel. This current design emphasizes the reasons that made this route the best alternative. A change has recently been made to the southern part of the route to accommodate the layback of the designed pit on the adjacent Brisas del Cuyuni deposit.

Power Transmission Line

From two alternatives, the most direct power transmission line route from the existing CVG-Edelca substation at Kilometer 86 to the process plant location was selected over the alternative route that would have followed the national highway, Troncal 10, to Las Claritas, and from there continued past the villages of Santo Domingo and Nuevas Claritas. The cross-country route was selected because of its shorter distance, lower cost and lower impact on local residents, and favorable topography, despite greater loss of forest vegetation.

Tailings Management Facility Location

The tailings management facility ("TMF") was located in the only area large enough within the concession boundaries that would not be used for mining or processing. The location suitable for the TMF is further restricted by the location of areas currently assigned to *artisanal* mining activities in the eastern part of the Cristinas 5 concession.

Mine Access Road

From three alternatives, each along existing roads, the preferred mine access road from Troncal 10 to the process plant is the northerly route, exiting Troncal 10 at Kilometer 84. Despite its greater length (19 km) and associated costs, it is the only alternative that avoids local communities, providing greater safety and minimal impacts of noise and dust to the residents. This access route was constructed in 2005-2006.

Plant Site

No alternatives were examined for the plant site, as, for efficiency reasons, it will be located on the highest land with the most stable underlying soils, in proximity to the open pit mines and TMF.

4.4.4 Assessment of Impacts to the Bio-Physical Environment

The project's potential, direct and indirect, positive and negative impacts, impact duration, probability, and reversibility, mitigation, and net effects have been assessed. Overall, it is expected that the environmental impact of the development of the Las Cristinas project can be minimized through the implementation of best management practices, responsible design and operations, and monitoring. It is of particular importance that the project is operated to protect the environmental quality of the Imataca Forest Reserve. This will be achieved by protecting water quality, minimizing erosion and geomorphological processes, protecting air quality, limiting clearing, controlling noise and dust, and ensuring that the site is closed responsibly once mining is completed, including re-vegetation and reforestation.

Construction Phase

During the construction phase, environmental impacts can result from site preparation including deforestation, clearing and earthworks, and construction of the mine facilities. The impacts from construction of the mine facilities may involve the initial footprint of the pit, initial construction of the TMF, watercourse diversions, waste rock storage area footprints and the site drainage management system, site access roads, power lines, process plant, ancillary facilities, warehouses, and concrete plant.

Surface-water impacts from erosion and sediment transport will be minimized through a properly designed and maintained site-drainage management system, including collection ditches and runoff-collection ponds. Potential contamination of surface and ground waters and soils by spills or improper storage, handling, or use of fuel, lubricants, and other chemicals will be minimized by spill-contingency and response-measures training, on-site clean-up kits, hazardous-materials management procedures, and containment systems and by using designated equipment refueling and maintenance areas.

Apart from the creation of two artificial lakes, the impacts to the physical environment are generally anticipated to be reversible and not significant with proper implementation of control measures.

From a terrestrial, biological perspective, the site, which has been previously disturbed, does not represent habitat that is not readily available or unique from the habitat adjacent to the site. It is also noteworthy that many of the previously disturbed areas of the site have naturally recovered over time. Regardless, lost forest habitat will be replaced through site and environmental rehabilitation at closure. Reclamation will include conversion of the open pits into lakes. Overall, impacts to biological resources are not expected to be significant or permanent as a result of construction.

An Environmental Supervision Plan ("ESP") has been developed for implementation during construction, as described in Section 4.4.6. The ESP provides direction for proper management of construction activities to minimize environmental effects, prescribes mitigation measures, and provides an organizational framework for implementation and reporting to the authorities.

Operations Phase

Many of the mitigation measures implemented during construction will also be applied during operations, including sediment and erosion controls and prevention of contamination. Runoff from on-site facilities will be directed to a series of runoff collection ponds and monitored for compliance prior to release to the environment. Rock facing on the downstream face of the TMF dam and a collection ditch at the toe of the dam will also be provided, with runoff and seepage being pumped back to the tailings basin.

ABA tests to date indicate that there is low potential for acid mine drainage from waste-rock dumps or temporary ore stockpiles adversely affecting surface-water quality. Potentially acid-generating rock will be encapsulated or buffered by acid-neutralizing rock within the dumps. Runoff and seepage from all waste-rock dumps and temporary stockpiles will be collected in perimeter ditches, directed to a runoff pond, and monitored. Effluent that does not meet acceptable discharge standards will be pumped to the cyanide-destruction plant.

The cyanide concentration in the tailings basin are expected to meet Venezuelan and World Bank standards because all the effluent will be treated in a cyanide-destruction plant prior to its disposal in the TMF. All sanitary waste from on-site buildings will be directed to the proposed wastewater treatment plant for treatment, and effluent from the treatment plant will be discharged to the polishing pond. Impacts on wildlife and vegetation and impacts of dust, noise and vibration will be minimized through special blasting procedures (e.g., low-frequency and low-shock blasting techniques); hunting will be prohibited within the concession lands and adjacent natural areas.

Overall impacts to the biophysical environment resulting from operations of the mine are anticipated to be reversible and not significant with the implementation of controls and mitigation measures.

Closure

During closure it is intended to return the site as close as possible to pre-project conditions consistent with the objectives of the Imataca Forest Reserve Plan. Active monitoring, inspection, and intervention will continue until acceptable chemical, physical, and biological stability has been achieved.

4.4.5 Assessment of Impacts to the Socio-Economic Environment

The socio-economic impact assessment for the Las Cristinas Project is based on historic information developed in 1996, plus a 2004-updated characterization and analysis conducted by the Venezuelan firm ProConsult C.A. ("ProConsult"). SNC-Lavalin has edited the information provided by ProConsult for content and consistency with the format of the report.

Overall, ProConsult expects that the project will result in many positive benefits at the national, regional, and local levels, such as: generation of a dynamic effect on the economy, contribution to the gross domestic product, increase of tax collection, creation of jobs, inclusion of workers into the social security system and improved work conditions, improvement of infrastructure and implementation of social strengthening and job plans, technical assistance to small-scale miners, and improvement in health conditions of population and quality of life.

Negative impacts are also expected as a result of introducing a large-scale industrial project into a stable, rural community. These negative impacts include accelerated migration, drastic changes in the labor market and local economy, risk of social conflicts, increased lack of public security, potential for inflation, impacts to cultural traditions and cultural landscapes, synergic increase in loss of cultural values among the indigenous population, and impact on the demand for public and social services.

However, it is also recognized by ProConsult that some or all of these impacts may already have been experienced due to the rapid influx of thousands of small-scale miners over the course of 2003. The recent significant reduction in the number of these small-scale miners reported by Crystallex has resulted in many positive improvements, such as reduced demand on community services, increased community stability, and reduced crime rates. In addition, Crystallex has already implemented a number of programs to add benefits to the local communities, including: the construction of 30 houses; construction of three water treatment plants and piped-water supply systems for eight communities; construction of a sewage collection system for three communities and is currently constructing a sewage treatment system; monthly medicine supply and improvements to a local health center; the sponsoring of two doctors; and the training of up to 25 university and college graduates on an annual basis. Crystallex has been instrumental in working with the State in the control of malaria, the incidence of which was increasing exponentially. With the implementation of mobile clinics and frequent testing of the local population, the number of diagnosed malaria cases has declined significantly.

Crystallex has indicated that additional mitigation measures will be implemented over the course of the construction and operations period to minimize socio-economic impacts. These measures will include training programs; technical assistance to local communities in the area of waste management and administrative management; continued technical assistance to the authorized small-scale miners; and continuation of the company and community liaison program to ensure that community issues are identified and addressed.

In the opinion of ProConsult, the Las Cristinas project can be developed in a manner that minimizes impacts to the socio-economical environment.

4.4.6 Environmental Supervision Plan

Crystallex has prepared an ESP for the construction phase of the Las Cristinas mining project, with the purpose of providing an overall plan for the supervision and management of construction activities to minimize the environmental effects, both biophysical and socio-economic, and to ensure compliance with regulatory requirements and environmental commitments made during the environmental planning process. The ESP includes comprehensive environmental protection procedures and guidelines for execution during a range of typical and emergency conditions; organizational structure and reporting requirements; personnel training requirements; and an environmental follow-up (monitoring) plan. The ESP intended to develop the environmental mitigation measures identified for the construction phase in the EIS into a comprehensive plan and framework for implementation by personnel who will work in the field during this phase.

4.4.7 Site Closure and Rehabilitation

Preliminary objectives and general concepts for a Closure and Rehabilitation Plan were developed as part of the EIS prepared in 2004. The overall strategy of the closure plan is to comply with the project's environmental obligations so that the facility can achieve acceptable chemical, physical, and biological stability by meeting all regulatory requirements and standards without human intervention.

Crystallex and CVG will maintain an active presence at the site for an interim period following termination of mine production. During this interim period they will continue to actively operate the site water-management system, monitor for contamination, and intervene as required to ensure compliance with applicable standards and regulations. The interim period will end once the physical stability of all remaining structures is demonstrated and site drainage meets regulatory discharge standards and can be released directly to the environment without treatment.

4.4.8 Conclusions

Based on all of the above, Crystallex believes that the Las Cristinas project can be developed in a manner that minimizes impacts to the biophysical environment. Main projected measures include:

- The waste-rock dumps will be designed to ensure that potentially acid-generating waste is placed over the low-permeability saprolite soils and covered/buffered by non-acid-generating or net-acid-consuming waste.
- A cyanide destruction plant will treat the entire discharge from the gold processing facility. The cyanide-free slurry will then be pumped from the cyanide destruction plant for deposition in the TMF.
- Treated effluent from the sewage treatment plant will be discharged to the polishing pond. Leachate collected from the sanitary landfill will be transferred to the TMF.

- The TMF dam is designed with appropriate standards and safety factors to guarantee its stability and is also designed to contain a 24-hour Probable Maximum Precipitation ("PMP") event. The Las Cristinas site area is in a zone with the lowest possible risk of seismic activity.
- The entire tailings basin is founded on a low-permeability saprolite soil layer, providing a competent containment barrier to contaminant migration, as demonstrated by contaminant transport modeling (SNC-Lavalin, 2005b). Crystallex and CVG will maintain an active presence at the site for an undefined interim period following termination of mine production and prior to their leaving the site permanently.
- Proposed measures to prevent, mitigate or compensate socio-economic impacts, as recommended in the Detailed Evaluation of Socio-economic Impacts of Las Cristinas Project, prepared by Proconsult C.A., 2004, and submitted to the MARN as Addendum #3 to the EIS, will be implemented [MDA has not reviewed this report].

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, PHYSIOGRAPHY

5.1 Accessibility

The Las Cristinas project area lies 370km by road south-southeast of the city of Puerto Ordaz. The first 55km of this highway, called Troncal 10, is a four-lane road between Puerto Ordaz and Upata; the highway continues as a well-maintained two-lane paved road to the border with Brazil at Santa Helena de Uairén. The Las Cristinas project can be accessed via two alternative routes from Troncal 10. The shortest access is westwards via a 6km unpaved road from the village of Las Claritas, through which Troncal 10 runs. The alternative route, which was designed to bypasses the local villages, is an upgraded, unpaved 19km access road from the highway at Kilometer 84. Under normal conditions, the drive from Puerto Ordaz to the camp takes about five hours. The Las Cristinas camp is located in the sub-Amazon rainforest of the Imataca Forest Reserve.

Puerto Ordaz is a port city on the Orinoco River, which flows into the Atlantic Ocean. The city of Puerto Ordaz is served by three airlines, with numerous daily flights to Caracas and other major Venezuelan cities. The nearest commercial airstrips to Las Cristinas are at El Dorado, 80km and approximately one hour by highway north of the camp, and at Luepa, 80km to the south. A charter flight from Puerto Ordaz to El Dorado takes about one hour. A 980m-long air strip with 6m-wide asphalt paving at Las Cristinas allows for the landing of small aircraft.

5.2 Climate

The climate at Las Cristinas is tropical and humid, with wet and dry seasons. The monthly temperature average rises to a 26.3ºC peak in March and 25.7ºC in September. In February and July the temperature reaches minimums of 24.3ºC and 24.5ºC respectively. The seasonal climate variation results from fluctuations in the location of the Inter-Tropical Convergence Zone (“ITCZ”) throughout the year, between summer and winter solstices. The overriding atmospheric circulation in this location causes the winds to be from the northeast.

Precipitation falls as tropical showers that are mainly short-term events of a few hours duration or less. Data obtained from the Las Cristinas weather station between 1992 and 2000 and from December 2003 until present indicate that the project area experiences a dry season (lower than average monthly rainfall, 273mm) that extends from January to April, and a wet season (higher than average rainfall) that extends from May to September, with a transitional period between October and December. The area receives an annual average of 3,283mm of rainfall. Monthly averages reach a maximum of 454.8mm and 437.8mm in June and July respectively, and a minimum of 76.6mm and 120.1mm in March and April respectively.

The average regional evaporation is equivalent to 58% of average annual precipitation. This results in an estimate of average annual evaporation at the Las Cristinas site of 1,904mm (=3,283mm x 0.58).

The average annual relative humidity on site is 81% with maximums in June, July and August (84%) and minimums in April and October (78.2 and 75.6% respectively). The average wind speed is consistent through the year and overall is determined to be 0.90m/s. The wind category of 0.5 - 2.1m/s is rarely exceeded.

Operations can be conducted year round.

The site is located in Seismic Zone 1 with a LOW Seismic Hazard in accordance with the recent Venezuelan Code.

5.3 Physiography

Las Cristinas lies in the physiographic region known as the Guyana Shield, a natural peneplain characterized by flat topography which is crossed by streams and rivers and, under normal conditions, is subject to flooding. The most prominent local topographic features are isolated hillocks or ranges of low hills that rise up to a maximum of about 80m above the peneplain; these features correspond to the location of diorite intrusions.

The geomorphological features of the Las Cristinas area are influenced by topography, slope, vegetation, soil, hydrography and climate, combined with anthropogenic physiographic disturbances resulting from years of small-scale gold mining activity. Climatology, hydrology and vegetation are considered the most important factors that control and regulate morphodynamic processes, especially erosion, weathering, sedimentation and flooding. Disturbed areas are particularly susceptible to erosion primarily due to the exposure of the clayey layers of the soil resulting from the removal of the uppermost, organic layer.

The most comprehensive report on anthropogenic disturbances of the area was provided in a study spanning the 1992-1994 period (cited in SNC-Lavalin, 2005a; MDA has neither seen nor reviewed this report, and this is provided for information purposes only). Since this study was conducted, small-scale mining activity has increased significantly, although the extent of the additional area affected is not expected to have increased significantly as most of the activities are focused in the areas of the main deposits of Mesones and Conductora.

There is very little topographic relief within the concession area. The average elevation is 130m above sea level, with small rounded hills reaching a maximum elevation of 160m above sea level. Four streams flow through the property: Amarilla, Las Claritas, Sofia and Morrocoy. These streams are wide and shallow, and occasionally flood during the rainy season. Much of the project area has been deforested and hydraulically mined by itinerant miners. As a result, there are numerous water-filled pits and large areas of tailings material. Some areas of poorly consolidated tailings are unstable and cannot support the weight of a vehicle, making access to some areas difficult.

Las Cristinas is contained within the sub-equatorial tropical zone. Although small-scale mining has previously disturbed much of the site, the area can generally be characterized as tropical jungle with distinct rainy and dry seasons. The surficial laterite soils, which are typical of tropical habitats, are not very productive, containing very low percentages of organic material and nutrients, but vegetation grows very quickly and biological diversity of the area is high.

Undisturbed primary vegetation is typical of the Sub-Amazon type rain forest. Large trees dominate the forest, with their canopy up to 30m above the ground. The forest floor is relatively open. Secondary vegetation, which has now invaded the mined or otherwise disturbed areas, consists of small "weed" trees, bushes, creeping vines and various grasses. This secondary growth is often quite dense and can be difficult to penetrate on foot.

5.4 Local Resources

The infrastructure in the region will require some improvement to support the proposed mining operation. The local population is not sufficient to fully operate the mine, and additional personnel will have to be brought in for construction and mining operations. Improvements to sewer, water and other local facilities will be made in order to accommodate the additional workers. There are sufficient water sources and land surface areas for mining, tailings disposal, and plant sites. Improvements have been made to the on-site airstrip.

Existing facilities include the exploration camp, whose electricity is supplied by a link to the national grid (there is a stand-by generator on site), sample preparation facilities, offices, dormitories, sample storage and seven core sheds.

The construction camp built by Placer Dome has been extensively refurbished. The camp consists of an office block, administration units, dormitory units, maintenance units, a kitchen and dining facility, gym, recreation center, a clinic permanently manned by a doctor, and outdoor basketball and mini-soccer courts. Catering is currently undertaken by contract with Universal Sodexho, and several hundred people can be fed at a time with little trouble. The camp is powered with electricity from the national grid, and two stand-by generators are located on site. A cell phone repeater station has also recently been constructed adjacent to the administration building, and thus the whole of the Las Cristinas project area now has cellular phone reception.

Significant power demands are required and will increase from an average of about 10 MW to 45 MW when the plant is in full production. Maximum demand could reach 55 MW. A 400 KVA power line has been installed near the project to supply power to Brazil. EDELCA, a State utility company, has installed a substation near the town of Las Claritas that is capable of supplying the electricity required by the project.

6.0 HISTORY

6.1 General History

General Fernandez Amparan first discovered gold in the Las Cristinas region in 1920, and gold mining at the site was initiated in the 1930s. During the 1940s, an underground mine was operated by New Goldfields de Venezuela, reportedly called "Mina Alto-Cuyuni," whose shaft was in the vicinity of what is now the Hoffman pit (David Rogerson, personal communication, 2007). Mining continued sporadically on a minor scale until the early 1980s when a gold rush occurred. Some 5,000 to 7,000 small-scale miners worked alluvial and saprolite-hosted gold deposits using hydraulic mining techniques. Many square kilometers of jungle were stripped of soil and saprolite. This material was processed in sluices and small hammer mills. The amount of gold recovered is unknown, and much of the area of the concessions is now covered with tailings.

After extensive exploration, Placer Dome Inc. ("Placer") announced commencement of construction of the Las Cristinas mine on August 2, 1997. The inauguration took place at the site with officials of Placer, CVG, and representatives of the Venezuelan government present. On January 20, 1998, Placer announced that its operating company in Venezuela, Minera Las Cristinas C.A., had decided to suspend construction. Construction resumed in May 1999 but was again suspended on July 15, 1999 due to uncertainty with respect to gold prices and title. Up until that time, Placer had reportedly spent US$168 million on the project.

CVG took possession of the property in 2001 and in 2002 signed a mine operating agreement (MOA) whereby Crystallex is required to explore, mine, and produce gold at Las Cristinas.

6.2 Ownership History

An outline of the history of property ownership was described by Crystallex on its website (2002), and the following was copied from that source:

- *May 1986 – Inversora Mael, C.A. receives rights to Las Cristinas property (4&6) from Mr. Ramon Torres. Mr. Torres received the titles one month earlier from Ms. Dot Culver de Lemon who was granted the title for Cristina 4 in February 1964 and Cristina 6 in August of that same year. (Notices of the transfers were recorded on the Registry, but not published in the Official Gazette of Venezuela as required under the Venezuelan mining law).*
- *November 1988 – Following various refusals by the Ministry of Energy and Mines (MEM) to publish notice of the transfers of the concessions, Mael commences lawsuit seeking invalidation of MEM action.*
- *January 1989 – Mael files petition with MEM to renew Cristinas 4 concession, which MEM denies.*
- *February 1989 – MEM purports to extinguish Cristinas 4 concession.*
- *March 1989 – MEM purports to extinguish Cristinas 6 concession.*
- *May 1991 – The Supreme Court of Venezuela rules that the transfer from Ms. de Lemon to Mr. Torres, then from Mr. Torres to Inversora Mael, C.A. was "perfectly valid." The court orders MEM to publish the notice of the transfers in the Official Gazette.*
- *June 1991 – Corporación Venezolana de Guayana (CVG), a state-owned corporation, awards Placer Dome a contract for the right to form a corporation (MINCA) to explore and mine Las*

Cristinas 4, 5, 6 and 7. [Placer stated in its 1996 feasibility study (Placer Dome Technical Services Ltd., March 1996) that Las Cristinas was controlled by two Venezuelan companies, which were formed in 1992: Minera Las Cristinas, C.A. ("MINCA"), 70% owned by Placer Dome de Venezuela, C.A. ("PDV") and 30% owned by Corporación Venezolana Guyana ("CVG"), a state-owned resource company, and Relaves Mineros Las Cristinas, C.A. ("Reminca"), 51% owned by PDV and 49% by CVG.]

- *July 1991 – CVG and Mael enter into a settlement agreement in relation to the actions of the MEM which were ruled illegal in the May 1991 court decision.*
- *October 1996 – Supreme Court again confirms the validity of the transfers to Mael of the Cristinas 4 & 6 gold concessions and requests that MEM publish the required notice of the transfers.*
- *March 1997 – Crystallex acquires Inversora Mael for US$30 million based upon multiple legal opinions and two Supreme Court decisions that Inversora Mael has valid claim to Las Cristinas 4 and 6.*
- *April 1997 – The Supreme Court takes the extraordinary step of directly ordering the publication of the notice of transfer between Mr. Ramon Torres and Inversora Mael in the Official Gazette.*
- *April 1997 – Mael commences an action to declare various MEM actions invalid and requiring MEM to recognize Mael's ownership.*
- *May 1997 – Supreme Court publishes notice of transfers to Mael of Cristinas 4 and 6 concessions in Official Gazette.*
- *January 1998 – Placer suspends construction at Las Cristinas, citing a need to ensure it gets the best possible terms to finance the rest of the project; and again in August 1999, blaming low gold prices.*
- *June 1998 – Venezuela's Supreme Court rules that Mael does not have status to assert ownership rights over Cristinas 4 and 6 concessions and declines to proceed with Mael's April 1997 lawsuit.*
- *August 1999 – Crystallex files new actions for its claim on Las Cristinas 4 and 6 seeking to nullify (i) the CVG MINCA joint venture agreement and (ii) the effect of the July 1991 settlement agreement.*
- *September 1999 – Admission chamber of Supreme Court refuses to admit Mael's action seeking to nullify CVG/MINCA joint venture agreement.*
- *September 1999 – Venezuela enacts new mining law which calls into question the legality of mining contracts issued by CVG.*
- *February 2000 - Admission chamber of Supreme Court refuses to admit Mael's action to nullify the July 1991 settlement agreement. Mael appeals.*
- *May 2000 – The Supreme Court grants Mael's appeal and in June 2000 re-admits Mael's claim in relation to the 1991 settlement agreement. Decision confirms Mael's legal standing.*
- *July 2001 – Placer Dome sells its interest in MINCA to Vannessa Ventures Ltd.* [On July 13, 2001 Placer sold 100% of the issued and outstanding shares in Placer Dome de Venezuela C.A to Vannessa Ventures Ltd. (Placer press release dated July 13, 2001), retaining an interest in the gold and copper revenue generated by Las Cristinas and under certain circumstances having the right to reacquire the shares in Placer Dome de Venezuela C.A.]
- *November 2001 – CVG terminates its mining contract with MINCA and subsequently takes possession of the property.*
- *March 2002 – MEM cancels the MINCA copper concessions.*

- *April 2002 – By Presidential Decree, Venezuela reserves for the MEM the direct exercise of the mining rights over Las Cristinas, through decree 1757 published in the Official Gazette #37,437 dated May 7th, 2002.*
- *May 2002 – Through Agreement entered during May 2002 between MEM and CVG, MEM granted mining rights over Las Cristinas to CVG.*
- *September 2002 – Crystallex and Venezuela(CVG) to develop Las Cristinas*

6.3 Previous Work

Placer conducted essentially all of the modern exploration on Las Cristinas prior to acquisition of the property by Crystallex. During their tenure on the property from 1991 to 2001, Placer completed line cutting, mapping, rock and soil sampling, geophysics, and drilling. These are described in Section 10.1.

Golder and Associates ("Golder") was contracted by Placer to collect drill core and surface geotechnical data in the spring of 1993, culminating in a preliminary draft report covering pit slope stability, availability of construction aggregates, tailings disposition, and waste disposal. Bruce Geotechnical Service from Vancouver completed complementary studies in 1994. Water Management Consultants (Denver, Co.) and Hay and Co. (Vancouver, B.C.) completed hydrological and hydrogeological studies (pumping test, mine dewatering, *etc*.) during 1996. MDA has not reviewed any of these reports. Placer completed a comprehensive feasibility study on the project in 1996 that was updated in 1998, which MDA has reviewed (Placer Dome Exploration and/or Placer Dome Technical Services Ltd., 1996a-f; 1998a, b).

After acquiring the property, Crystallex engaged MDA to review the geology at Las Cristinas, estimate resources and reserves, and provide a mine plan (Ristorcelli, Hardy, and Prenn, 2002; Mine Development Associates and Kappas, Cassiday and Associates, 2003; Ristorcelli and Hardy, 2003; Ristorcelli and Hardy, 2004a and Ristorcelli and Hardy, 2004c; Ristorcelli, 2005; Hardy, 2006; Hardy, 2007). The 2002 technical report prepared by MDA (Ristorcelli, Hardy, and Prenn, 2002) described the historic work and results of that work done by previous operators and discussed the adequacy of that data. Because the work, data, and studies were from others, the recommendations made in MDA's 2002 report were aimed at validating the previous work and revising the engineering studies culminating in a feasibility study of the project. Based on Placer's descriptions, MDA concluded that their exploration and sampling procedures conformed to or exceeded industry standards, but because all prior exploration had essentially been done by only one company and because hard copies of assay data were not available, substantial data verification was necessary. Placer had extensive checks and quality assurance/quality control ("QA/QC") protocols incorporated throughout the process and had noted no major problems. Placer reported minor biases in the laboratory results on the order of 5% to 10%, but believed that these were not material and that the groups of samples used often compensated for each other. Preliminary sampling by Crystallex verified the presence of gold and copper. Though inconclusive because of their small number, MDA's sampling found some grade differences, which they thought needed to be addressed during the then-upcoming validation program. MDA recommended that this validation program twin drill holes, conduct infill drilling, and take additional check samples on core splits, coarse rejects and pulps. During this program, Crystallex planned to assess sample preparation procedures and conduct a heterogeneity study to determine gold distribution in the rock and appropriate sample and sub-sample preparation procedures.

Crystallex undertook drilling to confirm results of the previous operator prior to their first resource estimate. Crystallex drilled 12 holes totaling 2,199m in 2003 to confirm the tenor of mineralization presented in the pre-existing database and also assayed check samples as described in Section 10.2. The drill holes were designed to twin existing drill holes as a check of the Placer drilling data. MDA's analysis (Ristorcelli and Hardy, 2003) of the twin holes indicated that while the comparison of location of gold grades was found to be reasonable, analyses on a hole-by-hole basis yielded highly variable results. Overall, the average gold grades for Crystallex's drilling were 15% lower than the Placer results, with more similarity in the twin-hole-sample assays in Conductora in general than in Mesones-Sofia. For additional confirmation, Crystallex re-assayed 262 pre-existing pulps, 200 pre-existing coarse rejects, and 342 pre-existing quarter-core samples. Although mean grades are similar for both datasets, there is a large variance in grade between individual pairs of Placer's core assays and Crystallex's core check samples. As expected, the variance is lower in the pulp and coarse reject checks. MDA evaluated the relationship between metal grades and core recovery and found a bias in the saprolite gold data, most prevalent in low-grade samples. This bias was not found in bedrock, which makes up the majority of the resource and reserve. MDA (Ristorcelli and Hardy, 2003) concluded, "*The bias should not materially affect the global estimated gold and silver grades; however within the saprolite in areas where core recovery is low, grades may be lower than predicted*." Overall, based on the 2003 program, MDA (Ristorcelli and Hardy, 2003) concluded that "*The Las Cristinas database can be used for feasibility-level study and resource estimation. Having said this, all future work must be cognizant of the underlying difference in grades between Placer data and the Crystallex verification drilling and the difference must be explained. It cannot be stated which is the more accurate at this time but the data remains sufficiently accurate for further use. Negligible contamination during sample preparation may have occurred during sample preparation of the Crystallex samples. The larger concern is the high variance noted in check assays, which should not affect the global metal estimate but could affect local estimates. This concern can be mitigated by completing a heterogeneity study of gold in the rock*." Crystallex's work corroborated the general tenor of gold mineralization reported by Placer. MDA completed a resource model at the conclusion of this work (Ristorcelli and Hardy, 2003) that is discussed in Section 6.4.2.

Crystallex completed an 18-hole, 7,131m drill program in 2004 and an additional 5,419m in 14 drill holes in 2005. Drilling in these two programs was focused in the western and southern parts of the modeled Conductora – Cuatro Muertos pit shell. The objective of these programs was to infill drill those poorly drilled areas to upgrade resource classification and ultimately increase the reserve. MDA took independent samples from the 2004 drill program, which verified the general tenor of mineralization. When the resource was evaluated in 2003, a difference in mean grades had been noted between Placer's data and Crystallex's initial verification drilling, and during the 2004 drilling and resource estimation, a similar difference in global mean grades ranging between 6% and 8% was noted, although differences are not statistically significant due to the small number of Crystallex drill holes (30) compared to over 1,000 Placer drill holes (Ristorcelli and Hardy, 2004a). These mean grade differences, though not statistically significant, were thought (Ristorcelli and Hardy, 2004a) to potentially indicate a sampling and sub-sampling issue related to heterogeneity of Las Cristinas, raising the possibility of a difference in mean grade of the deposit, possibly even higher grade than is presently noted. The 2004 drilling showed that while local grades were difficult to predict, the general form and continuity of the deposit was very predictable.

The objective of the 14-hole drill program in 2005 in the Conductora area was to increase material in the Measured and Indicated categories. During the course of the drill data verification and the resource expansion drilling, it was noted (Ristorcelli, 2005) that some biases existed between Crystallex and Placer data, the latter of which represent by far the bulk of the exploration data. A heterogeneity study was undertaken to better understand the grade biases noted, to define more appropriate sub-sampling procedures and protocol, and to maximize the efficiency of the upcoming grade-control program during mining operations. A report by Francis Pitard (2005) suggested that the grade bias of Crystallex grades being lower than Placer grades likely was due to the difference in size of the core samples. He further pointed out that the samples taken by Placer also could be understating the global grade of the Las Cristinas deposit.

Crystallex completed a 46-hole drill program in February 2007. Drilling during this campaign was done down dip of the Conductora - Cuatro Muertos deposit and along strike into the Morrocoy area, which lies between Cordova and Mesones-Sofia. The objective of this program was to better delineate the Morrocoy area into a defined resource and to increase resources and reserves down dip along the Conductora area. The results of this drilling are incorporated into the resource estimation in this technical report.

Crystallex commissioned a feasibility study by SNC-Lavalin that was completed in September 2003 (SNC-Lavalin, 2003) and updated in 2004 and 2005 (SNC-Lavalin, 2004a, 2005). These studies are more fully described in Section 6.5.2.

6.4 Historical Mineral Resource and Mineral Reserve Estimates

6.4.1 Estimates by Placer

Placer completed its most recently reported resource for Conductora-Cuatro Muertos and Mesones-Sofia in 1997, summarized in its 1998 Feasibility Study Update (Placer Dome Exploration and Placer Dome Technical Services, 1998a). MDA cannot verify that the calculations for Placer's resource and reserve estimates met NI 43-101 standards; these resources and reserves are provided here for historic perspective only. Placer first reported Measured and Indicated resources for the property in 1993, although the Mesones and Sofia areas were not included in the totals until 1997. Table 6.1 is a summary of the Placer resources completed prior to 1997. Table 6.2 summarizes the 1997 Placer's Measured and Indicated Las Cristinas resources, and Table 6.3 is a summary of the 1997 reported Inferred resource.

Table 6.1 Placer Dome 1993-1996 Measured and Indicated Resource Estimates for Conductora-Cuatro Muertos Only
(From Ristorcelli and Hardy, 2003)

Date	Cutoff	Tonnes	Grade	Grade	Contained	Contained
	Au g/t	('000s)	Au g/t	Cu %	Au oz ('000s)	Cu lbs ('000s)
June 1993	0.8	45,157	1.65	0.18	2,396	179,197
Sep 1993	0.7	164,375	1.29	0.13	6,818	471,100
Nov 1993	0.7	189,664	1.26	0.13	7,684	543,578
Sep 1994	0.7	214,305	1.25	0.12	8,613	566,481
Jan 1996	0.7	214,699	1.25	0.12	8,628	567,522

Table 6.2 Placer Dome 1997 Measured and Indicated Resource Estimate for Conductora-Cuatro Muertos-Potaso
(From Ristorcelli and Hardy, 2003)

	Cutoff	Tonnes	Au Grade	Cu Grade	Au Ounces	Cu Pounds
	(g Au/t)	('000s)	(g Au/t)	(%Cu)	('000s)	('000s)
Co/CM	0.5	347,318	1.12	0.11	12,507	815,475
Mesones/Sofia	0.5	41,598	1.08	0.33	1,444	299,334
TOTAL		388,916	1.12	0.13	13,951	1,114,809

Table 6.3 Placer Dome 1997 Inferred Resource Estimate for Conductora-Cuatro Muertos-Potaso
(From Ristorcelli and Hardy, 2003)

Area	Cutoff	Tonnes	Au Grade	Cu Grade	Au Ounces	Cu Pounds
	(g Au/t)	('000s)	(g Au/t)	(%Cu)	('000s)	('000s)
Co/CM*	0.5	110,929	1.12	0.10	3,994	234,186
Mesones/Sofia	0.5	21,992	0.79	0.12	559	56,473
TOTAL		132,921	1.07	0.10	4,554	290,658

MDA reviewed the modeling methodology of the resources reported in Placer's 1998 feasibility study update. While MDA believes that Placer has done careful work from the fieldwork to database quality control and believes that the resource is reliable, MDA has neither audited nor checked Placer's reported resources. They are reported here only for historic perspective.

Placer also calculated reserves for Las Cristinas, but again MDA cannot verify that these calculations met NI 43-101 standards; they are provided here for historic perspective only. The results of these studies, conducted between 1996 and 1999 and presented in Table 6.4, were taken from the public domain (annual reports and press releases). The March 1996 calculation did not include the Mesones-Sofia deposit, but all later calculations did. The 1996 calculations were based on a $375 per ounce gold price and a $1.00 per pound copper price. The 1999 reserves were based on a lower gold price of $325 per ounce and $1.00 per pound copper price, hence the drop in reserve. Placer did not report its reserves broken out by Proven and Probable as is now required by National Instrument 43-101.

Table 6.4 Placer Dome Reserve Estimates for Las Cristinas

Date	Tonnes ('000s)	Au Grade (g Au/t)	Cu Grade (%Cu)	Au Ounces* ('000s)	Cu Pounds* ('000s)
Mar-96	181,064	1.28	0.13	7,463	506,955
Aug-96	232,619	1.21	NA	9,027	NA
Dec-97	326,288	1.13	0.14	11,802	1,007,077
Dec-98	323,253	1.13	0.14	11,702	983,457
Dec-99	276,717	1.19	0.14	10,614	860,179

*In-situ contained metal

Grill (1999) reported several geological resource estimates for other mineralization on the Las Cristinas concessions; MDA cannot confirm this information, but it is presented for historical perspective. With regard to a low-grade gold model for the Cantera-Cordoba area, Grill (1999) reported "*the recompilation and reinterpretation of geologic data from Cantera-Cordoba did not yield a geologic model significantly different from the 1995 model which is estimated to contain 20.7 Mt grading 1.30 g/t at a 0.6 g/t cut-off*," and no updated resource was estimated in 1999. A "rough polygonal resource estimate for high-grade gold" was also made for the Cantera-Cordoba area, where selective mining of high-grade vein material by underground methods may be possible, according to Grill (1999). The study estimated a total of 569,000 tonnes of mineralized material grading 5.11 g Au/t, for a total of 93,400 ounces of gold, based on a model in which gold is concentrated in tabular veins and/or stockwork-like layers (Grill, 1999).

In the South Cantera (near the Hoffman) areas, Grill (1999) reported that, based on a manual resource estimate using data from 24 diamond drill holes, the area is "roughly estimated" to contain 3.22 million tonnes of mineralized material grading 1.46 g Au/t for a total of 149,000 oz of gold. Grill (1999) noted that "*full development of the South Cantera resource would require further plant design modifications as the approximate pit limit would significantly overlap the area currently occupied by the high grade stockpile, located on the southeast side of the plant site*."

Based on limited, widely spaced diamond drilling, Grill (1999) reported that using a manual resource estimate, the main mineralized parts of the Morrocoy zone were "*roughly estimated to contain 9.12 million tons of mineralized material grading 1.36 g/t Au for a total of 411,000 ounces of gold*" but noted that the overall drill-hole density in the Morrocoy area was very low in some parts. Data from 20 diamond drill holes and 13 trenches were used in this estimate.

Grill (1999) reported that based on data from 31 drill holes, a manual polygonal resource estimate for the Potaso area yielded a gold resource of 6.2 million tonnes of combined saprolite and bedrock resource material, with an average grade of 1.04 g Au/t at a 0.5 g Au/t cutoff for a total of 206,000 oz of gold.

6.4.2 Estimates by MDA

MDA has been contracted by Crystallex since 2002 to estimate resources and reserves for and report on the Las Cristinas project. Following the initial estimate, updates have been completed each year warranted by new drill data and/or changing economics.

2003

In 2003, Crystallex commissioned MDA to estimate a resource and a reserve for Las Cristinas, which were reported in a technical report (Ristorcelli and Hardy, 2003). This represented the first work by Crystallex in estimating a resource and reserve for the property. The following discussion is taken from that technical report.

MDA classified the resource by a combination of distance to the nearest sample, the number of samples used to estimate a block, and the number of drill holes used to estimate a block. As gold is the dominant metal from a value standpoint, all blocks were classified based on a modified distance calculated during gold estimation. A resource was estimated for the Conductora and Mesones-Sofia areas. The estimated resource for Conductora does not represent the entire body of mineralization at Conductora but does represent the most prolific of the resources and best understood and defined. The deposit is open ended at depth but is bounded at the south by a property boundary and the north by Mesones-Sofia. Combined resources are given in Table 6.5.

MDA noted that Placer's estimates of resources represented material inside an "optimistic-floating-cone" pit (MDA had no information defining their term "optimistic"). Placer's method of resource definition results in fewer tonnes at higher grades than an *in situ* method. The Placer methodology eliminates lower-grade resources outside an optimized pit shell but above cutoff that would become available for conversion to reserves with reasonable changing economics, metallurgy or economics. MDA's resources are tabulated by a cutoff close to economic so as to also report material that could become economic with reasonable technological and economic changes.

The principal resources outside of Conductora (including Cuatro Muertos and Potaso) and Mesones-Sofia lie in the Cordova and Morrocoy areas, which had not been estimated in 2003. In their 2003 report, Ristorcelli and Hardy remarked that these latter areas would require geological and data compilation prior to any estimation, but they do represent areas deserving of work. These areas are reported in the current report for the first time.

Table 6.5 Total Estimated Resources at Conductora and Mesones – Sofia (2003)
(Including Reserves*)
(From Ristorcelli and Hardy, 2003)

CO & M/S Measured and Indicated

Cutoff (g Au/t)	Tonnes	Gold (g/t)	Gold Ounces
0.2	862,680,000	0.71	19,800,000
0.4	557,646,000	0.95	17,010,000
0.5	438,931,000	1.09	15,327,000
0.6	354,171,000	1.22	13,842,000
0.7	285,709,000	1.35	12,426,000
0.8	235,022,000	1.48	11,217,000
0.9	197,459,000	1.61	10,202,000
1.0	169,467,000	1.72	9,354,000
1.5	84,231,000	2.22	6,007,900
2.0	39,693,000	4.26	5,434,300
2.5	17,976,000	3.48	2,010,200
3.0	9,738,000	4.13	1,293,000
3.5	5,855,000	4.74	892,000
4.0	3,670,000	5.36	632,000
5.0	1,941,000	6.15	384,000

Conductora and Mesones/Sofia Inferred

Cutoff (g Au/t)	Tonnes	Gold (g/t)	Gold Ounces
0.2	471,685,000	0.59	8,895,000
0.4	287,897,000	0.78	7,205,000
0.5	207,889,000	0.91	6,064,000
0.6	144,999,000	1.07	4,966,000
0.7	97,673,000	1.27	3,992,000
0.8	70,884,000	1.47	3,354,000
0.9	55,924,000	1.64	2,951,000
1.0	47,726,000	1.76	2,703,000
1.5	24,311,000	2.28	1,779,700
2.0	11,887,000	4.16	1,591,600
2.5	5,094,000	3.77	617,200
3.0	3,380,000	4.31	468,000
3.5	2,490,000	4.70	376,000
4.0	1,823,000	5.05	296,000
5.0	853,000	5.76	158,000

Reserves were developed from the Measured and Indicated resources by establishing the ultimate economic pit limits using Medsystem Lerchs-Grossman ultimate pit software. This optimized pit outline was used as a template for the ultimate pit design. The economic calculations were based on a gold price of US$325 per ounce and a breakeven copper-mining cost (assuming that Crystallex is compensated for all costs associated with copper production, but receives no profit from the recovered copper). Operating costs, recoveries and design criteria were based on Placer's feasibility studies. The reserves are summarized in Table 6.6.

Table 6.6 Crystallex's Total Las Cristinas Proven and Probable Reserves - 2003
(From Ristorcelli and Hardy, 2003)

Deposit	Category	Tonnes	Gold (g/t)	Gold Ounces	Strip Ratio
Conductora	Proven	34,133,000	1.43	1,569,000	1.3:1
	Probable	167,955,000	1.31	7,073,000	
Mesones/Sofia	Probable	21,860,000	1.28	900,000	1.89:1
Total	Proven	34,133,000	1.43	1,569,000	1.34:1
	Probable	189,815,000	1.31	7,973,000	
Total	Proven & Probable	223,948,000	1.33	9,542,000	1.34:1

Pit design parameters were taken directly from the 1996 feasibility study, except for the ramp width, which was increased to 30m to accommodate larger haul trucks. Inter-ramp angles are 45º in bedrock and 35º in saprolite. There is an area in the southern portion of the Conductora pit that has been designed at 25º in accordance with Placer's noting of a shallow-dipping fault, but this has since been studied and deemed to not be material.

Mining was planned to be conducted in two distinct, but concurrent, operations. The first would be mining of the saprolite, which was planned to be done by a contractor using one equipment fleet, and the second was mining of the bedrock, which was planned to be done by Crystallex, using a separate set of equipment. Different equipment fleets would be required because of the significantly different characteristics of saprolite and bedrock. Drilling and blasting will not be required in the majority of saprolite but will be necessary in the bedrock.

While the mining contractor would select the actual equipment to be used, it was expected that the saprolite mining fleet would consist of all-wheel-drive articulated haul trucks and hydraulic excavators. Scrapers would be the preferred choice under certain conditions. Bedrock mining was planned to be conducted using excavators and conventional haul trucks. Haul roads in the saprolite portions of the deposits need to be designed and constructed to handle the appropriate-sized equipment (150-tonne trucks), which means that road-base material needed to be available from bedrock-waste areas of the pit.

Based upon the initial production phase, the reserves produce a mine life in excess of 25 years, depending upon operating schedule, at a planned production rate of 20,000 ore-tonnes per day. Because ore is exposed at the surface, or just below the overburden, it will not be necessary to perform pre-stripping to access ore. Initial ore production is entirely from saprolite, with the ability to begin bedrock mining as early as the second year, depending upon the mining schedule. Once sufficient bedrock is exposed and enough working room provided, production will be from both saprolite and bedrock ores.

In the subsequent September 2003 feasibility study (SNC-Lavalin, 2003), reserves were reported as summarized in Table 6.7.

Table 6.7 Las Cristinas Reserves 2003 Update
(From SNC-Lavalin, 2003)

Deposit	Category (applies to ore only)	Ore kt	Grade (Au g/t)	Contained Au oz x1000	Waste kt		Strip Ratio
Conductora	**PROVEN**	36,620	1.38	1,625			
	Bedrock	26,147	1.37	1,150	**Total**	296,962	
	Saprolite	10,743	1.41	475	Bedrock	240,433	**1.33:1**
	PROBABLE	**187,117**	**1.27**	**7,669**	Saprolite	56,529	
	Bedrock	144,358	1.30	6,025			
	Saprolite	42,759	1.20	1,644			
Mesones/Sophia	**PROBABLE**	**21,922**	**1.24**	**871**	**Total**	**31,537**	
	Bedrock	12,754	1.32	543	Bedrock	15,286	**1.44:1**
	Saprolite	9,168	1.11	328	Saprolite	16,251	
Total	**PROVEN**	36,620	1.38	1,625			
	Bedrock	26,147	1.37	1,150	**Total**	328,499	
	Saprolite	10,473	1.41	475	Bedrock	255,719	**1.34:1**
	PROBABLE	**209,039**	**1.27**	**8,540**	Saprolite	72,780	
	Bedrock	157,112	1.30	6,567			
	Saprolite	51,927	1.18	1,973			
Total	**PROVEN & PROBABLE**	**245,659**	**1.29**	**10,165**	**Total**	**328,499**	
	Bedrock	183,259	1.31	7,717	Bedrock	255,719	**1.34:1**
	Saprolite	62,400	1.22	2,447	Saprolite	72,780	

2004

In 2004, after an 18-hole drill program, Crystallex requested an update to the resources and reserves. The 2004 drilling showed that while local grades were difficult to predict, the general form and continuity of the deposit were very predictable. MDA checked the modeling procedures and parameters and the model results. The model was checked for bias against the composites from which it was estimated. Multiple runs were made to assess sensitivity to modeling parameters. An independent geostatistician (Sandefur, 2004) was commissioned to perform a review of the geostatistical aspects of modeling. In the end, few changes were made to the estimation procedures.

Resources (Table 6.8) again calculated by MDA were updated and reported in a second feasibility report (SNC-Lavalin, 2004a), in which it was noted that copper and silver resources were not reported because Crystallex had not been granted the right to receive revenue from these metals and the SNC-Lavalin feasibility study was based on a gold-only project. The updated reserves in 2004 are given in Table 6.9.

Table 6.8 Total Estimated Resources at Conductora and Mesones – Sofia (2004)

(Including Reserves*; from Ristorcelli and Hardy, 2004a)

Total Las Critinas Measured and Indicated Resources (rounded)

Cutoff (g Au/t)	Tonnes	Gold (g/t)	Gold Ounces	Silver (g/t)	Copper (ppm)	CNSolCu (ppm)	Silver Ounces	Copper Kilograms
0.2	910,846,000	0.71	20,893,000	0.50	1,031	137	14,628,000	939,014,000
0.4	581,370,000	0.96	17,915,000	0.54	1,167	165	10,095,000	678,642,000
0.5	462,328,000	1.09	16,220,000	0.56	1,222	177	8,306,000	565,193,000
0.6	375,367,000	1.22	14,695,000	0.57	1,270	188	6,924,000	476,840,000
0.7	303,106,000	1.35	13,203,000	0.59	1,319	200	5,734,000	399,918,000
0.8	251,819,000	1.48	11,976,000	0.60	1,349	211	4,860,000	339,684,000
0.9	212,368,000	1.60	10,911,000	0.61	1,377	221	4,172,000	292,397,000
1.0	183,140,000	1.70	10,020,000	0.62	1,404	229	3,638,000	257,164,000
1.5	92,436,000	2.18	6,468,200	0.65	1,498	278	1,931,300	138,437,000
2.0	44,566,000	2.67	3,822,500	0.66	1,605	329	946,700	71,530,000
2.5	19,783,000	3.24	2,061,900	0.67	1,729	401	423,400	34,199,000
3.0	9,601,000	3.80	1,173,000	0.67	1,788	421	206,000	17,162,000
3.5	4,616,000	4.45	660,000	0.67	1,886	444	100,000	8,705,000
4.0	2,492,000	5.10	409,000	0.66	1,870	417	53,000	4,661,000
5.0	1,047,000	6.09	205,000	0.59	1,559	252	20,000	1,632,000

Total Las Critinas Inferred Resources (rounded)

Cutoff (g Au/t)	Tonnes	Gold (g/t)	Gold Ounces	Silver (g/t)	Copper (ppm)	CNSolCu (ppm)	Silver Ounces	Copper Kilograms
0.2	435,122,000	0.54	7,500,000	0.41	761	65	5,715,000	330,999,000
0.4	246,696,000	0.73	5,780,000	0.43	812	67	3,436,000	200,201,000
0.5	172,417,000	0.85	4,719,000	0.45	830	65	2,473,000	143,163,000
0.6	117,957,000	0.99	3,768,000	0.46	858	65	1,744,000	101,172,000
0.7	76,026,000	1.19	2,906,000	0.47	894	63	1,153,000	67,969,000
0.8	53,390,000	1.38	2,367,000	0.48	889	61	828,000	47,463,000
0.9	41,328,000	1.54	2,041,000	0.48	895	59	639,000	36,985,000
1.0	34,792,000	1.65	1,843,000	0.47	903	57	530,000	31,419,000
1.5	17,332,000	2.09	1,166,300	0.47	908	51	260,800	15,745,000
2.0	8,182,000	2.48	653,400	0.43	946	53	112,300	7,738,000
2.5	2,235,000	3.23	232,000	0.38	867	80	27,300	1,938,000
3.0	878,000	4.04	114,000	0.35	853	105	10,000	749,000
3.5	487,000	4.79	75,000	0.32	813	117	5,000	396,000
4.0	350,000	5.15	58,000	0.36	823	122	4,000	288,000
5.0	215,000	5.64	39,000	0.29	781	137	2,000	168,000

Table 6.9 Las Cristinas Reserves 2004

(From SNC-Lavalin, 2004a)

Deposit	Category (applies to ore only)		Ore kt	Grade (Au g/t)	Contained Au oz x1000	Waste kt		Strip Ratio
Conductora	**PROVEN**		**42,671**	**1.27**	**1,739**			1.04:1
		Bedrock	31,204	1.24	1,247	**Total**	**281,585**	
		Saprolite	11,467	1.33	491	Bedrock	225,593	
	PROBABLE		**227,793**	**1.15**	**8,441**	Saprolite	55,992	
		Bedrock	176,991	1.17	6,667			
		Saprolite	50,802	1.09	1,774			
Mesones/Sophia	**PROBABLE**		**26,396**	**1.11**	**944**	**Total**	**27,063**	1.03:1
		Bedrock	15,308	1.20	589	Bedrock	12,731	
		Saprolite	11,088	0.99	355	Saprolite	14,332	
Total	**PROVEN**		**42,671**	**1.27**	**1,739**			1.04:1
		Bedrock	31,204	1.24	1,247	**Total**	**308,648**	
		Saprolite	11,467	1.33	491	Bedrock	238,324	
	PROBABLE		**254,189**	**1.15**	**9,384**	Saprolite	70,324	
		Bedrock	192,299	1.17	7,256			
		Saprolite	61,890	1.07	2,129			
Total	**PROVEN & PROBABLE**		**296,860**	**1.17**	**11,123**	**Total**	**308,648**	1.04:1
		Bedrock	223,503	1.18	8,503	Bedrock	238,324	
		Saprolite	73,357	1.11	2,620	Saprolite	70,324	

2005

MDA was requested by Crystallex to update the Conductora resource model to include data from 14 new drill holes drilled by Crystallex in 2005. The objective of the 14-hole drill program in 2005 was to increase material in the Measured and Indicated categories. MDA used the same modeling procedures as were used in the 2004 resource. The updated 2005 Conductora resource estimate is given in Table 6.10.

Table 6.10 Total Estimated Resources at Conductora and Mesones – Sofia (2005)
(Including Reserves*; from Ristorcelli, 2005)

2005
Total Las Critinas Measured and Indicated Resources (rounded)

Cutoff (g Au/t)	Tonnes	Gold (g/t)	Gold Ounces	Silver (g/t)	Copper (ppm)	CNSolCu (ppm)	Silver Ounces	Copper Kilograms
0.2	998,163,000	0.71	22,876,000	0.49	1,004	117	15,593,000	1,001,926,000
0.4	632,610,000	0.96	19,532,000	0.52	1,142	143	10,671,000	722,590,000
0.5	500,657,000	1.10	17,661,000	0.54	1,202	153	8,729,000	602,020,000
0.6	406,499,000	1.23	16,011,000	0.56	1,251	162	7,267,000	508,691,000
0.7	330,868,000	1.36	14,445,000	0.57	1,298	170	6,037,000	429,478,000
0.8	276,976,000	1.48	13,164,000	0.58	1,327	177	5,146,000	367,495,000
0.9	234,450,000	1.59	12,008,000	0.59	1,354	184	4,422,000	317,426,000
1.0	202,367,000	1.70	11,033,000	0.59	1,382	190	3,852,000	279,626,000
1.5	102,514,000	2.16	7,123,200	0.62	1,466	226	2,043,500	150,280,000
2.0	48,347,000	2.66	4,127,400	0.64	1,572	273	988,200	75,994,000
2.5	20,806,000	3.25	2,171,600	0.66	1,710	338	438,900	35,578,000
3.0	10,180,000	3.80	1,245,000	0.66	1,776	342	216,000	18,083,000
3.5	5,027,000	4.42	714,000	0.67	1,858	350	108,000	9,340,000
4.0	2,810,000	4.98	450,000	0.64	1,821	309	58,000	5,116,000
5.0	1,044,000	6.02	202,000	0.60	1,528	159	20,000	1,595,000

2005
Total Las Critinas Inferred Resources (rounded)

Cutoff (g Au/t)	Tonnes	Gold (g/t)	Gold Ounces	Silver (g/t)	Copper (ppm)	CNSolCu (ppm)	Silver Ounces	Copper Kilograms
0.2	436,092,000	0.53	7,425,000	0.39	775	49	5,531,000	337,810,000
0.4	239,045,000	0.73	5,620,000	0.42	845	51	3,240,000	201,971,000
0.5	163,046,000	0.87	4,537,000	0.44	874	47	2,285,000	142,577,000
0.6	113,940,000	1.01	3,682,000	0.45	906	44	1,639,000	103,192,000
0.7	77,557,000	1.18	2,933,000	0.45	950	37	1,111,000	73,666,000
0.8	59,002,000	1.31	2,492,000	0.44	967	31	842,000	57,063,000
0.9	46,481,000	1.44	2,154,000	0.44	993	27	661,000	46,147,000
1.0	38,362,000	1.55	1,908,000	0.44	1,019	24	548,000	39,081,000
1.5	16,415,000	1.99	1,052,300	0.46	1,000	18	244,400	16,423,000
2.0	6,428,000	2.39	494,500	0.44	995	16	90,100	6,395,000
2.5	1,340,000	3.07	132,100	0.41	891	18	17,800	1,194,000
3.0	450,000	3.80	55,000	0.41	887	11	6,000	399,000
3.5	188,000	4.63	28,000	0.33	840	2	2,000	158,000
4.0	123,000	5.06	20,000	0.25	862	-	1,000	106,000
5.0	75,000	5.39	13,000	0.41	840	-	1,000	63,000

In its August 2005 update to the 2003 feasibility report (SNC-Lavalin, 2005a), MDA re-estimated the reserves. The calculated reserves are shown in Table 6.11.

Table 6.11 Las Cristinas Reserves 2005
(From SNC-Lavalin, 2005a)

Deposit	Category (applies to ore only)	Ore kt	Grade (Au g/t)	Contained Au oz x1000	Waste kt		Strip Ratio
Conductora	**PROVEN**	**40,681**	**1.41**	**1,840**			**1.55:1**
	Bedrock	31,026	1.39	1,385	**Total**	**429,385**	
	Saprolite	9,655	1.47	455	Bedrock	346,346	
	PROBABLE	**235,660**	**1.30**	**9,881**	Saprolite	83,039	
	Bedrock	197,996	1.31	8,370			
	Saprolite	37,664	1.25	1,511			
Mesones/Sophia	**PROBABLE**	**18,489**	**1.27**	**754**	**Total**	**33,369**	**1.8:1**
	Bedrock	11,819	1.36	516	Bedrock	17,807	
	Saprolite	6,670	1.11	238	Saprolite	15,562	
Total	**PROVEN**	**40,681**	**1.41**	**1,840**			**1.57:1**
	Bedrock	31,026	1.39	1,385	**Total**	**462,754**	
	Saprolite	9,655	1.47	455	Bedrock	364,153	
	PROBABLE	**254,149**	**1.30**	**10,635**	Saprolite	98,601	
	Bedrock	209,815	1.32	8,886			
	Saprolite	44,334	1.23	1,749			
Total	**PROVEN & PROBABLE**	**294,830**	**1.32**	**12,475**	**Total**	**462,754**	**1.57:1**
	Bedrock	240,841	1.33	10,271	Bedrock	364,153	
	Saprolite	53,989	1.27	2,204	Saprolite	98,601	

Saprock included with bedrock

2006

At the request of Crystallex, MDA provided a revised estimate of reserves as of January 1, 2006, that reflected a gold price of US$400 per ounce (Hardy, 2006). The same pit design and other physical parameters and costs as used in the 2005 revision (SNC-Lavalin, 2005a) were used in the 2006 revision, with no new work undertaken. Table 6.12 shows the revised 2006 Las Cristinas reserves.

Table 6.12 Las Cristinas Reserves 2006
(From Hardy, 2006)

Deposit	Category (applies to ore only)	Ore kt	Grade (Au g/t)	Contained Au oz x1000	Waste kt	Strip Ratio
Conductora	**PROVEN**	**47,824**	**1.29**	**1,984**		1.15:1
	Bedrock	35,975	1.28	1,475	**Total 378,102**	
	Saprolite	11,849	1.34	509	Bedrock 317,208	
	PROBABLE	**279,800**	**1.19**	**10,706**	Saprolite 60,894	
	Bedrock	230,640	1.21	8,973		
	Saprolite	49,160	1.10	1,733		
Mesones/Sophia	**PROBABLE**	**25,661**	**1.10**	**903**	**Total 26,198**	**1.02:1**
	Bedrock	14,997	1.19	574	Bedrock 12,845	
	Saprolite	10,664	0.96	330	Saprolite 13,353	
Total	**PROVEN**	**47,824**	**1.29**	**1,984**		**1.14:1**
	Bedrock	35,975	1.28	1,475	**Total 404,300**	
	Saprolite	11,849	1.34	509	Bedrock 330,053	
	PROBABLE	**305,461**	**1.18**	**11,610**	Saprolite 74,247	
	Bedrock	245,637	1.21	9,547		
	Saprolite	59,824	1.07	2,063		
Total	**PROVEN & PROBABLE**	**353,285**	**1.20**	**13,594**	**Total 404,300**	**1.14:1**
	Bedrock	281,612	1.22	11,023	Bedrock 330,053	
	Saprolite	71,673	1.12	2,571	Saprolite 74,247	

Saprock included with bedrock

January 2007

An updated estimate of reserves as of January 1, 2007 was also prepared for Crystallex by MDA (Hardy, 2007). This estimate used a gold price of US$450 per ounce. The same pit design and other physical parameters and costs used in the 2005 and 2006 revisions were used in the 2007 update, with no new work undertaken. Table 6.13 shows the updated 2007 Las Cristinas reserves.

Table 6.13 Las Cristinas Reserves 2007
(From Hardy, 2007)

Deposit	Category (applies to ore only)	Ore kt	Grade (Au g/t)	Contained Au oz x1000	Waste kt	Strip Ratio
Conductora	**PROVEN**	**50,613**	**1.25**	**2,031**		1.02:1
	Bedrock	38,271	1.23	1,513	**Total 355,523**	
	Saprolite	12,342	1.30	518	Bedrock 298,281	
	PROBABLE	**299,590**	**1.14**	**11,028**	Saprolite 57,242	
	Bedrock	247,403	1.16	9,253		
	Saprolite	52,187	1.06	1,776		
Mesones/Sophia	**PROBABLE**	**28,243**	**1.04**	**947**	**Total 23,616**	**0.84:1**
	Bedrock	16,371	1.13	595	Bedrock 11,472	
	Saprolite	11,872	0.92	351	Saprolite 12,144	
Total	**PROVEN**	**50,613**	**1.25**	**2,031**		**1:1**
	Bedrock	38,271	1.23	1,513	**Total 379,139**	
	Saprolite	12,342	1.30	518	Bedrock 309,753	
	PROBABLE	**327,833**	**1.14**	**11,975**	Saprolite 69,386	
	Bedrock	263,774	1.16	9,848		
	Saprolite	64,059	1.03	2,127		
Total	**PROVEN & PROBABLE**	**378,446**	**1.15**	**14,006**	**Total 379,139**	**1:1**
	Bedrock	302,045	1.17	11,361	Bedrock 309,753	
	Saprolite	76,401	1.08	2,645	Saprolite 69,386	

Saprock included with bedrock

6.5 Historic Feasibility Studies

6.5.1 Placer Dome Studies

Placer, through Placer Dome Exploration and Placer Dome Technical Services Limited, completed a comprehensive feasibility study on Las Cristinas in 1996 that was updated in 1998 (Placer Dome Exploration and/or Placer Dome Technical Services Ltd., 1996 a-f; 1998a, b). MDA cannot verify that the calculations for Placer's resource and reserves estimates met NI 43-101 standards; these resources and reserves are provided here for historic perspective only.

The 1996 feasibility study (Placer Dome Exploration and/or Placer Dome Technical Services Ltd., 1996a) reported an estimated Kriged geostatistical resource for the Conductora-Cuatro Muertos-Potaso zone of 9.55 million ounces of gold contained in 255.4 million tonnes grading 1.16 g Au/t and 0.12% Cu at a 0.6 g Au/t cutoff. The deposit was reported to be open at depth and along strike to the south. The study also reported an estimated Kriged geological resource for the Cordova zone of 20.7 million tonnes grading 1.30 g Au/t at a 0.6 g Au/t cutoff but noted "*An economic evaluation of the Cordova deposit has shown that it is of marginal importance to the project because of the high waste/ore strip ratio and the complex, erratic nature of the high grade gold mineralization. Due to the lack of a suitable site for the metallurgical facilities, within reasonable distance of the mineralized zones, the metallurgical plant site has been located adjacent to the Cordova zone…*"

The 1996 feasibility study (Placer Dome Exploration and/or Placer Dome Technical Services Ltd., 1996b) was based on operation of a 14.6 million ton-per-year cyanide leach and flotation plant. Mineable reserves in the Conductora-Cuatro Muertos-Potaso zone were estimated at 48,340,000 tonnes of saprolite ore grading 1.254 g Au/t and 0.126% total copper and 156,477,000 tonnes of bedrock ore grading 1.206 g Au/t and 0.122% total copper. A total of 6.5 million ounces of gold and 168.4 kt of copper would be produced over the mine life (Placer Dome Exploration and/or Placer Dome Technical Services Ltd., 1996f). The overall strip ratio is 0.88. Mine life was estimated to be 14.5 years, including two years of low-grade ore stockpile recovery starting in year 13. Open-pit production was planned with haul truck and hydraulic excavator mining equipment.

Construction costs before financing were estimated to be US$525.5 million, with post-construction capital costs during production life estimated at $120.8 million (Placer, 1996f). Throughput was estimated at 20,000 t/d for oxide saprolite, 40,000 t/d for sulfide saprolite, and 40,000 t/d for bedrock ore. Total operating costs were estimated to average $298/oz of gold over the mine life, assuming a gold price of US$400/oz and a copper price of US$1.15/lb (Placer Dome Exploration and/or Placer Dome Technical Services Ltd., 1996f).

Mine dewatering will be an ongoing process and expense requiring a sophisticated system of perimeter wells and full-time in-pit pumping. The water table is near the topographic surface, and the Conductora ultimate pit bottoms at -120m absl (120m below sea level).

Placer's 1996 feasibility study was updated in July 1998 (Placer Dome Exploration and Placer Dome Technical Services Ltd., 1998a). Additional drilling in 1997 led to recalculation of the Kriged geostatistical Measured and Indicated resource for the Conductora and Cuatro Muertos zone to 12.5 million ounces of gold contained in 347.3 million tonnes grading 1.12 g Au/t and 0.11% copper at a 0.5

g Au/t cutoff. The 1997 deep drilling demonstrated the down-dip continuity of the Conductora zone, but both the Conductora and Cuatro Muertos zones remained open at depth and along strike to the south.

The July 1998 feasibility update pointed out that the deep drilling at Conductora had introduced a new problem for resource classification because some of the deep estimates were below a limit that could likely be mined in the future. Taking this concern into consideration, a limiting envelope was developed using an optimistic optimized pit, whose resulting pit shell provided a good indication of what material had potential to be mined in the future. This optimistic pit limit was used to prevent any unwanted extrapolation of the resource to depth (Placer Dome Exploration and Placer Dome Technical Services Ltd., 1998a).

Following the 1997 drilling program in the Mesones-Sofia area, Placer estimated a Measured and Indicated geostatistical resource of 1.4 million ounces of gold in 41.6 million tonnes grading 1.08 g Au/t and 0.33% copper at a 0.5 g Au/t cutoff (Placer Dome Exploration and Placer Dome Technical Services Ltd., 1998a). The estimation used ordinary Kriging. The combined Measured and Indicated geological resource for the Conductora-Cuatro Muertos and Mesones-Sofia zones totaled 13.9 million ounces of gold in 388.9 million tonnes grading 1.12 g Au/t and 0.13% copper at 0.5 g Au/t cutoff.

6.5.2 Crystallex Studies

In January 2003, Mine Development Associates and Kappes, Cassiday and Associates completed an internal prefeasibility study for Las Cristinas based on data provided by CVG (Mine Development Associates and Kappes, Cassiday and Associates, 2003). As noted in that report, this study was "*entirely based upon Placer's Las Cristinas resource estimates and reserve calculations and supporting engineering work*." Most of the infrastructure, mine dewatering, processing capital and operating cost estimates were derived from Placer's documents, updated based on suppliers' quotations. Since MDA did not have access to the underlying data, it could not corroborate the Proven or Probable reserve for public reporting. However, assuming that the underlying data and conclusions were correct, MDA recommended that the results could be used for internal corporate decisions. MDA reported that the saprolite oxide material would be treated in an oxide carbon-in-pulp circuit to produce doré containing gold and silver, while the remaining ore types would be processed in a flotation/carbon-in-leach plant to produce gold and silver doré and copper concentrate.

In September 2003, SNC-Lavalin completed a 20,000 t/d feasibility study for Crystallex that incorporated reserve estimates by MDA (Table 6.7) (SNC-Lavalin, 2003). The study found that reserves totaled 246 million tonnes at an average grade of 1.29 g Au/t for 10.2 million ounces of gold. With a gold metallurgical recovery of 89.0%, 9.1 million ounces of gold would be recovered. Operating cost was estimated to be US$6.70/t, and capital costs were estimated to be $243 million (without VAT) with sustaining capital costs of $160 million (without VAT).

Mining would be by trucks and shovels, with conventional gravity and carbon-in-leach processing for a mine life of 34 years. The strip ratio would be 1.34:1.

At a gold price of $325/oz, the project was estimated to have an IRR of 14.5% (before VAT and taxes), cash flow of $742.4 million (before taxes), NPV at 5% of $238.5 million (before taxes), and a payback before taxes of five years. Environmental risks of effluent discharge, tailings dam failure, and closure challenges were thought to be low, while acid-generation potential was low to marginal.

This feasibility study reported that SGS Lakefield Research ("Lakefield") had conducted extensive metallurgical test work in which a one-tonne sample derived from representative drill core was run through a 50 kg/day, bench-scale carbon-in-leach (CIL) plant for 21 days. Sub-samples were sent to McGill University for gravity recovery testing.

In October 2003, SNC-Lavalin was asked to prepare a feasibility study for a 40,000 t/d operation rate (SNC-Lavalin, 2004a). Reserves (conforming to 43-101 and CIM definition) were reported as 297 million tonnes at an average grade of 1.17g Au/t for 11.12 million ounces of contained gold. At a gold recovery of 89.0%, 9.9 million ounces of gold would be recovered. Operating cost dropped from the earlier feasibility study to $5.964/t. Capital cost rose to $365.4 million (without VAT), and sustaining capital rose to $169.5 million without VAT. The strip ratio would have been 1.04:1, and mine life would be 20 years. At this operation rate and assuming a gold price of $325/oz, the project was estimated to have a before-tax IRR of 17.7% (also before VAT), net cash flow of $746 million, and payback in four years.

In August 2005, SNC-Lavalin completed a 43-101 Technical Report updating the September 2003 feasibility study (SNC-Lavalin, 2005a). As cited in the 2005 report, the following are the key changes made in 2005 compared to 2003:

- *Mineral resources and mining reserves, following two in-fill drilling program;*
- *Investigation of a suspected low fault angle in the open pit ;*
- *TMF design, following an extensive field investigation program and third party review;*
- *Foundation and waste dump designs, following an extensive field investigation program;*
- *Water Management Plans following completion of hydrological field work.*
- *Mining plans that originally envisaged a contractor mining the saprolite and Crystallex mining hard rock. Now it is planned that Crystallex will do all the mining with its own mining fleet based on the practical experience on a similar operation.*
- *Environmental factors, following completion of an Environmental Impact Assessment (EIA) and much consultation with the CVG, MARN and MEM.*
- *Capital and Operating Cost Estimates, following significant progress on the award of purchase orders for equipment, the award of contracts for construction and an extensive review of operating costs.*
- *Changes to the project schedule, resulting from permitting activities.*

The August 2005 update to the 2003 feasibility report estimated Proven and Probable reserves at 294.8 million tonnes with an average grade of 1.32 g Au/t for a total of 12.475 million ounces of gold. At a rate of 88.7% gold recovery, 11.05 million ounces would be recovered with an annual gold production, averaged over the life of the mine, of 270,730 oz of gold. Over the life of the mine, the average operating cost was estimated to be $7.66 per tonne. Capital cost was now estimated to be $293 million (excluding VAT), and sustaining capital was estimated at $284 million (excluding the VAT). The revised mine life was estimated to be 41 years with a strip ratio of 1.57:1.

At a gold price of $350/oz, the project was estimated (SNC-Lavalin, 2005a) to have the following results:

	Before Tax	**After Tax**
IRR	12.5%	8.4%
Net Cash Flow	$814million	$547million
NPV at 5%	$217million	$ 98 million
Payback	5.1 years	8.5 years

The August 2005 report modified the expected acid generation potential, from "low to marginal" in 2003 to "low and will be mitigated" in 2005. The 2005 report indicated that the seismic hazard zone was "low."

7.0 GEOLOGY

Placer has been the principal operator at Las Cristinas. While Placer collected much of the original data and performed the earliest geological interpretations, Richard Spencer of Crystallex has recompiled and reinterpreted the geology. This section of the report is an outgrowth of that effort and is written by Mr. Spencer.

7.1 Regional Geology

The Las Cristinas concessions are located in a poorly understood part of the Archean to early Proterozoic granite-greenstone terrain of the Guyana Shield. The Guyana Shield underlies the eastern part of Venezuela, Guyana, Surinam, French Guiana and parts of northern Brazil. Tentative correlations have been made with the granite-greenstone terrains of the West African Shield.

Three major geological subdivisions have been established for the Guyana Shield. Archean rocks older than 2.5 billion years consist of metamorphic high-grade gneiss, local charnockite (a hypersthene-bearing granite), and widespread granitoid bodies. Structurally separate from the Archean silicic crust are metasedimentary and metavolcanic rocks of early Proterozoic age. Early Proterozoic rocks have undergone compressional tectonism and are metamorphosed and intruded by syn-orogenic granites of the Trans-Amazonian Orogeny. Unconformably overlying the early Proterozoic rocks are mid-Proterozoic continental clastic units of the Roraima Formation.

The rocks of the Guyana Shield have undergone intense tropical weathering. The tropical weathering process has produced a lateritic profile 30m to 100m thick, as a result, basic geological information about the Guyana Shield is limited due to the paucity of outcrops in the Las Cristinas area.

7.2 Local Geology

7.2.1 Lithology and Stratigraphy

Las Cristinas is located in a Proterozoic granite-greenstone terrain of eastern Venezuela. Stratigraphy the Kilometer 88 district consists of a west-dipping sequence of lower Proterozoic supracrustal metavolcanic and metasedimentary rocks. Upward or westward younging directions have been confirmed in graded volcanosedimentary sequences cut in recent drilling.

Mineralization at Las Cristinas is hosted by a mafic to intermediate-composition volcanic sequence. The stratigraphy is conspicuously layered with fragmental volcaniclastic facies interpreted as autobreccias, lapilli tuffs of mafic to intermediate composition, interlayered with basalt and andesite lava flows. Regional mapping by the Venezuelan Geological Survey shows the Las Cristinas project lying within the Caballape Formation of the Botanamo Group. The Caballape Formation is described as consisting largely of graded wackes and other sedimentary facies with minor andesitic to rhyodacitic volcanic intercalations. This description contrasts with the dominantly mafic to intermediate-composition volcanic nature of the sequence that hosts the mineralization at Las Cristinas. The host sequence at Las Cristinas is now considered to constitute part of the Carichapo Group of the Pastora Supergroup (Table 7.1).

Table 7.1 Regional Stratigraphy and Broad Description of Lithology for Greenstone Rocks of the Guyana Shield in Venezuela
(from Day, et. al., 1995)

			Unit	Lithology	Age
Pastora Province	**Intrusive**		**Supamo Complex**	Granite, tonalite, trondjemite, granodiorite, quartz monzonite, gneiss & migmatite.	
	Botanamo Group		**Los Caribes Formation**	Intercalation of grey and green phyllites that grade to red phyllite that are intercalated with red sandstones and polymictic conglomerates with minor felsic tuff.	
			Caballape Formation	Graded graywacke, siltstones & conglomerates (80%) with minor tuffs, breccias and pyroclastic flows of andesitic to rhyodacitic composition.	
	Pastora Supergroup		**Yuruari Formation**	Epiclastic rocks (phyllite, schist. Slate and quartzite). Local tuff breccias and dacitic lavas. Regional metamorphism (greenschist facies) and local thermal metamorphism (cordierite-hornblende facies).	2131 +/-10 (Day et al. 1995) U-Pb date on zircon separates from the Yuruari Formation
		Carichapo Group	**El Callao Formation**	Low-K, high Fe basaltic to andesitic lavas. Greenschist to amphibolite facies metamorphism.	
			Cicapra Formation	Submarine tuffs, graywacke turbidites and volcanic siltstones, lithic tuffs, tuff breccias, agglomerates, and the upper part contain green chert and porphyroblastic schist.	
			Florinda Formation	Pillow basalts of tholeiitic to komatiitic composition.	

Exploration drilling at Las Cristinas provides intercepts over an approximately 1,000m stratigraphic interval. The stratigraphic sequence at Las Cristinas is mafic to intermediate-composition, with the majority of rocks ranging from basaltic to andesitic. There is some evidence for a change from dominantly basaltic compositions in the lower part of the sequence to dominantly andesitic rocks in the middle to upper part of the volcanic pile. Metavolcanic rocks range from homogeneous lavas, some of which have preserved amygdales, to fine-grained tuff and fine-grained volcanic sand, to fragmental facies. By far the majority of the fragmental rocks are monolithic in which the clasts have a similar composition to the matrix, with polylithic fragmental units constituting a very small part the stratigraphy.

Monolithic fragmental rocks range from those in which the clasts are clearly differentiated from the typically fine-grained volcanic matrix (lapilli tuffs) to those in which the margins of the fragments are not easily distinguished from the matrix. A common andesitic facies is that in which monolithic porphyritic fragments (plagioclase phenocrysts) are supported by a porphyritic matrix in which the plagioclase phenocrysts are of a similar size and have a similar distribution to that of the clasts. The monolithic fragmental rocks in which the matrix is similar in texture and composition to the fragments are interpreted as autobreccias.

Polylithic facies typically contain angular to subrounded clasts of similar size, supported in a fine- to medium-grained matrix. These units tend to be graded with both upward-fining and upward-coarsening components. These rocks may be pyroclastic in origin, although metamorphism and pervasive cleavage development make the identification of shards difficult.

Sedimentary units occur throughout the sequence but constitute a higher proportion of the stratigraphy in the upper part of the sequence drilled at Las Cristinas. The most common facies might be termed graywacke: volcanic sand-gritstone interlayered with mudstone-siltstone, which is laminated in some intersections. Some intervals show that the coarser facies grade upward into siltstone and mudstone.

Conglomerate facies are confined to the upper part of the stratigraphy at Las Cristinas. Polylithic conglomerates with poorly sorted clasts that range from cobbles to pea-sized granules are matrix supported; the matrix ranges from coarse sandstone to mudstone. The clasts are typically rounded to well rounded. Some of the conglomerate units fine upwards into muddy sandstones and siltstone layers. Conglomerate facies are interpreted as mass-flow deposits.

The very upper part of the stratigraphy intersected in drilling at Las Cristinas is dominated by fine-grained sedimentary or volcanosedimentary rocks. This siltstone- and mudstone-dominated sequence contains some jasperitic chert layers. It is not clear whether these are true chert beds, or whether they were formed from the pervasive silicification of mudstone facies.

Drill holes collared in the vicinity of the diorite stock in the Potaso area described below intersected a medium- to coarse-grained, phaneritic dacite body. The dacite is characterized by the presence of quartz phenocrysts, and the majority of the feldspar phenocrysts are more square than oblong which is consistent with a more potassic composition. Drill-hole intercepts show that the body has an inverted saucer-shape with a relatively flat lower surface. The intrusive body had a maximum thickness of 50m. The lower and upper contacts of the homogenous-textured igneous body typically consist of monolithic breccias that are interpreted as autobreccias. Similar monolithic breccias extend beyond the limits of the igneous body and become interlayered with laminated sandstone and siltstone-mudstone units that contain clasts of dacite as well as equant feldspar crystals reminiscent of the form of square feldspars found in the dacite. The dacite and related breccias and sedimentary rocks are interpreted as a central dome with proximal autobreccias that grade outwards into a series of mass-flow deposits whose matrix is sandy in more proximal situations and more muddy in areas distal to the central dome. The stratigraphic position of the apron of autobreccias and mass-flow deposits ties the extrusion of the dacite dome to the lower part of the volcanosedimentary pile in the Las Cristinas area.

Three phases of intrusive rocks, including diorite stocks, an “aplite dike” and diorite sills, occur on the Las Cristinas property. Porphyritic diorite stocks have been intersected in drilling in two parts of the Las Cristinas property. The interior of the diorite stocks is medium to coarse grained and is homogeneous to porphyritic in texture. The margins of the stocks are generally finer grained and contain xenoliths grading to monolithic “fragmental” rocks, in which fragments are enclosed in a matrix of similar composition and texture. These fragmental rocks are interpreted as autobreccias in which the fragments are xenoliths.

Hornblende in the diorite is pervasively altered to chlorite, while some of the plagioclase is altered to epidote and calcite. Potassium-silicate alteration, consisting principally of secondary biotite, is locally developed. Pyrite and chalcopyrite occur in shear zones and veinlets. The occurrence of sparse mineralization with the same sulfide species and similar alteration assemblages as the principal deposit is consistent with the diorite stocks being pre-mineralization in age.

The largest and best-defined stock reaches surface, in the saprolite, in a northeast-trending zone in the Potaso area on the south edge of the Las Cristinas deposit. The diorite, located north of the Potaso area, is asymmetric in a north-south section: it has a sub-vertical northwest face while its roof is shallowly inclined, dipping south at an angle of approximately 30° beneath the northern edge of the Brisas de Cuyuni deposit. This diorite stock occupies the gap in economic mineralization between the Las Cristinas and Brisas de Cuyuni deposits.

The second diorite stock is located in the northern part of the Las Cristinas property, where it occupies the gap in mineralization between the Mesones and Morrocoy areas.

A flat-lying intrusion termed “aplite” by Placer’s exploration team occurs in the northwestern part of the Las Cristinas deposit in the Mesones, Morrocoy, and Cordova areas. This sill varies between 5m and 35m thick with an average of about 12m. Although the intrusive body is flat lying, it is near-perpendicular to the steep-dipping stratigraphy, and therefore it may have been intruded as a dike prior to tilting of the stratigraphy, as opposed to being intruded as a sill after tilting of the stratigraphy. The “aplite” is medium grained, and relict textures suggest that the original rock was homogenous. The intrusion typically shows well-developed chilled margins against the country rock. The intrusion is pervasively altered to a muscovite-calcite assemblage with minor tourmaline. Its original composition, therefore, appears to have been dominated by plagioclase with minor mafic minerals while being devoid of free quartz, implying an original composition closer to that of monzonite.

Three-dimensional modeling of gold-grade shells shows that gold mineralization related to the breccia complex at Mesones passes through an oval-shaped hole in the “aplite” intrusion, which is consistent with the breccia complex having punched through the intrusive body. This implies that the intrusive body is pre-mineralization in age, which is consistent with the intense, pervasive muscovite-calcite (±tourmaline) assemblage to which the intrusive body has been altered. Similar muscovite-calcite alteration is common to the upper parts of the Mesones breccia complex. Despite the evidence for the intrusive body being pre-mineralization in age, it is devoid of gold and copper mineralization.

Mafic sills of gabbroic to dioritic composition occur throughout the Las Cristinas area. The sills strike northeast and dip to the southeast at an average of about 20°. They are arranged in upward-stepping *en echelon* sets, and the sills generally increase in number and thickness from south of the Conductora area to the Mesones-Sofia-Morrocoy area in the northern part of the deposit. These sills cut the "aplite" intrusive body described above and maintain their orientation irrespective of the dip of the stratigraphy, which is consistent with intrusion post-tilting. The sills are barren with respect to gold and copper and are partially altered or metamorphosed to a chlorite-epidote-calcite assemblage. These sills are considered to be post-mineralization, and the conclusion drawn from regional mapping is that the sills are Proterozoic in age.

7.2.2 Structure

A near-pervasive foliation (S_1) occurs in the Las Cristinas area where it varies in intensity from strong to absent. The S_1 foliation is sub-parallel to bedding (S_0). The intensity of foliation development is largely controlled by the nature of the rock, with massive beds, such as lava units, exhibiting the weakest cleavage development and fine-grained and fragmental rocks displaying the most intense foliation. A stretching lineation (L_1) is evident in the S_1 foliation and rakes to the southwest at an average plunge of 54° on a bearing of 213° (Gordon, 2005). The association of the stretching lineation with the planar S_1 foliation is consistent with the fabrics having developed under conditions of simple shear, with the shear plane orientated sub-parallel to bedding. Graded bedding on core indicates that stratigraphy is right-way-up on the Las Cristinas property.

Bedding and the S_1 cleavage strike north and dip moderately (30°-45°) to the west in the southern part of the property through the Conductora and Sofia areas. North and west of Sofia, the dip of bedding and the S_1 foliation change orientation abruptly to an overall northwest strike, and dips to the southwest are steeper (30°-70°). This change in orientation of bedding and S_1 cleavage defines a fold hinge whose axial trace strikes northeast with a plunge to the southwest (Gordon, 2005) and coincides with the axial trace of a regional synform delineated in mapping of the district. The generally northwest-striking limb of this fold contains a number of 100m-500m long N- and NW-striking limbs that constitute smaller-scale folds that have a similar geometry to the main synform. In contrast, the N-striking south limb (Conductora to Sofia) of the regional synform does not contain smaller-scale folds.

A second foliation (S_2) occurs sporadically on the Las Cristinas property, where it varies in intensity from absent to moderate; it is never strongly developed. The S_2 foliation strikes southeast (average 111°) and has an average dip of 36° to the northeast. S_2 is best developed as an axial planar cleavage in areas of ten-meter scale folding, where it appears as a moderate crenulation of S_1 (Gordon, 2005).

A northeast-striking fault is located in the axial zone of the regional synform defined by the S_1 foliation. This fault has been intruded by a thick (up to 100m wide) mafic dike and passes between the Mesones and Sofia mineralized centers (Figure 4.2) This fault is believed to have cut through a single mineralized breccia complex and resulted in the displacement of the Mesones component of that body

200m to the southwest of the Sofia remnant. From Mesones-Sofia, the fault coincides roughly with the location of the Quebrada Amarilla stream.

Quartz-tourmaline-sulfide breccias are concentrated in the Mesones-Sofia areas in the northern part of the Las Cristinas deposit. Two other small pipe-like breccia bodies outcrop to the northwest of Mesones-Sofia. In detail, the Mesones and Sofia breccia bodies consist of concentrations of bundles of sub-parallel sheeted vein breccias. These planar, sheet-like entities are clustered in Mesones and Sofia such that they constitute two elongate, pipe-like bodies that consist of ~30% breccia. Both bodies contain two principal sets of sub-parallel sheeted vein breccias; these are subvertical and bedding sub-parallel. Steep-dipping, sub-vertical vein breccias have a preferred northeast strike, which results in Mesones and Sofia having roughly elliptical footprints. Many of the vein breccias observed in drill hole core are sub-parallel to bedding. Some core intervals show bedding-sub-parallel vein breccias branching off sub-vertical breccias suggesting that they extend outward in the country rock from the sub-vertical structures.

Structure has a very significant role in relationship to mineralization at Las Cristinas, which is described in detail in Section 9.0.

7.2.3 Weathering

Weathering, a critical control on copper distribution, will also affect mining at Las Cristinas. Placer categorized the rocks into pedolith, saprolith, and bedrock.

Pedolith: The uppermost interval of the geological profile has undergone a volume reduction due to the intense weathering and consequent destruction of original textures, potentially enriching and/or homogenizing the gold concentrations. Pedolith is broken down into three subgroups:

> Laterite: Usually gold-bearing, this was the target of *garimpeiro* miners and is recognized by the presence of goethitic pisolites in red clay matrix. Laterite is occasionally covered by duricrust, consisting of quartz clasts and pisolites in iron oxide cement.
>
> Mottled Zone: This unit is recognized by hematitic and/or kaolin patches in massive, ferruginous clay matrix. This is locally referred to as *tigrito* texture. Original textures have been destroyed.
>
> Clay Zone: This unit is made up of white and green or iron-oxide--colored clays. It is defined by faint remnant texture to completely obliterated texture. This zone is best developed in kaolin-rich areas.

Saprolith: Saprolith has preserved textures, but with clay psuedomorphs and original volume unchanged. It is broken down into five subgroups based on oxidation and hardness (International Society for Rock Mechanics ("ISRM")). The breakdowns are described below.

> Oxide Saprolite ("SAPO"): This consists of white, green or iron-oxide--colored clays and silts. Relict textures/structures are generally preserved and nearly all sulfide minerals are oxidized.

This unit averages 30m in thickness, but ranges from 5 to 60m. ISRM hardness = S1-S6 (can be indented with fingernail).

Mixed Saprolite ("SAPM"): This interface between oxide and sulfide-stable saprolite can reach 20m in thickness and is defined by the presence of both oxide and sulfide minerals. ISRM hardness = S1-S6 (can be indented with fingernail).

Sulfide-Stable Saprolite ("SAPS"): This part of the saprolite that is located below the current redox front consists of green, gray, and white clay minerals and silt-size rock. Sulfide minerals and relict textures/structures are preserved. Supergene copper enrichment occurs in the upper part of this horizon. ISRM hardness = S1-S6 (can be indented with fingernail).

Saprock ("SAPR"): Saprock forms a one to 10m gradational contact between saprolite and bedrock; in places where it is absent, the contact between saprolite and bedrock is sharp. Saprock can consist of weathered rock fragments floating in a matrix of sulfide-stable saprolite and is defined as the first occurrence of material with an ISRM hardness = R1 (cannot be indented with fingernail but can be broken easily with a pocketknife).

Bedrock: The bedrock is divided into two main groups based on the stability of carbonate: carbonate-leached and carbonate-stable bedrock.

Carbonate-Leached Bedrock ("CLB"): The carbonate-leached bedrock is characterized by centimeter-sized vugs and voids caused by the leaching of carbonate veins and matrix. Porosity can reach 30% and the thickness of this zone ranges from 10 to 50m. ISRM hardness = R1-R6 (cannot be easily broken with a fingernail).

Carbonate-Stable Bedrock ("CSB"): The carbonate-stable bedrock has a gradational contact with the carbonate-leached bedrock over one to five meters. This unit is defined by the first occurrence of carbonate in veins or in matrix. Weathering is absent. ISRM hardness = R1-R6 (cannot be easily broken with a fingernail).

8.0 DEPOSIT TYPES

Three types of mineralization are evident at Las Cristinas (see Section 9.0 for more detail). These include:

- Mineralization associated with hydrothermal quartz-tourmaline breccias typical of the Mesones-Sofia area.
- Stratiform mineralization in which elevated gold and copper values are found within specific strata that are interbedded with strata that are poorly mineralized. Well-mineralized strata are typically volcaniclastic or sedimentary units that have a relatively high permeability. Poorly mineralized units are typically competent, such as homogeneous lava flows or intrusive rocks, whose permeability is relatively low. Stratiform mineralization is typical of the Conductora (including Cuatro Muertos and Potaso), Morrocoy and Cordova areas.
- Discrete auriferous quartz veins are located adjacent to the Las Cristinas deposit. Such veins include the Los Rojas and Albino veins that lie approximately 1km to the east of the Conductora area, and the Hofman vein, which lies about 1km to the west of the Cordova area. These veins consist of quartz with gold mineralization associated with pyrite (there is no appreciable chalcopyrite). The veins have chlorite selvages about 50cm wide. Although gold mineralization in these veins does not constitute part of the Las Cristinas resource, they are considered to be genetically related, and peripheral, to the Las Cristinas deposit. This type of mineralization is not discussed further in this report.

In terms of classification, Las Cristinas has been assigned to shear zone-hosted systems by some geologists, and to a porphyry association by others; however, several key elements of the Las Cristinas deposit must be satisfied in any attempt to classify the deposit. These include:

- Hydrothermal quartz-tourmaline breccias are present at the core of the mineralized system. Although the quartz-tourmaline breccias contain less than 5% of the reserve at Las Cristinas, the concentric arrangement of alteration facies record a decrease in hydrothermal fluid temperatures away from the breccias, showing that these constituted the core of the hydrothermal system. The quartz-tourmaline breccias are features that cross-cut stratigraphy and are clearly not shear zone related. Similar breccias are common in porphyry environments, and some show alteration and metal zoning similar to that observed at Mesones-Sofia, such as secondary biotite at depth to quartz-sericite at shallower levels, as well as a decrease in chalcopyrite upwards within the breccias.
- Alteration zoning at Las Cristinas is similar to that associated with porphyry systems with proximal secondary biotite giving way to distal chlorite-epidote-calcite (propylitic) facies. Quartz-sericite alteration is superimposed on other alteration facies and is likely to have resulted from the draw-down of meteoric water as the prograde hydrothermal system collapsed.
- The metal association of gold with copper and minor molybdenum is reminiscent of porphyry systems and is not common in shear zone-related gold systems.

Despite these factors that are typical of porphyries, Las Cristinas clearly is not a classic porphyry system since mineralization is not contained within, or closely associated with, any porphyritic intrusive stock. Furthermore, the abundant quartz veining associated with most porphyries is largely absent from the Las Cristinas deposit.

The conclusion, based on these factors, is that Las Cristinas is a porphyry-*related* mineralized system: it may be classified as a mafic-volcanic-hosted porphyry-associated system in which mineralization is located relatively distal from the porphyry. However, the fact remains that the majority of the mineralization lies parallel to the foliation and is influenced by the stretching orientation defined by a mineral lineation. This structural information is consistent with mineralization being coeval with shearing over an interval in excess of a kilometer in width.

The setting for Las Cristinas mineralization, therefore, is intrusion of a porphyry system into a regional-scale shear zone.

9.0 MINERALIZATION

9.1 Mineralization and Alteration

Two distinct styles of mineralization account for the resource at Las Cristinas: that at Mesones-Sofia is associated with hydrothermal breccias, while that in the Conductora, Morrocoy and Cordova areas is stratiform. The breccia-hosted mineralization at Mesones-Sofia contains about 5% of the current gold reserves at Las Cristinas, with the vast majority of the gold contained in the adjacent stratiform mineralized zone.

Mineralization in Mesones-Sofia is concentrated in the quartz-tourmaline-sulfide-calcite vein breccias and extends laterally into the adjacent country rocks. The breccias are sufficiently closely spaced that the country rock between them also constitutes ore in the central part of Mesones-Sofia. Grades in the country rock on the periphery of the system become less consistent as the distance between the breccias increases.

Breccias consist of quartz, tourmaline, calcite and sulfides, and the country rock alteration assemblage consists of fine-grained quartz, muscovite (sericite), calcite, tourmaline and disseminated clots of sulfides. Silicification is variably developed, with pervasive silicification largely confined to the breccias where it encapsulates the sulfides. Muscovite gives way to secondary biotite in the deepest intercepts in Mesones-Sofia. The occurrence of relict laths of biotite within intensely sericitized zones, as well as relict biotite in the central parts of larger muscovite laths, provides evidence that muscovite replaced pre-existing secondary biotite in the upper parts of the Mesones-Sofia hydrothermal breccia system. Patchy potassium-feldspar alteration is evident in the central part of Mesones-Sofia.

Sulfides commonly occur in aggregates up to 5cm in diameter at Mesones-Sofia. Sulfides also occur as semi-massive replacements in the matrix of the quartz-tourmaline breccias and as disseminations both in the breccias (in the matrix and in breccia clasts) and in the enclosing country rocks. Sulfide content in primary, hard-rock ore is 5-10% with a pyrite/chalcopyrite ratio of <5. Pyrite and chalcopyrite are the only common sulfides in Mesones-Sofia; molybdenite is scarce, but where it does occur, it is associated with pyrite and chalcopyrite. There is evidence that chalcopyrite gives way to pyrite upwards in the breccia bodies. For example, breccia bodies at Morrocoy, located structurally 200m above Mesones-Sofia, have similar overall sulfide contents but contain only a minor proportion of chalcopyrite. There is no appreciable difference in the nature and distribution of sulfides, sulfide species, or grade, between the muscovite- and biotite-dominated alteration assemblages. This implies that the majority of the mineralization was in place by the time that secondary biotite was overprinted by muscovite.

The Conductora (including Cuatro Muertos and Potaso), Morrocoy and Cordova areas contain over 95% of the gold resource at Las Cristinas. Mineralization in these zones (here called Conductora-style mineralization) is stratiform in nature and is concentrated in volcaniclastic units within the mafic-to intermediate-composition volcaniclastic host sequence. The distribution of mineralization is controlled by the permeability of the host rocks; gold grade and alteration intensity typically decrease abruptly at the contact between permeable volcaniclastic units and impermeable lava layers, for example. Pre-mineralization, altered dioritic intrusive stocks are largely devoid of significant gold mineralization due to their low permeability.

Mineralization occurs in a greater than three-kilometer long, north-trending zone that dips moderately (30° - 40°) to the west, sub-parallel to the volcanic stratigraphy and to the pervasive (S_1) cleavage. Gold mineralization is associated with a sulfide assemblage that consists essentially of pyrite and chalcopyrite.

Alteration mineral assemblages in Conductora are secondary biotite, minor potassium feldspar, calcite, chlorite and minor epidote and sericite. Calcite is ubiquitous, occurring mainly as disseminations but also in carbonate-sulfide veinlets, carbonate-only veinlets, and quartz-carbonate veinlets. Silicification is minimal in Conductora-type mineralization. Minor tourmaline disseminations occur in some parts of Conductora, but in much lower concentrations than in the Mesones-Sofia area. The most consistent gold mineralization occurs in zones in which secondary biotite is most intensely developed. Many sulfide clots within these biotite-dominated alteration zones are rimmed by a green chlorite alteration that has overprinted the secondary biotite.

Pyrite and chalcopyrite constitute the only sulfide species of significance in primary ore. The average pyrite/chalcopyrite ratio is >5. Sulfides occur principally as disseminations, but also in narrow veinlets 1-2mm wide. These veinlets are variable in composition ranging from sulfide-only to sulfide-calcite and sulfide-calcite-quartz. These veins have selvages of secondary biotite, chlorite or chlorite-epidote. Quartz-sulfide veins are rare, but where they do occur, they are in zones of intense secondary biotite development against which they have indistinct margins and are associated with multi-ounce gold values. Higher than average gold grades (>2 g/t) are associated with areas in which pyrite occurs as coarse clots up to 2cm in diameter in zones of intense secondary biotite alteration. Generally, however, the sulfides are fine-grained – much more so than in Mesones-Sofia.

Molybdenite is locally quite abundant, occurring in quartz-calcite-sulfide veinlets and disseminated with pyrite and chalcopyrite. The Potasso area, which constitutes the northern extremity of the adjacent Brisas deposit located adjacent to but off of the Las Cristinas property, contains disseminated molybdenite that appears to have no spatial relationship with pyrite and chalcopyrite on a hand-specimen scale.

9.2 Alteration and Metal Zoning

Alteration and metal zoning are interpreted such that the Mesones-Sofia breccia complex, whose tourmaline–bearing alteration assemblage defines the highest-temperature hydrothermal conditions on the Las Cristinas property, constitutes the core of the mineralized system about which the Conductora, Morrocoy, and Cordova zones are arranged. The Potaso area is separated from the Conductora deposit by an essentially barren, pre-mineralization intrusive stock. This dioritic intrusive body is weakly to moderately altered to a chlorite-epidote-calcite assemblage. Secondary biotite and associated mineralization are confined to shear zones that extend through the stock from the enclosing country rock. The spacing of the mineralized shear zones is relatively wide, resulting in the stock having generally low gold-copper grades. Mineralization at Potaso is in strata that are located above the southward-dipping roof of the diorite stock. Mineralization at Potaso constitutes the northern fringe of mineralization related to the Brisas de Cuyuni deposit, which lies immediately south of the Las Cristinas property. Hence, Brisas de Cuyuni and Las Cristinas are considered to be distinct and separate deposits located within the same mineral belt and separated by a pre-mineralization stock of dioritic composition.

Tourmaline-bearing assemblages have the smallest footprint of all of the alteration types. Tourmaline-bearing alteration, which is largely confined to the Mesones-Sofia area, passes outward into a secondary biotite zone whose distribution is asymmetric with respect to Mesones-Sofia: biotite alteration extends 2km to the south, through the Conductora area, while extending only several hundred meters to the north of Mesones-Sofia. Secondary biotite alteration gives way laterally to a chlorite-epidote-calcite assemblage. The majority of the gold reserve at Las Cristinas is located within biotite alteration facies, and to a lesser extent within the tourmaline zone, while the distal chlorite-epidote-calcite facies is essentially barren of significant gold mineralization.

Two alteration facies have been superimposed on the simple alteration zoning described above that ranges from proximal, high temperature tourmaline, through secondary biotite to lower temperature chlorite-epidote at the periphery of the system. The first is the muscovite alteration, which relict textures show was superimposed on secondary biotite, in the upper part of the Mesones-Sofia hydrothermal breccia system. The second is widespread, low-intensity chlorite – epidote - calcite alteration that occurs in the secondary biotite zone. Sulfides and some mineralization are associated with chlorite-epidote-calcite clots and veinlets. These minerals overgrow and overprint the secondary biotite and are interpreted to have developed from cooler fluids as the hydrothermal system collapsed in the waning stages of the mineralizing event.

The highest and most consistent copper grades at Las Cristinas occur in the Mesones-Sofia breccia complex, from which the grades decrease in all directions. Gold shows a different distribution than copper: it occurs in Mesones-Sofia, outwards from which the gold grade decreases before increasing significantly towards the peripheral, southern part of the deposit. The highest grade-thickness values for the deposit are located in the southern part of the Conductora area adjacent to the change from pervasive secondary biotite alteration to the distal chlorite-epidote-calcite assemblage.

9.3 Relationship between Structural Fabrics and Mineralization

Structural and fabric textures in sulfides provide some evidence for the timing of mineralization relative to the structural events described above.

Most of the pyrite and chalcopyrite grains at Las Cristinas are aligned within the S_1 foliation and many have calcite developed in pressure shadows adjacent to the grains. This spatial relationship may have resulted from preferential development of the sulfides in the cleavage planes, implying that mineralization was associated with cleavage formation, or alternatively, from the deformation and alignment of pre-existing sulfide grains in the cleavage. Some S_1 cleavage planes show sulfides aligned parallel to the stretching lineation. In addition, the majority of sulfide-bearing veinlets are also aligned in the S_1 foliation: again, there may have been pre-existing veinlets that were rotated into the foliation plane during cleavage development or, alternatively, they may have formed in that orientation during development of the foliation.

Despite the fact that the majority of veinlets are parallel to the S_1 fabric, some cross-cut the foliation and some of the disseminated sulfide grains overgrow the S_1 planar fabric. These relationships are consistent with the sulfides post-dating fabric development. In addition, some of the fragments in the Mesones-Sofia breccias have a pervasive S_1 cleavage whose orientation is different in each clast, which shows that brecciation occurred after the onset of cleavage development. Sulfides overgrow these fragments and their contacts with the matrix of the breccia, showing that at least a component of mineralization occurred after breccia development, while the fact that the breccias contain significant mineralization implies that the majority of the mineralization was introduced during development of the breccia. Therefore, the conclusion drawn from these relationships between structural fabric and sulfides is that mineralization occurred during formation of S_1 and continued after the cessation of S_1 development.

The minimum relative age of mineralization is constrained by the fact that sulfides are intensely folded in crenulations typical of the S_2 fabric. Placer reported, from the mapping of trenches, that post-mineralization displacement of a few meters is found along northwest-trending structures dipping shallowly to the northeast. The orientation described is the orientation of small shear zones related to development of the S_2 fabric (Gordon, 2005).

9.4 Conductora-style Mineralization

The Conductora (including Cuatro Muertos and Potaso) and Morrocoy deposits occur within the previously mentioned main north-trending and west-dipping ductile-deformation zone that can be traced for 3.5km along strike from the southern boundary of the Cristina 4 concession northward to the northern part of the Cristina 5 concession. The deformation zone is characterized by an S_1 foliation that varies in intensity from absent to moderately strong. Some S_1 foliation planes contain a stretching lineation (L_1), which implies that the structural fabric was generated by simple shear. Although the S_1 foliation is developed in a stratigraphic interval of over 1000m, there is no central zone of pervasive, intense foliation development that can be defined as the central part of a regional shear zone. Hence, the Las Cristinas deposit either lies on the margin of a wide, regional shear zone, or in a >1000m wide corridor of moderate to weakly developed shear zones in which the center of each is defined by a zone of more intense S_1 foliation development.

Gold-copper mineralization is associated with pyrite-chalcopyrite disseminations, veinlets (sulfide-only and quartz-calcite-sulfide veinlets), and massive sulfide replacement blebs that are generally oriented parallel to the S_1 foliation. Total sulfide content ranges up to about 5% locally in Conductora-style mineralization with an average of about 2% sulfides. The pyrite/chalcopyrite ratio is typically >5. Sulfides are concentrated in zones of intense secondary biotite (+ calcite) alteration in the volcaniclastic units of the stratigraphy. These volcaniclastic units are generally characterized by more intense S_1 foliation development in comparison to massive volcanic or intrusive facies. Intrusive bodies and competent volcanic facies have a lower average sulfide content than adjacent volcaniclastic facies. Pyrite and chalcopyrite also occur in association with epidote-chlorite-calcite alteration facies, where it is superimposed on the secondary biotite-calcite facies. On a microscopic scale, gold can be found as free grains in quartz and as blebs and fracture filling in pyrite and/or chalcopyrite.

Geological cross sections throughout the length of the deposit show that the mineralization is found within alternating bands, up to tens of meters thick, of higher and low gold grades that correspond to lithology; lower gold grades typically occur in massive, competent volcanic facies while zones of elevated gold grade are commonly hosted by volcaniclastic units.

Geological mapping in trenches indicates that within the oxide saprolite at Conductora, well-defined sub-parallel zones of "high-grade" mineralization occur intermixed with lower-grade zones of mineralization. Placer (Placer Dome Exploration and Placer Dome Technical Services, 1998a) states: "*These 'higher-grade' zones range from a few meters to tens of meters in thickness and can be up to 50m in strike length in a north-south direction. The occurrence of abundant disseminated limonite appears to differentiate higher-grade mineralized zones from the lower-grade ones. Geological boundaries can be drawn based on the presence of disseminated limonite for the Conductora area.*" Down-dip continuity is considered good to excellent. The overall true thickness of the gold mineralization envelope throughout the Conductora area reaches 500m. Individual higher-grade gold zones (>1 g Au/t) are up to 100m thick. Gold and copper mineralization identified to date occurs over a strike distance of over 3.5km, from the south end of Potaso to the north end of Morrocoy. Figure 9.1 is a general geological cross section.

Mineralization in the Cordova area, located west of Morrocoy, is similar to that of Conductora-style in being stratiform, but differs slightly in that it is not as laterally continuous, and the associated alteration assemblage is somewhat different from that typical of classic Conductora-style mineralization. Host rocks at Cordova consist of a volcaniclastic-dominated sequence with some massive volcanic units (some of which contain preserved amygdales) and matrix-supported polylithic conglomerates.

The host rocks are intensely altered to widespread sericite-pyrite and chlorite-epidote-calcite alteration. The sulfide assemblage consists mainly of pyrite with minor chalcopyrite and occurs as heavy disseminations and massive sulfide replacements that constitute about 10% of the rock. The majority of the pyrite occurs within the S_1 foliation with a small proportion overgrowing this S_1 cleavage. Gold grades are associated with zones of higher pyrite content.

The distribution of gold in the saprolite developed on Conductora-style mineralization is essentially the same as in the bedrock. In contrast, the distribution of copper in the saprolite has been affected by the intense tropical weathering, which resulted in the leaching of copper from the oxide saprolite and its precipitation as secondary copper minerals such as covellite, chalcocite and bornite below the paleo - water table in the sulfide-stable saprolite. The enriched, secondary copper zone located in the sulfide saprolite is analogous to a poorly developed, incipient "copper blanket" similar to those that are commonly associated with porphyry copper deposits in climates with fluctuating water tables. The copper-enriched zone within the sulfide saprolite is sub-horizontal at Las Cristinas, while the primary copper mineralization that occurs in the hard rock below is stratiform and lies sub-parallel to stratigraphy that is inclined to the west at 30° - 40°. Figure 9.2 is a cross section of the copper model.

9.5 Mesones-Sofia

The Mesones-Sofia deposits, located 200m north of the Cuatro Muertos area of Conductora, consist of two mineralized hydrothermal centers. Figure 9.3 is a general geological cross section through the Mesones-Sofia deposits. These centers each have a diameter of 400m – 500m and are separated by a northeast-striking, steep southeast-dipping, dioritic dike that is up to 100m wide.

Each center consists of a concentration of planar, quartz-tourmaline-calcite-sulfide breccia veins. Gold and copper mineralization is generally highest in these vein breccias. Sulfide content, metal grade, silicification and the intensity of tourmaline development generally decrease away from the margins of vein breccias, although a small proportion of the breccias have insignificant gold and copper mineralization. Local stratigraphic control on mineralization is evident where volcaniclastic lithologies are better mineralized than adjacent massive volcanic strata in the vicinity of the breccias. A section showing copper zones in Mesones-Sofia is presented in Figure 9.4.

The concentration of sulfides and corresponding elevated gold-copper grades in the hydrothermal breccias is consistent with mineralization being coeval with breccia development. Many of the sulfides are intergrown with, or directly rim, tourmaline clusters in the breccias and in the enclosing country rocks. In addition, pyrite and chalcopyrite occur disseminated through the breccia, having the same concentration in the matrix as in the clasts, with some sulfide grains overgrowing the contact between breccia matrix and fragments which shows that a component of Mesones-Sofia – style mineralization post-dated, or continued after, brecciation ceased.

The percentage of sulfides in the mineralized zones in Mesones-Sofia is higher than at Conductora, ranging to a maximum of 30% locally. The average chalcopyrite content of Mesones – Sofia is ~1%, and the average total sulfide content is approximately 5%. Gold and copper mineralization at Mesones-Sofia occurs as disseminations, clots, blebs, and veinlets of pyrite-chalcopyrite with minor covellite and bornite. The clots and blebs of sulfide are coarser than those typical of the Conductora-style, reaching diameters of up to 5 cm. In contrast with Conductora-style mineralization, the majority of the sulfides in Mesones-Sofia are encapsulated in quartz. Crushing of coarser sulfide accumulations and their liberation from quartz encapsulation would lead to a relatively high proportion of newly fractured surfaces on sulfide grains that may account for the higher efficiency achieved in floatation tests of Mesones-Sofia material over ore typical of the Conductora-style.

As in Conductora-style mineralization, copper is depleted in the oxide saprolite and enriched in the sulfide-stable saprolite. The precipitation of copper in the sulfide saprolite generated copper-enriched zones that are sub-horizontal, parallel to the paleo-water table. This sub-horizontal distribution is significantly different from the distribution of primary copper in the bedrock, where copper grades are controlled by the location of breccia veins.

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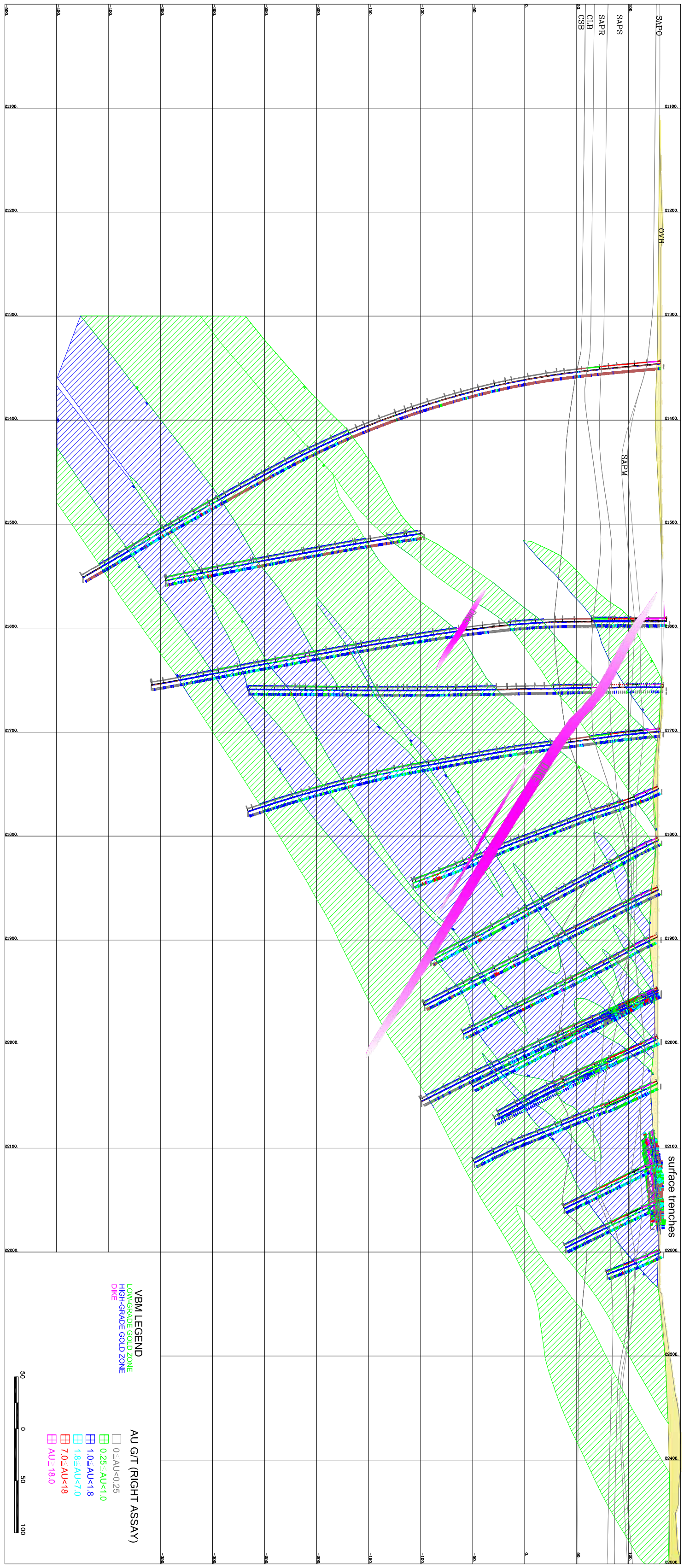

FIGURE NO.	9.1
Crystallex International Corp. Las Cristinas Conductora Geologic Model Section 9150 Au	Bolivar State / Venezuela
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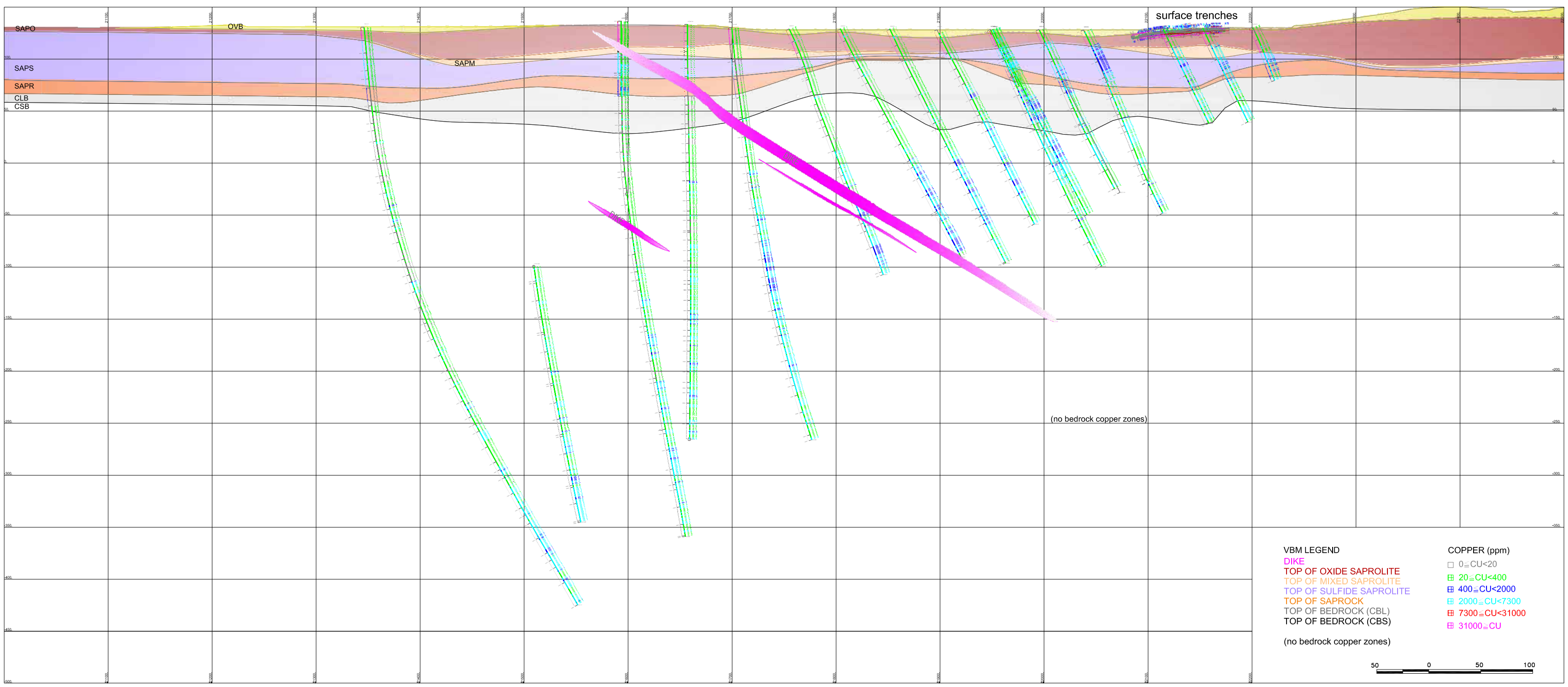
MINE DEVELOPMENT ASSOCIATES	Reno / Nevada
DATE	13-Sep-07
DRAWN BY	S Ristorcelli
CHECKED BY	MDA
SCALE	as shown



DATE	13-Sep-07
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CHECKED BY	MDA
SCALE	as shown

MINE DEVELOPMENT ASSOCIATES

Reno Nevada

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Las Cristinas
Conductora Geologic Model
Section 9150 Cu

Bolivar State Venezuela

FIGURE NO.
9.2

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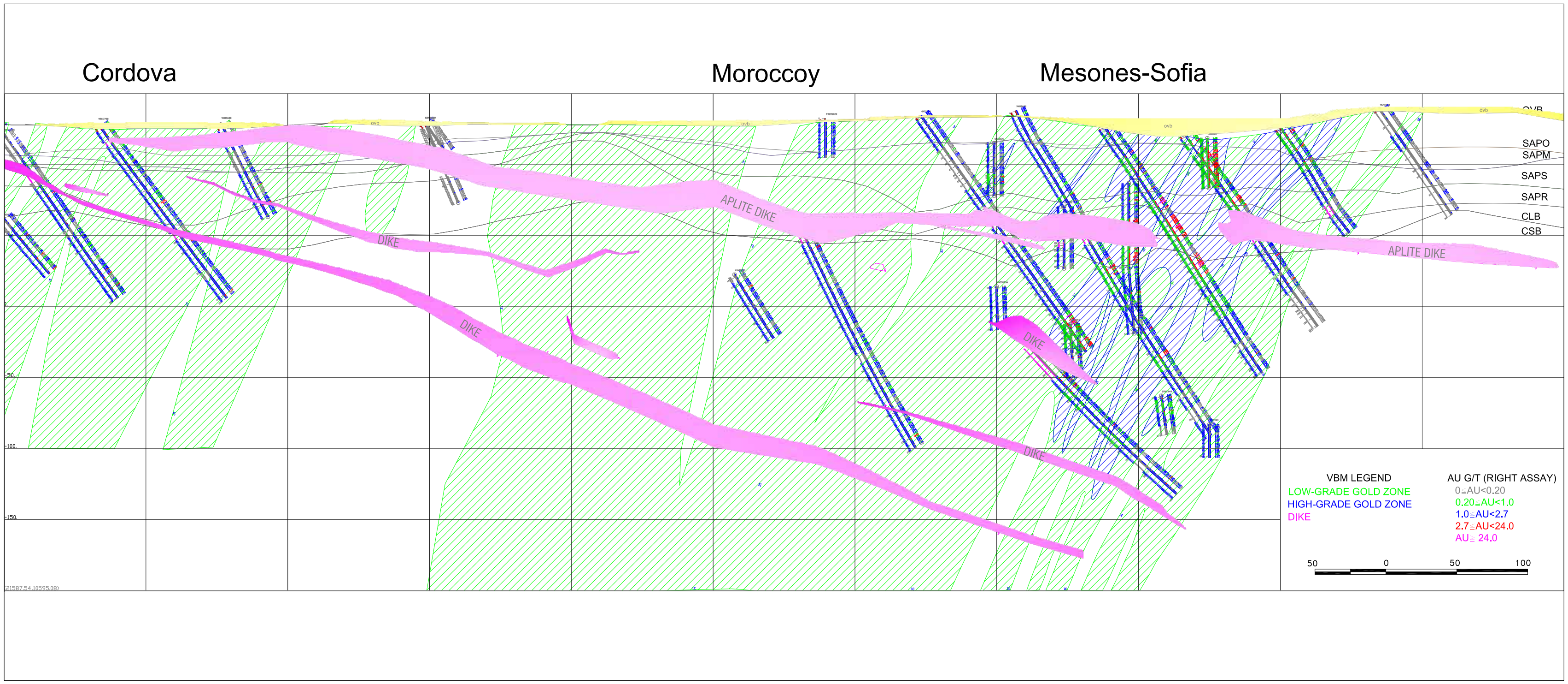

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SCALE	as shown

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Crystallex International Corp.
Las Cristinas
Mesones-Sofia, Moroccoy and Cordova
Section 950 Au

Bolivar State Venezuela

FIGURE NO.
9.3

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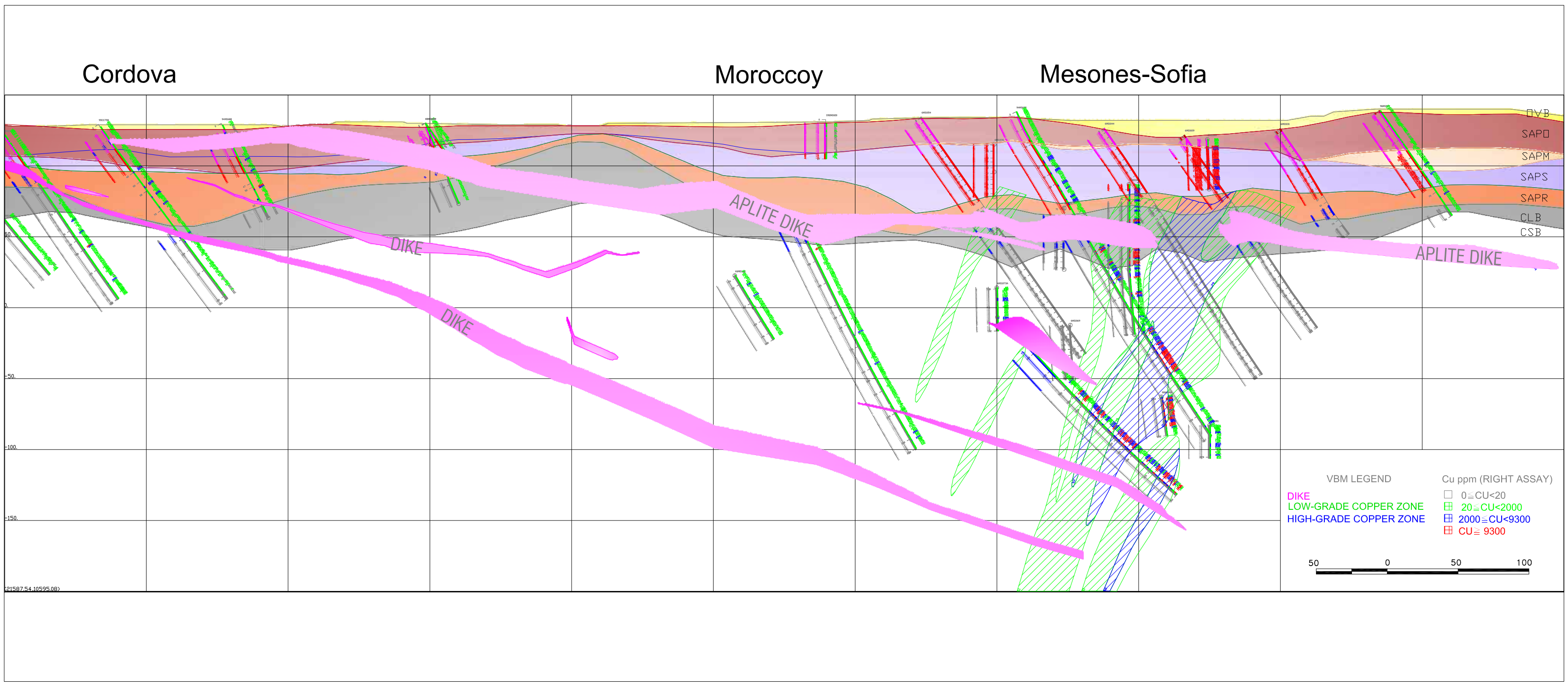

Crystallex International Corp.
Las Cristinas
Mesones-Sofia, Moroccoy and Cordova
Section 950 Cu

Bolivar State Venezuela

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MINE DEVELOPMENT ASSOCIATES

Reno Nevada

DATE	13-Sep-07
DRAWN BY	S Ristorcelli
CHECKED BY	MDA
SCALE	not to scale

FIGURE NO.
9.4

CAD CONTROL BLOCK REF: Las Cristinas_2007\Reports\43-101_2007\Figures\Fig9-4_mc950_2007.dwg
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10.0 EXPLORATION

The following section describes non-drilling exploration completed on the property. Exploration at Las Cristinas is dominated by drilling, and that drilling is described in Section 11.0.

10.1 Exploration by Placer

Exploration done by Placer prior to Crystallex's involvement at Las Cristinas included the following:

- Line cutting. Parallel lines were cut through the vegetation at 100m and 200m intervals, and were sampled at a spacing of 50m.
- Mapping. Geological mapping was done at scales of 1:5,000 and 1:500. Due to the paucity of exposure as a result of extensive weathering, mapping was largely conducted in trenches.
- Rock sampling. Over 1,200 samples were collected, mainly from the sides of trenches.
- Soil sampling: About 3,700 samples were taken from the upper part of the saprolite on grids of 50m by 100m or 50m by 200m. Analysis was by fire assay for gold plus, reportedly, 17 other elements by ICP. In addition about 1,100 samples were collected and assayed from 95 shallow auger holes. MDA did not use this data because it does not impact the defined resource, but the information will be of value in future exploration.
- Geophysics. Ground magnetometer, induced polarization ("IP"), radiometry, airborne magnetic survey, and transient electromagnetic geophysical surveys were done. Magnetic and electromagnetic methods have proven the most effective in defining the altered zone associated with the principal areas of mineralization. MDA did not review this data.
- Tailings evaluation. An evaluation of the tailings as a resource was completed in 1993, but results were not available.
- Drilling. Completion of 1,174 drill holes for a total of 158,738m of drilling. This work is described in the following sections of this report.
- Hydrologic studies. Groundwater and surface water studies were completed, most done by North American independent contractors.

Based on Placer's documentation and descriptions, Placer's work conforms to, or exceeds, industry standards.

Placer undertook extensive trenching in several different programs at Las Cristinas as follows:

- In 1994, a close-spaced surface trenching and mapping program was conducted to augment data collected in the close-spaced drill program and to provide detailed geological information used principally to assess the continuity of mineralization between close-spaced drill-hole intercepts. Four areas were selected for these studies in the Conductora area. These areas were stripped with a bulldozer to expose *in situ* saprolite. The areas were then washed with a hydraulic pump to highlight relic geological features and textures in the saprolite and were subsequently mapped at a scale of 1:100. Three of the four areas trenched measured 25m wide (perpendicular to foliation) by 40m long (parallel to foliation). Continuous trench samples were collected at a 1.5m spacing across the width of the areas (perpendicular to S_1 foliation) with a line spacing of 1.5m. The fourth grid area was smaller, measuring 25m by 25m, but the same sample spacing was used. In addition, six east-west trenches were dug to a depth of 3m and sampled with continuous 1.5m channel samples, both horizontally (along the trench face) and vertically (down the trench face). Additional 1.5m square blocks were sampled in 0.5m square panels.

- The 1995 test area straddles the eastern edge of the planned location of the Conductora pit. A series of trenches, spaced at 10m intervals, were oriented in an east-west direction (perpendicular to foliation), with one trench cut north-south parallel to the S_1 foliation. A bulldozer was used to prepare and access the sites, and a backhoe was used to dig the one-meter-wide trenches. Water was pumped from the flooded existing Conductora pit made by the small-scale miners, to allow access into much of the test area.

  The trenches excavated in 1994 and 1995 have depths ranging from one meter to four meters, depending upon the local amount of overburden and tailings. Every trench exposed a minimum of one meter of fresh oxide saprolite. These trench data were plotted on cross section and used to support and define mineral zone boundaries, but the data were not used for modeling. Trenching was done in both the Conductora and Cuatro Muertos target areas that measured 200m by 400m and 200m by 100m respectively. A total of 1,862m was excavated in 108 trenches in 1995, and a total of 1,840 one-meter samples were taken from these trenches.

- During 1998, 36 surface trenches were excavated in the Cantera-Cordova and Morrocoy areas to test the vertical and lateral continuity of high-grade gold mineralization in drill core projected to the surface and to test other occurrences of strong surface mineralization along strike (Grill, 1999). A total of 1,546 channel samples were collected from 1,625m of trenching. Most trenches were oriented in a northeast direction, perpendicular to foliation that strikes northwest in that area. The geology of all trenches was mapped at a scale of 1:100 and professionally surveyed.

As noted, exploration assay data from Las Cristinas includes surface samples of rock and saprolite, trench samples of saprolite, and drill samples of overburden, saprolite and rock. As MDA's work did not utilize any surface geochemical samples and only used the trench samples to support zone definition in modeling, further discussions in this report will concentrate on the drilling.

Topographic data were modeled from an aerial survey conducted by Eagle Mapping Services Ltd. in 1995.

10.2 Exploration by Crystallex

Exploration work by Crystallex focused initially (in 2003) on verifying the presence and tenor of mineralization at Las Cristinas. Further drill campaigns carried out in 2004, 2005 and 2006-2007 focused on increasing the reserve and resource through infill drilling, drilling down-dip extensions of the stratiform mineralized zone, and exploring strike extensions of the deposit. Particular attention has been paid to the studies of the alteration, stratigraphy and structure of the deposit in order to define the controls on mineralization so as to improve confidence in the validity of correlating mineralized zones between adjacent drill-hole intersections. Details of these drill campaigns are provided in Section 11.0 to Section 13.0. Particular attention was paid to sampling issues during these drill campaigns as described in Section 14.0. These drill campaigns also provided the opportunity to investigate the distribution of gold and gold heterogeneity.

Crystallex undertook a detailed drill program to determine the optimal means of sampling of the oxide saprolite for grade-control purposes for application when mining is started. The area selected for this study straddles the eastern edge of the planned Conductora pit at which there is a change from ore to waste. The objective of study was to compare the consistency of gold grade samples generated from reverse circulation (“RC”) and conventional hammer drilling; to determine the sampling method which yielded the most consistent and repeatable assays; and to determine the consistency with which waste could be distinguished from low-grade ore.

This drilling simulated bench-scale drilling with two east-west orientated lines of drill holes 6m apart, and the same was done with shorter drill lines orientated north-south, parallel to the edge of the planned pit, forming an “L”-shaped drill pattern. Conventional drilling was done at 6m spacing along the lines spaced 6m apart, forming a square drill-hole pattern (40 conventional holes were drilled). The conventional drilling seldom exceeded 10m due to the technical difficulties with the drilling of saprolite below the current water table. Drill holes in the north-south orientated lines and alternate holes in the east-west orientated lines were twinned with RC drilling to a depth of 25m to simulate the sampling of four benches (24 RC holes were drilled). Since the planned bench height in the saprolite is 6m, each 6m interval was collected as a separate sample. Six-meter long samples were taken where possible from the conventional drill holes, while the size of subsequent sample intervals depended on the total depth to which the conventional rig penetrated. For example, a hole that reached 15m depth would have generated two 6m samples and the third sample would be from the lowest 3m interval of the hole. Assay results of this study, from which a sample protocol for grade control will be established, were not available at the time of writing of this report.

11.0 DRILLING

The average drill spacing over the entire modeled area at Conductora (Figure 11.1) is roughly 70m. In the more intensely drilled areas, drill spacing decreases to 50m, and in the core of the deposit where economic mineralization is shallowest and where mining is planned to commence, the drill spacing is 25 to 35m. The entire modeled area at Mesones-Sofia (Figure 11.1) has an average drill spacing of 55m, while Morrocoy has wider drill spacing of approximately 85m. Figure 11.1 shows drill-hole locations for holes drilled by Placer and Crystallex at Las Cristinas.

The database presently has 189,026m of trench and drill-hole samples with a total of 187,226 gold assays, 168,020 copper assays, 43,830 cyanide-soluble copper assays, and 145,021 silver assays in 1,372 drill holes and/or trenches. Within this total are 108 individually named trenches and 1,264 drill holes. The drilling component of the database includes a total of 179,930m of drilling with 185,373 gold assays, 168,000 copper assays, 43,830 cyanide-soluble copper assays, and 145,001 silver assays.

11.1 Drilling by Placer

Placer drilled 1,174 holes at Las Cristinas between 1994 and 1997. Once early exploration drilling had determined the approximate location and strike direction of mineralization, most later drilling was undertaken on section lines orientated perpendicular to that trend (Figure 11.1).

According to historic documentation of procedures (Placer Dome Exploration and/or Placer Dome Technical Services, 1996a), drill-hole locations were established using a prismatic or Brunton compass and adjusted into position with a Brunton compass. After completion, each hole was fitted with a collar pipe, and a cement collar block was inscribed with the drill-hole number. Final drill-hole collar locations were then surveyed in UTM coordinates by Surco, C.A., an independent professional surveyor, and translated into local grid coordinates and entered into a GEOLOG database. As an aside, the same surveying company is presently involved with surveying. Down-hole survey readings, generally taken about every 50m, were completed using a Sperry Sun single-shot survey camera or a Pajari compass. Shallow holes (typically 30m to 50m deep) were surveyed by acid tests (dip deflections only). A total of 907 of the 1,174 holes (77%) have at least one down-hole survey.

Crystallex's Placer drill database was obtained from CVG and is summarized in Table 11.1; the drill plan map is shown in Figure 11.1. The database has detailed geological descriptions, geological codes, check assay data, specific gravity data, core recovery and rock quality designation ("RQD") data, and some trace element geochemical data. Through 1997, Placer reported that 1,167 holes and 155,370m of drilling had been completed on the Las Cristinas property (Placer Dome Exploration and Placer Dome Technical Services, 1998a).

Table 11.1 Placer's Drill Database Description

Data	Number
Drill holes	1,174
Meters of drilling*	160,600
Gold assays	162,806
Copper assays	145,547
Copper CN Soluble assays	40,655
Silver assays	145,221
Trenches	108

*Includes trenches

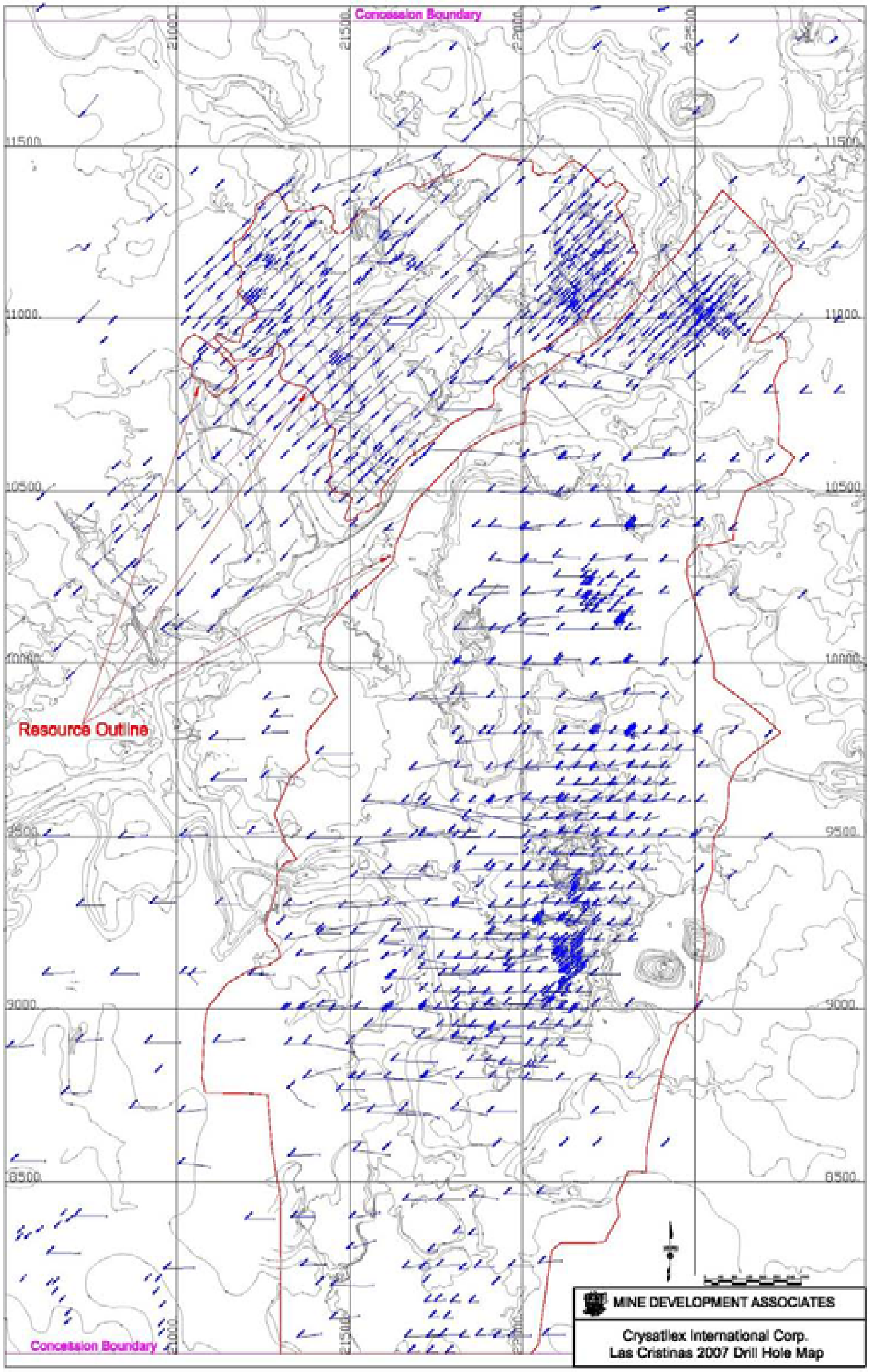
Drilling in an intensely weathered tropical environment presented challenges and, consequently, several different drilling techniques were attempted by Placer before choosing triple tube diamond drilling. Other methods tested include Vibracore, auger, and reverse circulation rotary drilling, none of which produced acceptable results. Up to seven hydraulic diamond-drill rigs were used simultaneously to complete the drilling. The best recovery was achieved with PQ tools (85 mm diameter) in saprolite, and with HQ tools (61 mm diameter) in bedrock. HQ was also used to drill some of the saprolite, as not all rigs were equipped to handle PQ (85 mm diameter) core. NQ (47.6 mm diameter) was used systematically in bedrock during the infill drilling phase within the Stage I pit area and occasionally in difficult drilling situations. The saprolite interval was drilled uncased until casing could be set in bedrock. Sample lengths ranged from 0.1 to 8.0m, with most being ~1.0m. Drilling was done in essentially three phases:

- Phase 1 Dominated by shallow drilling to test saprolite (drill spacing of ~90m);
- Phase 2 Dominated by bedrock drilling and filling gaps in the saprolite drill pattern (drill spacing of ~90m); and
- Phase 3 Infill drilling of the pit areas (drill spacing of ~50m).

Majortec Drilling, of Moncton, New Brunswick, undertook the majority of Placer's drilling at Las Cristinas.

Drill core was logged for rock type, alteration, mineralization, structure, and magnetic susceptibility. In addition, RQD, core recovery, rock strength, and joint roughness and coating were logged. If core recovery in the saprolite averaged less than 80%, the hole was re-drilled at the contractor's expense; global average core recovery in saprolite was between 85% and 90%. Hard-rock core recovery was above 95%. Oriented core was drilled in selected areas using a down-hole "crayon test" for determining the true orientation of foliation, bedding and lineation, as well as the orientation of veins and veinlets. This information was made available to Crystallex in the drilling database.

Figure 11.1 Drill Hole Location Map



11.2 Drilling by Crystallex

11.2.1 2003 Drilling

In 2003, Crystallex drilled 2,198.5m in 12 diamond drill holes (including one re-drilled hole), six of which were located in the Mesones-Sofia area and six in the Cuatro Muertos - Conductora zone. A total of 1,079 samples were collected from these holes. Drilling was conducted by Majortec Drilling under contract to Crystallex International. Majortec used an Acker MP-5 drill (an overpowered Longyear 44) mounted in a skid-mounted cargo container. A log skidder with rod sled completed the drill equipment roster.

The objective of this drill campaign was to twin selected holes drilled prior to 2003 in order to independently evaluate a portion of the Placer drill-hole database and assay data delivered to CVG, who delivered it to Crystallex. The sites of the proposed holes were located in the field by a geological technician and approved by the Project Geologist or the MDA representative. Spotting of holes involved identifying the collar location relative to drill holes being verified, and identifying the foresight/backsight for correct azimuth and hole inclination. The collar position of the Crystallex hole was fixed within a 2m-5m radius of the collar of the existing hole. The selection of the actual collar position was influenced by ponds and unconsolidated tailings generated by the informal mining operations.

Drilling was conducted 24 hrs per day, excluding one-hour travel between shifts. The core was recovered every 1.5m for HQ drilling and every 3m for NQ drilling, unless drill conditions necessitated shorter intervals for improved core recovery. The inner tube was recovered by wireline. Water under pressure was used to expel saprolite from the inner tube while rock core fell from the inner tube without encouragement. Polymers were used liberally to maintain high core recovery, especially in saprolite.

Ideally, core was collected from the drill site twice a day, but occasionally core sat boxed at the drill site for over two days. Core was received at camp in sequential four-slot wooden core boxes. Approximately 1 box in 20 was incorrectly numbered by the drill crew but was corrected prior to logging. The hard-rock core was cleaned using water, and saprolite core was typically scraped with a spatula to remove the skin of wet or dried polymer.

Geotechnicians reoriented the core and “put it back together” by rotating core, minimizing gaps and fitting pieces back together. A trained geotechnician then used a cloth “*scalimetrica*” to measure core lengths, to mark down-hole depth in meters, and to measure recovered core.

A geologist logged geotechnical items such as the longest core piece, sum of core pieces greater than 10 cm, and fractures per meter. Sample intervals based on geology, such as intrusive rock and lithologic contacts, were identified with flagging in the core box and noted on logs. The geotechnicians used a digital camera to photograph three boxes at a time. Flagged sample intervals and geological contacts were included in the photo, as were a “header file” with hole number, down-hole depth and box numbers.

Sampling typically was on 2m intervals but honored geological boundaries. Sample intervals were noted with blue flagging in the core box; numbered rip-off tickets were inserted into the core box immediately prior to sample bagging; and the core box was labeled. Irregular and significant quartz-tourmaline mineralization in the Mesones-Sofia area saprolite resulted in technical difficulties associated with sawing or cutting core, therefore it was decided to send all of the Mesones-Sofia saprolite for sample preparation. This material was not present in the Conductora area saprolite so that saprolite was cut (with a spatula or machete), and one half of the interval was submitted for preparation and analysis. Cloth bags were used for over ~90% of the samples and heavy translucent plastic bags were used for the remaining ~10%. Sample book rip-off tags with sample numbers were inserted into each bag. In 2003, all sampling and geology were overseen by Crystallex, while MDA had a representative on site for half of the program.

11.2.2 2004 and 2005 Drilling

Crystallex completed an 18-hole, 7,131m drill program in 2004 and an additional 5,419m in 14 drill holes in 2005. There are 5,993 and 5,419 gold assays for each drill program, respectively. Majortec Drilling was again the drilling contractor. Collar positions of the first four holes in Crystallex's 2004 drill campaign were located with compass and tape from the nearest identifiable drill-hole collar positions. The remaining 14 drill holes in this program were located directly by survey crews. Those drill holes completed in the 2005 program were all located with compass and tape from known collar positions. All of the collar positions of the drill holes drilled in Crystallex's 2003 and 2004 programs were subsequently surveyed by an independent contractor, Construcciones 2E-B C.A. Survey of the 2005 drill collar positions was done by Surco C.A. Down-hole surveys were done at 100m intervals, and these data, with that of the collar position, were incorporated into MDA's Medsystem® database.

Drilling in these two programs was focused in the western and southern parts of the modeled Conductora – Cuatro Muertos pit shell. The objective of these programs was to infill drill those poorly drilled areas to upgrade resource classification and ultimately increase the reserve. In 2004 and 2005, all sampling and geology were overseen by Crystallex.

11.2.3 2006 and 2007 Drilling

Crystallex completed a 46-hole drill program started in November 2006 and completed in February 2007. Total meters drilled were 13,574m, producing 12,178 samples. Sampling typically was on one-meter intervals and honored geological boundaries. Diorite sills and a monzonite intrusive body (referred to as aplite by Placer) were not sampled in their entirety since all previous analyses had shown this material to be barren with respect to gold and copper. For control purposes, a one-meter sample was taken from each intrusion adjacent to its upper and lower contact with enclosing country rocks.

Majortec Drilling was again the drilling contractor. Collar positions of the holes in Crystallex's 2006-2007 drill campaign were located with GPS and then verified by compass and tape from the nearest identifiable collar positions of pre-existing drilling. All of the collar positions of the drill holes drilled in Crystallex's 2006-2007 program were subsequently surveyed by independent contractor, Mr. David Rogerson (Surco CA), the same contractor who had undertaken Placer's surveying. Down-hole surveys were done at 100m intervals and these data, with that of the collar position, were incorporated into MDA's Medsystem® database.

Drilling during this campaign was done down-dip of the Conductora - Cuatro Muertos deposit and along strike into the Morrocoy area, which lies in between Cordova and Mesones-Sofia. The objective of this program was to bring up the Morrocoy area into a defined resource and to increase resources and reserves down-dip along the Conductora area. In 2006 and 2007, all sampling and geology were overseen by Crystallex, while MDA did visit the site during the drill program and independent sampling consultant, Mr. Trevor Nicolson, was on site for about 40% of the drill program.

12.0 SAMPLING METHOD AND APPROACH

12.1 Sampling by Placer

Prior to Crystallex's involvement at Las Cristinas and according to Placer reports, standard drilling procedure was to collar all drill holes with PQ core (8.5cm diameter) through the saprolite and reduce to HQ core (6.35cm diameter) in the underlying bedrock. HQ core, with which the majority of the hard-rock intersections were made, yields a ½ core sample volume of approximately 1,583cm^3 for one meter of core. Samples were prepared under supervision on site at Las Cristinas. Entire drill holes were generally sampled on one-meter intervals or less, as dictated by geology. Technicians a) assigned sample numbers, b) photographed the core, c) split or sawed the core in half, and d) sent one half to the on-site sample preparation laboratory for processing. Sample preparation and analytical procedures are well described in Placer's reports.

12.2 Sampling by Crystallex

12.2.1 2003 Drilling Program

The holes drilled by Crystallex in 2003, which were designed to twin previously drilled holes, differed in core diameter from the prior drilling. Crystallex's drilling was collared with HQ core (6.35cm diameter), and this was reduced to NQ core (4.76cm diameter) in the hard rock beneath the saprolite. NQ core, with which most of the hard-rock intersections were made in Crystallex's drilling, yields a ½-core sample volume of approximately 890cm^3 per meter of core, which is 56% of the volume of samples derived from ½-HQ core from Placer's drilling. Crystallex's sampling protocol was two-meter continuous sample intervals in contrast to Placer's protocol that called for continuous 1m sample intervals through the principal mineralized zones.

Core loss and RQD data were measured by Crystallex technicians on site at Las Cristinas under the supervision of the MDA and Crystallex geologists. The core was subsequently marked in continuous 2m sample lengths by these geologists. Saprolite core was split with a spatula, and rock was cut with a diamond saw by technicians on site. The samples of half core were bagged, numbered, and stored in a "safe room" prior to transport to the laboratory.

Samples were transferred from the Las Cristinas camp to the independent commercial preparation laboratory owned and operated by Triad in Tumeremo, Bolivar State, Venezuela in a vehicle that belonged to Crystallex and was, for the first half of the program, driven by the MDA representative. Reception at Triad's preparation facility was by the lab manager or his assistant during normal business hours.

12.2.2 2004 Drilling Program

Core drilling in the 2004 program followed the same procedures as were used in the 2003 program, with HQ core diameter in saprolite reduced to NQ core diameter in hard rock. Digital photos were taken of sequential sets of three core boxes on delivery of the core at the exploration camp. Core loss and RQD data acquisition by Crystallex's geological technicians for the 2004 program followed the same procedures as described above for 2003. Crystallex geologists then marked the core for continuous sampling of 1m and 2m intervals. The 2m sample intervals were used for the saprolite and the hanging wall of the main mineralized zone in 12 of the 18 holes. Continuous samples from core from the lower parts of these 12 holes and all core from the other 6 holes drilled in this program were sampled in continuous one-meter intervals. The core was cut as described for the 2003 program, and half core was logged by the Crystallex geologist on site.

Samples were bagged in suitable plastic bags and sequentially numbered. Blanks (half-core samples of barren mafic dikes) were inserted every 50 samples. The blanks were bagged and numbered in sequence with the drill samples and could not be identified without careful study of the rock. Pulps of standards were inserted into the sample sequence at intervals of every 30 samples. These samples are conspicuously different from the core samples. Sequential groups of 7 to 10 samples were placed in large nylon bags and transported to independent commercial preparation facilities in batches of 100 to 300 samples by a Crystallex-employed driver. Samples from 15 of the 18 holes were delivered to the preparation laboratory of SGS Minerals Services, Venezuela ("SGS") in Tumeremo, and pulps from these samples were then shipped by the laboratory for assay at SGS's analytical facility in Lakefield, Ontario. Core samples from the remaining three holes were sent to Triad Laboratories ("Triad") at La Camorra, Venezuela, for preparation and assay.

12.2.3 2005 Drilling Program

Core drilling in the 2005 program followed the same procedures as were used in the 2003 and 2004 programs. Eleven of the 14 drill holes were HQ core in saprolite with a reduction to NQ core in hard rock. Three drill holes were collared with PQ diameter, although the core recovered was HQ diameter. The PQ diameter hole was reduced to HQ diameter at the base of the saprolite.

Digital photos were taken of sequential sets of three core boxes once the sample intervals and sample numbers had been marked on the core boxes after delivery of the core to the exploration camp. Core loss and RQD data acquisition by Crystallex's geological technicians for the 2005 program followed the same procedures as described above for 2003 and 2004 programs. Crystallex geologists then marked the core for continuous sampling of 1m intervals. Intervals of poor core recovery were encountered in the upper parts of the saprolite in some of the drill holes. In these zones, a 1m core sample corresponds with a greater drilled length; in these cases the assay value obtained from the partial recovery is applied to the drilled sample length which is greater than one meter. The core was split or cut as described for the 2003 program, and half core was logged by the Crystallex geologist on site. A digital photo library of core that contains clear examples of vein types, lithology, and texture was developed to facilitate consistency in logging of the core.

Samples were bagged and sequentially numbered as described for the 2004 program. Blanks (1/2 core samples of barren mafic dikes) were inserted every 50 samples. The blanks were bagged and numbered in sequence with the drill samples and could not be identified without careful study of the rock. Pulps of standards were inserted into the sample sequence at intervals of every 20 samples. These samples are conspicuously different from the core samples. Sequential groups of 7 to 10 samples were placed in large nylon bags and transported to SGS's preparation facilities in Tumeremo in batches of 100 to 300 by a driver employed by Crystallex.

12.2.4 2006-2007 Drilling Program

Core drilling and sampling in the 2006 and 2007 program followed the same procedures as were used in the 2005 program. Core samples were numbered and sealed by Crystallex technicians under the direction of a geologist employed by Crystallex. Sample batches of 100 to 500 samples were delivered by SGS's preparation facility, which had been moved from Tumeremo to La Camorra since the previous drill program. Blanks, consisting of chips of mafic dike, were inserted in the sample sequence, and numbered empty sample bags were inserted in the positions at which standards were to be inserted in the sample sequence. The sequence of samples and blank sample material and empty, numbered sample bags was then delivered to the laboratory with appropriate preparation instructions that included a request to prepare a bar-coded pulp bag corresponding to each of the empty sample bags. Pulps and reject material from the prepared samples were then returned to Las Cristinas from the preparation laboratory. The sealed pulp bags, including the bar-coded and numbered empty pulp bags corresponding to the empty sample bags delivered to the lab, were laid out in sequence and pulverized certified standard material was added to the empty pulp bags. The standards were thus indistinguishable from the real, duplicate and blank sample pulps. A sample control spreadsheet was updated with the number of the standard inserted in each of the empty pulp bags. Mr. Trevor Nicolson, an independent consultant, was contracted by Crystallex to monitor sampling procedures, sample preparation and QA/QC procedures with *carte blanche* to interact with the laboratories. Mr. Nicholson directly oversaw the unpacking of the pulps, insertion of the certified standards, and repacking of the pulps for shipment during about 40% of the drill program. The pulps were repacked, and Crystallex shipped the samples to SGS's assay laboratory in Lima, Peru.

A set of pulp and 10-mesh duplicates from SGS's preparation facility at La Camorra was sent, after all assays had been received from SGS in Lima, to ALS-Chemex in Lima for preparation and assay in order to provide an independent check on SGS-Lima's reported assays.

13.0 SAMPLE PREPARATION, ANALYSES AND SECURITY

13.1 Placer's Program

Although sample preparation and analytical procedures are well described in Placer's reports, it is not clear what special security procedures were in place at that time. Triad Labs of Tumeremo, Venezuela and Bondar Clegg, of Vancouver, Canada assayed all samples taken at Las Cristinas in 1992. Beginning in January 1993, Placer Research Center in Vancouver, Canada, assayed all core samples, while Monitor Geochemical Laboratory de Venezuela, C. A. ("Monitor") analyzed trench samples.

All samples were prepared on site. In 1993, staff from Placer Research Center reviewed and amended laboratory procedures to conform to Placer Dome standards. Figure 13.1 shows Placer's sample preparation procedures.

All samples were fire assayed for gold and "geochemically" analyzed for silver, molybdenum, copper and cyanide-soluble copper. Table 13.1 shows the assay techniques used on Las Cristinas samples by the Placer Research Center. Note that the term "geochem" was not explained.

Table 13.1 Summary of Placer's Assaying Procedures at Las Cristinas

Laboratory	Element	Method
Placer Research Center	Au	Fire Assay, AA finish[1], 25 g sample
Placer Research Center/Bondar Clegg/Triad	Ag	Geochem, AA finish[2]
Placer Research Center/Bondar Clegg/Triad	Cu	Geochem, AA finish[3]
MINEN	CNSCu[4]	Cyanide Leach
Placer Research Center/Bondar Clegg/Triad	Mo	Geochem, AA finish[5]

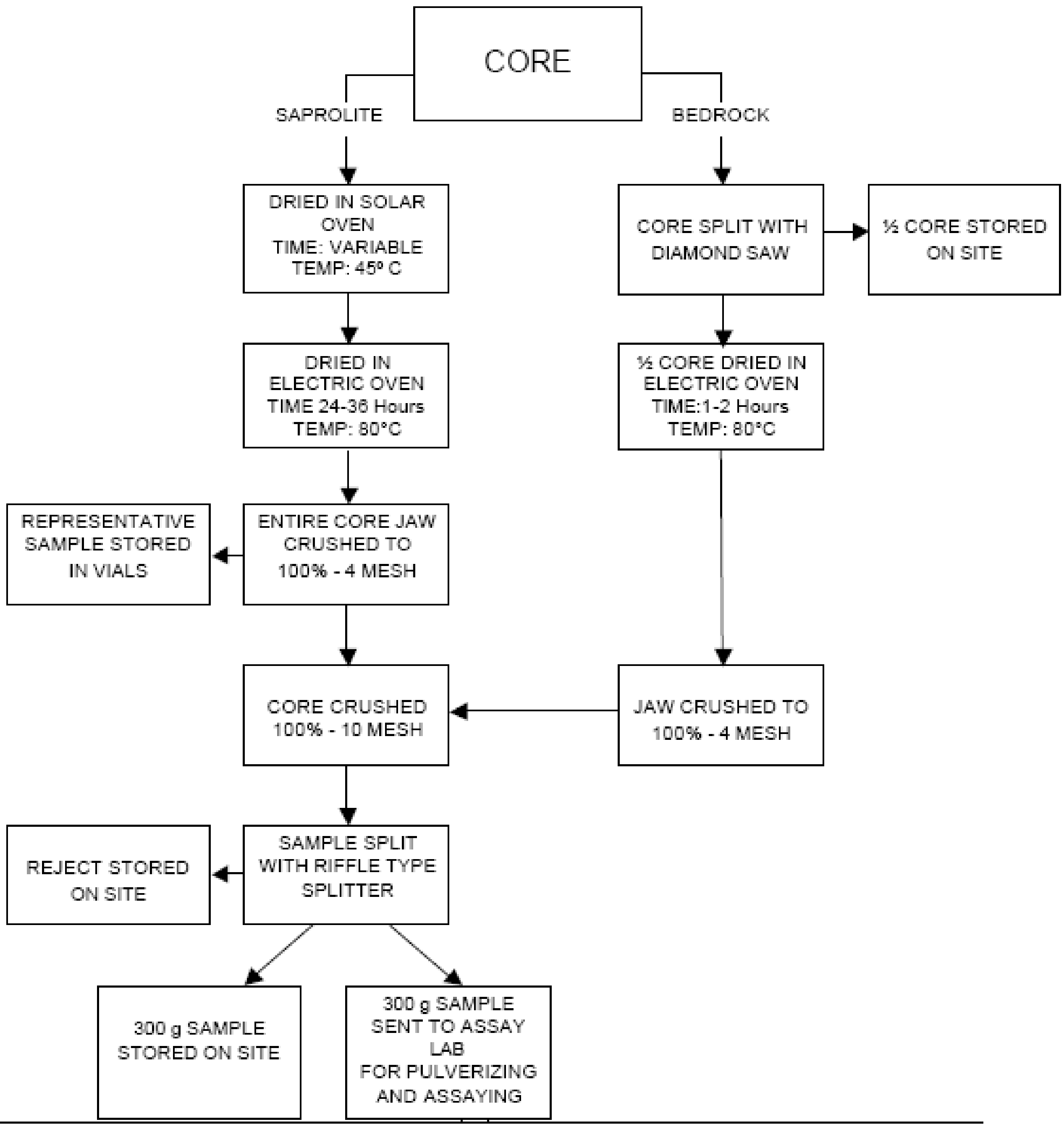
[1] Au > 3 g/t were re-analyzed with a gravimetric finish; [2] Ag > 10 g/t were re-analyzed using same analytical procedures
[3] Cu> 4,000 ppm were re-analyzed using same analytical procedures; [4] CNSCu is cyanide soluble copper
[5] Mo >1,000 ppm were re-analyzed using same analytical procedures

In addition to the above elements, core samples collected early in the program were analyzed for mercury, antimony, arsenic, zinc, and lead. Multi-element analysis was also performed on 3,700 surface samples. Additional multi-element analyses were completed on five-meter down-hole composites from ten holes drilled on cross-section 9,600N in the Conductora deposit.

In July 1993, R. Mohan Srivastava conducted an inter-laboratory bias analysis to compare Triad, Bondar Clegg, and Placer Research Center assay results (Placer Dome Exploration and Placer Dome Technical Services Ltd., 1996a, 1998a). The study concluded that the Triad results tended to be biased on the low side, while some of the Bondar Clegg results tended to be biased on the high side. Consequently it was decided to re-assay all Triad and Bondar Clegg samples for gold-only at the Placer Research Center and to use only Placer's gold assays on drill core for the 1996 resource study.

Standards, duplicates, and blanks were used for quality control of the on-site sample preparation laboratory (Placer Dome Exploration and Placer Dome Technical Services Ltd., 1996a). For every suite of 20 samples, there was one each of a duplicate, standard, and blank, which were submitted as blind samples to the assay lab.

Figure 13.1 Placer's Sample Preparation Procedures



Thirteen standards were prepared by the Placer Research Center representing a broad range of gold grades from Las Cristinas surface and core material. These were used to monitor accuracy of the assay lab as well as to detect potential contamination in sample preparation. Duplicates were taken from a split of the preceding sample and were used to test the precision of the assays and the homogeneity or nugget effect of the samples. Blanks were obtained from a nearby diorite quarry and were used to detect possible contamination during sample preparation as well as to verify sample order.

Standards, replicate samples on the same sample pulp, and blanks were also used for the quality control program for gold assays at the Placer Research Center. In each suite of 24 samples, one each was a replicate, standard, and a blank. According to Placer, quarterly statistical evaluations of the QA/QC data indicated that Placer's lab produced accurate and precise gold assay results. Results from a geochemical quality control program also indicated that the Placer Research Center's geochemical analyses for copper, silver, and molybdenum were highly accurate and precise, according to Placer.

In addition, 10% of the samples were sent to an outside lab for an independent check; the lab was the IPL laboratory of Vancouver, Canada. Of the 5,866 samples analyzed from 1993 to 1995, the two data sets were quite similar with minor differences between the two labs especially for gold grades less than 1.0 g Au/t, according to Placer's 1996 feasibility report. The average inter-laboratory bias appeared to be about 5 to 10%, with Placer's lab results being higher than IPL's. The Placer 1996 feasibility report (Placer Dome Exploration and Placer Dome Technical Services Ltd., 1996a) noted that this grade range was important because the economic cutoff for the project is between 0.6 and 0.7 g Au/t. That report stated that "*It appears that the PDI* [Placer Dome Inc.] *laboratory is providing more reliable assays of the less than 1.0 g/t gold grades than is the IPL laboratory. IPL appears to be understating the gold grade of the less than 1.0 g/t Au grades by about 5 to 10%....From this analysis the PDI assay results can be considered appropriate for resource estimation.*" MDA was unable to definitively analyze and compare the samples and check samples to verify Placer's above conclusion.

QA/QC information was also gathered on assay samples from the trenching program; these samples were assayed by Monitor Geochemical Laboratory de Venezuela, C.A. ("Monitor"). The Placer Research Center helped Monitor implement in-house standards and also completed a check assay program on samples sent to Monitor. A 1995 evaluation indicated that it appeared Monitor's assays were on average 5 to 10% higher than the expected means of the standards' values and that Monitor's mean gold grades were about 7% higher than Placer's mean gold grades on trench samples assayed by both labs. Placer's 1996 feasibility study (Placer Dome Exploration and Placer Dome Technical Services Ltd., 1996a) concluded that "*The systematic bias in the Monitor assay results presented above is not thought to have a significant impact on the 1996 Conductora/Cuatro Muertos resource estimate because the trench data are only a small part of the data base used for resource estimation.*" A similar check on Monitor's results from the 1998 trenching program showed that Placer results were about 3% lower than the Monitor results (Grill, 1999).

Monitor also assayed all the Mesones-Sofia drill core from the 1996 drilling, which represents about 55% of all the samples assayed in the Mesones-Sofia area. Placer's 1998 feasibility study (Placer Dome Exploration and Placer Dome Technical Services Ltd., 1996a) reported that, as with the trench samples, Monitor's drill core assays appeared to be about 5 to 10% higher than check assays by Placer Research Center. This problem was to be studied further, but MDA is not aware of any further reported conclusions.

Diamond drilling in the intensely weathered environment, *i.e.*, saprolite, presented potential sample bias (Placer used the term "contamination" and considered it similar to that encountered in wet reverse circulation drilling; to be consistent with Placer's terminology, the same wording will be used here). Crystallex and MDA noted that this was particularly apparent at Mesones-Sofia, where chunks of siliceous or tourmalinized hard rock were floating in the saprolitic clays. During drilling, water flowing around the core could wash out the clays, relatively increasing the amount of hard, possibly better-grade material.

Placer's care for this aspect of sampling is reportedly excellent. While great effort was made to eliminate "contamination," occasional contaminated intervals were unavoidable, according to Placer. Placer (Placer Dome Exploration and Placer Dome Technical Services Ltd., 1996a) stated that: *"Suspected contaminated intervals greater than 20 cm were sampled and logged as discrete intervals. If the contaminated interval was less than 20 cm the interval was marked and photographed in place and then removed prior to sampling. All sampled intervals were assayed for gold, copper and molybdenum in order to assess the potential for additional unrecorded down-hole contamination on a case by case basis. A total of 831 samples deemed to potentially be contaminated were eliminated from use by coding. The mean grade of these "contaminated" samples is 3.13 g Au/t with a maximum of 29.73 g Au/t. In addition, 32 trench samples deemed to potentially be contaminated were also eliminated from use in estimation"*

MDA evaluated the "contaminated" samples by selecting all samples lying within the area where "contaminated" samples exist. Descriptive statistics were calculated on all "contaminated" and "not-contaminated" samples. The results showed that there is a large discrepancy in mean grades between the two sets of data for gold, silver and copper. MDA capped the outlier samples to evaluate if the differences were caused by these few high-grade samples, but the results remained the same. Placer's elimination of these "contaminated" samples was justified, and MDA continued with the practice of not using these samples.

13.2 Crystallex's Program

13.2.1 2003 Drill Program

MDA's representative, Mr. Maynard, was on site for the first three weeks of the six-week drilling program. To the extent possible, MDA had chain of custody of the samples, though some inadvertent breaches did occur. The protocol of picking up core from the drill rig in the morning and at night deviated with the availability of Crystallex vehicles for the two- to three-kilometer trip. There were two periods during weekends when core pickup occurred only on two to three day intervals. A potentially important point is that local small-scale miners were conducting their placer mining operations in the immediate vicinity of the drill rig 24 hours a day. Mr. Maynard never saw any interest in the drill core on the part of the small-scale miners, but he was not on the drill site 24 hours a day seven days a week. The protocol of leaving core spread out in the logging shed within the exploration camp for as little time as possible prior to cutting and bagging was stretched repeatedly, with core laid out for two to three days at a time prior to cutting and bagging. The exploration camp at Las Cristinas is enclosed by a 3m-high diamond-mesh security fence, and access to the camp is strictly controlled by security personnel.

These minor infrequent exceptions to the security were inadvertent and accidental, minimizing the probability of compromising the samples. There was never any indication of intent to compromise the samples, and MDA does not believe that during any of these times was there any interference with the samples.

Bagged and labeled samples were transferred to a safe room at the exploration camp at Las Cristinas, where they were stored prior to transport to the preparation facility at Tumeremo. People other than the MDA representative were in the room only on a "by invitation" or "by request" basis. There were minor infrequent exceptions to this security, but the inadvertent and accidental nature of these exceptions eliminated the probability of compromising the samples. The protocol of the MDA representative having the only set of keys to the safe room was compromised when the door to the safe room was found open one morning, and a floor mop was leaning against the wall. It is suspected that the cleaner was doing her job of cleaning office floors. The door's lock was immediately changed, and the MDA representative retained the new set of keys. Overall, the MDA representative is confident that there was no breach of sample integrity, but due to certain uncontrolled, albeit minor and probably inadvertent infringements, cannot state that the samples were entirely in MDA's control. It is believed that any exceptions are strictly the result of accident and disinterest.

Samples from the 2003 drill campaign were prepared by Triad at its laboratory in Tumeremo and analyzed by Chemex in Vancouver. Sample preparation procedures were as follows:

- Dry samples in a low temperature oven;
- Jaw crush the sample in its entirety to -2mm;
- Run material through a multi-roll crusher and crush to -1mm;
- Split out 250g and pulverize by ring and puck to -150 mesh and;
- Package the 250g pulp and ship to Chemex, Vancouver for analysis.

Dr. Luca Riccio (then Vice President Exploration, Crystallex) and Mr. Maynard (MDA's site representative) found that Triad's preparation lab was clean and appeared to be in good working order. However, Triad did not present data that demonstrated the effectiveness of laboratory QA/QC procedures at that time. Crystallex/MDA's assessment of quality control is described later in this report.

Chemex procedures began with logging in the pulps. Their standard operating procedures included randomly checking for adequacy of pulverizing. Chemex required that the pulp was to meet 80% passing 200 mesh with a 66% pass ratio. In a few batches, additional pulverizing was necessary.

All samples were analyzed for gold and copper, and samples from the saprolite and underlying carbonate-leached bedrock were analyzed for cyanide soluble copper ("CNSCu"). Analyses for gold were by fire assay with an atomic absorption ("AA") finish on one-assay-ton charges (30g aliquots). Any sample yielding grades over 10g Au/t was fire assayed with a gravimetric finish.

For copper analyses, *aqua regia* was added to 0.5g of pulp to achieve a total volume of 12.5ml per sample. This solution was analyzed for copper by AA. Samples with assays greater than 1% Cu were re-assayed with 0.4g of sample in 100ml of *aqua regia* and analyzed by AA.

Samples for CNSCu were prepared with 30ml of 0.5% cyanide solution added to 0.5g to 1.0g of pulp. The sample was shaken until homogenized, and the pH of the solution was then checked. Changes in the pH were corrected with the addition of calcium oxide to increase the pH to between 9 and 13. The bottle was then rolled for two hours. The leach solution was centrifuged until clear, and the pH of the solution was checked again; if the pH was below 9, the leach was repeated with calcium added to the sample. The solution was then analyzed by AA spectrometry.

During Crystallex's verification drilling program, blanks and standards were systematically inserted into the sample stream. The following details are taken from Ristorcelli and Hardy (2003):

"<u>Pulp Standards.</u> Sample material used for standards was made by Crystallex's Revemin Laboratory. The Revemin pulp standards were inserted in the sample stream at a rate of 2 per 25, immediately prior to submission to Chemex.[Revemin is Crystallex's mine lab located in El Callao]

A mean difference of 11% exists in the low-grade results between the Crystallex standard and the sample results received from Chemex, with the Chemex results lower than the standard (38 assays, standard 0.91 g Au/t versus Chemex at 0.81 g Au/t). The high-grade standard results are similar to the Chemex results but are 2% lower (44 assays, standard 6.79 g Au/t versus Chemex at 6.91 g Au/t).

<u>Coarse Rejects.</u> Coarse rejects from previous Placer drilling were inserted into the sample stream, prior to submission to the Triad prep lab, at a rate of 2 per 25 samples. Coarse-reject material generally comprised 100% passing 10 mesh, 90% passing 100 mesh material. A similar relationship of Crystallex results and Placer results exists with Crystallex/Chemex being lower grade (Table 13.2).

<u>Barren Core (blanks).</u> Barren aplitic core was inserted into the front end of the sample stream with new drill samples. These blanks were given a new number in sequence with the standard samples. Blanks were inserted into the sample stream at a rate of 1 per 25.

Review of the blank sample grades showed that there was some contamination in the 2003 sampling program. Table 13.3 *shows that the Crystallex assays on the "barren" Placer core returned grades over 2.5 times higher grade than the original Placer blank sample grades. It is not certain which data set is correct, though it is believed to be the Placer set. The implication is that there may have been some contamination in the sample preparation procedures at the laboratory (Triad) during the 2003 drill- sample-preparation procedures."*

Table 13.2 Descriptive Statistics on Inserted Coarse Rejects
(From Ristorcelli and Hardy, 2003)

	Placer	Diff.	Crystallex	
Count	105		105	
Mean	1.26	11%	1.13	g Au/t
Std. Dev.	1.60	10%	1.45	g Au/t
CV	1.27	-1%	1.28	
Min.	0.01	400%	0.00	g Au/t
Max.	8.02	21%	6.65	g Au/t

Table 13.3 Descriptive Statistics on Inserted Barren Core
(From Ristorcelli and Hardy, 2003)

	Placer	Diff.	Crystallex	
Count	53		53	
Mean	0.02	-60%	0.06	g Au/t
Std. Dev.	0.05	-35%	0.08	g Au/t
CV	2.12	62%	1.31	
Min.	0.01	67%	0.00	g Au/t
Max.	0.30	-12%	0.34	g Au/t

13.2.2 2004 Drill Program

Core boxes were collected from the drill platform by the exploration geologists in the early morning and late afternoon each day. From there, the core was transported to the exploration camp by Crystallex's exploration geologists or geological technicians.

Sampling of split core was done at the exploration camp by Crystallex's geological technicians and geologists under the supervision of Dr. Luca Riccio. Samples from 15 of the drill holes were delivered to SGS's preparation facility in Tumeremo by Crystallex personnel. Samples from three drill holes (1145, 1146 and 1147) were delivered to Triad's preparation facility in Tumeremo for assay by Triad in Venezuela.

Sample preparation followed the same procedure as was used in the 2003 program described above. All samples were analyzed for gold by fire assay of a 30g aliquot with an AA finish as described for the 2003 program. Samples with grades over 10 g Au/t were fire assayed with a gravimetric finish. All samples were analyzed for copper by ICP, and samples from the sulfide saprolite and mixed sulfide-oxide saprolite from 14 of the 18 drill holes were analyzed for CNSCu using the procedure described for the 2003 program.

13.2.3 2005 Drill Program

Core boxes were collected from the drill platform by Crystallex's exploration geologists in the early morning and late afternoon each day. From there, the core was transported to the exploration camp by the exploration geologists or geological technicians.

Sampling of split core was done at the exploration camp by Crystallex's geological technicians and geologists under the supervision of Dr. Richard Spencer (Vice President Exploration, Crystallex) and Eng. Freddy Quijano (former Chief Geologist, Las Cristinas Project). Samples from the 14 drill holes were delivered to SGS's preparation facility in Tumeremo by Crystallex personnel.

Sample preparation followed the same procedure as was used in the 2003 and 2004 programs described above. All samples were analyzed for gold by fire assay of a 30g aliquot with an AA finish. Samples with grades over 10g Au/t were fire assayed with a gravimetric finish. All samples were analyzed for copper by ICP, and samples from 13 of the 14 holes were analyzed for a suite of 34 elements by ICP after *aqua regia* digestion. Samples from the sulfide saprolite and mixed sulfide-oxide saprolite were submitted for CNSCu analysis by the procedure described for the 2003 program.

Sample QA/QC was undertaken by Spencer (January 2006) for the 2005 drill program.

13.2.4 2006 and 2007 Drill Program

Similar sampling procedures were used in 2006 and 2007 as in previous drill programs and hence will not be repeated here. Differences included:

- Material used for blanks that were inserted at a rate of about 1 in 30 samples was fresh diorite taken from a quarry located some 100km south of the Las Cristinas property.
- In previous drill programs undertaken by Crystallex, pulps were sent directly to the analytical facility by the laboratory that undertook the preparation. In 2006-2007, following the recommendation of Mr. Trevor Nicholson, the independent consultant responsible for the QA/QC program, pulps were returned to Las Cristinas after preparation by the SGS laboratory situated near El Dorado, about 100km to the north of the Las Cristinas property.
- Certified standards were purchased from CDN Resource Laboratories of Burnaby, British Columbia. The standards included:
    - CDN-GS-P5B
    - CDN-GS-1C
    - CDN-GS-1P5
    - CDN-GS-1P5A
    - CDN-GS-15
- Bar-coded and numbered empty pulp bags were registered by the preparation laboratory so that the standards could be inserted in their correct position in the sample sequence before being shipped to SGS Lima, Peru, for analysis.
- Check assays were done by ALS-Chemex in Lima, Peru.
- The sample QA/QC was undertaken by independent consultant, Mr. Trevor Nicholson of Nicholson Analytical Consulting, of Comox, British Columbia. Mr. Nicholson was on site for about 40% of the drill program.

14.0 DATA VERIFICATION

As most of the Las Cristinas database is derived from Placer's work, it is important to note that based on Placer's descriptions of their procedures, their data collection and exploration procedures conform to or exceed industry standards. If conducted as reported, Placer's QA/QC program was high quality. In general, MDA found that, again based on reported methodology, Placer's exploration data were collected in a technically sound manner. According to Placer documentation, quality assurance checks were in place for most of the project, and validation of data was ongoing. Nevertheless, it was clear that additional verification was necessary because one company had completed all development work, there were no independent checks or studies of the work, and most of the original hardcopy data were unavailable for detailed study or auditing.

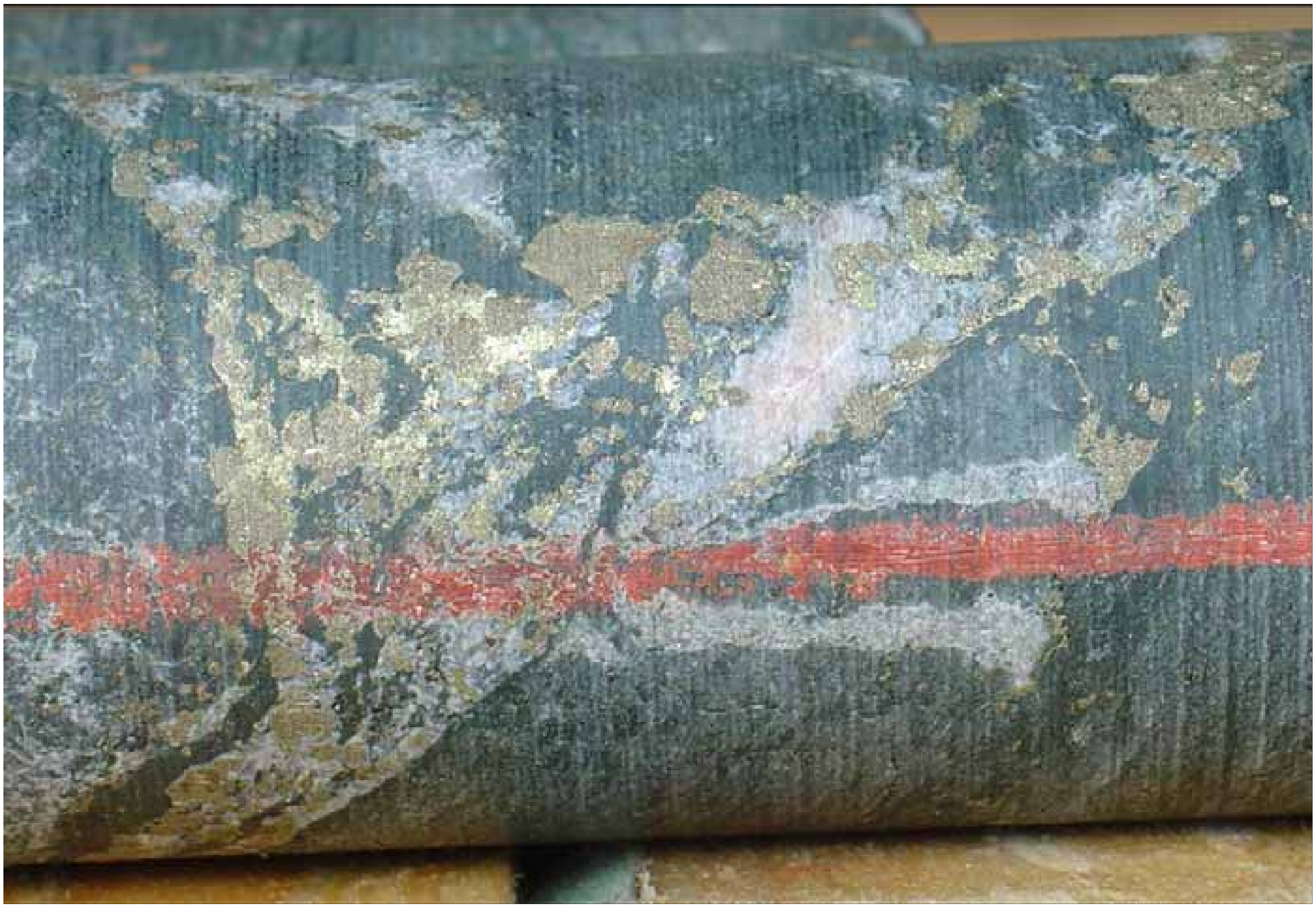
Under the terms of the September 2002 agreement between Crystallex and CVG, Crystallex obtained an electronic database from CVG, which included Placer's drill, topographic, geological, and engineering data. At that time, data from 1,174 drill holes and 108 trenches were included in the Las Cristinas database. Although about 99% of the drill data were obtained, hard copies of the assay and geological data were not available, leaving a gap in the ability to validate the database.

When MDA visited the Las Cristinas site in October 2002, they found drill pads, drill collars, drill core and samples, core photographs, and other supporting data demonstrating that exploration was done in a manner not incompatible with what was described in the documentation of Placer's work. To conduct independent corroboration, Crystallex drilled 2,198m in 12 diamond drill holes, for a total of 1,079 core samples, to verify the presence and tenor of mineralization. These 12 holes twinned previously drilled Placer holes. In addition, 275 QA/QC samples from this drill program were analyzed. The Crystallex drill results and check samples corroborate the general tenor of gold mineralization reported by the previous operator. For additional confirmation, Crystallex re-assayed 262 pre-existing pulps, 200 pre-existing coarse rejects, and 342 quarter-core samples of pre-existing core. Although mean grades are similar for both datasets, there is a large variance in grade between individual pairs of Placer's core assays and Crystallex's core check samples. The variance is lower in the pulp and coarse reject checks. However, as a result of some of these just-mentioned discrepancies, several additional studies were completed to aid in the understanding of grade variability.

Natural grade variability (heterogeneity) is an issue at Las Cristinas. Although it has become better understood through the efforts of Crystallex, it is an issue that should continue to be addressed prior to and during production. The issue can be a problem if left unchecked during production possibly resulting in massive misclassifications of ore and waste. The effect of material heterogeneity on the resource estimate will be dominated by local variance and may have instilled a minor low bias to the sample database. The issue is introduced by the distribution of metals originally in primary ore as shown in Figure 14.1.

For this reason, Pitard (2005) rhetorically questioned: "*Can the existing gold grade database, created with diamond drilling and conventional 30-g fire assays, lead to an accurate block model?*" To which he responded: "*The answer is no. But, with good geology of the various quartz and sulfide events, it can make a world of a difference.*" The problem he is referring to is the ability to estimate accurately locally and with precision. MDA believes that this is difficult to do, but the consequence is not so great that it would negatively impact a mine and deposit of this scale in an open-pit scenario; essentially higher grades will be generally where higher grades are estimated to be, and the same with the mid- and low grades. While the gold occurs in the free state, it is generally not coarse grained nor visible but does appear to occur in clots of sulfides (Figure 14.1). It is not possible to compensate for the issue of a potential low bias instilled in the sample assay results.

Figure 14.1 Photograph of Well-Mineralized Core



(photograph courtesy of Richard Spencer, January 2006 showing clots of pyrite ±chalcopyrite)

14.1 Data Verification by Placer

In addition to the internal check assaying, systematic QA/QC program, and external, independent check assaying program described in Section 13.1, Placer conducted a PQ/HQ drilling comparison and a closely spaced drilling program.

Grade versus core recovery was reviewed by Placer. The results indicate that the influence of core recovery is negligible on total grade and virtually non-existent on the ore grade. The differences, though negligible, show higher core recovery drill intervals being slightly lower grade than the grade of drill intervals with lower core recovery in saprolite. [MDA believes that this may indicate a bias in sampling due to selective recovery of mineralized material in the saprolite material. While Placer had eliminated many samples due to poor recovery or "contamination", a procedure that MDA continued, MDA reduced the resource classification for those blocks estimated from samples with low core recovery.]

Placer drilled four 12m-by-18m areas in a star pattern with 13 HQ diamond drill holes in each pattern. Drill hole spacing was 3m in an east-west direction and 3m in a north-south direction, with two holes drilled at 6m spacing on the north and south ends of the pattern. The long axis of the pattern was oriented approximately parallel to foliation, *i.e.*, 000^{o} azimuth in the Conductora area and 020^{o} azimuth in the Cuatro Muertos area. Depth of the holes was dictated by the oxide/sulfide saprolite contact, with a minimum of 5m being drilled into the sulfide saprolite. The average depth of the holes was 40m. Both splits of the drill core were sent to the Placer Research Center for analysis to test the variability in the sample collection, preparation, and analysis procedures.

The results of this drill program show that correlation coefficients typically fall within a range of 0.4 to 0.6 for gold samples 3m apart and quickly falls to less than 0.1 for samples up to 9m apart. Generally sample pairs show stronger correlation for drill-hole comparisons along the NNE strike direction than across or down the dip. Copper typically shows higher correlation coefficients than gold for holes the same distance apart. Copper also shows the same general trend correlation, with better correlation in the north-south direction and poor correlation in the east-west direction.

A comparison of gold fire assays with an AA finish was made for 2,489 drill core sample splits, with both halves of the core assayed. The mean grades of the two halves of the core were the same at 1.39 g Au/t with similar variability. The correlation coefficient was 0.95. The Placer-generated quantile-quantile ("QQ") plots showed similar distributions, while the relative difference plots did not show any conditional bias.

If done as reported above, the QA/QC program demonstrated that Placer's exploration work was high quality.

14.2 Placer Data Verification by Crystallex

Crystallex completed a 12-hole drill verification program and duplicate sampling/check assaying program for which MDA's involvement was to ensure some independence. The verification program collected:

- 1,086 split core samples from 11 holes and one re-drilled hole, all completed by Crystallex,
- 342 splits of Placer core (quarter cores) from Placer drilling (1 sample was lost),
- 262 Placer pulps (3 samples lost), and
- 200 splits of Placer coarse-reject samples (2 samples lost).

MDA supervised drill sampling, sample collection, and sample packaging for the first half of the program, with the goal of maintaining sample integrity and chain of custody. Sample preparation and assaying were done by independent laboratories. The program inserted standards, blanks, and coarse rejects at irregular intervals in the sample stream with an overall frequency of two standards, two coarse rejects, and one blank per 25 samples submitted for analysis.

A QA/QC program for the Crystallex core drilling program was outlined by Dr. Luca Riccio, former Vice President of Exploration for Crystallex, and Mr. Ristorcelli of MDA. Dr. Riccio worked with Mr. Maynard during the initiation of the project while Mr. Maynard carried out the project for the first three weeks. Dr. Riccio was responsible for the program and was on site after Mr. Maynard's departure. Mr. Maynard was on the Las Cristinas property from January 15, 2003 until February 7, 2003, living and working at the camp.

14.3 First Preliminary Independent Corroboration of Project

At the initiation of this project, MDA compared topographic data with drill-hole collar elevations and found they agreed. MDA also plotted drill-hole maps with traces of drill holes and found that the database compiled by MDA from CVG data corresponded well with electronic drawing files presumed to have been compiled by Placer. In addition, MDA requested that Crystallex contract an independent surveyor to check drill-hole locations. Crystallex had 25 drill holes surveyed and, aside from an equal shift with all surveys (~34m in the east and ~3m in the north), the surveys showed that these original survey data stand up to verification relative to each other. Correcting for this shift, all holes were within 1.7m of the surveyed coordinates and generally off by less than one meter. The coordinate shift is an issue that has recently been resolved by Crystallex in that independent surveyor Mr. David Rogerson (Surco CA) has resurveyed the surface in the planned pit area and in the process has corrected this shift.

In late 2002, MDA took 65 independent samples of core, pulps, and coarse rejects. After choosing and receiving the samples, MDA renumbered the samples to names known only to MDA. At most, though not all, times MDA had the samples in their direct control. But at no time when out of MDA's control (except during cutting the core) did anyone know which samples were which. Due to the preliminary nature of this program, which was only the initial part of the larger program, the check samples, though lower grade, corroborate the general tenor of historic data.

MDA's samples were taken from various resource areas and were from varied grade ranges. Samples were taken from split core, sawn core, coarse rejects and pulps. MDA compared the results of MDA's and Placer's samples for copper and gold only. Table 14.1 presents descriptive statistics of MDA's check-sampling program, and the table shows MDA's samples are lower grade for both copper and gold. Table 14.2 shows the correlations of gold and copper between MDA and Placer samples. On closer review (Figure 14.2 and Figure 14.3), it is clear that the differences occur mostly in the check samples of split core. Since this is such a small dataset, no global, definitive statements can be made concerning the Placer database based on these samples alone; however, it does suggest that initial sample preparation may be very important, as the comparisons are better further down the sample preparation process.

Table 14.1 Descriptive Statistics of MDA 2002 Check Samples

		Valid N	Mean	Std.Dev.	CV	Min.	Max.	Units
MDA	Au	65	3.09	5.63	1.82	0.04	38.19	g/t
	Ag	65	1.64	1.58	0.96	0.50	7.00	g/t
	Cu	65	3,352	5,909	2	10	30,800	ppm
	CNSCu	65	367	960	3	5	5,700	ppm
Placer	Au	65	3.80	5.94	1.57	0.03	35.00	g/t
	Ag	64	1.00	1.34	1.34	0.05	6.20	g/t
	Cu	64	3,738	6,334	2	6	30,400	ppm
	CNSCu	4	1,550	2,159	1	293	4,770	ppm

Table 14.2 Correlation of 2002 MDA Check Samples

Gold								
	Mean	**Std.Dv.**	**r(X,Y)**	**r^2**	**p**	**N**	**dep: Y**	**dep: Y**
MDA Au	3.09	5.63						
Difference	-19%	-5%						
Placer Au	3.80	5.94	0.93	0.86	0.00	65	0.76	0.98
Copper								
	Mean	**Std.Dv.**	**r(X,Y)**	**r^2**	**p**	**N**	**dep: Y**	**dep: Y**
MDA Cu	3402	5943						
Difference	-9%	-6%						
Placer Cu	3738	6334	0.99	0.97	0.00	64	158.70	1.05

Figure 14.2 Gold Check Assay Correlations

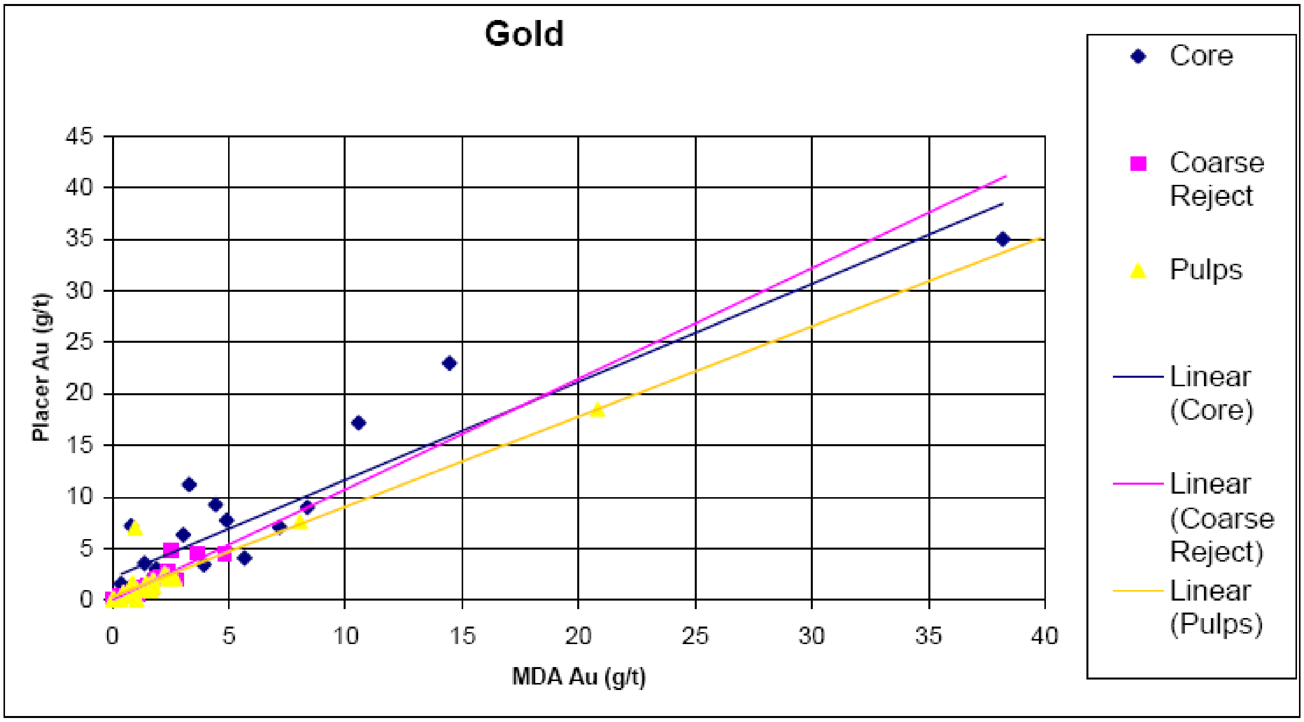
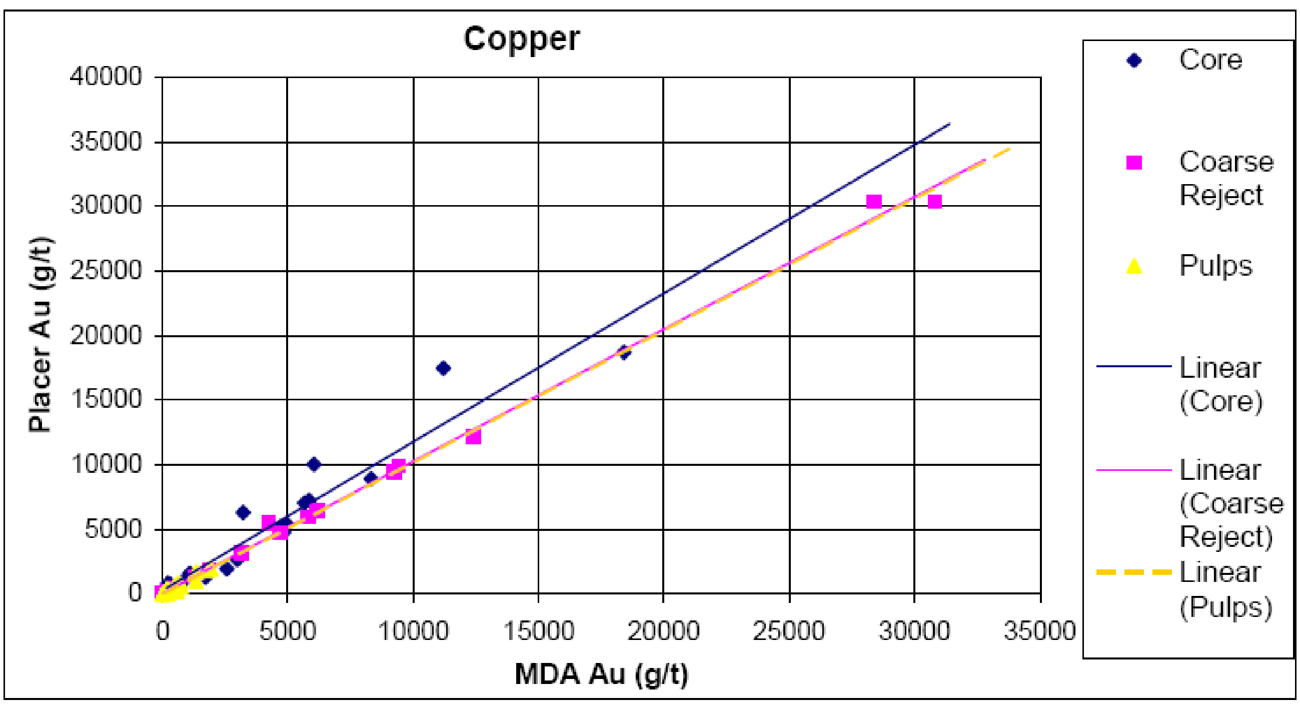


Figure 14.3 Copper Check Assay Correlations



14.4 MDA/Crystallex Joint Check Program on Previous Samples

Crystallex took samples of existing Placer quarter-core splits, coarse rejects, and pulps for gold grade re-assay.

Quarter-core splits of Placer core samples (341) were sawn, prepared, and analyzed to corroborate assay data. Sample selection was determined by location and grade. Mr. Maynard chose the intervals to be re-split and did the sawing personally with a tile cutter rock saw. Each quarter core sample had the original hole number and sample number recorded and was bagged in a white cloth bag identified with only a four-digit number on the outside and a slip of paper with the four-digit number in the bag. These samples were submitted to Triad for sample preparation and sent to Chemex for analysis.

The 341 quarter-core check samples of Placer core showed poor reproducibility, poor correlation, but a modest comparison of mean grades. The Crystallex check samples are 8% lower grade (Table 14.3 and Figure 14.4). Note that most of the difference is caused by four of the highest-grade samples. Eliminating these four samples increases the slope of the line from 0.42 to 0.83 (Figure 14.5), though does not materially affect the r^2, which remains a low 0.4. By eliminating the four highest mean-grade samples, Crystallex mean grades become higher grade than Placer by 6%.

Table 14.3 Descriptive Statistics on Quarter-Core

	All samples						
	Placer	Diff.	KRY	Avg.	Diff.	Var.	Abs. Var.
N	341		341	341	341	341	341
Mean	1.96	8%	1.82	1.89	25%	10%	63%
Std	3.72	56%	2.39	2.79	128%	149%	135%
Mn	0.02	122%	0.01	0.02	-89%	-833%	0%
Max	40.35	93%	20.90	30.63	1501%	1501%	1501%
	Greater than 0.4 g Au/t Average						
	Placer	Diff.	KRY	Avg.	Diff.	Var.	Abs. Var.
N	305		305	305	305	305	305
Mean	2.16	8%	2.01	2.09	24%	9%	64%
Std	3.89	58%	2.46	2.89	133%	155%	141%
Mn	0.27	366%	0.06	0.40	-89%	-833%	0%
Max	40.35	93%	20.90	30.63	1501%	1501%	1501%

Figure 14.4 Scatterplot of All Crystallex Checks on Quarter Core

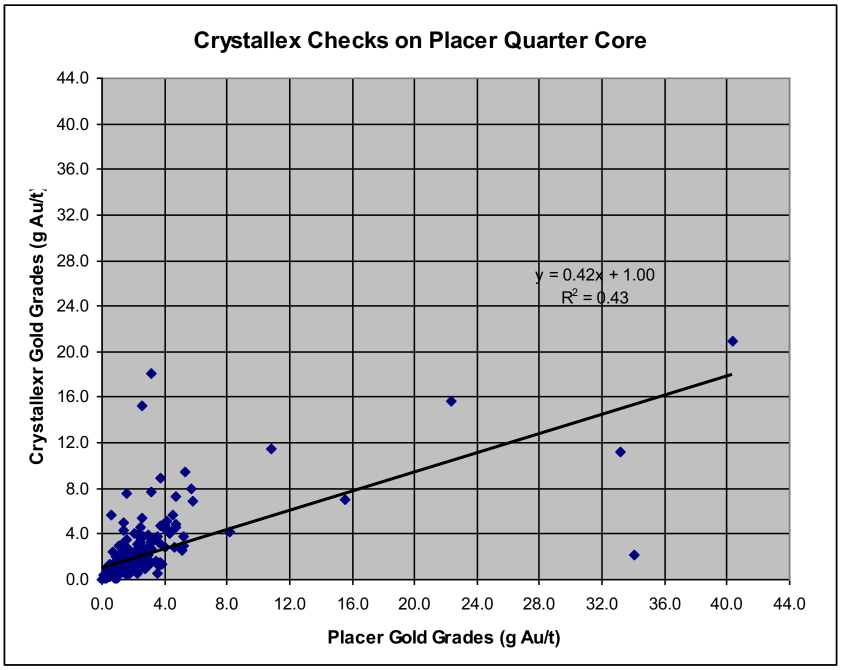
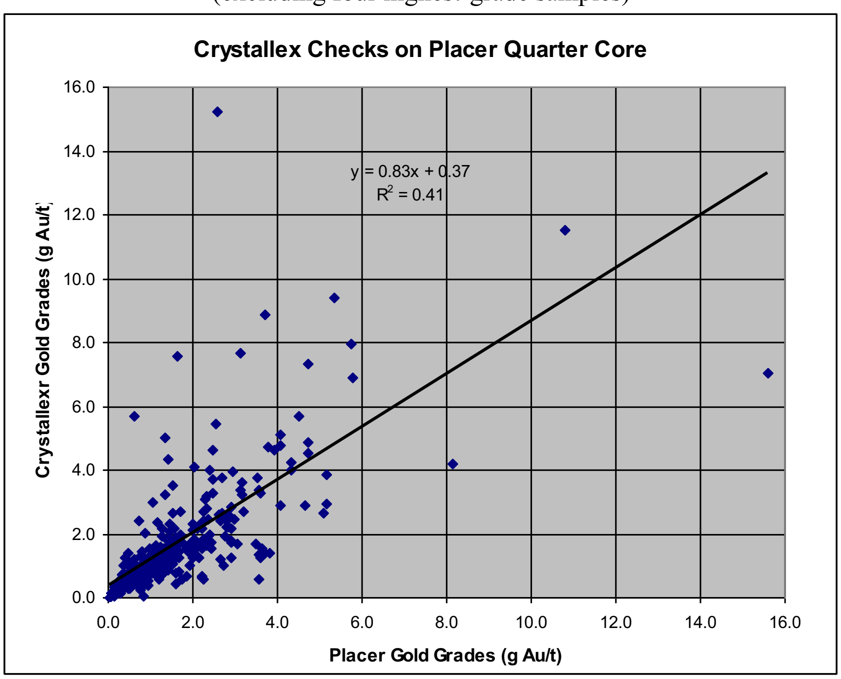


Figure 14.5 Scatterplot of Crystallex Checks on Quarter Core

(excluding four highest-grade samples)

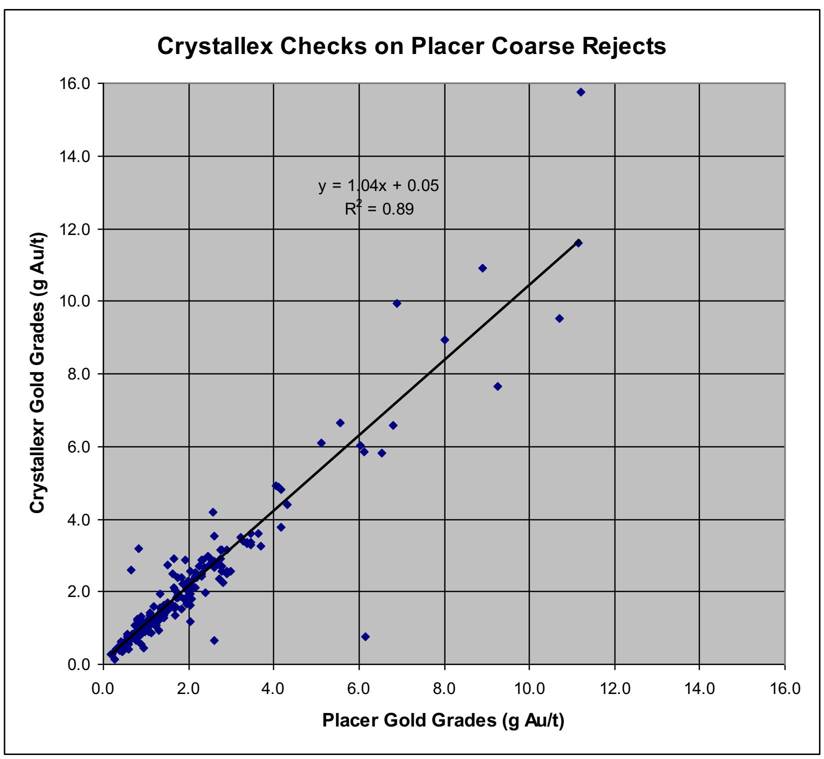


Coarse reject checks on the Placer drilling (198) were submitted for analysis. Coarse rejects, selected by location and grade, were placed in a four-digit numbered cloth bag while the drill hole and depth were blind to the laboratory. These were assayed to corroborate original assays and to check for reproducibility. Results from 198 check assays on coarse rejects showed good correlation, although mean grades were 6% higher for the Crystallex samples (Table 14.4 and Figure 14.6).

Table 14.4 Descriptive Statistics on Coarse Rejects

	All samples						
	Placer	Diff.	KRY	Avg.	Diff.	Var.	Abs. Var.
Count	198		198	198	198	198	198
Mean	2.01	-6%	2.14	2.08	1%	-4%	25%
Std. Dev.	1.91	-9%	2.11	1.98	58%	66%	61%
Min.	0.19	48%	0.13	0.20	-75%	-302%	0%
Max.	11.20	-29%	15.75	13.48	701%	701%	701%
	Greater than 0.4 g Au/t Average						
	Placer	Diff.	KRY	Avg.	Diff.	Var.	Abs. Var.
Count	192		192	192	192	192	192
Mean	2.07	-6%	2.20	2.13	0%	-5%	24%
Std. Dev.	1.91	-9%	2.11	1.98	58%	66%	62%
Min.	0.37	-12%	0.42	0.43	-75%	-302%	0%
Max.	11.20	-29%	15.75	13.48	701%	701%	701%

Figure 14.6 Scatterplot of Crystallex Checks on Coarse Rejects



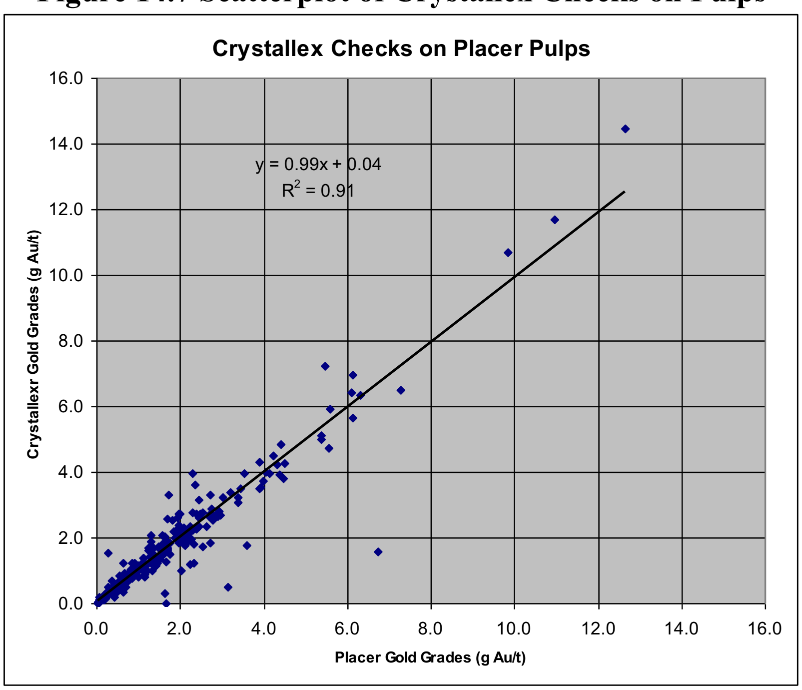
<u>*Pulps*</u> from Placer drilling (259) were submitted for analysis. Selection of pulps was based on location and grade. Pulps are stored in paper envelopes in plastic bags in woven rice bags in open sided sheds at site. MDA obliterated the sample numbers on the paper envelopes with black markers, and the envelope was inserted in a new paper envelope with a four-digit sample number; the original hole and sample number were kept in MDA records only. The newly numbered pulps were sent directly by courier to Chemex for analysis.

Results from the 259 sample pulps showed good correlation and similar mean grades (Table 14.5 and Figure 14.7). This is true for all samples as well as those samples greater than 0.4 g Au/t, a value that is approximately the economic cutoff. A cluster of five samples was noticeably higher grade in the Placer set than in the Crystallex set. Variance of check sample grades is considered high for pulps.

Table 14.5 Descriptive Statistics on Pulps

	All samples						
	Placer	**Diff.**	**KRY**	**Avg.**	**Diff.**	**Var.**	**Abs. Var.**
Count	259		259	259	258	258	258
Mean	1.71	-1%	1.73	1.72	5%	0%	27%
Std. Dev.	1.74	-4%	1.81	1.75	53%	64%	57%
Min.	0.02	NA	0.00	0.01	-82%	-443%	0%
Max.	12.65	-12%	14.45	13.55	513%	513%	513%
	Greater than 0.4 g Au/t Average						
	Placer	**Diff.**	**KRY**	**Avg.**	**Diff.**	**Var.**	**Abs. Var.**
Count	216		216	216	215	215	215
Mean	2.02	-1%	2.04	2.03	4%	0%	25%
Std. Dev.	1.75	-4%	1.82	1.76	55%	64%	59%
Min.	0.28	NA	0.00	0.40	-82%	-443%	0%
Max.	12.65	-12%	14.45	13.55	513%	513%	513%

Figure 14.7 Scatterplot of Crystallex Checks on Pulps



14.5 Twin Hole Analysis

MDA tabulated the Placer drill holes with corresponding Crystallex twin holes so that the same intervals were represented. Analyses were made on a hole-by-hole basis, which yielded highly variable results, and on all data. Table 14.6 shows that overall Crystallex drilling yields average gold grades for those true twins are 15% lower than the corresponding Placer intervals (not all the drilling were true twins).

Table 14.6 Twin Hole Comparison

Crystallex	Diff.	Placer	Comments
1,669	-1%	1,683	Total meters
1.28	-15%	1.49	Mean Grade (g Au/t)
0.00	-70%	0.01	Minimum grade (g Au/t)
50.50	-38%	80.83	Maximum grade (g Au/t)

The comparison of location of gold grades was found to be reasonable in that the higher-grade intervals were found to be in the same locations for the most part. Not unexpectedly, the twin-hole sample assays were more similar in Conductora than in Mesones-Sofia. One apparent difference was that the Crystallex drilling did not duplicate the higher-grade single assays, *i.e.*, >~ 7 g Au/t. For example, there were 54 (3%) samples over 7 g Au/t in the Placer data averaging 14.79 g Au/t, but only 14 (2%) above 7 g Au/t in the Crystallex data, though with a similar mean grade of 14.88 g Au/t. At least some of this can be attributed to sample lengths, as Placer sampled 0.82m intervals on average compared to Crystallex's average sample length of 1.94m. Using composited sample lengths, Placer had 2.7% of the samples greater than 7 g Au/t while Crystallex had 1.9% greater than 7 g Au/t. Placer's mean composite grade of composites over 7 g Au/t was 12.5 g Au/t, while Crystallex's was 13.39 g Au/t.

A comprehensive evaluation was done by Ristorcelli and Hardy (2004b). In that study, MDA suggested:

> *"In 2003 after the 12 twin hole program was completed, a difference in mean grades was noted when a comparison was made between Placer Dome's (Placer) data and Crystallex's initial verification drilling. During this most recent estimation process, a similar difference was noted with the latest drilling being approximately 6% lower in grade than the nearest Placer drill data. MDA has not attempted to compensate for this apparent sample bias in the estimation nor is any adjustment warranted.*
>
> *Taken in context with geologic information, the results of Crystallex sample verification programs present information on the behavior of gold distribution of the Las Cristinas deposit. Briefly, the Crystallex/MDA check assays verified Placer's pulps and coarse rejects. The checking program did show differences in quarter core (compared to Placer's one half core) checks but it is important to note that Crystallex only had quarter core to check and mean differences are dominated by outlier sample grades. Statistical analysis by Dr. Peter Knudsen, Dean of the School of Mines & Engineering, University of Montana, concluded there was no significant difference between the means for the pulp and quarter core and the T test for the coarse rejects was inconclusive. The Crystallex 2003 twin hole assays yielded a global mean difference of 15%, with the Crystallex drill assays coming in lower than the Placer drill core samples. A principal issue regarding this difference is the fact that Crystallex drilled smaller*

diameter core than Placer. Each step up in core size represents a difference of 80% in volume. Placer tested for a potential bias (five holes and 277 paired samples) and found that there was a 4% difference in mean grades with HQ being lower than PQ, though they deemed the difference not statistically significant. The visual heterogeneity of the deposit along with the just-mentioned check results suggest that the difference in grades could be caused by this sample volume difference.

These mean grade differences, though not statistically significant, could indicate a sampling and subsampling issue related to heterogeneity of Las Cristinas mineralization raising the possibility of a difference in mean grade of the deposit, possibly even higher grade than is presently reported. A heterogeneity study has been initiated to better understand the phenomenon and to obtain better parameters for subsampling protocol and grade control during mining operations."

Interestingly, the completed heterogeneity study (Section 14.11) suggested that sample size does affect the mean global grade of sample assays returned, and that this represents an incalculable upside to Las Cristinas.

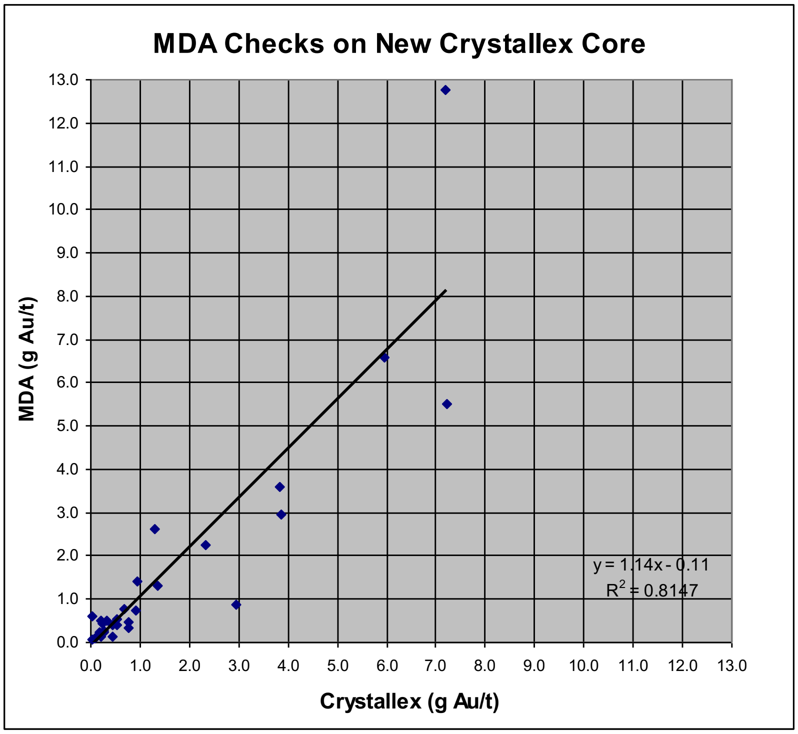
14.6 MDA Checks on 2003 Crystallex Sampling

MDA took independent core samples from Crystallex's 2003 verification drill program. The samples were always in the custody of MDA representative, Mr. Maynard. These samples were taken by Mr. Maynard and relabeled so as to avoid any possibility of tampering with the samples. As shown in Table 14.7 and Figure 14.8, Crystallex's data are corroborated. It should also be noted that the difference in grades between Crystallex core samples and MDA's core check samples is high.

Table 14.7 MDA Checks on Crystallex 2003 Drilling

		Difference		
	MDA	**Diff.**	**Crystallex**	
Count		29		
Mean	1.62	7%	1.52	g Au/t
Std. Dev.	2.68	27%	2.11	g Au/t
CV	1.66	19%	1.39	
Min.	0.06	77%	0.03	g Au/t
Max.	12.75	77%	7.22	g Au/t

Figure 14.8 MDA Checks on Crystallex 2003 Drilling



14.7 2004 Drill Program

Much of the 2004 drill program verification was based on the 2003 drilling, which post-dated the modeling done for the first resource estimate. The analysis of this work was first done by Ristorcelli and Hardy (2004c). MDA also took independent samples from the 2004 drill program (Table 14.8), which verified the general tenor of mineralization. No formal reports were completed for the QA/QC work of Crystallex's 2004 drill program. Some preliminary assessment was done that showed that the analytical work and standards used were not particularly clean; however, nothing was noted that would have negated the use of these 18 holes considering they represented less that 2% of all drilling at Las Cristinas.

Table 14.8 2004 MDA Independent Samples

MDA Sample No.	MDA (g Au/t)	Crystallex (g Au/t)	Crystallex Sample No.	Hole	From (m)	To (m)	Length (m)
LC04-01	2.440	2.400	23742	K-4CO1130	261.5	262.5	1.00
LC04-03	1.260	2.400	22419	K-4CO1135	238.5	239.5	1.00
LC04-04	0.190	0.477	22418	K-4CO1135	237.5	238.5	1.00
LC04-05	3.370	3.910	22459	K-4CO1135	276.5	277.5	1.00
LC04-06	6.460	27.100	22484	K-4CO1135	299.5	300.5	1.00
LC04-07	2.380	2.540	22456	K-4CO1135	273.5	274.5	1.00
LC04-08	1.270	5.000	22527	K-4CO1135	340.5	341.5	1.00
LC04-09	2.600	2.500	22452	K-4CO1135	269.5	270.5	1.00
LC04-10	4.230	5.100	23775	K-4CO1130	292.5	293.5	1.00
LC04-11	2.470	2.370	23714	K-4CO1130	235.5	236.5	1.00
LC04-12	0.750	0.616	23712	K-4CO1130	233.5	234.5	1.00
LC04-13	1.660	6.000	22481	K-4CO1135	296.5	297.5	1.00
LC04-14	2.005	2.230	23709	K-4CO1130	230.5	231.5	1.00
LC04-15	6.365	7.500	22426	K-4CO1135	245.5	246.5	1.00
LC04-16	2.580	2.910	22468	K-4CO1135	284.5	285.5	1.00
LC04-17	18.750	4.900	22431	K-4CO1135	249.5	250.5	1.00
LC04-18	3.050	1.536	54593	K-4CO1144	304.5	305.5	1.00
LC04-19	0.770	0.488	54594	K-4CO1144	305.5	306.5	1.00
LC04-20	1.220	0.673	54559	K-4CO1144	273.5	274.5	1.00
LC04-21	5.110	5.700	54525	K-4CO1144	235.5	236.5	1.00
LC04-22	2.010	0.310	54526	K-4CO1144	236.5	237.5	1.00
LC04-23	2.750	2.400	54433	K-4CO1144	145.5	147.5	2.00
Number of Samples		22					
Mean	3.350	4.048	-17% Difference of the means (MDA/Crystallex)				
Std. Deviation	3.824	5.528					
Minimum	0.190	0.310					
Maximum	18.750	27.100					

14.8 2005 Drill Program

Ristorcelli (July 2005) reported that "*Overall there is nothing in this data set to preclude using the assay data in the resource estimate. There is a high failure rate on the standards, although most of these could be sample-handling issues. The inserted blanks show that two submittals are suspect. This QA/QC program has not had external check assays by second laboratories and there are no duplicate lab checks. There is no split core or checking on coarse rejects. Overall, the 2005 drill program QA/QC is limited and leaves some doubts. However, given that all but three failures could be explained by mishandling standards, the 2005 data are accepted but with some hesitation. There is high confidence that the drill data did hit the intended targets and there is nothing suggesting that the data are in fact in error. Rather, the hesitation is caused by the lack of a comprehensive QA/QC program. The reader must understand that many ounces in this latest estimate are based on this relatively small drill database with this limited QA/QC.*"

As a result of the preceding observations, Spencer (2006) evaluated the QA/QC of the 2005 drill program. Spencer took pains to evaluate the data in light of some sub-standard standard assay material and verified all samples that failed in light of the checks. His work resulted in Crystallex obtaining new standards for future programs, re-assaying failed batches, and explaining discrepancies. Spencer's conclusions (2006) were that "*The high percentage of repeatable values in the reassay programme demonstrates the integrity of the assay data from the 2005 drill sampling programme at Las Cristinas.*" and "*Poor assay repeatability in high-grade spikes, which are quite common at Las Cristinas, has the potential to significantly affect the calculated average grade of a mineralized interval, although less so* *on a global basis when considering the effect on the grade of the entire deposit."* MDA concurs and found the 2005 drill-sample assay data suitable for use in resource estimation to classification of up to and including Measured.

14.9 2006-2007 Drill Program

The following section concerning QA/QC for the 2006-2007 drill program was taken from Nicholson (2007).

14.9.1 Introduction

Nicholson Analytical Consulting ("NAC") was contracted to aid in the design of and to oversee the QA/QC program for Crystallex's 2006-2007 drill program. NAC's involvement in the program included:

- inspection and recommendations of lab facilities to be used for the program;
- recommendations on design and implementation of the program prior to the start of drilling;
- active monitoring of Crystallex's QA/QC data for the primary element of Au; and
- analysis of any internal and external duplicate assaying.

NAC was on-site for approximately 40% of the time at various points throughout the drill program. NAC's primary focus was the quality control of the analytical data. However, at Crystallex's invitation, NAC also examined the procedures being used in all parts of the drill program. Although only involved in the design of the QA/QC program, NAC noted no irregularities in any areas of the drill program. NAC was impressed by the thoroughness and professionalism displayed by all of the Crystallex personnel.

14.9.2 Lab Inspection and Recommendations

Prior to the start of the drilling program, NAC and Crystallex carried out an investigation of the possible labs that could be used during the program. As a result, the samples were shipped from the property to the SGS lab at El Dorado for sample preparation only. NAC was on-site for approximately 40% of the drill program and accompanied the samples to the lab during this time. NAC made routine visits to the lab while delivering these samples and gave guidance to the lab staff concerning procedures they were using to prepare the core samples.

The prepared samples and reject material were picked up and transported back to the Las Cristinas compound. The prepared pulp samples were secured in a locked room until they were shipped to SGS-Lima for analysis. NAC conducted sieve tests on several of the pulp and reject samples from the SGS El Dorado lab. All of the samples passed the sample preparation criteria set out by the lab.

Overall, NAC is satisfied with the work done at SGS-El Dorado and is confident that the samples were adequately prepared.

All samples from this program were shipped to SGS-Lima Peru for analysis on recommendation from NAC. NAC has dealt with SGS-Lima on other projects and felt that they would be the best lab within

South America to assay the samples. The lab is very modern and is ISO 9001:2000 and ISO 17025 certified.

For convenience, the check lab selected was ALS-Chemex, also in Lima. NAC has also dealt with this lab on previous projects and found the quality of the work to be excellent. This lab is also a very large modern facility and is ISO 9001:2000 certified.

14.9.3 Program Design and Implementation

The QAQC program was designed in consultation with Richard Spencer, VP Exploration, of Crystallex.

Active QA/QC Monitoring

Standard Insertion

The active monitoring portion of the program utilized certified reference materials ("CRM") inserted into the sample stream to verify the accuracy of the data being received from the primary assay lab as the data were returned to Crystallex. The program employed the use of five CRM's inserted into the sample stream on a rotating basis. The CRM's used in this program were obtained commercially from CDN Resources labs in Burnaby, BC, Canada. Each of the standards has undergone extensive homogenization testing and has been round-robin assayed by several labs both in Canada and abroad. These standards come with a certification which includes a recommended value and confidence interval (Table 14.9) as well as outlining the procedures used for determining these values.

Table 14.9 CRM Gold Grades and Confidence Intervals

Standard Name	Gold (recommended value and 95% confidence interval)
GS-P5B	0.44 ± 0.04 g/t
GS-1C	0.99 ± 0.08 g/t
GS-1P5A	1.37 ± 0.12 g/t
GS-1P5	1.58 ± 0.16 g/t
GS-15	15.31 ± 0.58 g/t

The analysis protocol called for all samples to be assayed using 30g fire assay fusion followed by determination by atomic absorption spectrometry. Any sample with a gold value above 5 g Au/t was to be re-assayed using a 30g fire assay fusion followed by a gravimetric finish. It was important that at least one of the standards used in the program had a value above 5 g Au/t in order to assess the quality of those analyses that were done by this alternate higher-grade method.

The standards were ordered in bulk (several kilograms each) and shipped to the Las Cristinas site prior to the start of drilling. NAC re-labeled these standards with generic names (S1 to S5) and sent them to SGS labs in El Dorado to be re-homogenized, split and bagged in 100g splits. The standards were relabeled to prevent the lab from determining the origin and values of the standards. The standards' bags were then returned to Las Cristinas and held in a locked room until the start of the drilling program. The decision of which standard to be inserted at any given location in the sample stream was made by NAC or one of the Crystallex geologists after examining the core samples surrounding the standard insertion position. The intent was to have the gold concentration in the standard be as close as practical to gold concentration in the surrounding samples. Standards with higher grades were inserted into areas that had visible mineralization, and those with lower grades were inserted where little or no mineralization was seen.

The program called for one standard to be inserted approximately every 25th sample. The position of the first standard in each batch was randomized within the first 25 samples. This way the standard did not appear in the same ordinal sample position within each batch of samples. Core samples were shipped to the lab with an empty core bag containing a core tag placed in the position that the standard was to occupy. The instructions accompanying the sample batch told the lab that this was a standard position and to leave an empty labeled pulp bag in that position with a number matching the accompanying core tag.

After preparation of the core samples was complete and the pulp samples were returned to the Las Cristinas site, either NAC or one of the Crystallex geologists added one of the five standards to the empty pre-labeled pulp bag. Inserting the standards on-site prevented the lab from knowing which of the standards had been inserted in any given position, and it allowed NAC/Crystallex to check that the sample numbering and positions were correct prior to submitting the samples for analysis.

Although one can never completely disguise the presence of standards in a sample stream, this is as close as one can possibly get. The standards appeared in bags identical to those of the samples. The bags and labels did not have any identifying characteristics to distinguish them from regular samples in the stream.

Blank Insertion

Barren rock material was inserted into the sample stream at the rate of one every 30th sample position. This rock was from a barren diorite quarry located off-site and was cut with a diamond saw into 5-10cm fragments that were not conspicuously dissimilar to core fragments. Blank material was bagged as a sample and not identified to the laboratory.

Data Treatment

The active monitoring portion of the QA/QC program was carried out for gold only. Analysis data were obtained directly from SGS-Lima via e-mail. Shewhart and Cumulative Sum ("CuSum") control charts were constructed as the data came in and were used to determine quality.

Crystallex and SGS-Lima were notified by NAC when any group of data failed QA/QC tests. A standard determination that falls outside the control limits indicated a control failure. The control limits used were ± 2 S.D. for warning limits and ± 3 S.D. for control limits. When a control failure occurred, NAC directed SGS-Lima to have the affected range of samples re-analyzed. The protocol for selecting affected samples is that for any sequence that a QA/QC standard fails:

1) Re-analysis starts earlier in the sequence at the position of the last valid QA/QC standard and finishes later in the sequence at the position of the next valid QA/QC standard. This range includes all samples, standards, blanks and duplicates that fall between these valid QA/QC standards and also includes the both-valid QA/QC standards on each end of the sequence.

2) In the event that there are no QA/QC standards in the sequence prior to the failed QA/QC standard, the range includes all samples prior to the failed QA/QC to the beginning of the batch.
3) In the event that there are no QA/QC standards in the sequence after the failed QA/QC standard, the range includes all samples after the failed QA/QC to the end of the batch.

NAC also produced range charts along with the Shewhart control charts. The range charts are a good indication of the precision of data. These were not used for active monitoring but for informational purposes only. Since the Crystallex data are only a subset of the data produced by SGS and the data are not contiguous, large shifts in range do not necessarily indicate a failure.

No run rules (for excessive runs above and below the centerline and 2 S.D.) were applied to the Shewhart chart. Bias was measured using CuSum charts as they give a much faster and clearer picture than can be obtained from using Shewhart charts.

External Data Verification

Duplicates

Several different types of sample duplicates were generated during the drilling program. These duplicates were assayed by either the primary lab, SGS-Lima, or by the external check lab, ALS-Chemex-Lima. As well as sample duplicate analyses, each lab produces analysis replicates on a subset of the pulp samples in a batch. These are supplied as a part of the dataset and will be called "Internal Duplicates" for the purposes of this report. Two different types of duplicate samples were generated for analysis by the primary assay lab: 1) duplicate samples split from -10 mesh material and 2) duplicate samples obtained by prepping ¼ core samples.

The duplicates obtained from the -10 mesh splits were generated approximately every 50th sample. The duplicates from the ¼ core were also generated approximately every 50th sample. In both cases, the duplicate appeared immediately following the original sample and was numbered as a normal sample in order to be blind to the primary assay lab.

In the case of the duplicate split from the -10 mesh material, an empty bag with a core tag in it was placed in the position that the duplicate was to occupy. The instructions accompanying the samples told the preparation lab that this was a duplicate position and that a -10 mesh duplicate split of the previous sample was to occupy the empty bag.

The ¼ core duplicates were not identified to the laboratory, as the core was already in its assigned bag. In this case, sample prep proceeded as normal.

Three different types of duplicates were generated for analysis by the check assay lab: 1) analysis of the original pulp analyzed by the primary lab, 2) duplicates created by splitting the -10 mesh material, and 3) duplicates created by splitting the sample pulp.

When duplicate samples were required to be prepared for the external check lab, both types of duplicates were created from the same sample. The preparation lab generated the -10 mesh duplicates according to Crystallex's instructions during the original preparation of the samples. The pulp duplicate was created by the check lab by splitting the -10 mesh duplicate it received from the primary assay lab. All duplicates sent to the external check assay lab were sent directly from the primary assay lab.

Data Treatment

Regression plots, t-statistics and basic descriptive statistics were determined for each duplicate set. Six plots were constructed:

1) Pulp assay (primary lab) vs. pulp assay (check lab) - these analyses were performed on the same sample pulp;
2) Pulp assay (primary lab) vs. -10 mesh duplicate assay (primary lab);
3) Pulp assay (primary lab) vs. ¼ core duplicate assay (primary lab);
4) Pulp assay (primary lab) vs. internal duplicate assay (primary lab); these analyses were performed on the same sample pulp;
5) Pulp assay (primary lab) vs. -10 mesh duplicate assay (check lab); and
6) Pulp assay (check lab) vs. -10 mesh duplicate assay (check lab).

The t-statistic (comparison of means) was used as the primary indicator of fitness of the data. Single regression plots were also constructed. All t-statistics in this report are calculated at the 95% confidence level.

Data Handling
Data were obtained directly from each lab without Crystallex's involvement. NAC performed the necessary quality checks on the data and forwarded QA/QC validated data to Crystallex in Excel format on an ongoing basis as the data became available.

14.9.4 Active QA/QC Monitoring for Gold (Au)

Standard Monitoring
The QA/QC program resulted in the insertion of 543 standards in a total of 12,173 drill core samples. This gives an overall insertion rate of 4.46% or one standard for every 22.4 samples. Of the 543 standards that were submitted, there were four standard failures (Table 14.10). All of the failed standards and the associated samples were re-assayed as per the QA/QC protocol, and all of the re-assayed sequences passed the QA/QC criteria on the second pass (Table 14.11).

Table 14.10 Standard Data Summary for 2006/07 Crystallex Las Cristinas QA/QC Program

Standard Name	No. Of Determinations	No. of Failures	Failure Rate	Analysis Mean (g/t)	Standard Deviation	Recommended Value at 95% C.I.
GS-P5B	58	1	1.72%	0.43	0.002078	0.44 ± 0.04 g/t
GS-1C	190	0	0.00%	0.98	0.002643	0.99 ± 0.08 g/t
GS-1P5A	162	0	0.00%	1.36	0.004319	1.37 ± 0.12 g/t
GS-1P5	27	1	3.73%	1.55	0.005154	1.58 ± 0.16 g/t
GS-15	106	2	1.89%	15.34	0.1693	15.31 ± 0.58 g/t
Overall	**543**	**4**	**0.74%**			

Table 14.11 Standard Failures/Corrections for 2006/07 Crystallex Las Cristinas QA/QC Program

Sample ID	Hole ID	Standard ID	Original Analysis (g/t)	Recommended Value at 99% C.I	Corrected Analysis (g/t)
305768	K6MO1196	GS-15	9.830	15.31 ± 0.87 g/t	15.235
307100	K6MO1165	GS-15	10.850	15.31 ± 0.87 g/t	15.291
302382	K6MO1174	GS-1P5	0.526	1.58 ± 0.24 g/t	1.360
307175	K6MO1165	GS-P5B	0.358	0.44 ± 0.06 g/t	0.410

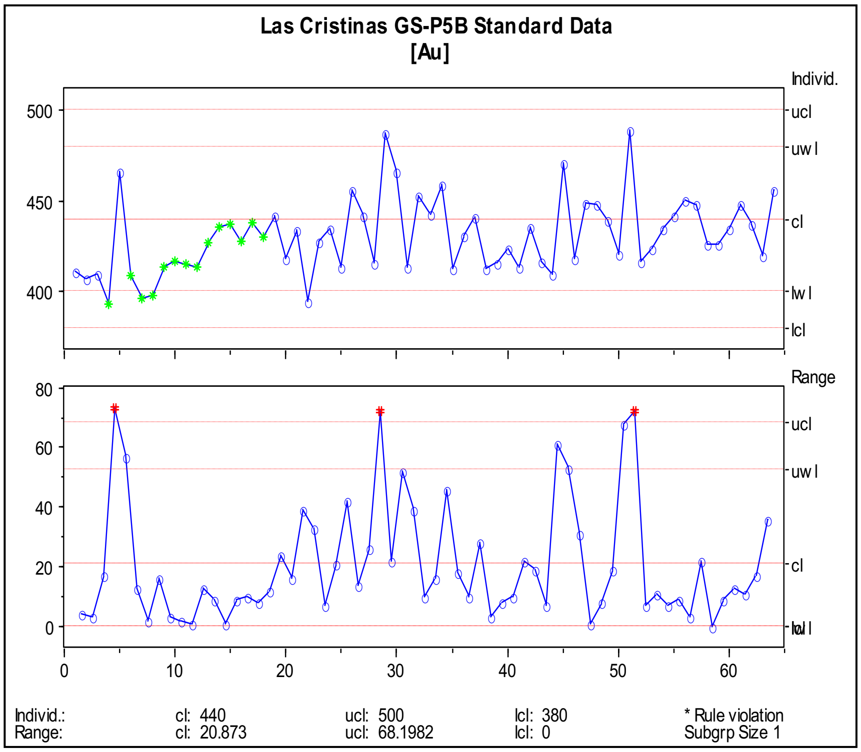
Small biases were detected on all standards used in the program. This is not uncommon as all of the major assay labs use a batch fluxing and fusion procedure for any given project. The optimal fusion procedure is determined for the matrix of the samples within the program. The standards may have a slightly different matrix than those of the samples, which cause small biases to be seen in the final result. It is usually a low negative bias that is seen as the fusion/fluxing process is not optimized for the standard matrix. In this program, four of the five standards employed showed a small negative bias (Table 14.12). All of the biases are well with the 95% confidence interval for the each standard.

Table 14.12 Biases for 2006/07 Crystallex Las Cristinas QA/QC Program Standards

Standard Name	Analysis Bias (g/t)	Recommended Value
GS-P5B	-0.01	0.44 ± 0.04 g/t
GS-1C	-0.01	0.99 ± 0.08 g/t
GS-1P5A	-0.01	1.37 ± 0.12 g/t
GS-1P5	-0.03	1.58 ± 0.16 g/t
GS-15	+0.03	15.31 ± 0.58 g/t

In addition to gold, each sample was analyzed by ICP-AES/*aqua regia* digestion for 38 other elements. There was no active monitoring in this program for any of these elements. The standards used in this QA/QC program have no recommended or certified values for any element other than gold. Since there have been no quality control measures implemented on any of the ICP elements, they should not be used in any ore reserve calculations. Final Shewhart and CuSum charts for gold are given in Figure 14.9 to Figure 14.13.

Figure 14.9 Control and Range Charts for Standard GS-P5B



Cumulative Sum Chart for Standard GS-P5B

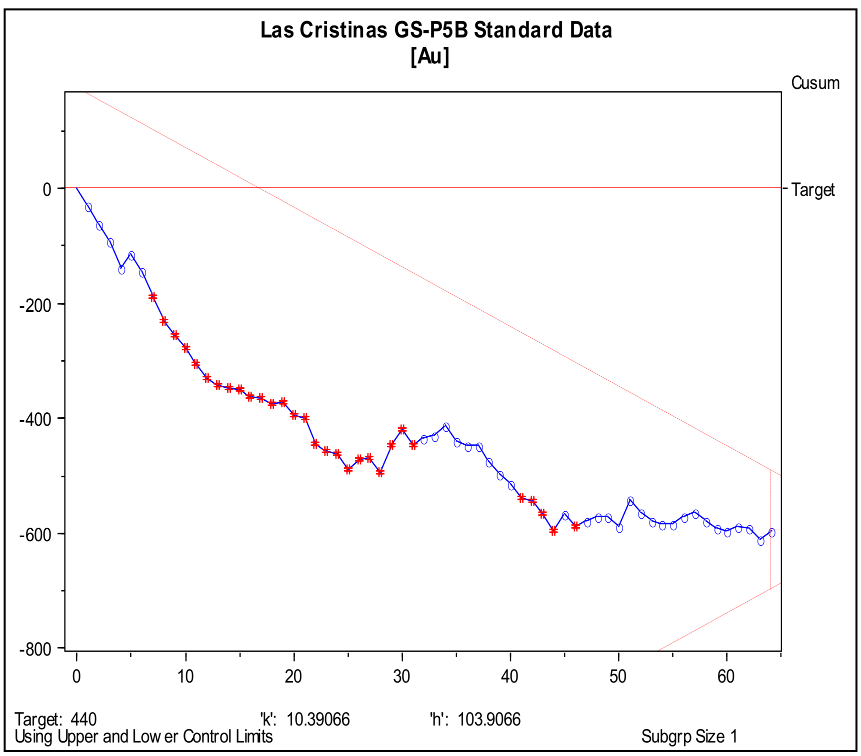
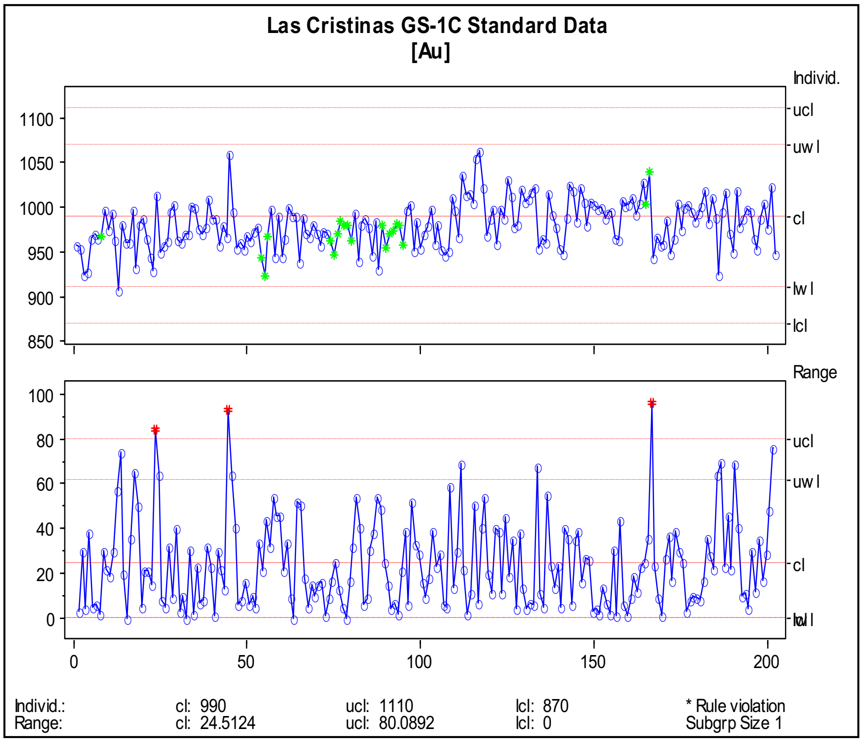


Figure 14.10 Control and Range Charts for Standard GS-1C



Cumulative Sum Chart for Standard GS-1C

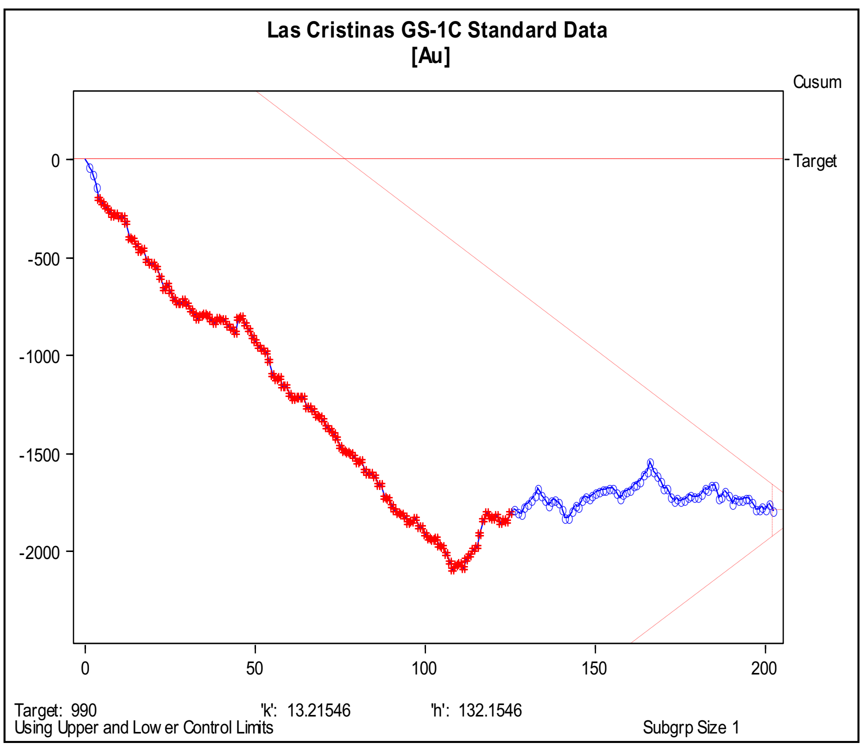
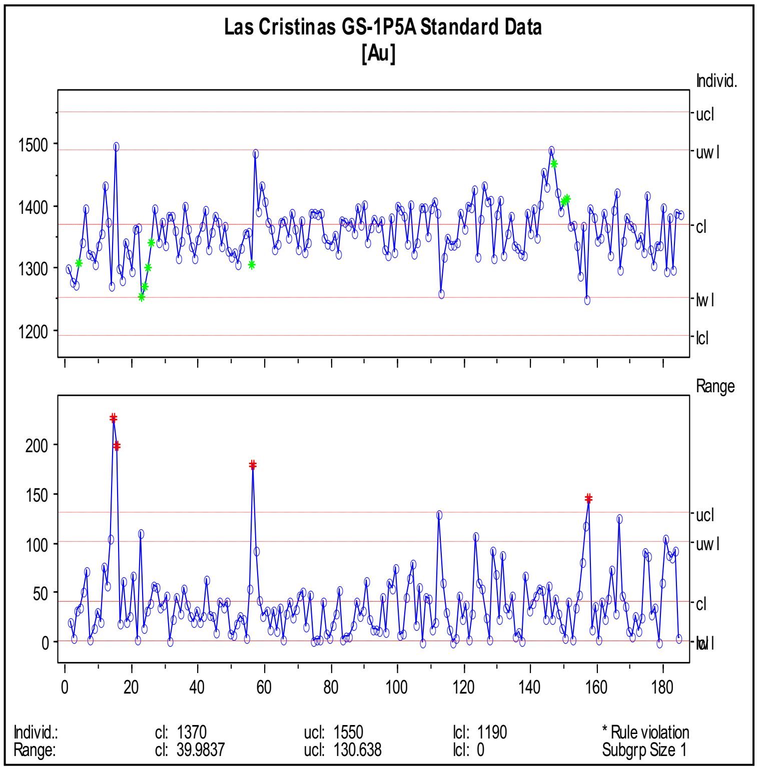


Figure 14.11 Control and Range Charts for Standard GS-1P5A



Cumulative Sum Chart for Standard GS-1P5A

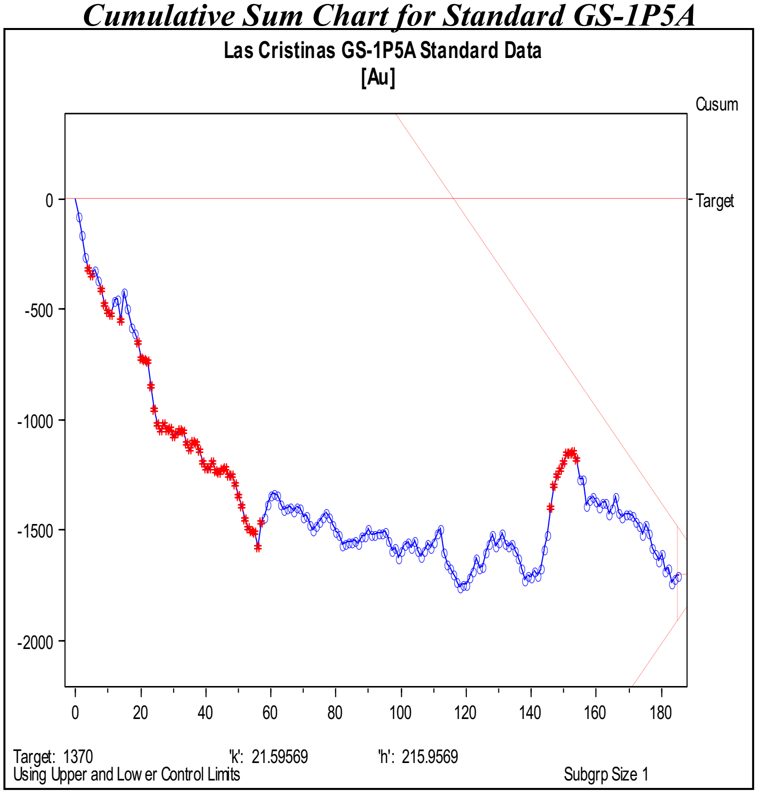
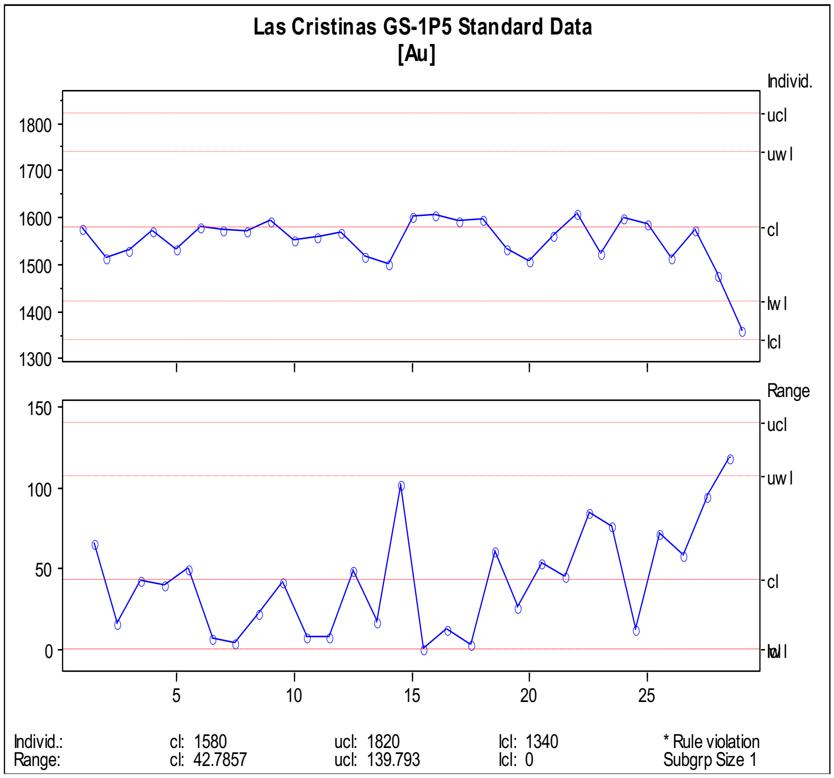


Figure 14.12 Control and Range Charts for Standard GS-IP5



Cumulative Sum Chart for Standard GS-1P5

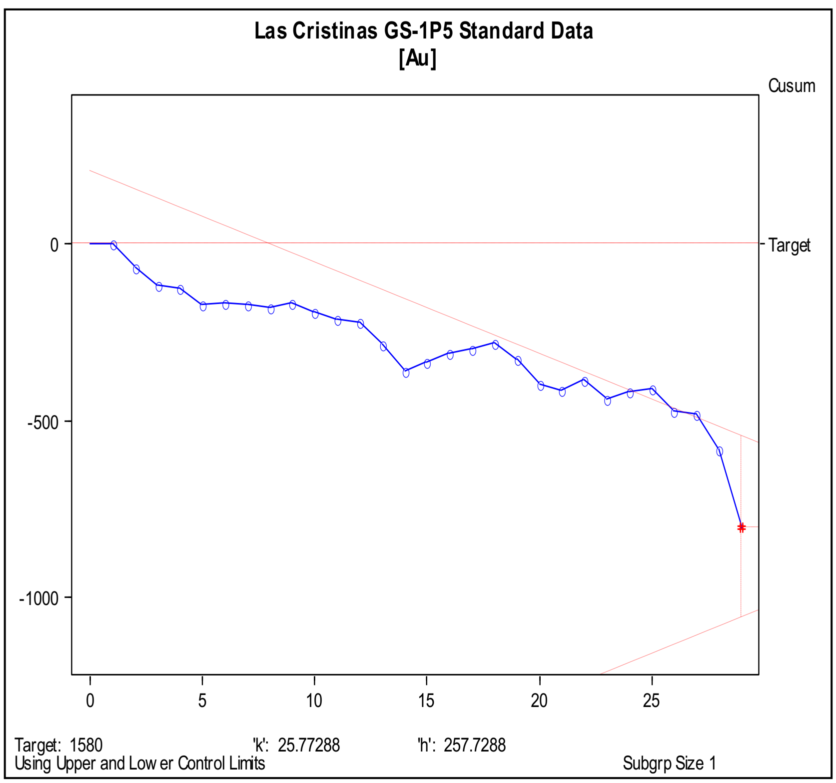
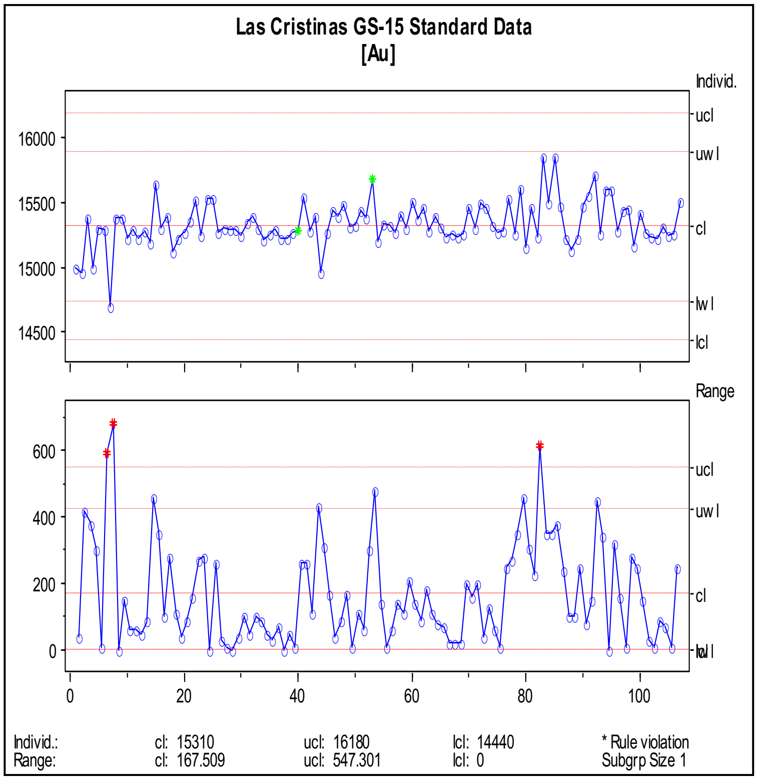
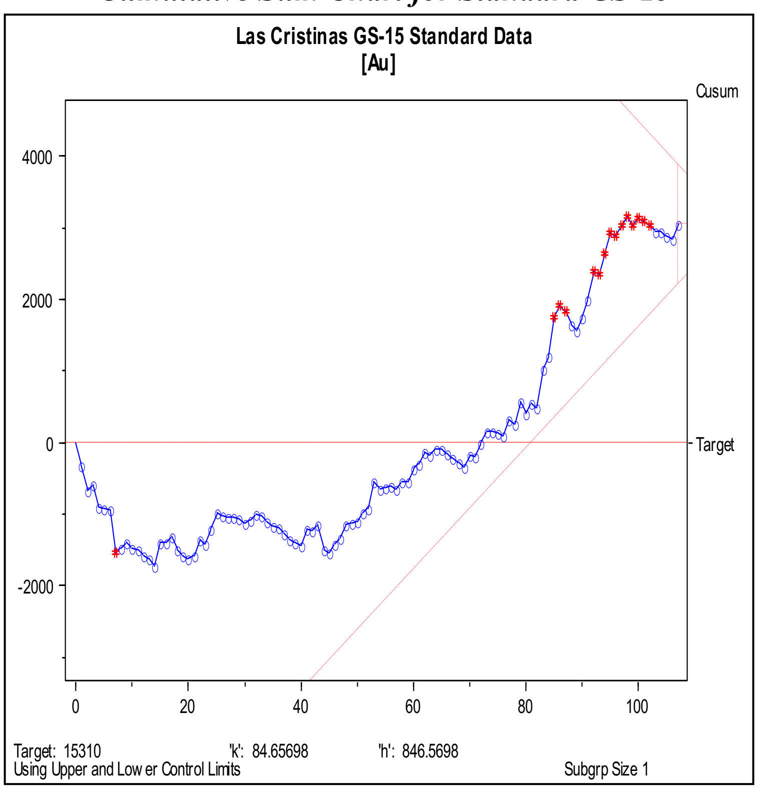


Figure 14.13 Control and Range Charts for Standard GS-15



Cumulative Sum Chart for Standard GS-15



Blank Monitoring

The blank material used in this program was collected from a diorite quarry located some 100km south of the property. Previous assays of the diorite, which is used for construction aggregate, showed that the rock is essentially barren of gold, and it was therefore considered to be useful as blank material. The failure level for the blank material was set at 100 ppb Au by the Crystallex geologists. This is high for testing contamination in a lab setting, but the uncertainty over the baseline levels in the material was taken into consideration.

There were numerous failures of the blank material starting right at the beginning of the program. After multiple analyses, it became apparent that some of the material used as a blank for this program is not completely barren. Several of the blank samples analyzed returned concentrations of gold over the allowable limit of 100 ppb. Since all of these blanks have been analyzed at least twice by the primary lab, it is believed that this gold actually exists in the blank material and is not contamination or analytical error. Several of the blank samples have been re-split from rejects and have returned a comparable result as the initial assay (Table 14.13). There were 436 blanks inserted into 2173 samples (Table 14.14). This gives an overall insertion rate of 3.58% or one standard for every 27.9 samples. Final Shewhart chart is given in Figure 14.14.

Table 14.13 Blank Failures/Corrections for 2006/07 Crystallex Las Cristinas QA/QC Program

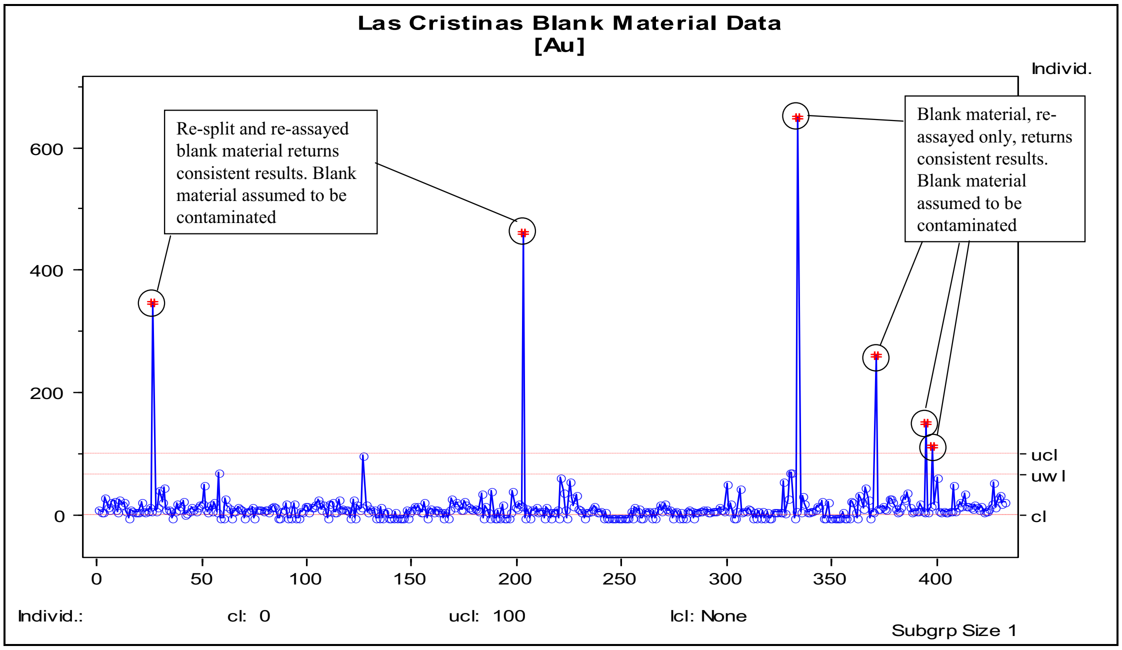
Sample ID	Hole ID	Original Analysis (ppb Au)	Additional Analyses (ppb Au)	
301107	K6MO1166	346	357	323
301567	K6MO1168	188	17	
301624	K6MO1168	421	55	
301717	K6MO1168	461	414	431
302099	K6MO1171	694	15	
304255	K6CO1187	183	70	
306557	K7MO1200	650	650	638
301006	K6MO1166	263	256	
307320	K6MO1170	2052	4	
307812	K6MO1178	112	28	
311825	K7MO1205	150	146	
313476	K7MO1204	260	60	68
302996	K6MO1180	281	112	121

(Red indicates continuing failure as explained in text above)

Table 14.14 Blank Data Summary for 2006/07 Crystallex Las Cristinas QA/QC Program

Standard Name	No. Of Determinations	No. of Failures	Failure Rate	Analysis Mean (ppb)	Standard Deviation	Recommended Value
Blank	436	13	2.98%	14.6	45.35	<100 ppb

Figure 14.14 Control Chart for Blank Material



14.9.5 External Data Verification

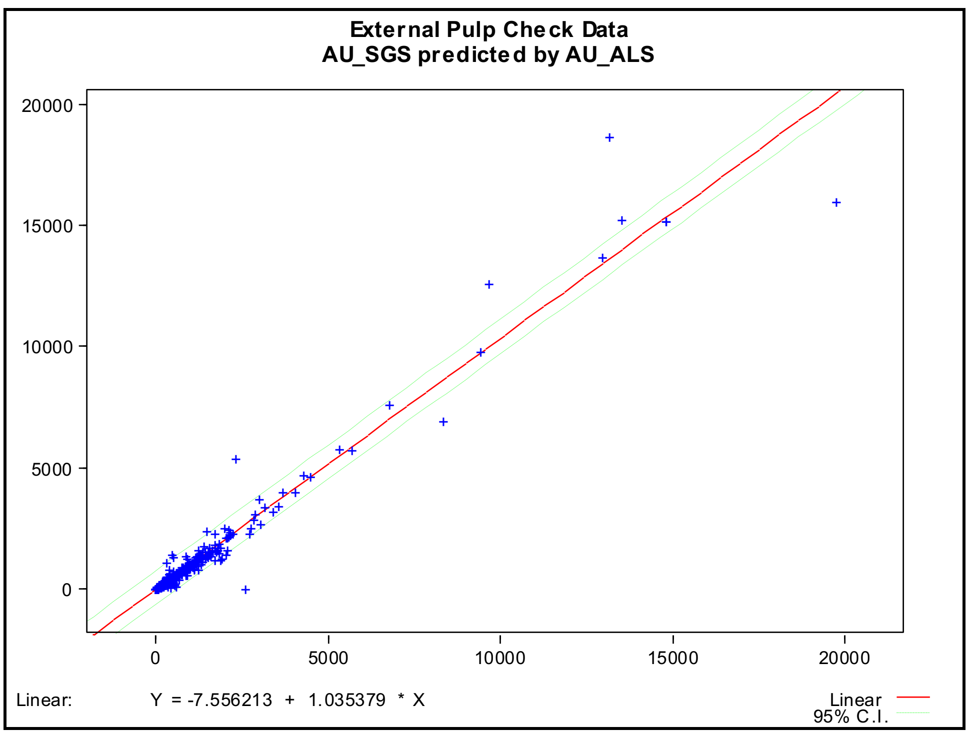
"Original Pulp" Assay (primary lab) vs. "Original Pulp" Assay (external lab)

Of 13,486 original pulps assayed by the primary lab (SGS-Lima), 673 were forwarded to the external lab (ALS Chemex-Lima) for check assaying. This represents a total of 5% or one in 20 samples. The regression plot (Figure 14.15) and statistical analysis (Table 14.15) are presented below.

Table 14.15 Statistical Analysis of External Duplicate Pulp Samples

Mean of primary lab data set	0.707 g Au/t
Standard error of primary lab data set	0.06710
Mean of external lab data set	0.694 g Au/t
Standard error of external lab data set	0.06502
Data items	673
Correlation coefficient	0.979071
Paired t-statistic, 95% C.L.	1.2145
t-critical, 95% C.L., 672 D.F.	1.9635

Figure 14.15 Regression Plot for External Pulp Duplicate Samples



Note: plot is in units of "ppb"

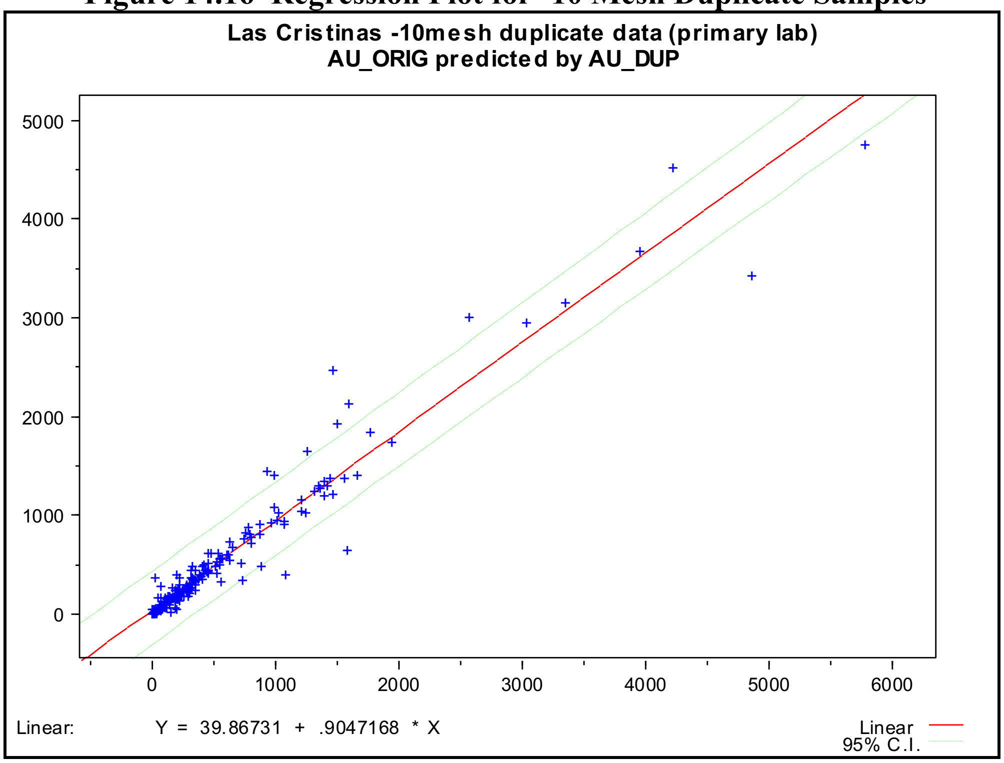
"Original Pulp" Assay (primary lab) vs. -10 Mesh Duplicate Assay (primary lab)

Out of 12,178 drill core samples assayed by the primary lab (SGS-Lima), 203 were accompanied by pulps, which are duplicates obtained by splitting the sample material while still at the -10 mesh stage of sample preparation. This represents a total of 1.66% or one in 60 drill core samples. The regression plot (Figure 14.16) and statistical analysis (Table 14.16) are presented below.

Table 14.16 Statistical Analysis of External Duplicate -10 Mesh Samples

Mean of primary lab data set	0.538 g Au/t
Standard error of primary lab data set	0.05444
Mean of -10 mesh dup. data set	0.540 g Au/t
Standard error of -10 mesh dup data set	0.05648
Data items	203
Correlation coefficient	0.968242
Paired t-statistic, 95% C.L.	0.0838
t-critical, 95% C.L., 202 D.F.	1.9718

Figure 14.16 Regression Plot for -10 Mesh Duplicate Samples



Note: plot is in units of "ppb"

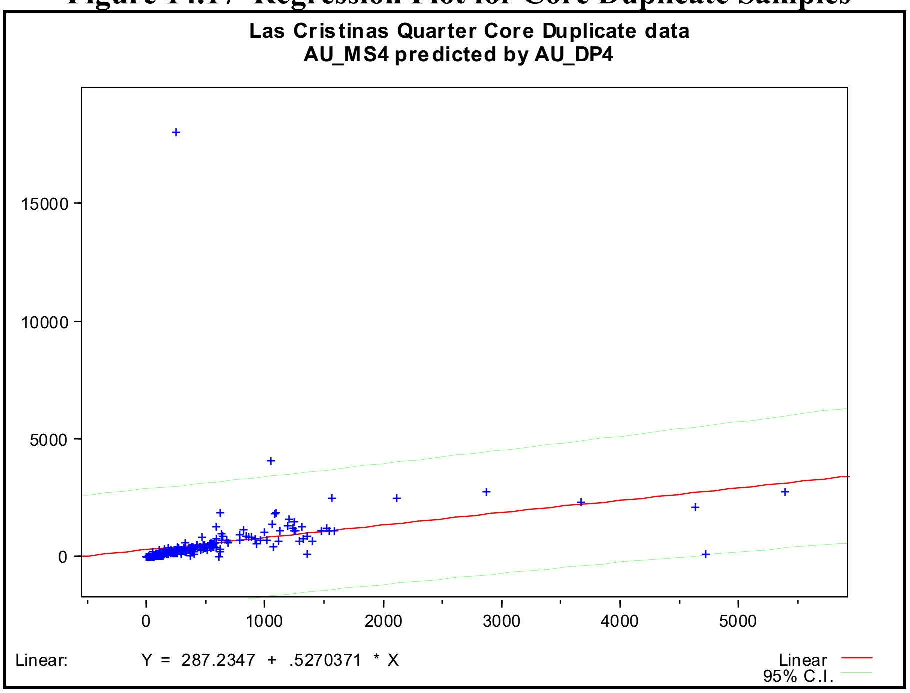
"Original Pulp" Assay (primary lab) vs. ¼ Core Duplicate Assay (primary lab)

A total of 213 out of 12,178 drill core samples assayed by the primary lab (SGS-Lima) were ¼ core samples. These samples were accompanied by pulps, which represented duplicates obtained by splitting the regular half-core samples in half at the core sampling stage and creating two ¼ core samples. This represents a total of 1.74% or one in 57 drill core samples. The regression plot (Figure 14.17) and statistical analysis (Table 14.17) are presented below.

Table 14.17 Statistical Analysis of External Core Duplicate Samples

Mean of primary ¼ core data set	0.556 g Au/t
Standard error of primary ¼ core data set	0.09178
Mean of duplicate ¼ core data set	0.511 g Au/t
Standard error of duplicate ¼ core data set	0.04942
Data items	213
Correlation coefficient	0.28377
Paired t-statistic, 95% C.L.	0.50207
t-critical, 95% C.L., 213 D.F.	1.9712

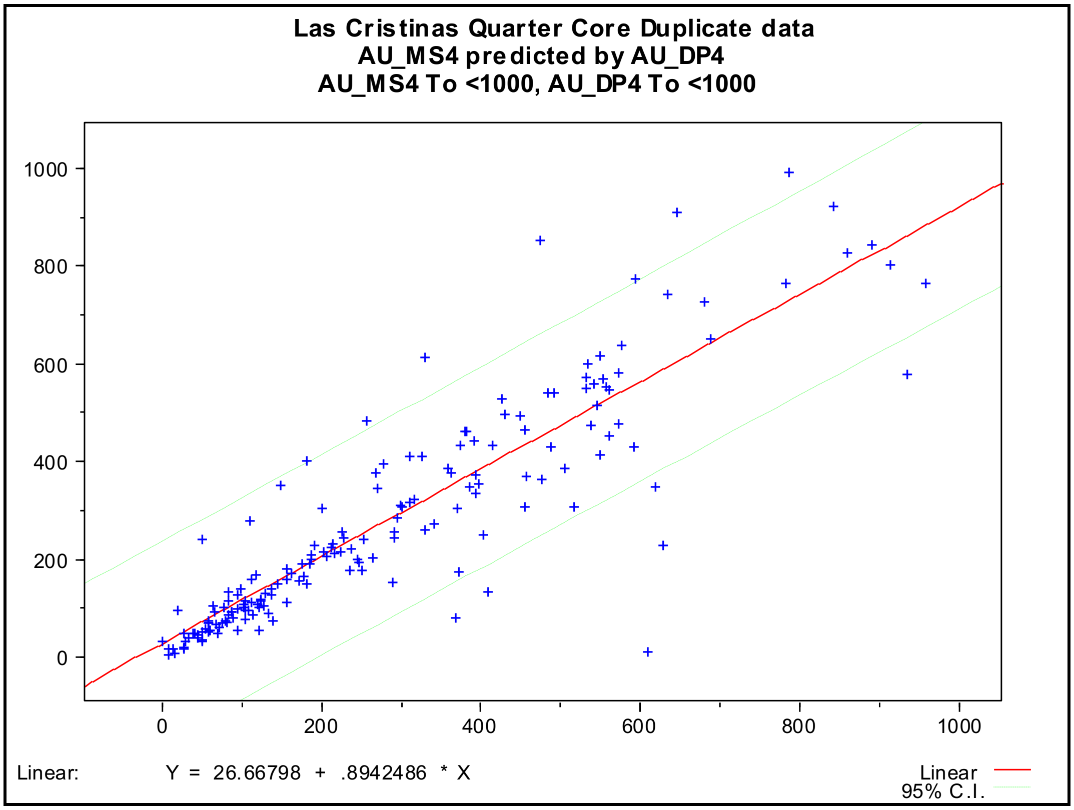
Figure 14.17 Regression Plot for Core Duplicate Samples



Note: plot is in units of "ppb"

As expected with ¼ core duplicates, the higher the grade of gold in the sample the less reproducible the assay value becomes. This is likely due to the nugget effect. Samples with high grades typically have a metallic gold component to them where the gold occurs within the sample as discrete "nuggets" instead of as an evenly distributed gold ore. This can be seen by constructing regression plots with the high-grade values filtered out. Figure 14.18 is plot for values with Au concentration <1 g Au/t. The correlation gets better as the upper limit of Au concentration is lowered.

Figure 14.18 Quarter-core Duplicate Data
(Au in ppb)



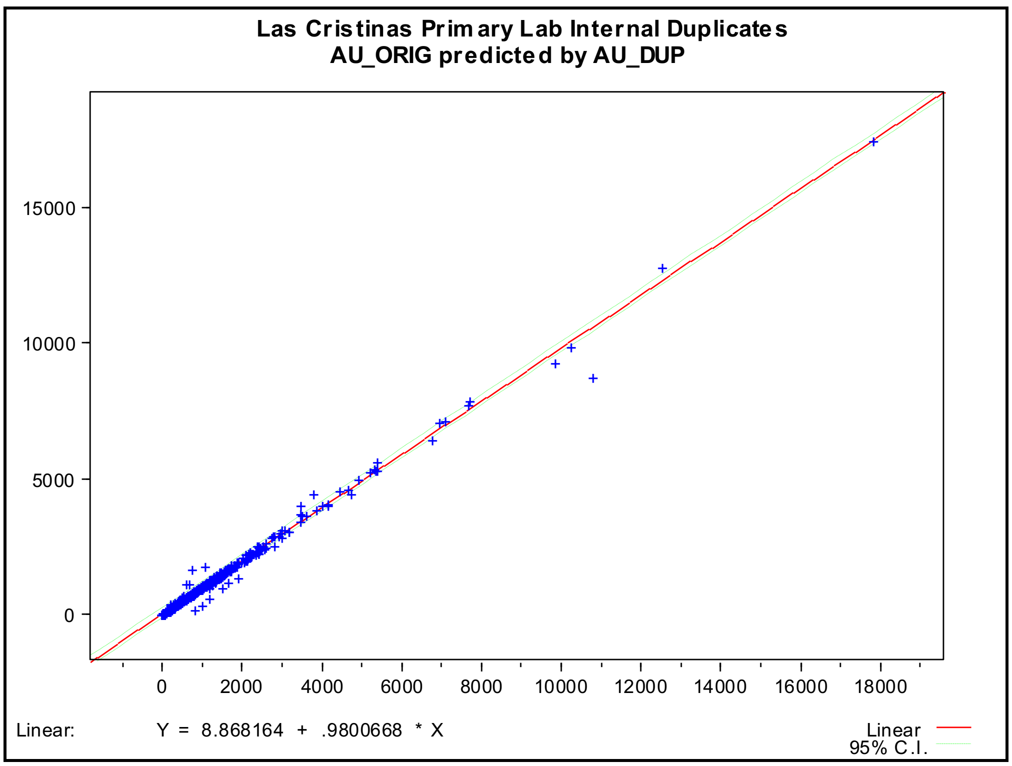
"Original Pulp" Assay (primary lab) vs. Internal Duplicate Assay (primary lab)

Out of 12,178 drill core samples assayed by the primary lab (SGS-Lima), 1,221 duplicate pulp samples were forwarded to the external lab (ALS Chemex-Lima) for check assaying. This represents a total of 10.02% or one in 10 drill core samples. The regression plot (Figure 14.19) and statistical analysis (Table 14.18) are presented below.

Table 14.18 Statistical Analysis of Internal Lab Duplicate Pulp Samples

Mean of primary lab data set	0.610 g Au/t
Standard error of primary lab data set	0.03245
Mean of internal duplicate data set	0.613 g Au/t
Standard error of internal duplicate data set	0.03299
Data items	1221
Correlation coefficient	0.99659
Paired t-statistic, 95% C.L.	1.2145
t-critical, 95% C.L., 1220 D.F.	1.9619

Figure 14.19 Regression Plot for Internal Lab Duplicate Pulp Samples



Note: plot is in units of "ppb"

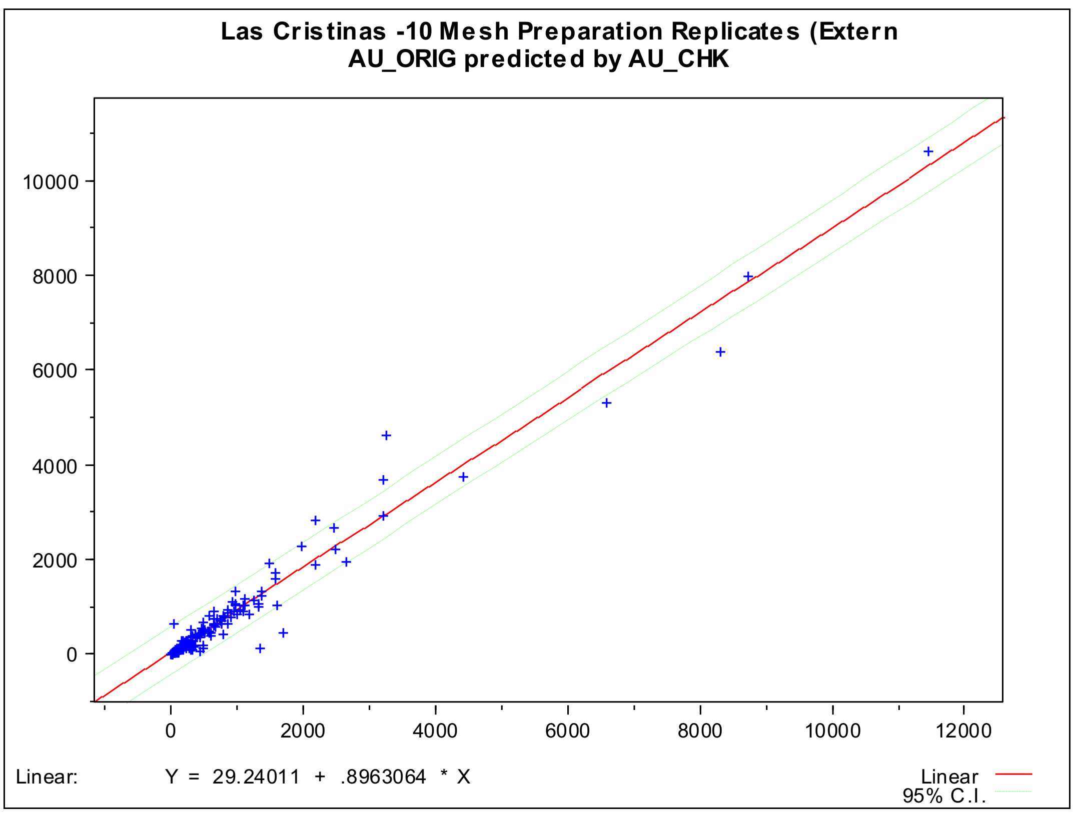
"Original Pulp" Assay (primary lab) vs. -10 mesh Duplicate Assay (external lab)

Out of 12,178 drill-core samples assayed by the primary lab (SGS-Lima), 181 -10 mesh duplicate samples were forwarded to the external lab (ALS Chemex-Lima) for check assaying. This represents a total of 1.5% or one in 66 drill core samples. The regression plot (Figure 14.20) and statistical analysis (Table 14.19) are presented below.

Table 14.19 Statistical Analysis of External Lab -10 Mesh Duplicate Samples

Mean of primary lab data set	0.6774 g Au/t
Standard error of primary lab data set	0.0096
Mean of external lab data set	0.7131 g Au/t
Standard error of external lab data set	0.0105
Data items	181
Correlation coefficient	0.980985
Paired t-statistic, 95% C.L.	0.31917
t-critical, 95% C.L., 180 D.F.	1.9732

Figure 14.20 Regression Plot for External Lab -10 Mesh Pulp Samples



Note: plot is in units of "ppb"

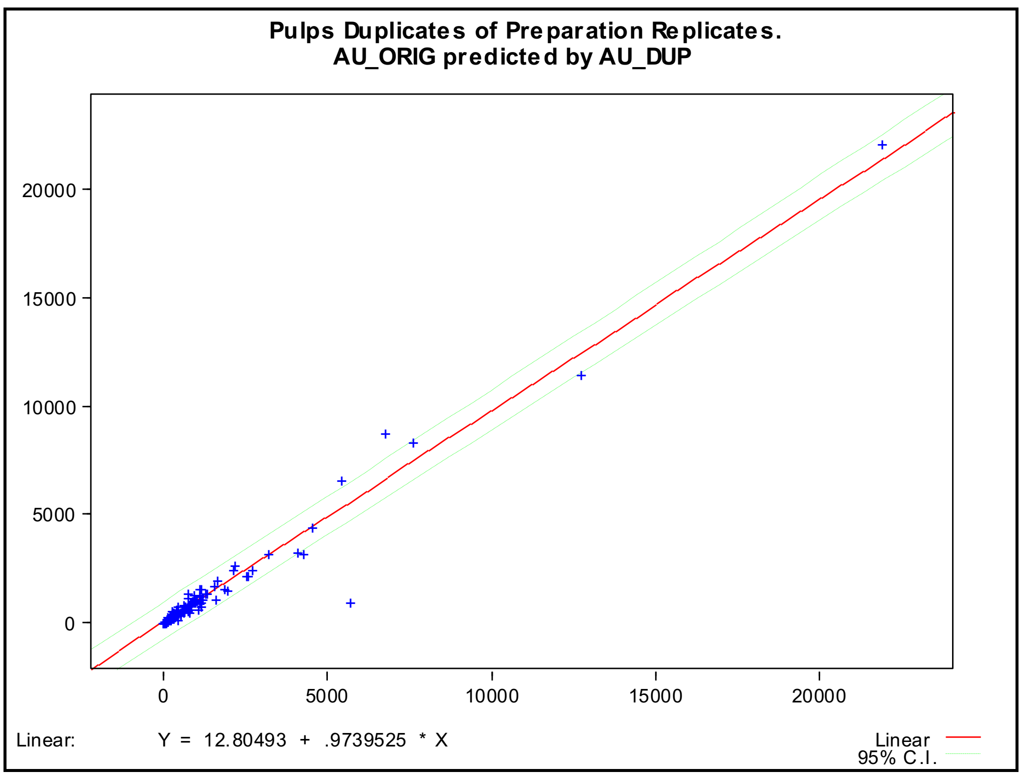
-10 mesh Duplicate Assay (external lab) vs. Pulp Duplicate Assay (external lab)

Out of 12,178 drill core samples assayed by the primary lab (SGS-Lima), 188 external lab -10 mesh samples were forwarded to the external lab (ALS Chemex-Lima) for check assaying. This represents a total of 1.54% or one in 65 drill core samples. The regression plot (Figure 14.21) and statistical analysis (Table 14.20) are presented below.

Table 14.20 Statistical Analysis of External Lab -10 Mesh Duplicate Samples vs. Pulp Duplicate

Mean of -10 mesh dup data set	0.840 g Au/t
Standard error of -10 mesh dup data set	0.1559
Mean of pulp duplicate data set	0.849 g Au/t
Standard error of pulp duplicate data set	0.1566
Data items	188
Correlation coefficient	0.978512
Paired t-statistic, 95% C.L.	0.28678
t-critical, 95% C.L., 187 D.F.	

Figure 14.21 Regression Plot of External Lab -10 Mesh Duplicate Samples vs. Pulp Duplicate



Note: plot is in units of "ppb"

14.9.6 Summary and Conclusions

Crystallex's 2006-2007 Las Cristinas drill program was subject to quality control measures that have ensured that the resulting data are precise and accurate. The program used a combination of standard, blank, and duplicate analyses to achieve this goal.

Primary quality control was achieved through the use of certified reference standards embedded in the sample stream and blind to the laboratory. Through the use of Shewhart and CuSum charts, NAC was able to correct any deficiencies in the data on a continuing basis.

The program identified four instances where the analytical data for the certified standards were of an unacceptable quality and 13 instances where the analytical data for the blank material were of an unacceptable quality. This triggered the re-assay of 645 of the drill core samples in order to correct the failures. All failures that occurred during this phase of the quality control process were corrected to NAC's satisfaction.

Data verification was achieved by use of duplicate analysis by both the primary and an external check laboratory. In all instances, the comparisons of means of the duplicate and original datasets agree at the 95% confidence level.

All duplicate dataset pairs also show good correlation with each other, with the exception of the ¼ core duplicates with grades above 1 g Au/t.

NAC believes that Crystallex has a dataset from this drill program that they can depend on to advance their objectives at Las Cristinas.

14.10 Grade versus Core Recovery Comparison

As grade bias can be introduced into samples while drilling core in rock of variable hardness and because there was a suggestion of such an effect in Placer's work, MDA evaluated the relationship between metal grades and core recovery. A bias was discovered in the saprolite gold data, which was found to be most prevalent in low-grade samples. This bias does not exist in the bedrock, which makes up the majority of the resource and reserve. The bias should not materially affect the global estimated gold and silver grades; however within the saprolite in areas where core recovery is low, grades could be lower than predicted. A summary of the saprolite data at different grade cutoffs is shown in Table 14.21. The number of saprolite samples with recoveries below 90% represents just over 40% of the total saprolite samples in the database, for both cutoffs in the table.

Table 14.21 Gold Grade vs. Core Recovery in Saprolite

Core Recovery	> 0.0 g Au/t Avg Grade g Au/t	> 0.3 g Au/t Avg Grade g Au/t
< 90%	0.89	1.71
> 90%	0.72	1.56
Difference	24%	10%

In bedrock, the copper grade is 3% lower in lower-recovery (<90%) samples, which is not considered significant. However, in the combined saprolite and saprock, copper grades range from 5% to 9% higher for low-recovery samples, which amounts to roughly half the population of saprolite samples. This could result in overstating the copper grade by up to 10% in the saprolite. This is not significant for the oxide saprolite, but could be significant for the mixed and sulfide saprolite. Figure 14.22 and Figure 14.23 illustrate these relationships graphically.

The decreased confidence in the lower-core-recovery samples was considered when classifying material into Measured, Indicated and Inferred resource categories. Lower core-recovery values estimated into the blocks were assigned a lower confidence rating by modifying the distance used for classification.

Figure 14.22 Box and Whisker Plot for Gold Grade versus Core Recovery

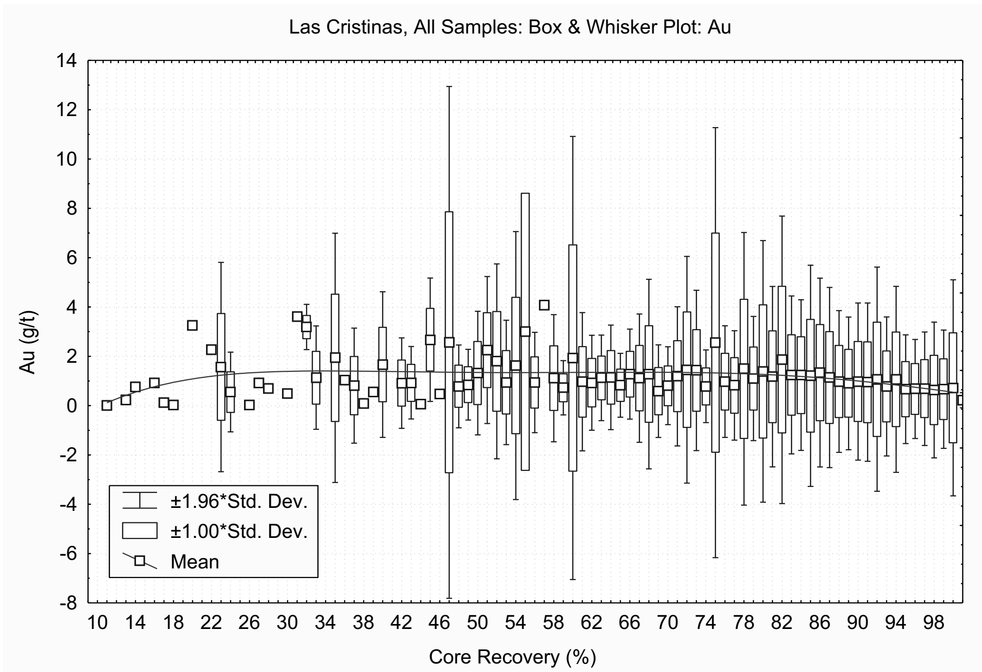
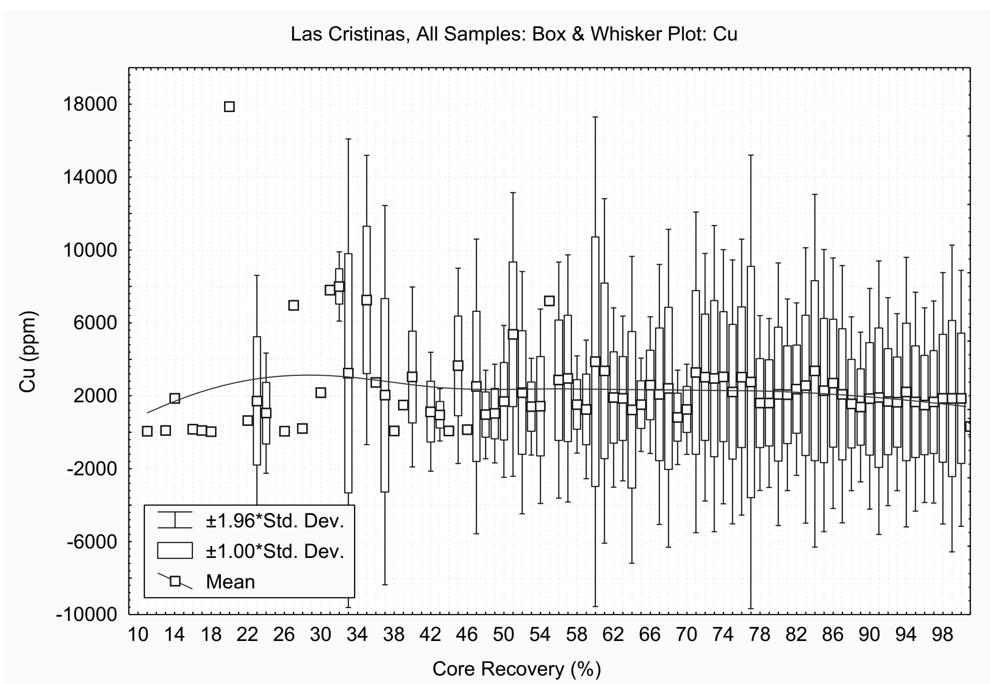


Figure 14.23 Box and Whisker Plot for Copper Grade versus Core Recovery



14.11 Miscellaneous Data Verification and Sampling Studies

Early in the project history, Ristorcelli (2003) reported that the Crystallex verification drilling showed a potential bias, although it was passed on as not material compared to the total amount of drilling done by Placer. Repeating the statement from the 2003 Las Cristinas Technical Report: "*After analysis of the 2003 drill program, MDA believes that the Las Cristinas database can be used for feasibility-level study and resource estimation. Having said this, all future work must be cognizant of the underlying difference in grades between Placer data and the Crystallex verification drilling and the difference must be explained. It cannot be stated which is the more accurate at this time but the data remains sufficiently accurate for further use. Negligible contamination during sample preparation may have occurred during sample preparation of the Crystallex samples. The larger concern is the high variance noted in check assays, which should not affect the global metal estimate but could affect local estimates. This concern can be mitigated by completing a heterogeneity study of gold in the rock.*"

As a consequence of the above statement, Crystallex contracted Mr. Francis Pitard to perform a heterogeneity test to 1) quantify the effect of sample mass on estimated sample grades, which could clarify substantial differences observed between Crystallex sampling and Placer sampling, 2) assess the adequacy of samples based on the material heterogeneity of the deposit, and 3) recommend a sampling protocol. From this, Pitard (2005) concluded that:

> *"When comparing composited grades from 30-g conventional fire assays with average 12859-g total assays, the following observations can be made:*
>
> - *Between 0.40 and 1.10 g/t, original assays can be underestimated by about 25%.*
> - *Between 1.10 g/t and 2.3 g/t, original assays can be underestimated by about 7%.*
> - *Above 2.3 g/t, original assays can be overestimated by about 15%.*
> - *Overall, large 12859-g samples show an average increase of the gold content about 7.7%.*
>
> *However, this test was performed with only 49 samples* [derived from the 266 original individual samples]*, while I originally requested 50 to 100 samples: Biases are real, but they lack accuracy."*

Pitard recommended, *"Do not focus too much on the grade increase. However, you should most certainly focus your attention on the possible increase of the ore reserves. The difference can be quite potent for the project"* and went on to report:

> ***"The In Situ Nugget Effect***
>
> *Results from the Heterogeneity Test help to roughly quantify the effect of diamond drilling diameter on the evaluation of the gold resources. Results are as follows:*
>
> - *A ½ PQ 2m core is 9 times too small to include a gold cluster where it should for a 0.5 g/t grade, 4 times too small for 1.1 g/t, and 2 times too small for 2.5 g/t.*
> - *A ½ HQ 2m core is 18 times too small to include a gold cluster where it should for a 0.5 g/t grade, 8 times too small for 1.1 g/t, and 3 times too small for 2.5 g/t.*
> - *A ½ NQ 2m core is 25 times too small to include a gold cluster where it should for a 0.5 g/t grade, 11 times too small for 1.1 g/t, and 5 times too small for 2.5 g/t.*
> - *These are only approximate numbers and you should look at them with circumspection. It is the general message that counts: Placer Dome had a much better chance to include gold clusters with the systematic use of a larger diameter.*
> - *However, it is very clear the diameter used by Placer Dome was already too small. Furthermore, when you drill, the smaller the diameter the less the recovery, and*

especially for the gold contained in crumbling clusters of sulfides/quartz which may occur at Las Cristinas. So, we are really looking at the tip of the iceberg with the present Heterogeneity Test: It is good news for the Crystallex management.

- *Unfortunately, nobody can make miracles by looking at only 49 samples, therefore it would be ludicrous to make any attempt at quantifying what I called "good news."*

14.12 Data and Sample Verification Conclusions

The original objective of the 12 twin-hole program in 2003 was to have independent verification of the Las Cristinas mineralization, which the program did accomplish. Additional checks on Placer's sample data that included pulps, coarse rejects, and quarter core which were sampled and reassayed further verified the sample grades reported by Placer. Throughout the exploration conducted by Crystallex, Crystallex has maintained a high degree of technical quality, responding and correcting those issues that were deemed weak or improper. Crystallex has also allowed independent consultants free access to the data and samples, such as Mr. Maynard, an associate of MDA, who maintained his own sample custody and Mr. Trevor Nicolson, who was involved with sampling in the 2006-2007 drill campaign.

Issues of variability and biased-low samples were addressed in a heterogeneity study. The high variability must be addressed prior to and during production to avoid massive misclassifications of ore and waste rock during production. This material heterogeneity or grade variability has negatively impacted the ability to make any resource estimate precisely reflect local estimated grades. Importantly, the style of mineralization and its natural variability are the likely causes of the underlying difference in grades between Placer data and Crystallex data, where Crystallex samples are both smaller and slightly lower grade than Placer's grade. It has been demonstrated that this is likely due to sample size. Taking this further, it is possible that the entire sample database might be understating the mean grade of the deposit. While this appears possible and even likely, there is no possible way to quantify this potential underreporting of grade and no way to incorporate this into the database or resource model.

15.0 ADJACENT PROPERTIES

The value of Las Cristinas is not dependent on any adjacent properties. It is a stand-alone property based on its own merits. There are numerous artisanal mining workings scattered in the region, and recent exploration by Gold Reserve Inc. ("GRI") of Spokane, Washington, has resulted in the definition of a reserve of gold and copper in the Brisas del Cuyuni ("Las Brisas") property located immediately to the south of Las Cristinas. The following selected paragraphs describing the Las Brisas property are taken from GRI's website (http://www.goldreserveinc.com/properties.asp):

> *Brisas is a large resource of low-grade disseminated gold and copper mineralization of Precambrian greenstone type. The mineralization is hosted in a fine-grained volcanic rock that was deposited in a water-filled basin as sediment. The copper and gold mineralization was introduced into the rocks during deposition of the host and subsequently modified by metamorphism and tropical weathering.*
>
> ***Surface assessment***
> *Surface exposures of weathered rock are limited to the walls of small flooded pits, rare weathered outcrops and areas cleared by past surface mining activity. Intense weathering produced saprolites to a depth of 60 meters making drilling the primary tool used to define subsurface geology. The rocks encountered in drilling include oxide saprolite, sulfide saprolite and the hard or unweathered bedrock. Andesite tuff units defined in the hardrock include a series of vitric tuffs, lapilli tuffs and crystal tuffs. Based on megascopic and microscopic features, the andesite tuffs are interpreted to have been deposited in shallow water. All the rock units have been metamorphosed to greenschist facies. The andesite tuffs have been intruded by a series of basic dikes and sills and a large monzonite stock. The stock is confined to the east edge of the property.*
>
> ***Geologic structure of the property***
> *Geologic correlation has identified a stratigraphic sequence from top to bottom of: 1) a thick unit of vitric tuff; 2) a two hundred meter thick unit consisting of mixed lapilli tuffs, crystal tuffs and vitric tuffs characterized by rapid vertical and lateral textural changes, 3) a series of thicker, more consistent crystal tuffs, vitric tuffs and lapilli tuffs. The structure of the property is very simple. The tuffs dip shallowly to the west and strike north-south. Very little faulting has been identified and those faults identified are the sites of the basic dikes. Movement along these faults is minimal and often there appears to be no movement at all.*
>
> *Ore grade mineralization is stratabound and strataform within the 200-meter thick unit characterized by rapid vertical and horizontal changes. Mineralization follows this unit down from the surface and is open at depth. In addition, the deposit is open to the southwest. Three basic types of mineralization exist. Oxide mineralization, restricted to the oxide saprolites, is gold only and makes up about four percent of the total mineralization. Massive sulfide mineralization, as both laminated sulfides and quartz-tourmaline-sulfide breccia pipes, has been identified on the surface and from drilling.*
>
> *The Blue Whale is an example of this type of mineralization. It contains relatively high-grade copper and gold mineralization. The Blue Whale makes up only a small percentage of the total deposit. The majority of the mineralization is disseminated sulfide mineralization in discrete pyrite grains within the tuffs and as narrow restricted quartz-carbonate-pyrite veinlets. These veinlets often contain visible gold. The disseminated mineralization can be further subdivided into a copper-gold-pyrite mineralization and a pyrite-gold mineralization. The sulfide saprolite and the underlying weathered rock unit are unoxidized and contain typical disseminated sulfide mineralization. The copper-gold-pyrite mineralization dominates*

the northern portion of the deposit while the gold-pyrite mineralization dominates the southern portion of the orebody. Alteration within the deposit includes massive carbonate often associated with epidote and chlorite. The character of the mineralization and the alteration is consistent with typical gold-in-greenstone type deposits found elsewhere in the world's greenstone-granite terrenes.

Mineral Resource and Reserve Estimates

Pincock, Allen & Holt ("PAH"), of Denver, Colorado, reviewed the methods and procedures utilized by the Company 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…

Mineral Resource Estimate

Based on work completed by PAH for the Brisas bankable feasibility study, using an off-site smelter process for treating copper concentrates, the Brisas Project is estimated to contain a measured and indicated mineral resource of 12.1 million ounces of gold and approximately 1.6 billion pounds of copper (based on 0.4 gram per tonne gold equivalent cut-off). The October 2006 estimated measured and indicated mineral resource utilizing an off-site smelter process is summarized in the following table:

(kt=1,000 tonnes)	Measured			Indicated			Measured and Indicated		
Au Eg		Au	Cu		Au	Cu		Au	Cu
Cut-off Grade	kt	(gpt)	(%)	kt	(gpt)	(%)	kt	(gpt)	(%)
0.40	250,565	0.686	0.119	323,371	0.637	0.130	573,936	0.658	0.125
(In Millions)	Measured			Indicated			Measured and Indicated		
Au Eg		Au	Cu		Au	Cu		Au	Cu
Cut-off Grade		oz.	lb.		oz.	lb.		oz.	lb.
0.40	-	5.527	657	-	6.621	927	-	12.148	1,584

The inferred mineral resource, based on an off-site smelter process (0.4 gram per tonne gold equivalent cut-off), is estimated at 115 million tonnes containing 0.59 grams gold per tonne and 0.12 percent copper, or 2.18 million ounces of gold and 294 million pounds of copper.

[Some text eliminated for brevity.]

The mineral resource and gold equivalent (AuEq) cut-off is based on $400 per gold ounce and $1.15 per pound copper. The qualified persons involved in the property evaluation and resource and reserve estimates were Susan Poos, P.E. of Marston & Marston, Inc., Richard Addison, P.E., and Rick Lambert, P.E., of PAH.

Mineral Reserve Estimate

Based on the NI 43-101 Technical Report completed by PAH during October 2006, using an off-site smelter process for treating copper concentrates, the Brisas Project is estimated to contain a proven and probable mineral reserve of approximately 10.4 million ounces of gold and 1.3 billion pounds of copper. The October 2006 estimated proven and probable mineral reserve utilizing traditional flotation and off-site smelter processes is summarized in the following table:

	Reserve tonnes	Au Grade	Cu Grade	Au Ounces	Cu Pounds	Strip
Class	(millions)	(gpt)	(%)	(thousands)	(millions)	Ratio
Proven	226.3	0.69	0.12	5,032	601	
Probable	258.4	0.64	0.13	5,357	737	
Total	484.6	0.67	0.13	10,389	1,338	1.96

The mineral reserve (within a pit design) has been estimated in accordance with the SME Reporting Guide and CIMM Standards as adopted by CSA National Instrument 43 - 101, which we believe is substantially the same as SEC Industry Guide 7. The mineral reserve was estimated using metal prices of U.S. $400 per ounce gold and U.S. $1.15 per pound copper with an internal revenue cut-off of $3.04 per tonne. The qualified persons involved in the property evaluation and resource and reserve estimates were Susan Poos, P.E., of Marston & Marston, Inc., Richard Addison, P.E. and Rick Lambert, P.E. of PAH.

16.0 MINERAL PROCESSING AND METALLURGICAL TESTING

16.1 Introduction

This section was written by J.R. Goode and Associates ("Goode"); it had been reviewed by SNC-Lavalin in 2005 and has been edited for reporting consistency for this report, but the opinions expressed herein are those of Goode.

The Las Cristinas deposit comprises oxidized saprolite ("SAPO") over sulfide- and copper-enriched saprolite ("SAPS") lying over bedrock; SAPS for most purposes, as well as metallurgy, includes mixed saprolite ("SAPM"). A thin transitional zone of saprock ("SAPK") lies between saprolite and the underlying harder bedrock layers. Leaching has removed calcite from the uppermost bedrock layer forming what is termed the carbonate-leached bedrock ("CLB"). The lowermost bedrock layer is carbonate-stable bedrock ("CSB"). Gold occurs in all layers and at similar grades. Copper is absent from the SAPO, enriched in the SAPS, and present at low levels in the CLB and CSB. The sections on geology (Sections 7 and 9) should be referenced for more details.

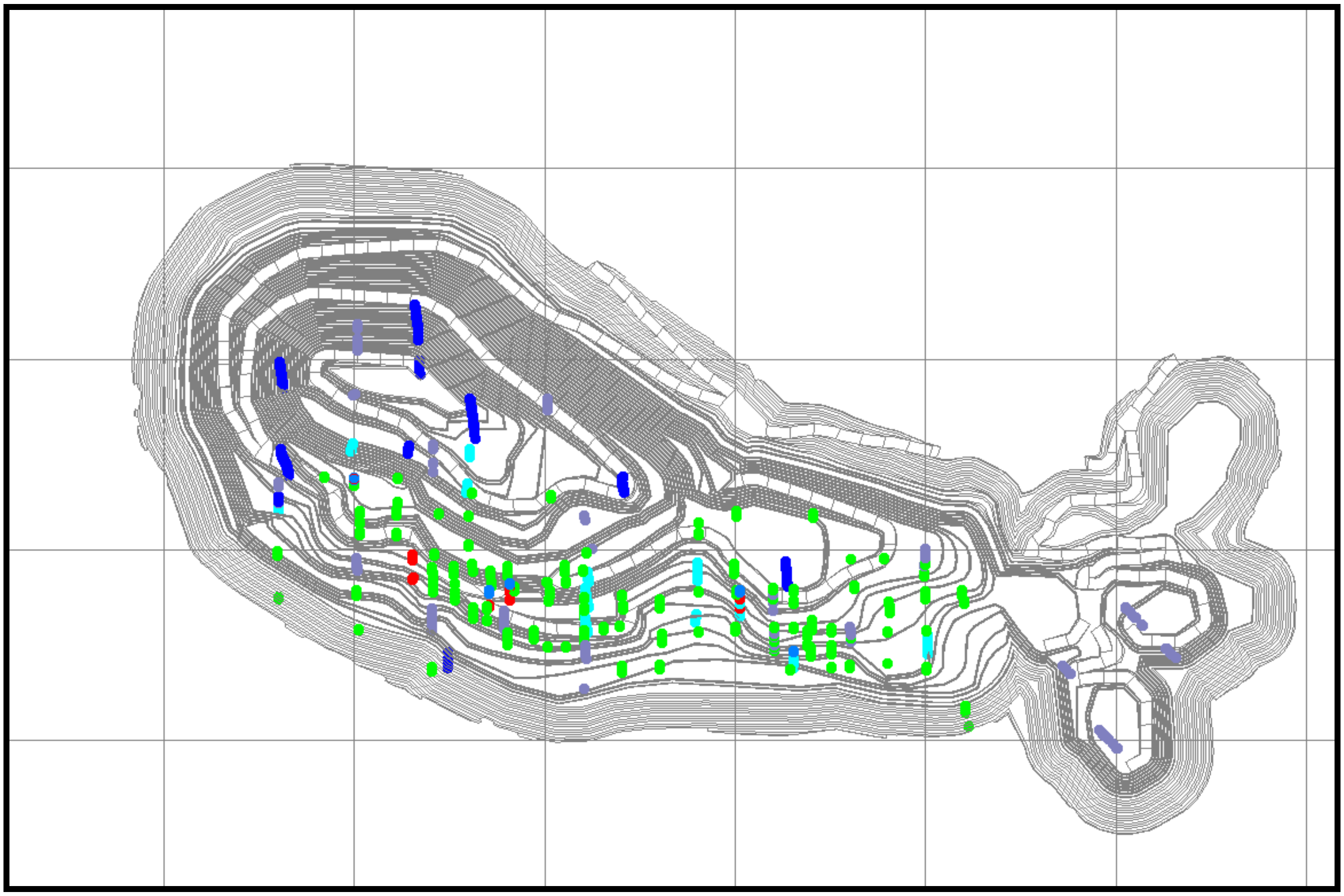
The Las Cristinas property was extensively explored and tested by Placer after the company acquired an interest in the property in the early 1990s. Much of the testwork was performed at the Metallurgical Research Centre in Vancouver which issued 18 reports on the metallurgy of the project between September 1992 and June 1998. Bench testwork covered most aspects of the metallurgy of the deposit. . The location of Placer's metallurgical samples is presented in Figure 16.1, Figure 16.2, and Figure 16.3.

In early 1994, Placer concluded (Placer Dome Inc., Metallurgical Research Centre, 1994) that "*test results so far support a simple gravity concentration/cyanidation circuit for gold recovery from the Las Cristinas ores. Anticipated gold recoveries are:*

Oxidized Saprolite	*92%*
Sulphide Saprolite	*94%*
Carbonate Leached Bedrock	*93%*
Carbonate Stable Bedrock	*89%*"

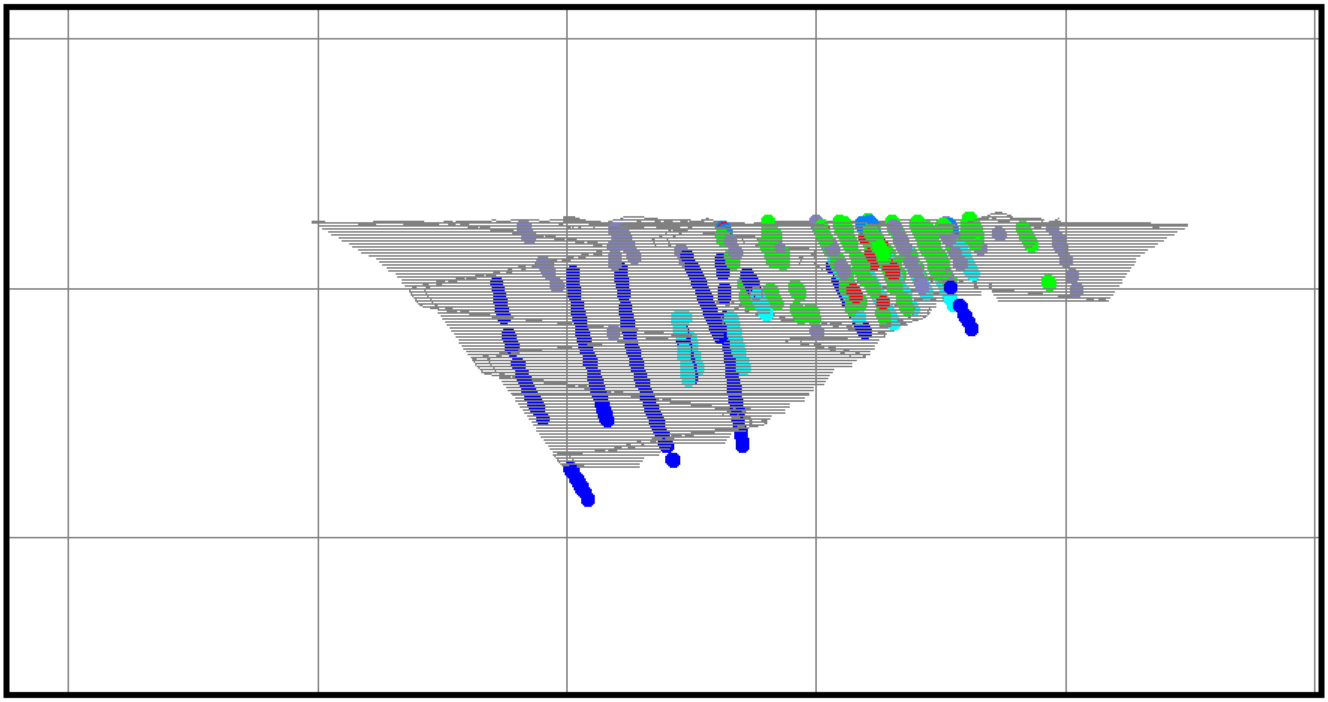
However, Placer decided to additionally recover copper from the deposit and developed a gravity-flotation circuit that would produce a copper-gold flotation concentrate for custom processing in an off-shore smelter. To give adequate overall gold recovery, it was necessary to cyanide leach certain flotation products.

Figure 16.1 Plan Map Showing Metallurgical Samples



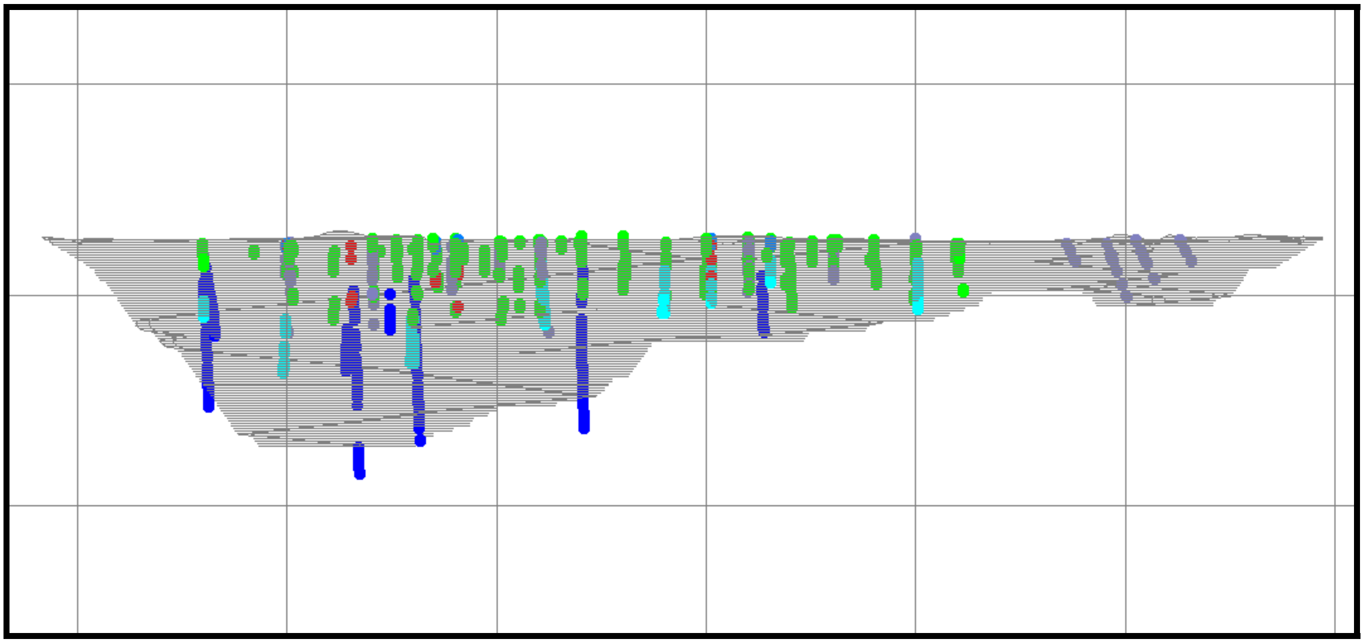
(Placer metallurgical samples: green; acid rock drainage samples: red; Crystallex 2003 metallurgical samples: dark blue; Crystallex 2004 metallurgical samples: cyan; Crystallex 2005 metallurgical samples: medium blue; Crystallex 2006 metallurgical samples: purple-blue)

Figure 16.2 Cross Section Showing Metallurgical Samples – Looking North



(Placer metallurgical samples: green; acid rock drainage samples: red; Crystallex 2003 metallurgical samples: dark blue; Crystallex 2004 metallurgical samples: cyan; Crystallex 2005 metallurgical samples: medium blue; Crystallex 2006 metallurgical samples: purple-blue)

Figure 16.3 Cross Section Showing Metallurgical Samples – Looking West



(Placer metallurgical samples: green; acid rock drainage samples: red; Crystallex 2003 metallurgical samples: dark blue; Crystallex 2004 metallurgical samples: cyan; Crystallex 2005 metallurgical samples: medium blue; Crystallex 2006 metallurgical samples: purple-blue)

The flotation flowsheet was demonstrated in several pilot plant runs operated at solids flowrates of up to 150 kg/h. As Placer continued its metallurgical development work, the flowsheet became more complex. In particular, an acidification-volatilization-recovery ("AVR") plant was added to the flowsheet because cyanide consumption in an earlier version of the flotation flowsheet appeared to be excessive. The AVR process was bench tested and was included in Placer's 1996 Feasibility Study (Placer Dome Technical Services Ltd., 1996c), although by February 1998 Placer had achieved process improvements and decided that the $23 million capital cost of the AVR plant was not justified (Placer Dome Technical Services Ltd., 1998c).

Most of the Placer program of studies and testwork was done internally but some work was performed by contract groups. For example, Laplante at McGill University examined gravity concentration (Laplante, 2003). Pocock Industrial studied thickening and filtration of flotation products (Pocock Industrial Inc., 1995). MacPherson examined grinding (A.R. MacPherson Consultants Ltd., 1994), and other groups studied mineralogy. The Placer metallurgical work is summarized in the MDA study of 2003 (Mine Development Associates and Kappes, Cassiday and Associates, 2003) and is not summarized in total herein.

In early 2003, Crystallex, SNC-Lavalin, and Goode reviewed available metallurgical test data and performed various trade-off studies. These analyses indicated that the production, transportation off-shore, and smelting of a copper-gold flotation concentrate, as proposed by Placer, was a less attractive alternative and that direct leaching of most or all of the ore and on-site production of bullion would give better gold recovery. The trade-off studies also showed that the direct leach process, which is the flowsheet originally selected by Placer, would simplify the process, improve plant operability, and give lower capital and operating costs.

Crystallex organized new samples to be shipped from Venezuela and arrangements were made with SGS Lakefield Research Limited ("Lakefield") to test the direct leach process. The program ran from the time that samples arrived at Lakefield in early April 2003 until mid-2004. The work was supervised by Goode, Crystallex, and SNC-Lavalin, and Goode visited Lakefield on several occasions to observe tests and discuss and monitor the progress of the program of work.

16.2 Summary

Several samples of SAPO, SAPS, carbonate CLB and CSB ore from within the limits of the planned the Conductora pit were examined in bench tests and pilot plant operations by Lakefield during the months of April through December 2003 (SGS Lakefield Research Limited, 2003a-c, 2004a-b). Samples of waste from the Conductora pit and four samples of Mesones ore were also studied. Sub-samples of Conductora ore were sent to McGill University for gravity recovery testwork (Laplante, 2003). Outokumpu conducted pilot plant settling tests on several samples (Outokumpu Mintec Canada Ltd., 2003a-b). The various test programs were designed to confirm relevant data generated by Placer, determine the gold recovery and reagent requirements for the proposed gravity-leach flowsheet, and generate plant design data.

Grinding data are generally in accordance with data generated by Placer. Pilot-scale gravity concentration tests at Lakefield on Conductora ore show about 30% gold recovery from both a SAPO-CSB blend and a SAPO-SAPS-CLB-CSB blend at mass concentration ratios of about 4000:1 (SGS Lakefield Research Limited, 2003a). Preliminary data for Mesones (SGS Lakefield Research Limited, 2004a) show an even better response. Intensive cyanidation of the concentrates from Conductora gave >99% leach recovery. Tests at McGill (Laplante, 2003) to determine the gravity recoverable gold ("GRG") content of Conductora SAPO and CSB samples showed 39% and 46% GRG, respectively, which would translate into practical recoveries of about 25%.

Thirty-six hour bottle-roll leach tests on Conductora gravity tailings confirm that SAPO leaches very well to give about 99% overall (gravity+leaching) extraction and a 0.02 g Au/t tailing. With a 24h leach time, tailings were 0.03 g Au/t corresponding to 98% extraction. CSB gives about 85% overall extraction (0.17 g Au/t tailing). Cyanide additions for SAPO and CSB have been less than 1 kg/t ore. Pure SAPS samples with cyanide soluble copper ("CNSCu") levels of 370 ppm or less have been tested and gave 85 to 88% extraction, albeit with cyanide additions of 1.7 to 1.9 kg/t. Mixtures containing SAPO, SAPS and CSB gave 85 to 90% overall extraction provided that sufficient NaCN was present. The NaCN addition varied with the CNSCu level in the ore.

An initial gravity-leach test on each of the four Mesones samples showed an average 85% overall gold extraction and modest reagent consumption. It is believed that higher extraction could be obtained with optimization of the leach conditions.

Duplicate bench scale tests on a series of samples containing 20%CLB and 80% CSB and between 1 and 2 g Au/t yielded an average of 88.7% overall gold recovery (gravity and leaching) with no measurable dependency on head grade.

A 2 kg/h pilot plant was operated for three weeks in which batch-ground/gravity concentrated Conductora ore was subjected to carbon-in-leach ("CIL") processing. During the first 13 days (PP1), a blend of 20% SAPO and 80% CSB was leached with 0.7 kg/t of cyanide to give a final overall gold extraction of 89.6% (tailings average of 0.15 g Au/t). A SAPO-SAPS-CLB-CSB blend was processed for the last week (PP2). The plant tailing was 0.15 g Au/t for an extraction of 89.3% with a cyanide addition of 0.8 kg/t.

Viscosity measurements by Lakefield (SGS Lakefield Research Limited, 2003b) indicated nothing problematical in the mixtures that will be handled in the Las Cristinas plant.

Outokumpu conducted high-rate thickening tests on nine sample blends, ranging from pure SAPO to pure bedrock, using its pilot-scale thickener (Outokumpu Mintec Canada Ltd., 2003a-b). At 50% solids in the underflow, all blends containing 50% SAPO or less could be processed at 0.46 $t/m^2/h$ or greater. Allowing for a 15% scale-up, the data showed that a 50m diameter thickener would give at least 47% solids in the underflow when processing up to 20,000 t/d of a 50% SAPO, 50% CSB mixture. Acid-base-accounting ("ABA") tests and various geotechnical studies were performed by Lakefield on several samples to determine the potential for acid generation.

Natural-degradation tests and continuous INCO Air/SO_2 cyanide-destruction tests have been performed on pilot plant tailings (SGS Lakefield Research Limited, 2004a). Natural degradation under Lakefield climatic conditions reduced weak-acid dissociable cyanide ("CNWAD") to below 20 ppm in about 40 d for pilot plant tailings from PP1 and 100 d for PP2 tailings. The INCO process then reduced CNWAD to <0.3 ppm and Cu to about 1 ppm under industry-typical operating conditions. INCO tests on naturally degraded PP2 tailings solution gave <0.1 ppm CNWAD and <0.5 ppm Cu.

16.3 Samples

Composite samples of the different rock types from the Las Cristinas deposit were prepared from drill core stored at the mine site in Venezuela under the direction of Dr. Luca Riccio, Crystallex's prior Vice President of Exploration. Each sample was composited from individual drill-core intervals, each with a mass of between 0.5 and about 7kg and probably averaging about 2kg across all samples. The location of the samples within the orebody is presented in Figure 16.1, Figure 16.2, and Figure 16.3. The samples summarized in Table 16.1 were shipped to Lakefield.

Table 16.1 Summary of Main Sample Shipments

Sample	Mass kg	Mine est. Au – g/t	Major Assays – Lakefield				
			Au – g/t		Ag – g/t	Cu – %	CNSCu – %
			Assay (2 assays)	Calculated (testwork)			
SAPO 1	313	1.59	1.63	1.47	1.2	0.038	0.004
SAPO 2	101	1.38	Not used – no data				
SAPS1	39	1.55	1.32	1.55	2.2	0.14	0.018
SAPS2	31	2.29	2.16	2.20	1.9	0.15	0.033
SAPS(2)	36	1.29	1.33	-	1.4	0.11	0.037
SAPS3	31	1.64	2.15	-	6.1	0.21	0.12
SAPS4	32	1.53	1.84	-	1.7	0.43	0.31
CSB1	1001	1.38	1.28	1.24	0.9	0.15	0.006
CLB-CSB	1002	1.31	Not composited – see text				

As well as the foregoing, four waste samples from the Conductora deposit were received by Lakefield (the M samples) and used for ABA testwork (SGS Lakefield Research Limited, 2004a). Two samples of Mesones CSB (samples E2 and E4) and two samples (E1 and E3) of a mixture of CSB and bedrock (CLB) were also received and tested. The gold, silver, copper and cyanide soluble copper assays for the CSB were about 1.4 g Au/t, 2 g Ag/t, 0.35%, and 0.016%, respectively. The equivalent data for the Mesones CSB-CLB mixture are 1.2 g Au/t, 2.3 g Ag/t, 0.6%, and 0.035%.

The CLB-CSB sample comprised bags C1 to C21. The CLB was confined to five bags in the shipment and these were used to make high-CLB composites to allow investigation of this material. Lakefield also prepared a series of six composites containing a nominal 20% CLB and covering gold grades from about 1 to 2 g Au/t using material from the individual bags of the CLB-CSB shipment. These composites were used to determine the head grade – gold recovery effect in a series of tests performed in December 2003.

Graphitic carbon assays were obtained as the difference between CTotal and CO_2 on all samples and were found to be in the range of 0.01 to 0.08%. Preg-robbing tests were done on the earlier samples and samples CSB, SAPS2, and SAP(2) were found to be mildly preg-robbing with 11, 9, and 16% of a 10 ppm spike adsorbed after 24h. SAPO and the other SAPS samples returned values of 4% or less. Mercury assays in the various samples were either 0.3 g/t or <0.3 g/t except for SAPS1 which was reported as 0.4 g/t.

The as-received screen analyses of SAPO, SAPS2 and SAPS3 were 63µm, 182µm, and 69µm, respectively. It is presumed that this is the in-situ screen analysis for these materials. All other samples were provided as fragments of drill core.

Individual samples within the first CSB sample were used to make eight depth samples before the CSB composite was formed. The analytical data for the depth samples are presented in the graph presented as Figure 16.4. Some fluctuations are evident although there may be little statistical significance to the observed effects. CSB samples from 151m, 259m, and 437m were leached to see if there was a significant depth effect. Various composites have been produced for metallurgical testwork as presented in Table 16.2.

Figure 16.4 Variation of Head Assay with Depth in CSB

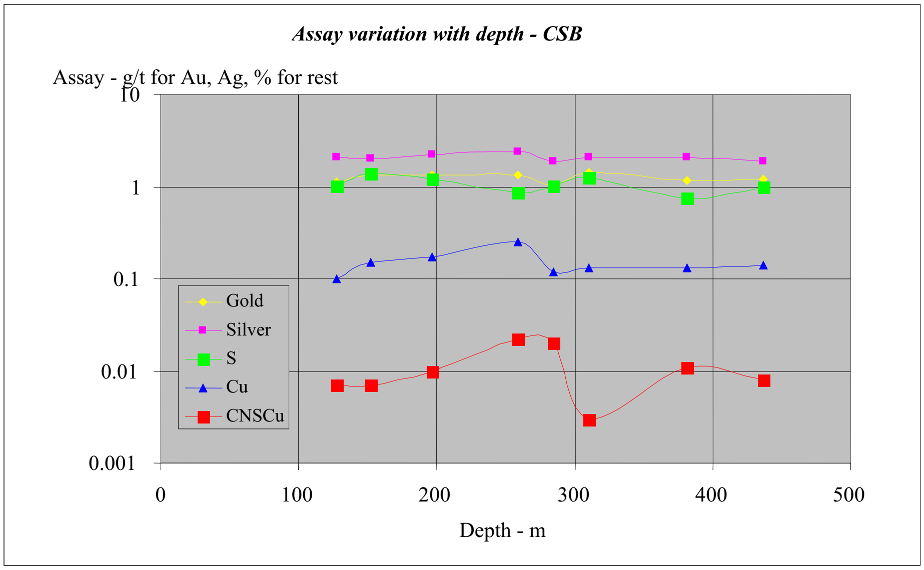


Table 16.2 Composites Used in Testwork

Composite name	Composition
SAPO-CSB	20% SAPO1, 80% CSB
Comp S1	10% SAPO1, 10% SAPS2, 80% CSB1 (target 85 ppm CNSCu)
Comp S2	10% SAPO1, 20% SAPS2, 70% CSB1 (target 112 ppm CNSCu)
Comp S3	10% SAPO1, 10% SAPS3, 80% CSB1 (target 172 ppm CNSCu)
Comp S4	10% SAPO1, 20% SAPS3, 70% CSB1 (target 286 ppm CNSCu)
Comp S5	10% SAPO1, 10% SAPS4, 80% CSB1 (target 362 ppm CNSCu)
SAPS350	40% SAPS1, 50% SAPS2, 10% SAPS3 (target 350ppm CNSCu)
CLB-CSB Comp. 1	68% CLB, 32% CSB (selected from CLB-CSB sample)
CSB2	100% CSB (balance of CLB-CSB sample)
CLB-CSB Comp. 2	40% CLB-CSB Comp.1, 60% CSB1 (to give 27% CLB, 73% CSB)
Mine blend	15% SAPO1, 5% SAPS350, 15% CLB-CSB Comp1, 65% CSB1 Equals 15% SAPO, 5% SAPS(350ppm CNSCu), 10% CLB, 70% CSB
CLB-CSB G1	Part bags C2, 3, 7, 12, 17, and 20 from CLB-CSB shipment, estimated 20% CLB
CLB-CSB G2	Part bags C2, 3, 7, 10, 12, 17, 20, and 21 from CLB-CSB shipment, estimated 20% CLB
CLB-CSB G3	Part bags C3, 4, 6, 10, 11, 17, 20, and 21 from CLB-CSB shipment, estimated 20% CLB
CLB-CSB G4	Part bags C1, 4, 6, 8, 9, 10, 11, 13, 14, 17, 18, 19, and 21 from CLB-CSB shipment, estimated 20% CLB
CLB-CSB G5	Part bags C1, 5, 8, 9, 13, 14, 15, 16, 18, and 19 from CLB-CSB shipment, estimated 20% CLB
CLB-CSB G6	Part bags C5, 15, 16, and 19 from CLB-CSB shipment, estimated 20% CLB

Full compositing and analytical data are provided in the Lakefield documents (see SGS Lakefield references in Reference Section 22.0).

16.4 Grinding Tests

Standard Bond rod mill (14 mesh screen) and ball mill work indices (150 mesh screen) and abrasion index data were obtained on selected samples and sample composites. Metric data are presented in Table 16.3.

Table 16.3 Grinding Parameters from Standard Tests

Sample	Rod mill index	Ball mill index	Abrasion index – g
CSB1	17.1	15.0	0.27
80%CSB – 20% SAPO	-	14.2	-
Mine Blend	15.9	14.4	0.24
CLB-CSB Comp.2	-	14.7	-

The data are similar to data obtained by MacPherson (A.R. MacPherson Consultants Ltd., 1994) on samples provided by Placer.

Bond work indices ("BWi") were also estimated from grinding data obtained in a small mill used to prepare feed for leach tests. These data, which are indicative of Bond work indices, are not as reliable as full Bond indices, are presented in Table 16.4.

Table 16.4 Selected Bond Ball Mill Work Indices from Leach Grinds

Material	Identity	Comparative BWi (metric)
Comp S1	SAPO-SAPS-CSB blend	13.2
Comp S2	SAPO-SAPS-CSB blend	12.6
Comp S3	SAPO-SAPS-CSB blend	13.6
Comp S4	SAPO-SAPS-CSB blend	12.3
Comp S5	SAPO-SAPS-CSB blend	13.7
Average of Comp S samples	-	**13.1**
Comp 2	CSB depth sample – 151 m	14.7
Comp 4	CSB depth sample – 259 m	19.0, 17.4*
Comp 8	CSB depth sample – 437 m	16.1, 15.5*
Average of CSB depth samples	**-**	**16.5**

* Second BWi data obtained from pebble mill and probably less accurate.

The Bond ball mill work index data (metric) obtained by MacPherson (A.R. MacPherson Consultants Ltd., 1994) for Placer were 15.3 for CSB and 10.5 for CLB. These data, which are similar to the values tabulated above, have been used by SNC-Lavalin in the design criteria. MacPherson also reported on semi-autogenous grind ("SAG") work indices and rod mill work indices.

SAPO and SAPS were not subject to Bond work index tests in the Lakefield work or by MacPherson because the material was too fine to test. However, an apparent work index for saprolite can be calculated from the work index measurements for blends containing this material. The formal Bond test noted in Table 16.3 suggests a work index of 11 but this value is suspect. The saprolite work index calculated from the data of Table 16.4 ranges from 6 to 8.5.

The abrasion index measurements obtained by Lakefield (SGS Lakefield Research Limited, 2003a) are a little higher than those obtained by MacPherson (A.R. MacPherson Consultants Ltd., 1994) who obtained 0.06 and 0.10 g for CLB and 0.15 to 0.23 g for CSB.

16.5 Gravity Recovery of Gold

The feed for bottle-roll leach tests was prepared by grinding 2kg batches of ore to the desired grind then removing coarse gold using a 3in. Knelson concentrator with upgrading of the concentrate on a Mozley table. The leach feed was then made by mixing all of the Knelson tailings and the Mozley tailings. Average data for the different ore types from twenty small-scale gravity recovery tests are provided in Table 16.5.

Table 16.5 Average Data from Gravity Tests Ahead of Bottle Roll Leach Tests

Sample	Grind	Gravity Concentrate			Tail	Head, g/t Au	
	K_{80}, µm	Wt %	Au, g/t	% Rec'y	Au, g/t	calc.	direct
SAPO	35	0.031	252	5.3	1.35	1.47	1.63
SAPS	50	0.06	900	18.4	1.39	1.71	-
COMP S	63	0.097	356	22.9	1.14	1.48	1.43
SAPO/CSB1 20/80	77	0.082	278	15.7	1.00	1.19	1.38
CSB	67	0.091	328	22.5	0.96	1.24	1.24
CSB depth	94	0.086	254	17.2	1.03	1.25	1.29
CLB/CSB2	99	0.026	1198	22.2	1.07	1.38	1.46
CLB-CSB G1 to G6	54	0.078	436	23.8	1.06	1.38	1.12

There was no discernable relationship between the head grade and percentage gravity recovery of gold in the six CLB-CSB samples.

The four samples of Mesones CSB and CLB-CSB mixtures were also processed by gravity concentration and responded well. From an average feed grade of 1.1 g Au/t, 37% of the gold was recovered to a 711 g Au/t concentrate.

A pilot plant was operated to process about 1 tonne of Las Cristinas material over a 20d period. The first part of the pilot plant run used a feed comprising 20% SAPO and 80% CSB. The second part of the pilot plant run used a feed comprising 15% SAPO, 5% SAPS, 10% CLB, and 70% CSB. The feed for the pilot plant was prepared in 30kg batches which were processed by the same Knelson-Mozley flowsheet as described above. Gravity recovery data from the pilot plant are provided below in Table 16.6.

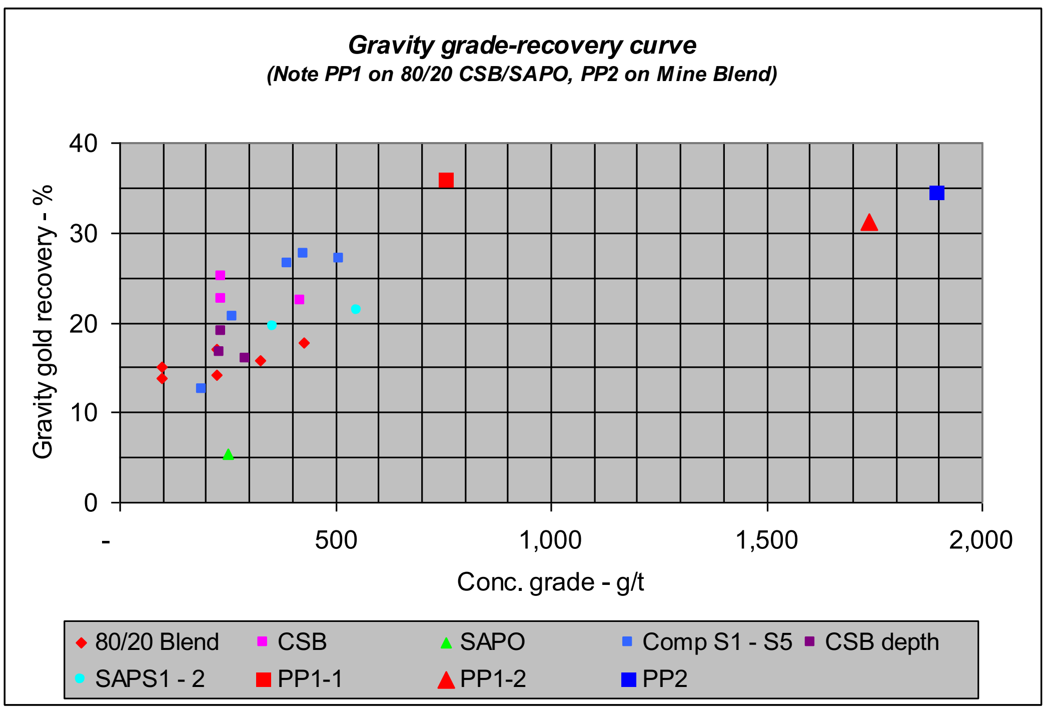
Table 16.6 Gravity Concentration Data from Pilot Plant Feed Preparation Work

Feed	Phase	Gold assays – g/t			% recovery to conc.	
		Head	Tail	Conc.	Mass	Gold
SAPO-CSB	PP1-1	1.50	0.95	775	0.071	36
SAPO-CSB	PP1-2	1.39	0.95	1760	0.025	32
SAPO-CSB	PP2	1.38	0.90	1920	0.025	34

In the first part of the pilot plant (Phase PP1-1), the mass of Mozley concentrate was set at 15 to 25g per 30kg batch grind or about 0.07% mass pull. In the later operation (PP1-2 and PP2), the mass pull was reduced to 5 to 10g of concentrate or about 0.025% mass. The tabulated concentrate assays are based on the assay head and the gravity tail assay estimated from the cyanidation data.

Gravity recovery in the pilot plant was far higher than in the small-scale tests as indicated in Figure 16.5. This is as expected and reinforces the importance of processing large samples to determine gravity recovery potential.

Figure 16.5 Gravity Recovery Data



Samples of CSB and SAPO were processed by Professor André Laplante at McGill University (Laplante, 2003). About 40kg of SAPO containing 1.34 g Au/t and 100kg of CSB containing 1.5 g/t were dispatched and used in the McGill work. Using the standard Laplante GRG-test protocol, it was established that SAPO contained 39% GRG while CSB contained 46%. It was noted that about 10% of the total gold in each sample was –20µm in size. Based on an analysis of the data, Laplante concluded that about 25% gold recovery would be obtained by gravity processing. Using its circuit modeling system and the same data, Knelson projected 18 to 20% gold recovery from SAPO and 24 to 27% recovery from CSB. SNC-Lavalin has used a conservative 20% gravity gold recovery from blended ore.

Samples of the concentrates produced during the three different segments of the gravity recovery portion of the pilot plant were leached under intensive conditions to simulate processing in an Acacia or Gekko concentrate leach system. The intensive leach procedure used 2% NaCN solution, H_2O_2 as an oxidant, and a leach time of 48h. Results are summarized in Table 16.7.

Table 16.7 Intensive Cyanidation of Gravity Concentrate

Feed	Pilot run	NaCN		Data	Extraction					Tail	Calc head
		Add	Cons		2 h	6 h	12 h	24 h	48 h	g/t	g/t
SAPO-CSB	PP1-1	233	74	Au	90	84	90	95	98.6	6.6	484
				Ag	95	90	96	96	95.7	2.3	54
	PP1-2	240	78	Au	91	93	101	99	99.5	6.3	1,378
				Ag	102	95	103	100	98.3	2.3	138
Mine blend	PP2	260	100	Au	101	96	108	99	99.3	8.5	1,246
				Ag	104	95	101	98	98.3	2.3	136

Available data indicate that gravity recovery should be very effective at Las Cristinas and gravity gold recovery should comfortably exceed 20% of the gold in the feed. The concentrates are very amenable to intensive leaching.

16.6 Cyanide Leaching

16.6.1 Bottle roll tests

All bottle-roll tests were preceded by the removal of coarse gold in a gravity concentration step. The gravity concentration effect is typified by the data presented earlier in Table 16.5. The results discussed in this section are overall gold recovery, i.e., gravity recovery plus leach extraction.

An initial series of 9 CIL tests investigated the effects of grind (P80 of 110, 75, and 50µm) and time (12, 24, 48h) on leaching of the SAPO-CSB blend with cyanide strength of 0.5 g/L. This work showed very little difference in overall recovery at 50 and 75 µm at the longer leach times, and a grind of 75 µm and CIL time of 36 h was selected for most additional leach tests.

A second series of tests looked at cyanide addition strategy and showed that an initial 0.5 g/L held for 4h gave reasonable gold extraction (87%), low tailings gold grade (0.15 g Au/t) and lower cyanide addition (0.9 kg/t).

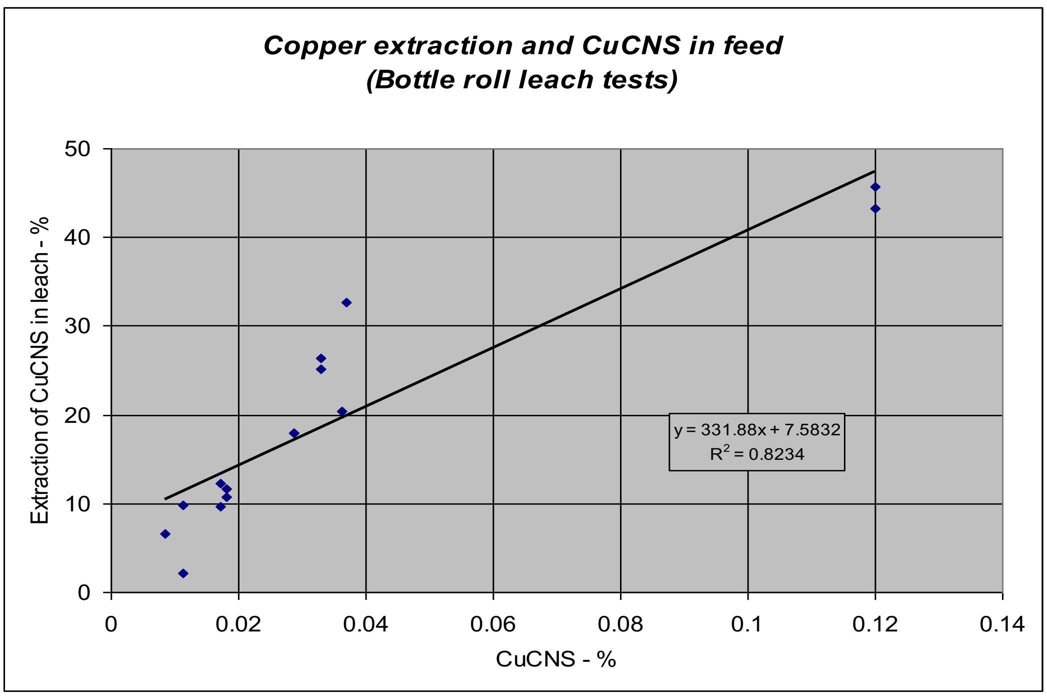
Tests on pure SAPO showed that 99% extraction (tailings of 0.02 g Au/t) was possible after 36h of CIL with 0.9 kg/t NaCN addition. Other tests showed that overall extraction from SAPO was 98% (0.03 g Au/t tailings) across a range of leach times between 24 and 36h. A 36h leach of CSB gave 85%

recovery (0.17 g Au/t tails) following 0.8 kg/t NaCN addition. Leach tests on SAPO-CSB and SAPO-SAPS-CSB blends containing 75% saprolitic material (tests number CN68 to 76) showed very little sensitivity of the overall gold recovery to leach time in the 24 to 36h range. Lime and cyanide additions were also relatively unaffected across this time range.

Copper leaching from the SAPO, CSB, and blends was generally less than 5% from heads of about 0.05% for SAPO and 0.15% Cu for CSB.

Leaching of samples of pure SAPS, which contain CNSCu, gave higher tailings grade and higher cyanide consumption. SAPS1 (180 ppm CNSCu) gave 88 and 91% overall extraction (tails of 0.18 and 0.12 g Au/t) after 36h with the addition of 2 and 1.2 kg/t of NaCN, respectively. SAPS2 (330 ppm CNSCu) gave 85 and 89% extraction (tails of 0.34 and 0.26 g Au/t) following the addition of 1.9 and 1.4 kg/t of NaCN, respectively. SAP(2), containing 370 ppm CNSCu, gave 94% overall extraction (tails of 0.07 g Au/t) with the addition of 1.5 kg/t of NaCN. A sample of SAPS3 (1200 ppm CNSCu) gave 88% overall extraction (0.18 g Au/t tails) but required a cyanide addition of 2.45 kg/t. CNSCu extraction from the SAPS-bearing material was in the 2 to 45% range as is illustrated in Figure 16.6.

Figure 16.6 Copper Leached From SAPS-Bearing Ore



Mixtures of SAPO, CSB, and different amounts of various SAPS composites were combined to form Comp S1 to S5 with total CNSCu values between 85 and 362 ppm. Initial tests used an NaCN addition of about 1 kg/t. Gold recovery was 84% for the low CNSCu composite (tails 0.22 g Au/t) with recoveries of about 76% (tails of 0.37 g Au/t) for the high CNSCu sample. Other tests on the higher Cu composites using higher NaCN additions (1.2 to 2.1 kg/t) gave recoveries of about 87 to 90% (tails of about 0.15 g Au/t).

Reagent additions during the bottle-roll leach tests are summarized in graphs presented in Figure 16.7 and Figure 16.8. There is an obvious relationship between the CNSCu level of the ore and the amount of cyanide consumed during the leach process. Lime consumption for SAPO and SAPS is higher than for the bedrock material as indicated in Figure 16.8.

Figure 16.7 Cyanide Consumed in Bottle Roll Tests

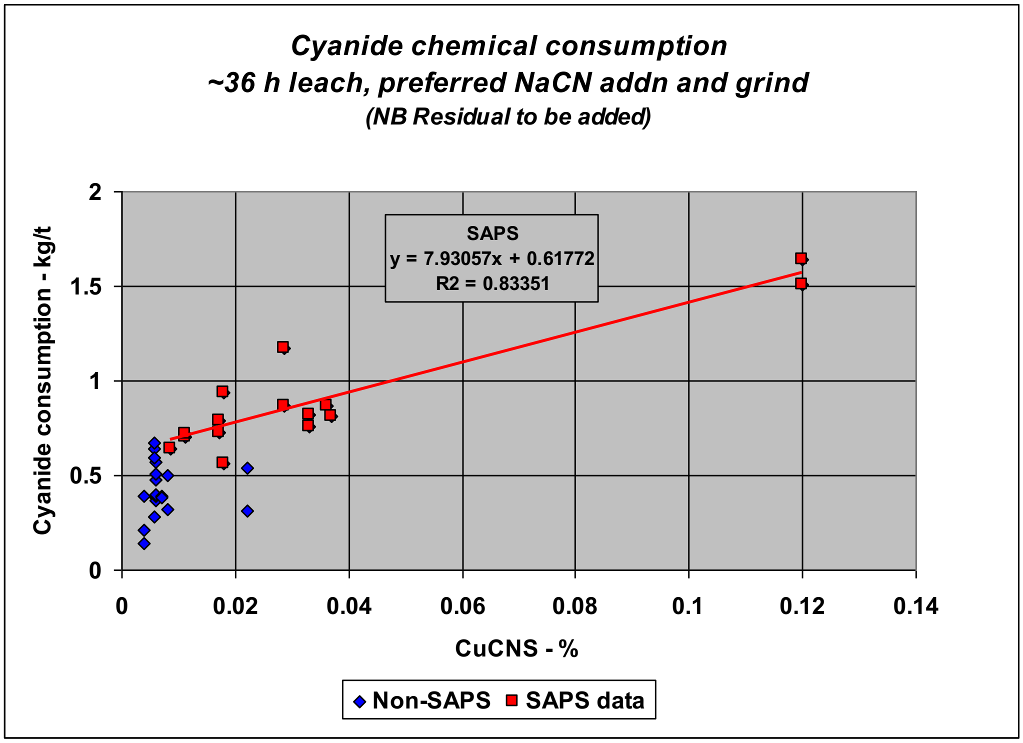
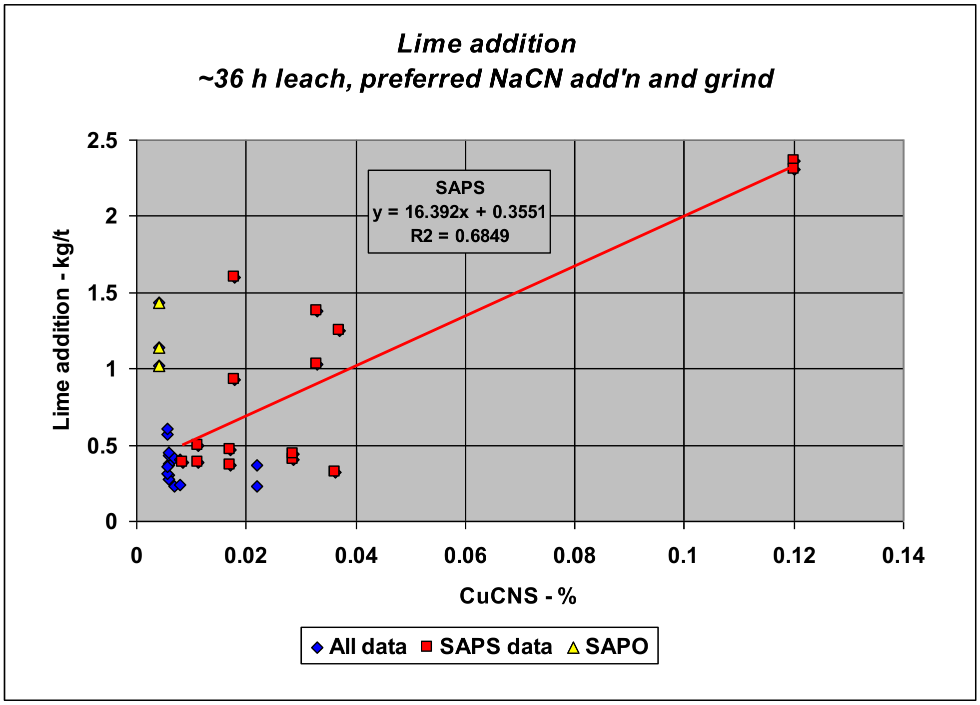


Figure 16.8 Lime Addition in Bottle Roll Tests



The regression equations indicated on the above graphs have been used to develop the operating costs for different ore types and blends. In the case of the relationship between CNSCu level and cyanide consumption, the equation indicated above has been tempered by data obtained by Placer in its work on SAPS-containing material. This has had the effect of increasing the cyanide consumption over the levels indicated above.

Lakefield also performed four leach tests on samples of Mesones gravity tailings at grinds in the 71 to 103µm range (SGS Lakefield Research Limited, 2004a). Overall gold extraction (gravity and cyanidation) varied from 84% to 88%. The average calculated head grade was 1.09 g Au/t and the average tailings grade was 0.16 g Au/t for an average overall extraction of 85%. Cyanide additions were in the 0.9 to 1.6kg/t range (average of 0.77kg/t) and obviously related to the high CNSCu content of the samples. Lime addition was modest at an average of 0.4kg/t. It is likely that, with optimization of reagent addition strategies, the gold recovery from Mesones samples could be improved.

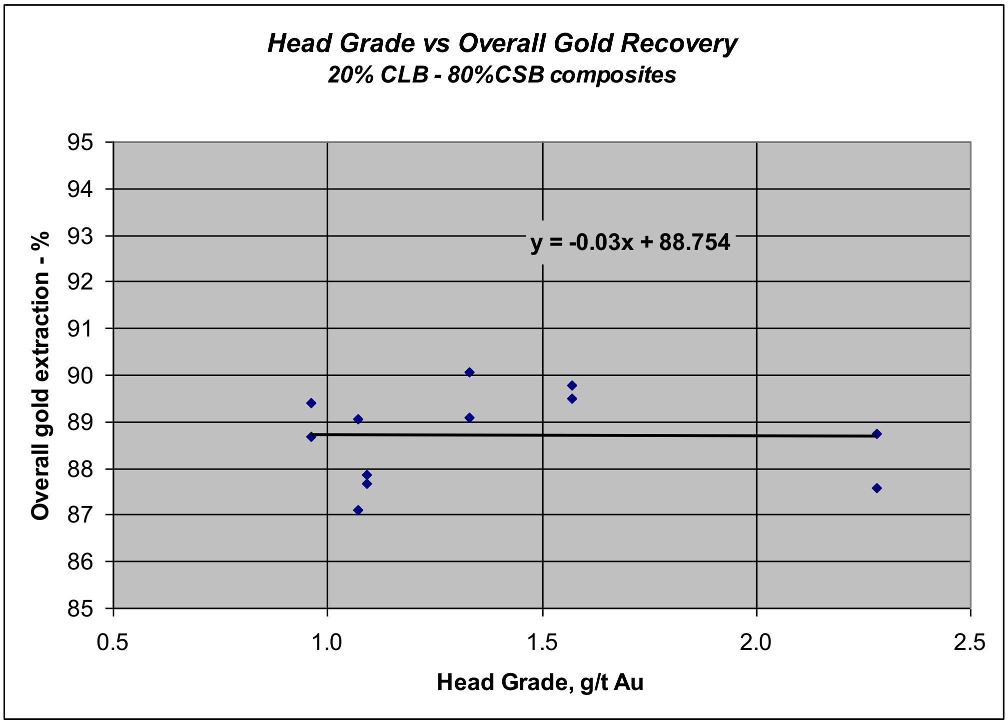
A series of gravity recovery – bottle-roll leach tests was performed on CLB–CSB mixtures composited to contain 20% CLB, 80% CSB and gold grades between a nominal 1 g Au/t and 2 g Au/t. In each case, 3kg of composite was prepared, mixed, ground to a nominal 70 µm, subjected to gravity recovery in the 3in. Knelson with the concentrate upgraded on the Mozley table and tailings combined. The gravity tailings were then leached for 36 h in duplicate under the standard leach conditions.

The actual grind was finer than intended with a range of 53 to 55 µm and averaged 54 µm. As mentioned earlier, testwork showed that there is little sensitivity to grind in the 50 to 70µm range with a 36h leach time so the data are valid despite the finer grind.

The head grade calculated from the gravity-leach tests for the six samples ranged from 0.96 to 2.28 g Au/t and averaged 1.38 g Au/t. The expected head grade, based on the assays of the individual components of each sub-sample, ranged from 1.0 to 1.9 g Au/t and averaged 1.34 g Au/t. The direct head assays for the samples ranged from 0.96 to 1.56 g Au/t and averaged 1.1 g Au/t.

Overall recovery (gravity plus leaching) for the six duplicate tests was 88.7% with a range of from 87.8 to 89.6% for the averages of the pairs. The range in the individual tests was from 87.1 to 90.1%. There is no discernable (or statistical) relationship between the overall gold recovery and calculated head grade. The data are plotted in Figure 16.9.

Figure 16.9 Grade - recovery relationship



Lakefield made a fixed cyanide addition of 0.91 kg/t in the grade-recovery tests (SGS Lakefield Research Limited, 2003c). The actual consumption averaged 0.51 kg/t with a slight trend to higher consumption (0.6 kg/t) with the 2 g Au/t head grade material.

Lime additions in the subject series of tests averaged 0.62 kg/t with no relationship between head grade and reagent addition.

The twelve gravity-leach tests in the grade-recovery series on the CLB-CSB mixtures show that there is very little, if any, change in overall gold recovery across the range of 1 to 2 g Au/t. Other parameters, including gravity gold recovery, lime and cyanide consumption, were not significantly affected across the range of samples examined.

16.7 Pilot plant

16.7.1 Pilot plant configuration

The CIL pilot-plant operation included the batch ball milling of 30kg aliquots of feed material, removal of a gravity concentrate using a 3in. Knelson concentrator, and upgrading of the composite on a Mozley table with table tails combined with Knelson tails. Initially the table was operated to give a 0.07% mass pull, but this was changed early in the operation to a 0.025% mass pull.

Gravity tailings were transferred to a holding tank ahead of the CIL pilot plant where the density was adjusted and trash removed on a 28-mesh screen. Feed slurry was then pumped at a rate corresponding to 1.9 kg/h of solids to the first of six CIL tanks providing a total of 36h residence time. Lime was added to adjust the pH to the desired level and, for the SAPO-CSB blend, a total of 0.7 kg/t of NaCN was added as a solution – 67% to the first tank with the balance to the second tank. During processing of the Mine Blend (comprising 15% SAPO, 5% SAPS, 10% CLB, and 70% CSB), which contains CNSCu-containing SAPS, the NaCN addition was increased to 0.8 kg/t.

Each CIL tank contained 4 g/L of activated carbon during the initial operation. This was changed to 8 g/L part way through PP1, which processed a SAPO-CSB blend because it was initially not clear that it was sufficient. Carbon was retained in each tank with a 20-mesh screen located on the tank outlet and was manually advanced every 12h. Based on modeling studies, a carbon loading of 1500 g Au/t was selected in the design of the pilot plant operation. The carbon loaded into the pilot plant was pre-loaded to ensure rapid attainment of equilibrium.

A 28-mesh safety screen was fitted to the final CIL tank discharge late in the first pilot plant campaign.

A feed sample was taken from each batch of feed to the Knelson concentrator and every 8h from the feed to the CIL plant. Tailings were sampled every hour, filtered, and combined to form 4h composites. A full profile through the CIL circuit (solids, solution, carbon) was taken every day, and screen analyses were periodically checked.

16.7.2 Gravity concentration data

As noted in Table 16.6, after adjustment of the Knelson procedure to give a high concentration ratio, the pilot plant achieved better than 30% gold recovery to a concentrate assaying more than 1700 g Au/t.

16.7.3 CIL pilot plant data

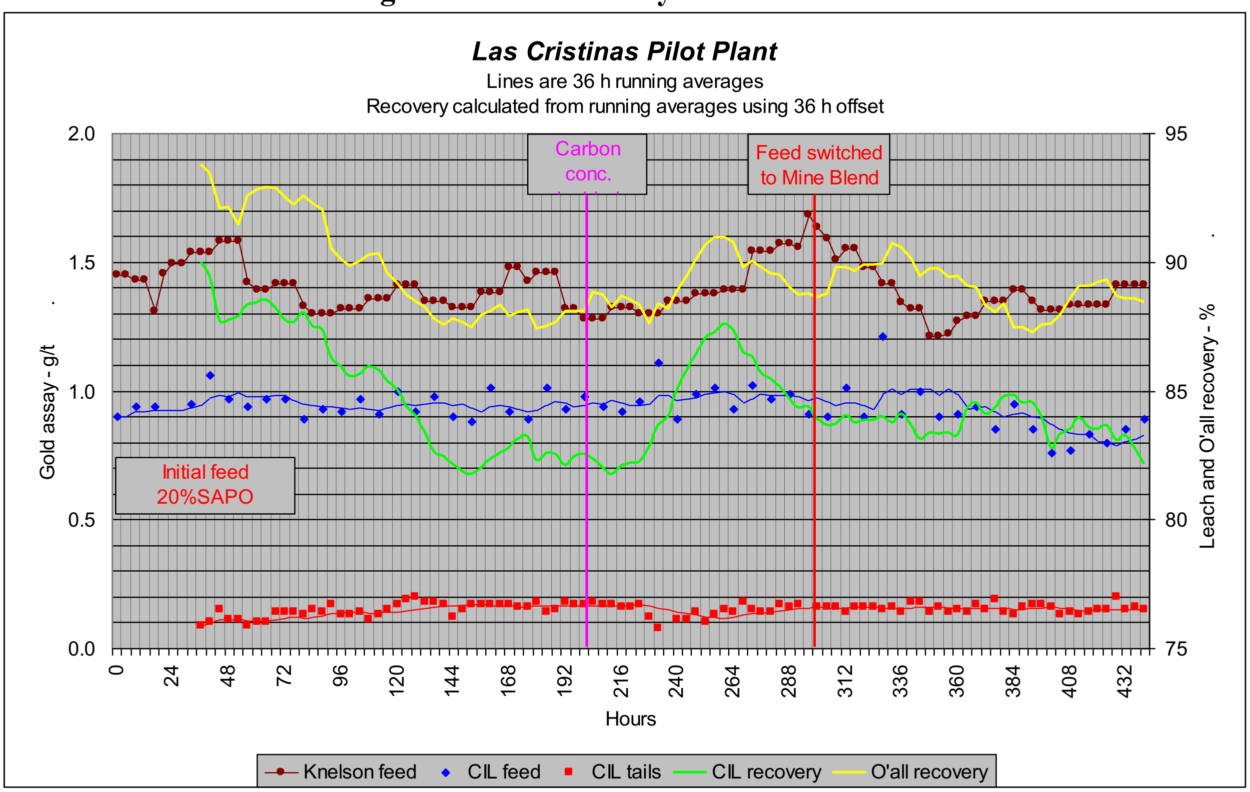
Lakefield data (SGS Lakefield Research Limited, 2003a) show that the average tailing assay for gold when the plant was at equilibrium was 0.15 g Au/t during processing of the SAPO-CSB blend and the Mine Blend. Corresponding overall gold extraction levels are about 89%.

The cyanide addition during the pilot plant operation was set at 0.7 kg/t for the SAPO-CSB blend and 0.8 kg/t for the Mine Blend. The cyanide consumption was 0.3 kg/t during the last four days of PP1B and 0.34 kg/t during the last four days of PP2. Residual cyanide concentration must be added to the chemical consumption to arrive at expected total cyanide addition. Lime addition was 0.78 kg/t and 0.85 kg/t, respectively. Results are summarized in Table 16.8 and in the graph presented as Figure 16.10.

Table 16.8 Summary of Pilot Plant Data

Parameter	PP1A (day 7-9)	PP1B (day 10-14)	PP1Carbon (day 7-14)	PP2 (day 16-20)
Feed	20/80 Blend	20/80 Blend	20/80 Blend	Mine Blend
Carbon Concentration, g/L	4	8	-	8
NaCN Addition, kg/t	0.71	0.70	0.70	0.77
NaCN Consumption, kg/t	0.27	0.30	0.28	0.34
CaO Addition, kg/t	0.87	0.78	0.84	0.85
Average CIL Feed Assay, g/t Au	0.95	0.95	0.95	0.90
Average CIL Tail Assay, g/t Au	0.17	0.15	0.16	0.15
% Gravity recovery	36.3	31.4	33.0	34.5
% Extraction in CIL	82.2	84.8	83.6	83.6
% Overall recovery	88.6	89.6	89.0	89.3

Figure 16.10 Summary Pilot Plant Data



Certain issues arose during the pilot-plant operation and are discussed below:

1) Possible contamination of tailings samples with partially loaded active carbon: Carbon was observed in some tailings samples and some high-grade tailings assays were suspicious. To investigate and correct this problem, all tailings samples with a grade of 0.18 g Au/t or higher were screened at 28-mesh and re-assayed. Several high-grade assays were thereby eliminated.

   Selected tailings samples were microscopically investigated and others assayed for graphitic carbon. Three pilot-plant head samples from PP1 and three from PP2 were bottle-roll leached and returned tailings of 0.13 and 0.15 g Au/t, respectively – similar to the pilot plant tails. It transpired that carbon contamination was an occasional problem but it had been eliminated.

   Some tailings samples were re-leached to determine if carbon loss was a problem or if longer leach times would be warranted. The re-leach data suggested that carbon losses were minimal. An additional 48h of leaching (more than double the 36h-leach time of the CIL pilot plant) gave a reduction in tailings assay of between 0.01 and 0.04 g Au/t suggesting that longer leach times would not be justified.

2) Coarse particle hold-up: The transit times for fine particles through the CIL pilot plant were obviously shorter than the transit times for coarse particles. This was directly evidenced by the fact that the P80 of the pilot plant tailings started at 38µm and did not reach 60µm until 100h after the plant operation was started. Coarse particle hold-up was also suggested by the graph of tailings grade against time. The latter showed very low initial tails assays of 0.09 g Au/t followed by an increase to 0.17 g Au/t over 100h which is similar to the final running average of about 0.15 g Au/t for the SAPO-CSB blend.

   Screen analyses of the CIL tank contents showed a coarse P80 of about 71µm compared to a feed of less than 70µm. Additionally, the slurry percentage solids in CIL tanks 3, 4, 5, and 6 (where there are no solution additions) are higher than the tailings according to the daily surveys. From 2003-05-09 to 2003-05-13 inclusive, the percentage solids in the last four CIL tanks was 45.9% but the average tailings percentage solids was 44.4% in the survey suite of samples. According to data from the routine tailings samples, the average was 46.6% solids so the accumulation of solids may not be serious.

In summary, the pilot plant eventually reached equilibrium with respect to particle transit time. The data reported in the summary tables of this report are for periods where equilibrium had been reached.

16.8 Carbon elution

Two samples composited from loaded carbon from the Las Cristinas pilot plant were eluted using the high-pressure Zadra approach. Data are summarized in Table 16.9. The data indicate no problems with eluting gold from carbon.

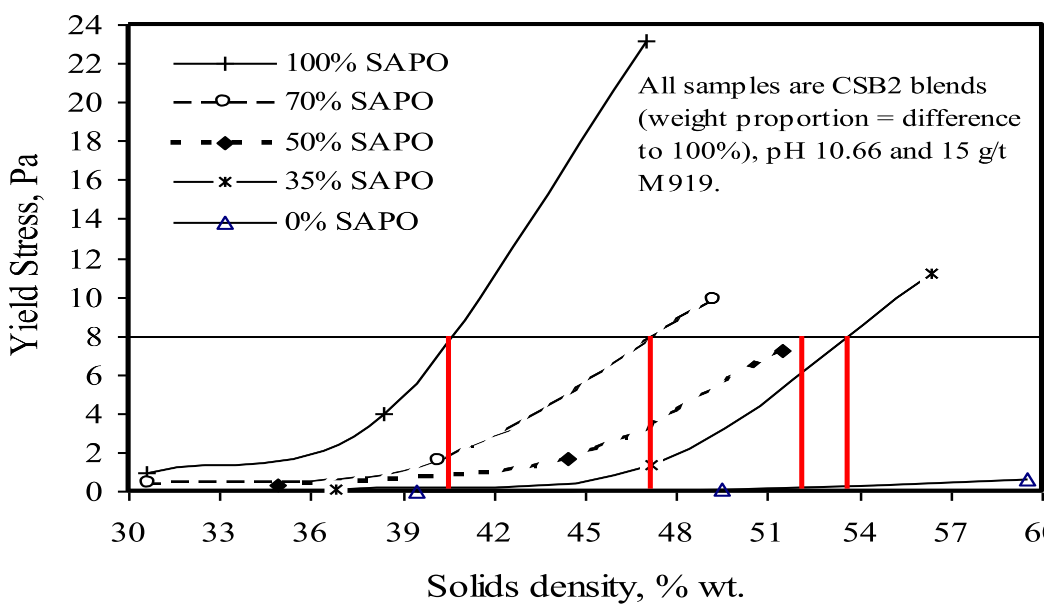
Table 16.9 Carbon Stripping Results

	Unit	Au	Ag	Cu	Au	Ag	Cu
Loaded carbon assay	g/t	1552	185	334	1534	287	555
Acid washed assay	g/t	1598	306	366	1615	319	364
Eluted carbon assay	g/t	32	1.2	<20	38	40	20
Recovery	%	98.0	99.6	94.6	97.6	87.8	96.4

16.9 Viscosity Tests

Lakefield measured viscosity using a Haake rheometer (SGS Lakefield Research Limited, 2003b). The data show that 100% SAPO has a critical solids density ("CSD" – defined as the percentage solids where the Yield Stress ("YS") exceeds 8 Pa) of about 40% solids, while 70% SAPO-30% CSB has a CSD of about 47%. At 50% SAPO, the CSD is about 52% solids. Figure 16.11 indicates the basic viscosity data. Data show that the CSD for SAPS is about 56% solids, which is far higher than the 40% indicated for SAPO. Lakefield concluded that all samples indicated good flowability.

Figure 16.11 Basic Viscosity Data



16.10 Thickening Tests

16.10.1 Flocculant Scoping Tests

Using a limed sample of pilot plant feed (SAPO-CSB slurry at pH 10.7), Lakefield investigated the following flocculants at dosages of ~30 g/t and higher (SGS Lakefield Research Limited, 2003b).

Anionic	Magnafloc 10, Magnafloc 919
Non-ionic	Magnafloc 333
Cationic	Magnafloc 455, 368

Lakefield selected Magnafloc 368 and 919 for further work since it gave preferred clarity and underflow density.

Outokumpu (2003a) also performed flocculant scoping tests but on non-limed SAPO-CSB and concluded that Magnafloc 919 was a superior flocculant. Outokumpu went on to use this material in most of its thickener tests.

In its work for Placer, Pocock (Pocock Industrial Inc., 1995) recommended the use of Percol E10, which is now known as Magnafloc 10, and is a low charge density, anionic, flocculant.

16.10.2 Laboratory Thickening Tests

Lakefield undertook laboratory thickening tests in measuring cylinders without rakes on various Las Cristinas ore types and blends (SGS Lakefield Research Limited, 2003b). The better results for each ore type/blend are tabulated below in Table 16.10.

Table 16.10 Lakefield Static Thickening Tests

Ore /blend	Floc. dose	U/F solids	Unit area	Conventional Thickener diameter for 20,000 t/d - m
	g/t	%	$t/m^2/h$	
CSB2	15	44.9	0.83	45
CLB/CSB	15	45.8	0.83	45
SAPO-CSB (20:80 – PP1 feed)	10	51.7	0.07	156
SAPO-CSB (35:65)	27	39.3	0.23	86
SAPO-CSB (50:50)	18	42.6	0.15	107
SAPO-CSB (70:30)	15	37.4	0.10	128
SAPO	23	37.3	0.22	95
SAPS	33	42.0	1.04	41

Note that thickener diameters use a 1.5 rate scale-up factor

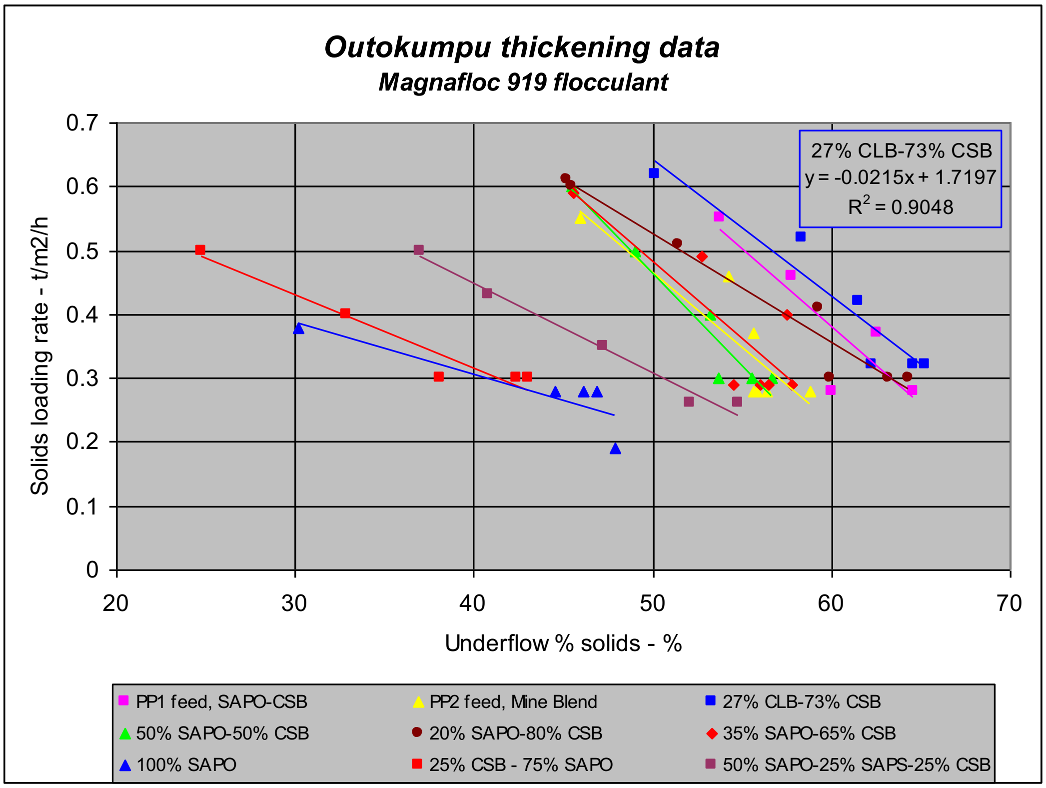
It will be realized that the data in Table 16.10 apply to conventional thickener designs and that settling rates in high-rate thickeners are typically 10 times greater than in conventional thickeners leading to about 1/3 the thickener diameter.

16.10.3 Outokumpu Thickening Tests

Outokumpu operated its continuous $0.1m^2$ pilot-scale thickener at Lakefield in three campaigns (Outokumpu Mintec Canada Ltd., 2003a-b). In all, Outokumpu conducted 58 tests on nine ore blends ranging from pure SAPO through various SAPO-SAPS-CLB-CSB blends, to a simple mixture of CSB and CLB. The Outokumpu pilot unit has been widely used and its scale-up characteristics are well established.

The results of the Outokumpu tests are summarized in Figure 16.12. The data show that, with the correct flocculant, thickener underflow solids concentrations of 50% or greater can be obtained at a loading rate of 0.47 t/m2/h or lower with all of the ore types/mixtures that were tested, provided that the saprolite content of the thickener feed does not exceed 50%. At the design feed rate of 20,000 t/d (900 t/h) and using the Outokumpu scale-up factor of 1.15, the Las Cristinas thickener would need to be 53m in diameter to give 50% solids in the underflow. If a thickener underflow percentage solids of 47% is satisfactory, then a 50m diameter thickener would be sufficient for the 50% saprolite mixture.

Figure 16.12 Outokumpu Thickening Test Data



The Outokumpu (2003a) and Lakefield (SGS Lakefield Research Limited, 2003b) testwork showed that Magnafloc 919, an anionic flocculant, was suitable. The average flocculant dose in all of the tests that were performed was 27 ppm and a dosage of 30 to 40 ppm will probably be needed in the plant. Overflow clarity was generally good and well under 500 ppm of suspended solids.

16.11 Environment-Related Testing

Lakefield completed fifteen modified EPA ABA tests on SAPO, CSB, 20%SAPO:80%CSB blend (PP1 pilot plant feed), pilot plant tailings, SAPS2 (about 330 ppm CNSCu, 0.7% S), 50% SAPS3:50% SAPS4 (about 2100 ppm CNSCu, 1.2%S), samples of Mesones ore, and waste rock from Conductora. The data are reported in two Lakefield reports (SGS Lakefield Research Limited, 2003a and 2004b). Lakefield concluded that Conductora SAPO ore and waste would be classified as non-acid generating and that the SAPS blend with very high cyanide soluble copper and a SAPS waste sample may be acid generating. The acid generating potential of the other samples was deemed uncertain.

Standard settling tests, without rakes, were performed on flocculated but degraded tailings from pilot plant operations with SAPO-CSB blend and Mine Blend. After seven days, settled solids reached 60 to 61% solids. Consolidation tests up to 5 bar were performed in a consolidation (Rowe) cell. Results are presented in Lakefield's 2003 report (SGS Lakefield Research Limited, 2003b) and are discussed in the tailings and environmental section of the SNC-Lavalin feasibility reports.

Hydrometer tests on flocculated but degraded tailings from pilot plant operation with SAPO-CSB blend and Mine Blend showed that both samples contained about 33% passing 10µm and 5% passing 1.3µm.

Natural degradation tests on tailings from pilot plant operation with SAPO-CSB blend and Mine Blend were performed in a 57L aquarium located outside at Lakefield (SGS Lakefield Research Limited, 2003a). Results are summarized in Figure 16.13 presented below. It will be noted that PP1 was terminated after 55d when CNWAD had dropped to less than 15ppm. PP2 tailings took 100d to reach 20 ppm – probably because the initial sample contained more cyanide and copper than the PP1 tailings sample.

Figure 16.13 Natural Degradation of PP1 and PP2 Tailings

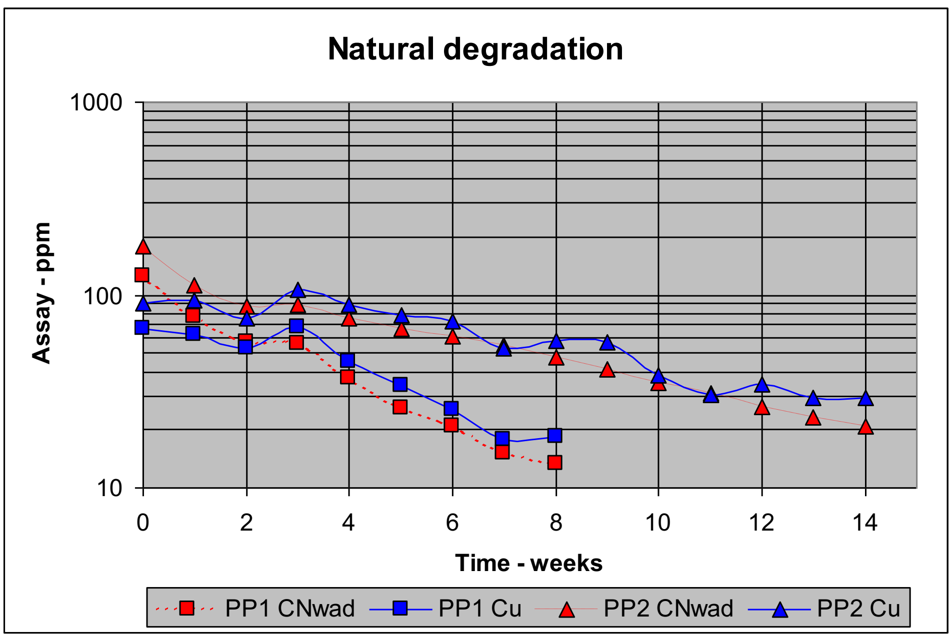


Figure 16.13 shows that cyanide and copper are rapidly removed in the Lakefield environment. Data from Crystallex's operations in Venezuela show even faster cyanide degradation rates under the more favorable temperature and insolation conditions in that location.

Four continuous cyanide destruction tests were performed using the INCO process and standard test procedures on degraded tailings solution from PP1. The tests showed that with an SO_2 to CNWAD ratio of about 6, a starting CNWAD of 13 ppm, a residence time of 20 to 30 minutes, and at a pH of 8, CNWAD values (measured by the Scaler distillation method) of <0.3 ppm could be attained with or without copper addition. When the SO_2 to CNWAD ratio was dropped to 3, without using copper addition, the CNWAD level was reduced to 0.7 ppm. Residual copper levels were 1.1 to 1.7 ppm at the higher SO_2 addition levels and 4 ppm at the lower level. Lime additions in these tests were in the range of 2 to 3 kg/kg of CNWAD destroyed.

Five continuous tests were done on degraded PP2 tailings solution containing 21 ppm CNWAD and 22 ppm Cu. At SO_2 to CNWAD ratios of about 6, CNWAD was reduced to <0.1 ppm with or without copper addition. Copper in treated solution was <0.5 ppm. Lime consumption was 3 to 4 kg/kg of CNWAD destroyed.

The treatment conditions noted above are similar to industrial experience elsewhere with the INCO air/SO2 process and the results are very acceptable.

17.0 MINERAL RESOURCE ESTIMATES

17.1 Database

MDA received a copy of the Placer digital database for the Las Cristinas project from Crystallex on four compact discs in 2002. This database was later augmented by ASCII and spreadsheet files. Original data available included:

- Drill data in GEOLOG format with:
  - Assay data (Au, Cu, CNSCu, Ag, and some trace elements),
  - Geological descriptions,
  - Structural data,
  - Geotechnical data, and
  - Check sample data;
- PCXPLOR databases (incomplete);
- Survey information;
- Geological code definitions;
- Cross sections with drill data and some geological interpretations;
- Geological maps and drill hole maps;
- Site maps;
- Trench geological maps with assays;
- Point load test results;
- Surface geochemical data;
- Topographic data; and
- Photographs of core.

The initial database was missing data from about 85 holes, but Crystallex was able to obtain data from 75 of them, bringing the final database to within 10 holes of being complete. The missing holes are located at Mesones-Sofia, outside of the main resource areas. Most of the 75 holes obtained by Crystallex from CVG were missing copper data, and all were missing geological data. A description of the original database is given in Table 17.1.

Table 17.1 Descriptive Statistics of Database Used

Data	Number
Drill holes	1,174
Meters of drilling*	160,600
Gold assays	162,806
Copper assays	145,547
Copper CN Soluble assays	40,655
Silver assays	145,221
Trenches	108

*Includes trenches

The database received by MDA had up to three check assays for gold and sometimes one check assay for silver and copper. There is no record of what each check assay represents, such as core split, coarse reject, or pulp. Correlation between these duplicate samples is very good to excellent.

Since constructing the original database, all of which was data derived from Placer's work, Crystallex has drilled 90 core holes in four drill campaigns from 2003 through 2007. All Crystallex drilling was NQ size and was completed by the same drilling contractor as was used by Placer Dome, Majortec Drilling. Crystallex's data in the database are described in Table 17.2.

Table 17.2 Descriptive Statistics of Crystallex Data

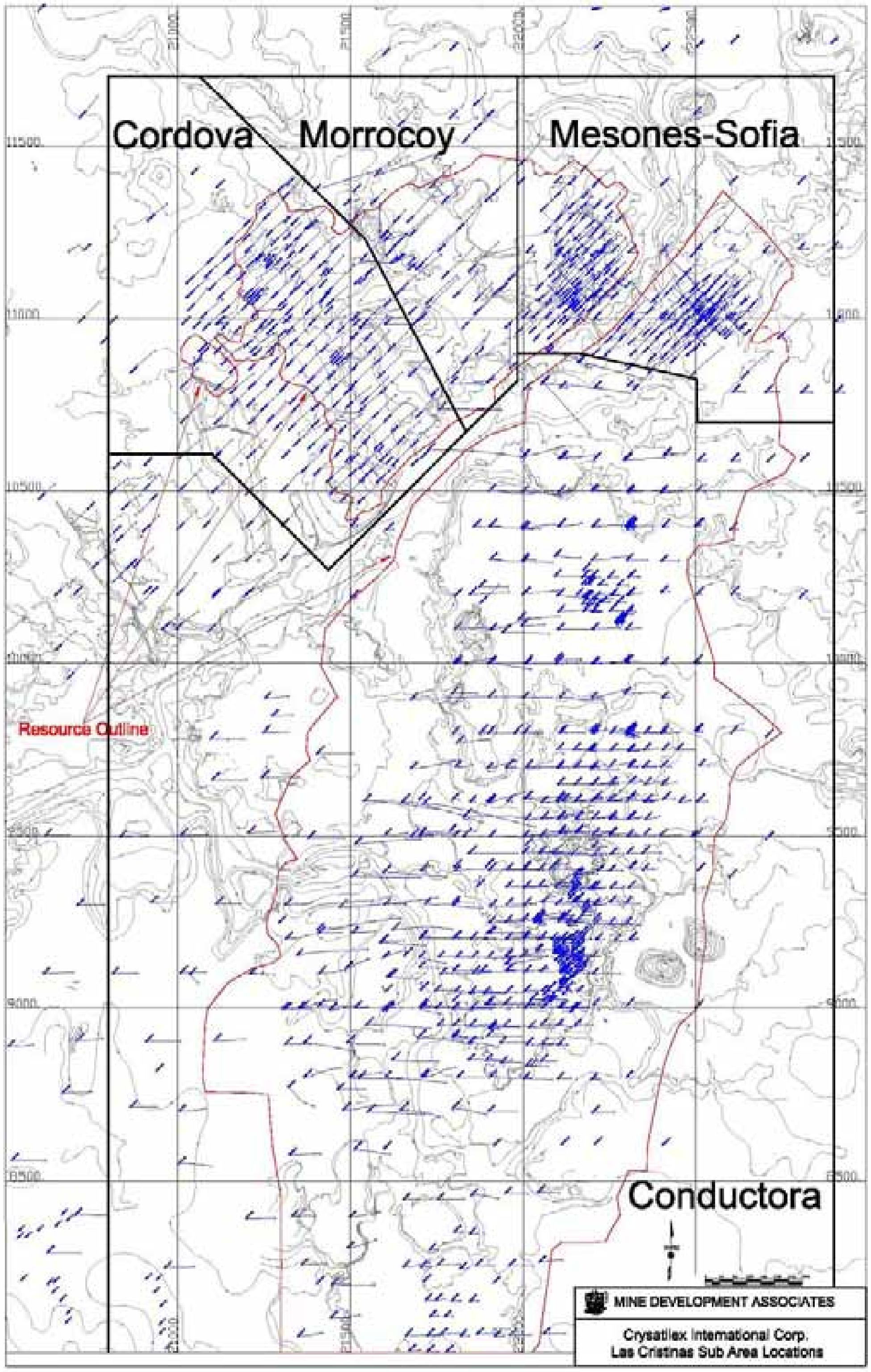
Data	Number
Drill holes	90
Meters of drilling	28,427
Gold assays	24,669
Copper assays	22,661
Copper CN Soluble assays	3,250
Silver assays	None
Trenches	None

17.2 Model Areas

Boundary files were made around four areas of the concession, which were used for modeling, estimation, and tabulations. These boundaries differentiated areas of varying amounts of exploration data, degree of geological understanding, geological contacts, and level of confidence. Four areas were defined: Conductora, which includes Cuatro Muertos and Potaso, Mesones-Sofia, Cordova, and Morrocoy (Figure 17.1).

For grade modeling, the different areas were defined on the basis of geographic location and drill pattern. Most of the drilling in Conductora was at azimuth 090°, while in Mesones-Sofia, Morrocoy and Cordova it was at azimuth 045°. All areas lie within the same block model, but each was estimated from its respective drill-hole files, and all work was limited by bounding files which were contiguous but did not overlap (Figure 17.1).

Figure 17.1 Locations of the Four Las Cristinas Sub-Areas



17.3 Las Cristinas Resources – General

MDA classified the resource in order of increasing geological and quantitative confidence, into Inferred, Indicated and Measured categories to be in compliance with Canadian National Instrument 43-101 and the "CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines," issued in 2000 and modified with adoption of the "CIM Definition Standards - For Mineral Resources and Mineral Reserves" in 2005. CIM mineral resource definitions are given below:

Mineral Resource

Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories. An Inferred Mineral Resource has a lower level of confidence than that applied to an Indicated Mineral Resource. An Indicated Mineral Resource has a higher level of confidence than an Inferred Mineral Resource but has a lower level of confidence than a Measured Mineral Resource.

A 'Mineral Resource' is a concentration or occurrence of diamonds, natural solid inorganic material, or natural solid fossilized organic material including base and precious metals, coal, and industrial minerals in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge.

The term Mineral Resource covers mineralization and natural material of intrinsic economic interest which has been identified and estimated through exploration and sampling and within which Mineral Reserves may subsequently be defined by the consideration and application of technical, economic, legal, environmental, socio-economic and governmental factors. The phrase 'reasonable prospects for economic extraction' implies a judgment by the Qualified Person in respect of the technical and economic factors likely to influence the prospect of economic extraction. A Mineral Resource is an inventory of mineralization that under realistically assumed and justifiable technical and economic conditions might become economically extractable. These assumptions must be presented explicitly in both public and technical reports.

Inferred Mineral Resource

An 'Inferred Mineral Resource' is that part of a Mineral Resource for which quantity and grade or quality can be estimated on the basis of geological evidence and limited sampling and reasonably assumed, but not verified, geological and grade continuity. The estimate is based on limited information and sampling gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.

Due to the uncertainty that may be attached to Inferred Mineral Resources, it cannot be assumed that all or any part of an Inferred Mineral Resource will be upgraded to an Indicated or Measured Mineral Resource as a result of continued exploration. Confidence in the estimate is insufficient to allow the meaningful application of technical and economic parameters or to *enable an evaluation of economic viability worthy of public disclosure. Inferred Mineral Resources must be excluded from estimates forming the basis of feasibility or other economic studies.*

Indicated Mineral Resource

An 'Indicated Mineral Resource' is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough for geological and grade continuity to be reasonably assumed.

Mineralization may be classified as an Indicated Mineral Resource by the Qualified Person when the nature, quality, quantity and distribution of data are such as to allow confident interpretation of the geological framework and to reasonably assume the continuity of mineralization. The Qualified Person must recognize the importance of the Indicated Mineral Resource category to the advancement of the feasibility of the project. An Indicated Mineral Resource estimate is of sufficient quality to support a Preliminary Feasibility Study which can serve as the basis for major development decisions.

Measured Mineral Resource

A 'Measured Mineral Resource' is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters, to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough to confirm both geological and grade continuity.

Mineralization or other natural material of economic interest may be classified as a Measured Mineral Resource by the Qualified Person when the nature, quality, quantity and distribution of data are such that the tonnage and grade of the mineralization can be estimated to within close limits and that variation from the estimate would not significantly affect potential economic viability. This category requires a high level of confidence in, and understanding of, the geology and controls of the mineral deposit."

Because of the requirement that the resource exists "in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction," MDA is reporting the resources at cutoffs that are reasonable for deposits of this nature and mining conditions of this type. MDA has considered geological understanding and use it in modeling, sample integrity, verifiability of data, and estimation parameters in the classification. For example, there are no Measured or Indicated resources at Cordova because at this time the geology is poorly understood and the sample data have not been validated. For the entire deposit the relative amount of Measured material has increased as compared to previous estimates because of the extensive work in geology and data verification that Crystallex has done.

17.4 Gold

17.4.1 Conductora

Quantile-Quantile ("QQ") plots were made for the Conductora gold grades. Grade populations of 0.15 g Au/t, 1 g Au/t, 7 g Au/t, and 18 g Au/t were analyzed. Cross sections were made using color coding of the drill samples to match these cutoffs. After constructing and plotting these sections, and working with the analytical and geological data (lithological and structural information), certain modeling criteria and gold distributions became apparent. While these zones were defined in 2002 and have proven to be quite predictable and robust, it was not until well into Crystallex's exploration and geological studies that the reason for the gold distribution was understood. The controls on mineralization are lithological with the more favorable units having more primary porosity and permeability. As such, the highest-grade zones lie within what is considered to be a dominantly volcaniclastic unit. While the lithology correlates with the mineralization, the amounts of sulfides and alteration do as well. As such, the higher-grade zones can be visually identified by lithology, alteration, and sulfides. The sulfides are dominated by pyrite and lesser chalcopyrite.

The following zones are described in terms of geology and distribution of mineralization:

- Traces of gold (~0.1 g Au/t or 100 ppb) are found throughout the entire sequence of rocks including outside the defined mineralized zones. These rocks are weakly altered and have low sulfide contents.
- The low-grade zone is defined by low-sulfide content, moderate alteration, and grade ranges from approximately 0.2 g Au/t to 1 g Au/t. These zones strike for the entire length of the concession from south to north broken only by an 80m-wide, vertical, unmineralized dike.
- The high-grade zone is defined by high sulfide content, strong alteration within a dominantly volcaniclastic lithology, and grade ranges above approximately 1 g Au/t. This main body of +1 g Au/t material, the central core, occurs in tabular deposits up to 100m thick along a strike length of over 1,000m beginning about 600m north of the southern property boundary.

The highest-grade zone, which could not be modeled separately, is defined statistically as grading over 7 g Au/t. MDA took considerable time attempting to model this zone. In the central core of the deposit in the well-mineralized volcaniclastic unit, there is a thin zone about 5m thick of +7 g Au/t (on a sample-interval scale) that extends for close to 1000m down dip. But this zone strikes only a few hundred meters, and the intercepts for the most part cannot certainly be correlated. Outside this central zone, the +7 g Au/t material is spotty and does not correlate.

Grade boundaries are gradational except at the very highest cutoffs of over 10 to 20 g Au/t. Most of the gold mineralization behaves more like that of a disseminated deposit, as would be expected of a lithologically controlled gold deposit. MDA derived a color-coded cutoff of 0.2 g Au/t from grade-distribution plots. This figure of 0.2 g Au/t is well below economic cutoff but well within the tenor of the gradational lower-grade boundary. In order to better define the next natural, gradational mineralization boundary, MDA used a majority-in/majority-out rule-of-thumb that enclosed a coherent cluster of higher grades. This higher-grade zone was determined to be over ~1 g Au/t. The next higher-grade coherent mineralized zone was defined as having a grade of ~1.7 g Au/t. The highest-grade zones are over ~7 g Au/t and are found to have moderate continuity from hole to hole and section to section only in the central part of the deposit around northing 9,000N in local grid coordinates. In the core of the deposit, such a zone of high grade but only a few meters thick can extend with moderate continuity from the surface to the deepest holes, a distance of up to 600m down dip.

Unmineralized dikes cut the mineralized zones described above. These mafic dikes are easily identified and distinguished from the mineralized country rock by their weak alteration and negligible pyrite content. These units were segregated during modeling. Quaternary alluvial material overlies all saprolite (which in turn overly bedrock) units. Tailings and workings from recent small-scale *artisinal* mining, which has been particularly intense since the 1980s, are included with the alluvial material unit for classification and modeling purposes.

Table 17.3 lists the zones being modeled. A typical cross section through the core of the deposit is shown in Figure 9.1.

Table 17.3 Modeled Gold Zones at Conductora

Zone/Material	Description
8	Overburden
9	Dikes – Not modeled (given 0 grade; all below overburden)
21	Footwall low-grade zone (all below overburden)
31	Main low-grade zone (all below overburden)
41	Hanging wall low-grade zone (all below overburden)
22	Footwall high-grade zone (all below overburden)
32	Main high-grade zone (all below overburden)
42	Hanging wall high-grade zone (all below overburden)
99	Background outside mineralized units (all below overburden)

Gold grades typically do not change significantly across contacts between bedrock and saprolite material types. As such, the same gold zones described above were carried across the saprolite-bedrock contact. These gold zones were modeled as semi-soft boundaries, in that down-hole compositing was first done to six-meter intervals and then coded from the cross-sectional zones. Later in the modeling process, the grades of those blocks that straddle contacts between material types were weight-averaged with the percentage of each zone represented in those blocks, thereby maintaining the integrity of the zone and honoring gradational boundaries. The only hard boundaries used in the geological model for gold were the contacts of the unmineralized dikes and the contact between the saprolite and overburden.

17.4.2 Mesones-Sofia

Separate QQ plots were made for drill sample gold grades from the Mesones-Sofia and Conductora areas. Data from these underwent separate statistical analysis in order to honor the distinct differences in geology, alteration and mineralization style evident between the Mesones – Sofia and Conductora areas. Both Mesones and Sofia are interpreted as being breccia pipes characterized by proximal, relatively high-temperature alteration and mineralization assemblages. Mineralization is largely confined to the breccias. In contrast, mineralization at Conductora is concentrated in an extensive, inclined sheet and is characterized by lower-temperature alteration assemblages in comparison to Mesones-Sofia. Grade populations of ~0.2 g Au/t, ~1.0 g Au/t, ~2.7 g Au/t, and ~24 g Au/t were reviewed, but only the low-grade ~0.2 g Au/t and the higher-grade zone, ~1.0 g Au/t, were used in the final model. Otherwise, the same procedures and geological parameters were used to model Mesones-Sofia as were used to model Conductora, including the segregation of the unmineralized dikes and the overburden alluvial material from the mineralized zones.

There is less confidence in the Mesones-Sofia model due to the complexity of the shape of the breccia body in comparison to the relatively simple, sheet-like geometry of Conductora. Hard boundaries were required in this deposit because of the extremely high grades in the central zones. Local high-grade zones are found with sulfide clots and quartz-flooded breccia zones. These pockets are presumed to have very short continuity, on the order of meters or less. A list of the modeled zones is given in Table 17.4, and a typical cross section through Mesones-Sofia is given in Figure 9.3.

Table 17.4 Modeled Gold Zones at Mesones-Sofia

Zone/Material	Description
8	Overburden
9	Dikes – Not modeled (given 0 grade; all below overburden)
31	Main low-grade zone (all below overburden)
32	Main high-grade zone (all below overburden)
99	Background outside mineralized units (all below overburden)

17.4.3 Morrocoy and Cordova

Similar modeling procedures were used at Morrocoy and Cordova as were used at Conductora. The resulting model contains relatively small high-grade zones within more extensive low-grade boundaries. Another difference between Morrocoy and Cordova with respect to Conductora is steeper dips of the mineralized zones (~60^{o} to the southwest) and their overall northwest strike. This change in attitude of the mineralized zones is due to folding in which the Conductora and Sofia areas are located in the north-striking (southern) limb of a regional synform, while Cordova, Morrocoy and Mesones are located in the northwest-striking limb. Coding and procedures are otherwise the same as for Conductora, described in Section 17.4.1. A typical cross section through Morrocoy and Cordova (and Mesones) is given in Figure 9.3.

17.5 Copper

17.5.1 Conductora

The copper model is dominated by material types that resulted from surface weathering processes. Primary copper mineralization at Conductora is disseminated in low to moderate grades (~1,000 to ~2,000 ppm) with no well-defined grade boundaries or geological controls, although there is a weak relationship to gold, with higher copper grades in some of the volcaniclastic units that typically host the higher gold grades. The copper occurs as disseminations and also, but rarely, in clots up to 10s of centimeters across.

Weathering has modified the original copper distribution. Much of the copper has been leached from the oxide saprolite, although some pods of high copper and high soluble copper do exist where primary copper sulfides are encapsulated by quartz, typically in breccia zones. The copper that was leached was re-deposited in the mixed and sulfide saprolite. This re-deposited copper occurs as secondary copper sulfides including chalcocite, covellite, and bornite, and is cyanide soluble. As with the gold, copper in the overburden was modeled as a distinct unit. Consequently, the following material types and copper zones were modeled:

- The alluvial material was modeled separately;
- The oxide saprolite was modeled separately;
- The sulfide and mixed saprolite were modeled together; and
- All material from the saprock and below was modeled.

Table 17.5 gives a list of the material types that were modeled, and Figure 9.2 presents a typical cross section with the material types related to copper mineralization at Conductora.

Table 17.5 Modeled Copper Zones at Conductora

Zone/Material	Description
8	Overburden
9	Dikes – Not modeled (assigned 0 grade)
6	Oxide saprolite
4, 5	Mixed and sulfide saprolite high-grade zone
1, 2, 3	Background outside mineralized units

17.5.2 Mesones-Sofia

Copper mineralization at Mesones-Sofia has a similar distribution to that of gold in that it is largely confined to the breccia zones that are clustered to form breccia-dominated areas that have an overall pipe-like geometry. Differences between mineralization at Mesones-Sofia as compared with Conductora can be summarized as follows:

- The majority of the mineralization at Mesones-Sofia cross-cuts stratigraphy with a relatively small component oriented parallel to bedding. Conductora-style mineralization is overwhelmingly bedding parallel.
- Mesones and Sofia are composed of two distinct pipe-like bodies in which vein-breccias are concentrated. Two dominant breccia-vein orientations are evident in core: one is steeply dipping and the other, subordinate set, is bedding sub-parallel. Both of the breccia pipes are oval-shaped in cross section with the long axis orientated northeast, probably due to a preferential northeast strike of the sub-vertical vein-breccias. The Sofia breccia is located on the south side of a fold axis, in the same limb as Conductora. This limb strikes north and dips moderately (30-40°) to the west. Mesones lies on the north side of the fold axis, with Morrocoy and Cordova, where strata strike northwest and dip more steeply (average 60°) to the southwest. Mineralization decreases in intensity and grade abruptly at the margins of both breccia pipes.
- Most sulfide grains and aggregates in the Mesones and Sofia breccia pipes are encapsulated in quartz, whereas silicification is rare in Conductora. Sulfide grains and aggregates are, on average, significantly coarser in Mesones-Sofia than in Conductora.

Sofia is separated from Mesones by a steeply dipping diorite dike that varies from about 80 to 100m wide. As is the case with the shallow-dipping *en echelon* diorite sills that are ubiquitous in the northern part of the Las Cristinas deposit, the wide dike in the Mesones-Sofia area is post-mineralization in age and cuts mineralization. These barren dikes are assigned a zero gold and copper value in the model. A list of modeled zones is given in Table 17.6, and a typical cross section showing the copper mineralization is given in Figure 9.4.

Table 17.6 Modeled Copper Zones at Mesones-Sofia

Zone/Material	Description
8	Overburden
9	Dikes – Not modeled (assigned grade of 25 ppm Cu; all below overburden)
6	Oxide saprolite
4, 5	Sulfide and mixed saprolite
61	Low-grade zone in carbonate-stable bedrock, carbonate-leached bedrock and saprock
62	High-grade zone in carbonate-stable bedrock, carbonate-leached bedrock and saprock
99	Outside the mineralized zones in carbonate-stable bedrock, carbonate-leached bedrock and saprock

17.5.3 Morrocoy and Cordova

Similar procedures for modeling the copper were used at Morrocoy and Cordova as were used at Conductora, but overall there is substantially much less copper at Morrocoy and Cordova in comparison with Mesones-Sofia and Conductora. Like the gold, the copper is modeled in the bedrock units along northwest strikes and ~60^o dips. Coding and procedures are otherwise the same as for Conductora, described in Section 17.5.1. Figure 9.4 is a cross section through Morrocoy and Cordova (and Mesones-Sofia).

17.6 Silver

Silver occurs in low concentrations at Conductora, Cordova and Morrocoy and partly because of these low grades, and partially because it has received little study, the silver mineralization is poorly understood. It seems that the silver is finely disseminated throughout the deposit in very low concentrations of less than ~0.5 g Ag/t. Relatively high-grade silver zones have an erratic, discontinuous distribution throughout the Las Cristinas deposit. Table 17.7 shows the list of units used in modeling silver grades at Conductora. Some of the same material types that were used in the modeling of copper were also used in order to model silver.

Table 17.7 Modeled Silver Zones at Conductora

Zone/Material	Description
8	Overburden
9	Dikes – Not modeled (given 0 grade; all below overburden)
1, 2, 3, 4, 5, 6	Background (all material below overburden)

The distribution of silver at Mesones-Sofia is similar to that in Conductora. Table 17.8 shows the list of units used in the modeling of silver. The same material types that were used in silver modeling were used for modeling copper grades.

Table 17.8 Modeled Silver Zones at Mesones-Sofia

Zone/Material	Description
8	Overburden
9	Dikes – Not modeled (given 0 grade; all below overburden)
1, 2, 3, 4, 5, 6	Background (all below overburden)

17.7 Specific Gravity

Specific gravity at Las Cristinas is dominantly controlled by weathering and is incorporated into the model with material type. The specific gravity values used are given in Table 17.9 The bedrock essentially has similar density throughout, except for the dikes, which have a lower density. Weathering processes have saprolitized the rocks and decreased their densities. Generally, density of material types at Las Cristinas increases with depth. The leaching of carbonate from the bedrock unit located beneath the saprolite, the carbonate-leached bedrock unit, resulted in the development of voids and vugs, resulting in a decrease in the specific gravity relative to primary bedrock.

Table 17.9 Material Types used to Define Specific Gravity

All Areas

Material Type	SG
CBS Bedrock	2.79
CLB Bedrock	2.35
Saprock	1.92
Sulfide Saprolite	1.69
Mixed Saprolite	1.69
Oxide Saprolite	1.56
Overburden	1.63
Dike	1.93

Mesones-Sofia Only

Material Type	SG
CBS Bedrock	2.79
CLB Bedrock	2.39
Saprock	2.13
Sulfide Saprolite	1.89
Mixed Saprolite	1.64
Oxide Saprolite	1.68
Overburden	1.64
Dike	1.89

17.8 Metallurgical Model

The metallurgical model is the same as the material-type model. The principal differences in these rock types that would affect metallurgical characteristics are: a) the hardness, manifested in the amounts of clay, b) the amount of copper (in both primary and remobilized secondary chalcocite), and c) the specific gravity. The specific gravity was described earlier and is a direct consequence of surface weathering. Generally the specific gravity increases while the relative clay content decreases with depth. Approximate copper grades for the main material types are given in Table 17.10. No hardness model of material for bedrock has been determined or made.

Table 17.10 Copper and Soluble Copper Grades by Material Type and Area
(All grades in ppm)

	CBS, CLB, SAPR	CBS, CLB, SAPR	SAPS, SAPM	SAPS, SAPM	SAPO	SAPO
Area	**ppmCu**	**ppmCNSCu**	**ppmCu**	**ppmCNSCu**	**ppmCu**	**ppmCNSCu**
Conductora	756	82	1634	900	552	33
Mesones-Sofia	3104	419	2755	1733	298	41
Morrocoy/Cordova	332	123	348	277	143	14
Note: Numbers of samples are necessarily the same for Cu and CNSCU mean grades						

17.9 Conductora Grade Models

17.9.1 Conductora - Assays

The assay database from which Conductora was modeled is described in Table 17.11. In the defined Conductora area, there are 78,253 samples with gold grades and 77,117 samples with copper grades. There are 1,853 samples that were eliminated from the modeling database because they were from trench samples and 873 eliminated because they were deemed "contaminated." "Contaminated" samples were not used for obvious reasons, which were described more thoroughly earlier in the report in Section 13.0. Trench samples were eliminated for three reasons: there is a positive bias compared to drill samples, surface hand sampling commonly introduces biases, and the variography results were distinctly different and difficult to model when trench data were combined with drill sample data.

Table 17.11 Descriptive Statistics of the Conductora Assay Database
(including trench data and those samples deemed "contaminated")

AREA 1 Conductora-Cuatro Muertos

	Valid N	Mean	Median	Std. Dev.	CV	Min	Max.	Units
East	103,927					20,800	22,805	m
North	103,927					8,003	10,903	m
Elevation	103,923					(454)	145	m
From	103,927	118.59				0.0	599.0	m
To	103,927	119.59				0.1	600.0	m
Length	103,927	1.00				0.0	450.0	m
Au	102,648	0.84	0.37	5.14	6.10	0.00	1296.5	ppm
AuCap	102,648	0.80	0.37	1.52	1.90	0.00	40.0	ppm
Cu	97,780	831	366	1533	2	0	90,800	ppm
CuCap	97,780	827	366	1438	2	0	25,000	ppm
CuCNA	32,574	262	32	985	4	1	48,250	ppm
CuCnCap	32,574	261	32	984	4	1	48,250	ppm
CuRatio	32,484	17	6.00	24	1	0.00	100.0	%
Ag	78,376	0.90	0.30	7.57	8.40	0.00	680.0	ppm
AgCap	78,376	0.79	0.30	2.57	3.28	0.00	130.0	ppm
CREC	95,065	91	98	17	0.2	0	232	%
RQD	59,833	77	85	23	0.3	0	253	%
MaterialCode	5,941					1	9	%
Zone	103,927					0	42	%
Code	103,927					0	0	ppm
Area	103,927					1	1	
Type	103,927					0	9	
Use	893					2	2	
DHorTR	102,872					1	2	

Capping limits were determined iteratively considering:

- the context of modeled zones, material types,
- grade distribution plot profiles of each metal,
- the affected "contained" metal content,
- the geology, and
- the resulting coefficient of variation (CV).

The final capping limits are given in Table 17.12. The total-metal-content reduction caused by capping ranged from 0.2% for copper to 43% for silver. The extreme effect in the reduction of contained silver is justified by the fact that the silver high-grades have little to no continuity and are poorly understood.

Gold-metal-content reductions ranged from 2% for the overburden to 10% for mineralization located outside the mineralized zones. The apparently extreme 10% reduction in metal content caused by capping in the areas outside defined mineralized zones is justified by the fact that there is no continuity of the higher grade. It is believed to be "pockets" or blebs, outside the mineralized zones. Gold-zone metal reduction caused by capping was 6% for low-grade and 5% for high-grade zones. Although continuity of the higher grades is, in most cases, good, the rather loose, broad mineral zones at Conductora necessitated that capping be done.

Table 17.12 Capping Limits and Assay Statistics Conductora Samples

Zones 21, 31, 41	Low-sulfide zone			Capped at 7 g/t				
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Au	46,482	0.39	0.61	3.38	5.51	0.00	808	g/t
AuCap	46,482	0.39	0.58	0.70	1.20	0.00	7	g/t
Difference in grade		0%	-5%	Difference in metal			-5%	
Zones 22, 32, 42	**High-sulfide zone**			**Capped at 40 g/t**				
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Au	22,955	1.26	1.96	9.40	4.81	0.00	1,297	g/t
AuCap	22,955	1.26	1.87	2.50	1.34	0.00	40	g/t
Difference in grade		0%	-5%	Difference in metal			-5%	
Zone 8	**Overburden**			**Capped at 7 g/t**				
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Au	1,676	0.88	1.22	1.41	1.16	0.00	14	g/t
AuCap	1,676	0.88	1.20	1.27	1.06	0.00	7	g/t
Difference in grade		0%	-2%	Difference in metal			-2%	
Zone 0	**Outside Zones**			**Capped at 6 g/t**				
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Au	26,815	0.09	0.21	2.04	9.58	0.00	282	g/t
AuCap	26,815	0.09	0.18	0.42	2.28	0.00	6	g/t
Difference in grade		0%	-14%	Difference in metal			-14%	

Type 1, 2, and 3	Bedrock and Saprock			Capped at ppm ppm				
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Cu	69,192	359	756	1246	1.65	0	68400	ppm
CuCap	69,192	359	755	1207	1.60	0	22000	ppm
Difference in grade		0%	0%	Difference in metal			0%	
CuCNA	16,249	32	82	220	2.67	1	6700	ppm
CuCnCap	16,249	32	82	207	2.53	1	3750	ppm
CuRatio	16,237	6	10	13	1.34	0	100	ppm
Type 4, 5	**Sulfide and Mixed Saprolite**			**Capped at ppm ppm**				
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Cu	12,587	800	1634	2781	1.70	0	90800	ppm
CuCap	12,587	800	1615	2474	1.53	0	25000	ppm
Difference in grade		0%	-1%	Difference in metal			-1%	
CuCNA	7,280	244	900	1870	2.08	1	48250	ppm
CuCnCap	7,280	244	900	1870	2.08	1	48250	ppm
CuRatio	7,256	40	42	31	0.75	0	100	ppm
Type 6	**Oxide Saprolite**			**Capped at ppm ppm**				
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Cu	11,444	275	552	832	1.51	0	12300	ppm
CuCap	11,444	275	550	814	1.48	0	7300	ppm
Difference in grade		0%	0%	Difference in metal			0%	
CuCNA	6,887	7	33	220	6.58	1	9700	ppm
CuCnCap	6,887	7	33	220	6.58	1	9700	ppm
CuRatio	6,840	2	7	13	1.89	0	100	ppm
Type 8	**Overburden**			**Capped at ppm ppm**				
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Cu	1,653	154	255	346	1.35	0	4640	ppm
CuCap	1,653	154	249	295	1.19	0	1900	ppm
Difference in grade		0%	-3%	Difference in metal			-3%	
CuCNA	981	18	37	78	2.14	1	1455	ppm
CuCnCap	981	18	37	78	2.14	1	1455	ppm
CuRatio	978	13	19	19	0.99	0	100	ppm

17.9.2 Conductora - Composites

Gold: After capping, the gold-assay sample intervals were composited to six-meter lengths. The gold grades were down-hole composited using geological restrictions for some material types. Honored material types were overburden (material type 8) and dikes (material type 9), because there is a discontinuity between both of these and the gold mineralization and because both post-date mineralization; only the dike is barren. After compositing and excluding the overburden and dike, the six-meter composites were coded from the cross-sectional gold-zone interpretations. This set of composites was used for modeling gold and core recovery. Gold-composite statistics are given in Table 17.13.

Copper, copper solubility and silver by material type: After capping, the copper-assay sample intervals were composited to six-meter lengths. All the material types were honored during compositing. These composites were used for estimating copper, copper solubility, and silver. After compositing, the composites were back-coded from the model with the relative elevation from the top of the mixed or sulfide-saprolite unit. This relative elevation was used as a reference for a sample's distance above or below the oxide-sulfide contact in modeling copper and copper solubility ratios in the saprolite units. Descriptive statistics of the composite-samples files all showed reasonably well-behaved data, and for those data sets that were not, estimation routines were changed to account for high-variance data sets, which did not occur in the gold data. Copper composite statistics are given in Table 17.13.

Table 17.13 Statistics by Zone (Au) and Type (Cu) of Conductora Composites

All composites

	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Length	17474	0.0	5.3	0.0	0.0	0.0	6.0	m
Au	16274	0.48	0.82	2.24	2.73	0.00	226.54	g Au/t
Aucap	16274	0.48	0.78	0.93	1.20	0.00	15.23	g Au/t

ZONE 21,31,41 Low-sulfide mineralization

	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Length	7871	0.0	5.6	0.0	0.0	0.0	6.0	m
Au	7609	0.50	0.63	1.17	1.85	0.01	88.40	g Au/t
Aucap	7609	0.50	0.60	0.44	0.74	0.01	9.17	g Au/t

ZONE 22,32,42 High-sulfide mineralization

	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Length	4008	0.0	5.3	0.0	0.0	0.0	6.0	m
Au	3687	1.49	1.93	4.05	2.10	0.01	226.54	g Au/t
Aucap	3687	1.49	1.83	1.27	0.69	0.01	15.23	g Au/t

ZONE 8 Overburden

	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Length	378	0.0	3.4	0.0	0.0	0.0	6.0	m
Au	255	0.92	1.12	0.88	0.79	0.04	4.93	g Au/t
Aucap	255	0.92	1.10	0.83	0.76	0.04	4.37	g Au/t

ZONE 99 Outside mineralized zones

	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Length	4719	0.0	5.5	0.0	0.0	0.0	6.0	m
Au	4539	0.12	0.21	0.81	3.78	0.00	34.33	g Au/t
Aucap	4539	0.12	0.19	0.25	1.34	0.00	6.00	g Au/t

TYPE 1,2,3 CBS, CLB, SAPR

	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Length	11155		5.2			0.0	6.0	m
Cu	10334	505	772	900	1.16	1	15522	ppm
Cucap	10334	505.00	770.70	884.42	1.15	1.00	13887	ppm
CuCN	2770	41	82	170	2.07	1	3035	ppm
CuCNC	2770	41	81	163	2.01	1	3035	ppm

TYPE 4,5 SAPS, SAPM

	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Length	2586		4.4			0.0	6.0	m
Cu	2344	940	1668	2161	1.29	0	46779	ppm
Cucap	2344	940.00	1648.66	1935.45	1.17	0.00	22196	ppm
CuCN	1368	291	927	1512	1.63	1	23136	ppm
CuCNC	1368	291	927	1512	1.63	1	23136	ppm

TYPE 6 SAPO

	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Length	2200		4.6	0.0		0.0	6.0	m
Cu	1984	307	560	717	1.28	0	8168	ppm
Cucap	1984	307.00	558.62	708.42	1.27	0.00	7300	ppm
CuCN	1201	9	33	173	5.22	1	6823	ppm
CuCNC	1201	9	33	173	5.22	1	6823	ppm

TYPE 8 OVB

	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Length	657		2.2			0.0	6.0	m
Cu	559	171	259	314	1.21	0	3582	ppm
Cucap	559	171.00	252.08	263.14	1.04	0.00	1900	ppm
CuCN	334	23	38	61	1.63	1	540	ppm
CuCNC	334	23	38	61	1.63	1	540	ppm

17.9.3 Conductora - Geostatistics and Estimation

MDA calculated numerous variograms and correlograms at varying lags, cutoffs, azimuths and dips, and with separate and combined zones. In the end, variogram models were chosen that were parallel to the mineralization-controlling geological fabric, namely 15° strike azimuth, 285° dip azimuth and dip of -35°. The variograms were calculated on composites of gold, copper, CNSCu-to-total-Cu ratio, and silver. Silver has a small (~1%) population of very high-grade samples with no apparent continuity, and consequently, the silver variograms portray the low-grade "disseminated" style of mineralization, which was modeled differently from the high-grade spikes.

All metal grades were estimated by ordinary Kriging. The estimation parameters are given in Appendix B. Multiple overwriting estimation passes were done for gold to compensate for over-smoothing in a single pass. This was not necessary for either copper or silver; however, the cyanide-soluble ratio yielded an over-smoothed model compared to the actual grades. The ratio of CNSCu to total copper in each block was estimated from the ratio in the drill composites. This method was chosen because CNSCu data were incomplete and estimating the ratio gave the ability to use estimation parameters pertinent to cyanide solubility, since the ratio is rock and grade dependent.

Gold distribution has not been materially affected by the weathering process. However, gold distribution has been significantly modified in the overburden due to alluvial concentrations and rudimentary mining. Included in the overburden are tailings and reworked material. As this unit is a catch-all term for all surficial material, no Measured resources were defined in this unit. As a result, gold was modeled in domains that crossed the bedrock and saprolite contacts, but never the overburden contact.

Copper distributions were materially affected by the weathering process. The overburden was treated as its own unit for the same reasons as it was for gold estimation. Copper has been leached from the oxide saprolite, although some local areas of high copper are preserved in areas of intense silicification that have protected copper minerals from leaching above the water table. These remnant pods of cyanide-soluble copper required that a locally accurate estimate of the cyanide-soluble copper be done. The copper leached from the oxide saprolite was deposited at and below the mixed/sulfide and oxide-saprolite contact. Little redistribution of copper occurred in the saprock, CLB and CSB bedrock. Consequently, both CNSCu and total-copper estimation were restricted to:

- oxide saprolite,
- combined mixed and sulfide saprolite, and
- combined saprock, CLB and CSB bedrock.

Very few differences were noted between the material types for silver grades. Throughout the sequence of material types, the silver is low-grade but with erratic spotty high-grades, often occurring as single assay spikes. The silver was modeled in the overburden as one unit, and all the other units combined as the second.

17.9.4 Conductora - Resources

MDA classified the resource by a combination of distance to the nearest sample, the number of samples used to estimate a block, the geological understanding and predictability of the resources, and the quality of the drill samples used, *i.e.*, core recovery. As gold is the dominant metal from a value standpoint and Crystallex has no mining rights to the copper, all blocks were classified based on gold (Table 17.14). The ranges used for resource classification were chosen based on an average of the directional gold variogram ranges.

Table 17.14 Criteria for Classification of Conductora Resources

Class	Distance*	Min. No. of Samples	Min. No. Drill Holes
Measured*	0 to 20 m	2	1
Indicated	1 to 20 m	1	1
Indicated	20 to 60 m	2	1
Inferred	60 to 110 m	1	1

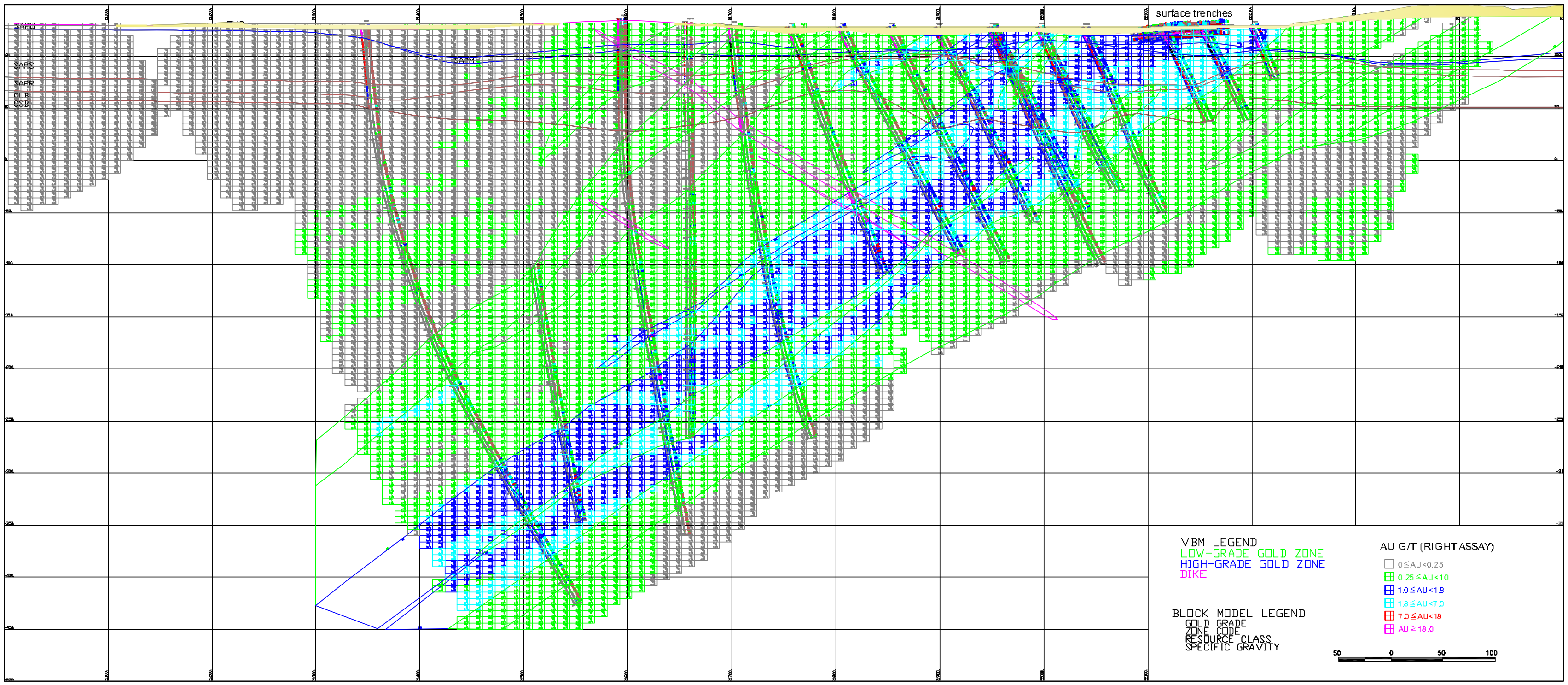
* See next paragraph for explanation of modified distances; all overburden is classified as Inferred.

MDA modified the distances used for classification by the percent core recovery. It was shown in an earlier section of this report that core recovery affects gold and copper grades and introduces a bias in the saprolite. The lower core recovery decreases confidence in the results and therefore is introduced into the definition of Measured, Indicated, and Inferred. MDA modified the distance between the closest sample and the model block by the following relationship:

- Estimated core recovery between 80% and 100%, no factor;
- Estimated core recovery between 60% and 80%, distance multiplied by 1.1; and
- Estimated core recovery below 60%, distance multiplied by 1.2.

The modified distance was used for the classification scheme given in Table 17.14. Essentially, those blocks with estimated lower core recovery were downgraded in classification.

The classification and the estimation described above resulted in a Measured, Indicated and Inferred resource at Conductora. Measured and Indicated resources are broken out in Table 17.15 and Table 17.16 and combined in Table 17.17, while the total Inferred resources are given in Table 17.18. This does not represent the entire body of mineralization at Conductora, as additional drilling will likely better define additional mineralization. The deposit is open ended at depth but is bounded at the south by a property boundary and at the north where it trends into Mesones-Sofia, Cordova and Morrocoy. A typical section of the Conductora gold model is given in Figure 17.2, and the copper model is in Figure 17.3.



Crystallex International Corp.
Las Cristinas
Conductora Block Model
Section 9150 Au

Bolivar State

Venezuela

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MINE DEVELOPMENT
ASSOCIATES

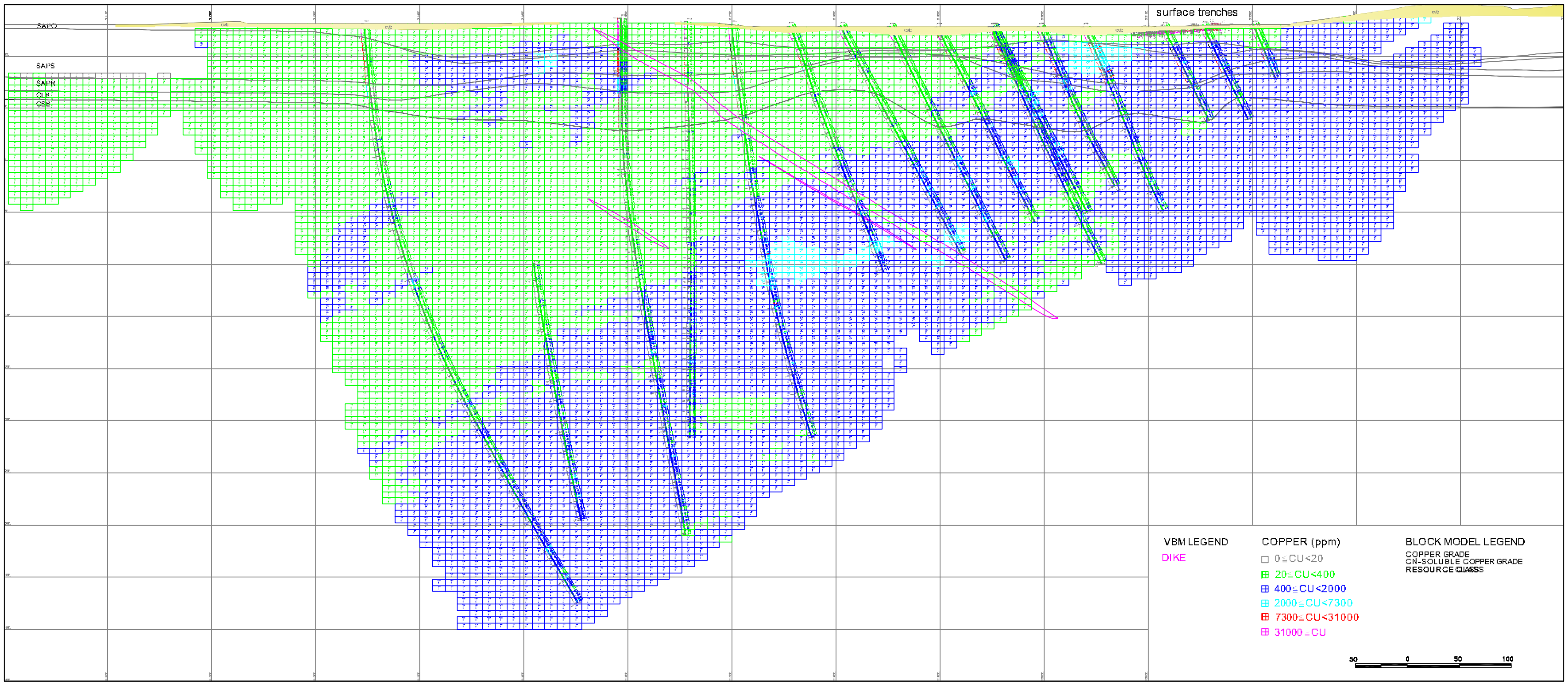
Reno

Nevada

DATE	Sep 12, 2007
DRAWN BY	S Ristorcelli
CHECKED BY	MDA
SCALE	as shown

FIGURE NO.
17.2

CAD CONTROL BLOCK R&KSteven\Projects\Las Cristinas_2007\Reports\43-101_2007\Figures\Fig17-2_n9150_2007.dwg
DATE:4/2/03



DATE	Sep 12, 2007
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SCALE	as shown

MINE DEVELOPMENT ASSOCIATES

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Crystallex International Corp.
Las Cristinas
Conductora Block Model
Section 9150 Cu

Bolivar State Venezuela

FIGURE NO.
17.3

CAD CONTROL BLOCK REF: R:\Las Cristinas_2007\Reports\43-101_2007\Figures\Fig17-3_bc9150_2007.dwg
DATE: 1/2/03

Table 17.15 Conductora Measured Resources
(Including Reserves*)

Conductora Measured (inclusive of Cuatro Muertos and Potaso)								(rounded)
Cutoff (g Au/t)	**Tonnes**	**Gold** (g/t)	**Gold** Ounces	**Silver** (g/t)	**Copper** (ppm)	**CNSolCu** (ppm)	**Silver** Ounces	**Copper** Kilograms
0.2	194,937,000	0.91	5,691,000	0.50	960	132	3,159,000	187,081,000
0.4	162,676,000	1.03	5,361,000	0.53	1,019	143	2,751,000	165,783,000
0.5	**135,221,000**	**1.14**	**4,969,000**	0.55	1,067	153	2,369,000	144,227,000
0.6	109,954,000	1.28	4,528,000	0.56	1,121	166	1,994,000	123,237,000
0.7	91,264,000	1.41	4,143,000	0.58	1,166	177	1,705,000	106,405,000
0.8	77,528,000	1.53	3,814,000	0.59	1,198	187	1,481,000	92,848,000
0.9	68,219,000	1.62	3,562,000	0.60	1,221	196	1,320,000	83,281,000
1.0	61,403,000	1.70	3,356,000	0.61	1,244	204	1,202,000	76,361,000
1.5	35,751,000	2.03	2,328,700	0.64	1,354	245	737,900	48,400,000
2.0	14,551,000	2.47	1,153,700	0.68	1,483	316	319,100	21,584,000
2.5	4,927,000	2.98	472,500	0.72	1,535	366	113,700	7,563,000
3.0	1,769,000	3.48	198,000	0.77	1,578	403	44,000	2,790,000
3.5	596,000	4.04	77,000	0.79	1,646	471	15,000	981,000
4.0	211,000	4.64	32,000	0.75	1,621	476	5,000	343,000
5.0	38,000	6.04	7,000	0.76	1,465	380	1,000	56,000
Note: inconsistencies between grade, tonnes, and ounces are due to rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

Table 17.16 Conductora Indicated Resources
(Including Reserves*)

Conductora Indicated (inclusive of Cuatro Muertos and Potaso)								(rounded)
Cutoff (g Au/t)	**Tonnes**	**Gold** (g/t)	**Gold** Ounces	**Silver** (g/t)	**Copper** (ppm)	**CNSolCu** (ppm)	**Silver** Ounces	**Copper** Kilograms
0.2	835,798,000	0.68	18,165,000	0.44	861	92	11,689,000	719,538,000
0.4	544,465,000	0.89	15,509,000	0.45	959	100	7,930,000	522,251,000
0.5	**428,293,000**	**1.01**	**13,853,000**	0.47	1,006	105	6,417,000	430,734,000
0.6	333,008,000	1.14	12,184,000	0.48	1,047	109	5,086,000	348,793,000
0.7	257,856,000	1.28	10,628,000	0.48	1,089	114	4,004,000	280,831,000
0.8	206,666,000	1.42	9,409,000	0.49	1,114	117	3,236,000	230,308,000
0.9	171,985,000	1.53	8,471,000	0.49	1,131	120	2,709,000	194,463,000
1.0	148,712,000	1.62	7,765,000	0.49	1,144	122	2,357,000	170,141,000
1.5	78,206,000	1.98	4,976,000	0.51	1,215	138	1,269,800	94,989,000
2.0	29,290,000	2.41	2,267,600	0.51	1,254	159	481,200	36,715,000
2.5	8,997,000	2.88	834,300	0.52	1,262	204	150,700	11,358,000
3.0	2,475,000	3.34	266,000	0.53	1,267	233	42,000	3,136,000
3.5	545,000	3.92	69,000	0.57	1,261	293	10,000	687,000
4.0	143,000	4.64	21,000	0.53	1,279	254	2,000	182,000
5.0	36,000	5.77	7,000	0.43	1,325	155	1,000	48,000
Note: inconsistencies between grade, tonnes, and ounces are due to rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

Table 17.17 Conductora Measured and Indicated Resources
(Including Reserves*)

Conductora Measured and Indicated (inclusive of Cuatro Muertos and Potaso)								(rounded)
Cutoff (g Au/t)	Tonnes	Gold (g/t)	Gold Ounces	Silver (g/t)	Copper (ppm)	CNSolCu (ppm)	Silver Ounces	Copper Kilograms
0.2	1,030,735,000	0.72	23,856,000	0.45	929	99	14,848,000	906,620,000
0.4	707,141,000	0.92	20,870,000	0.47	973	110	10,681,000	688,034,000
0.5	**563,514,000**	**1.04**	**18,822,000**	0.48	1,020	117	8,786,000	574,961,000
0.6	442,963,000	1.17	16,712,000	0.50	1,066	123	7,079,000	472,030,000
0.7	349,120,000	1.32	14,771,000	0.51	1,109	130	5,709,000	387,236,000
0.8	284,194,000	1.45	13,222,000	0.52	1,137	136	4,716,000	323,156,000
0.9	240,203,000	1.56	12,033,000	0.52	1,156	141	4,030,000	277,744,000
1.0	210,115,000	1.65	11,121,000	0.53	1,173	146	3,559,000	246,502,000
1.5	113,958,000	1.99	7,304,700	0.55	1,258	171	2,007,700	143,390,000
2.0	43,841,000	2.43	3,421,300	0.57	1,330	211	800,300	58,299,000
2.5	13,924,000	2.92	1,306,800	0.59	1,359	261	264,400	18,921,000
3.0	4,244,000	3.40	464,000	0.63	1,396	304	86,000	5,926,000
3.5	1,141,000	3.98	146,000	0.68	1,462	386	25,000	1,668,000
4.0	354,000	4.64	53,000	0.66	1,483	386	8,000	525,000
5.0	75,000	5.91	14,000	0.60	1,397	271	1,000	104,000
Note: inconsistencies between grade, tonnes, and ounces are due to rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

Table 17.18 Conductora Inferred Resources
(Including Reserves*)

Conductora Inferred (inclusive of Cuatro Muertos and Potaso)								(rounded)
Cutoff (g Au/t)	Tonnes	Gold (g/t)	Gold Ounces	Silver (g/t)	Copper (ppm)	CNSolCu (ppm)	Silver Ounces	Copper Kilograms
0.2	408,902,000	0.52	6,770,000	0.41	761	59	5,351,000	310,970,000
0.4	203,094,000	0.76	4,930,000	0.42	813	57	2,749,000	165,095,000
0.5	**143,346,000**	**0.89**	**4,083,000**	0.44	850	55	2,028,000	121,830,000
0.6	105,917,000	1.01	3,426,000	0.45	876	53	1,536,000	92,825,000
0.7	76,295,000	1.15	2,816,000	0.47	900	51	1,143,000	68,650,000
0.8	58,262,000	1.27	2,385,000	0.48	915	48	899,000	53,298,000
0.9	44,898,000	1.40	2,022,000	0.50	927	46	719,000	41,616,000
1.0	36,094,000	1.51	1,757,000	0.51	942	45	588,000	33,997,000
1.5	15,232,000	1.93	943,700	0.53	981	45	258,600	14,937,000
2.0	4,814,000	2.34	362,600	0.49	987	47	76,000	4,749,000
2.5	1,124,000	2.85	103,100	0.41	992	53	14,800	1,115,000
3.0	228,000	3.51	26,000	0.44	947	57	3,000	216,000
3.5	62,000	4.30	9,000	0.54	997	90	1,000	62,000
4.0	22,000	5.38	4,000	0.39	1,111	11	-	24,000
5.0	14,000	5.74	3,000	0.39	1,102	12	-	16,000
Note: inconsistencies between grade, tonnes, and ounces are due to rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

17.10 Mesones-Sofia Grade Model

17.10.1 Mesones-Sofia - Assays

The Mesones-Sofia assay database used for modeling is described in Table 17.19. There are 38,275 samples with gold grades, and 30,253 samples with copper grades in the defined Mesones-Sofia area. There are some "contaminated" samples but no trench samples in the Mesones-Sofia database. Capping limits were assessed considering:

- the context of modeled zones, material types,
- grade distribution plot profiles of each metal,
- the affected "contained" metal content,
- the geology, and
- the resulting coefficient of variation (CV).

The final capping limits are given in Table 17.20.

Table 17.19 Descriptive Statistics of the Mesones-Sofia Assay Database

	Valid N	Mean	Std.Dev.	CV	Min	Max	Units
Hole	230						
From	39,528				0	381	m
To	39,528				0.1	382	m
Length	39,528	0.86			0.01	198	m
AuA	38,275	0.81	2.75	3.39	0.00	370.00	g/t
AuC	38,275	0.78	1.73	2.23	0.00	33.00	g/t
CuA	30,253	2,363	4,370	2	0.00	174,300	ppm
CuC	30,253	2,355	4,252	2	0.00	55,000	ppm
CuCNA	10,869	808	2,863	4	0.00	79,500	ppm
CuCNC	10,869	808	2,863	4	0	79500	ppm
Cu-Ratio	10,867	32	33	1.04	0	100	ppm
AgA	29,770	0.90	8.22	9.15	0.00	620.00	g/t
AgC	29,770	0.76	2.12	2.80	0.00	50.00	g/t
Material	31,099				0	9	
Zone	39,375				8	99	
Code	39,375				61	99	
Area	39,528				2	2	
Type	39,375				1	9	
Core Recover	30,622	94	94	1.00	0.00	102	%
Core RQD	16,933	72	73	1.01	0.00	102	%
Use	39,138				1	2	
Drill hole/Trench	39,528				1	1	

The "contained" metal was reduced between 3% and 5% for the gold by capping, depending on the zone. Copper capping levels were negligible on the "contained" amount of metal, but the mixed/sulfide saprolite still has a high CV; however, this is a manifestation of the style of mineralization, which is a combination of primary and supergene mineralization and has some locally enriched areas. Silver CVs are very high, just as in Conductora; this is a manifestation of the style of mineralization which is typified by small isolated "blebs" or "spikes" of very high-grade silver.

Table 17.20 Capping Limits and Assay Statistics at Mesones-Sofia

Zones 21, 31, 41	Low-sulfide zone			Capped at 13 g/t			
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Au	20,527	0.35	0.53	1.25	2.36	0.00	73	g/t
AuCap	20,527	0.35	0.51	0.75	1.46	0.00	13	g/t
Difference in grade		0%	-3%		Difference in metal		-3%	

Zones 22, 32, 42	High-sulfide zone			Capped at 33 g/t				
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Au	7,534	1.29	2.29	5.50	2.40	0.01	370	g/t
AuCap	7,534	1.29	2.17	3.32	1.53	0.01	33	g/t
Difference in grade		0%	-5%		Difference in metal		-5%	

Zone 8	Overburden			Capped at 4 g/t				
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Au	4,051	0.12	0.19	0.69	3.55	0.01	43	g/t
AuCap	4,051	0.12	0.18	0.30	1.61	0.01	4	g/t
Difference in grade		0%	-5%		Difference in metal		-5%	

Zone 0	Outside Zones			Capped at 5 g/t				
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Au	788	0.36	0.84	1.35	1.61	0.01	13	g/t
AuCap	788	0.36	0.78	1.08	1.38	0.01	5	g/t
Difference in grade		0%	-6%		Difference in metal		-6%	

Type 1, 2, and 3	Bedrock and Saprock			Capped at 55000 ppm				
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Cu	16,517	1360	3104	4622	1.49	1	82700	ppm
CuCap	16,517	1360	3095	4552	1.47	1	55000	ppm
Difference in grade		0%	0%		Difference in metal		0%	
CuCNA	3,122	106	419	1142	2.73	0	22250	ppm
CuCnCap	3,122	106	419	1142	2.73	0	22250	ppm
CuRatio	3,118	10	18	20	1.08	0	100	ppm

Type 4, 5	Sulfide and Mixed Saprolite			Capped at 55000 ppm				
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Cu	4,728	950	2755	5411	1.96	4	174300	ppm
CuCap	4,728	950	2729	4991	1.83	4	55000	ppm
Difference in grade		0%	-1%		Difference in metal		-1%	
CuCNA	3,694	420	1733	4344	2.51	1	79500	ppm
CuCnCap	3,694	420	1733	4344	2.51	1	79500	ppm
CuRatio	3,694	64	57	31	0.55	0	100	ppm

Type 6	Oxide Saprolite			Capped at 5000 ppm				
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Cu	2,918	192	298	548	1.84	0	16010	ppm
CuCap	2,918	192	290	393	1.35	0	5000	ppm
Difference in grade		0%	-3%		Difference in metal		-3%	
CuCNA	2,039	10	41	382	9.33	1	10910	ppm
CuCnCap	2,039	10	41	382	9.33	1	10910	ppm
CuRatio	2,039	6	12	15	1.32	0	100	ppm

Type 8	Overburden			Capped at 1400 ppm				
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Cu	548	115	191	249	1.31	9	3980	ppm
CuCap	548	115	187	217	1.16	9	1400	ppm
Difference in grade		0%	-2%		Difference in metal		-2%	
CuCNA	430	26	55	163	2.95	1	2229	ppm
CuCnCap	430	26	55	163	2.95	1	2229	ppm
CuRatio	430	26	29	21	0.71	0	97	ppm

17.10.2 Mesones-Sofia - Composites

The same logic and methodology were used in compositing at Mesones-Sofia as at Conductora.

Gold by zone: After capping, the gold assay sample intervals were composited to six-meter lengths. The gold grades were down-hole composited using geological restrictions for some material types. Pertinent material types were overburden (material type 8) and dikes (material type 9) because there is a discontinuity between both of these and the primary gold mineralization. Both post-date mineralization, and while the dike is barren, the overburden has remobilized, dispersed, and/or re-concentrated gold. Sample data from dikes and overburden were used as hard boundaries for compositing. After compositing, the six-meter composites were coded from the cross-sectional gold zone interpretations. This effectively smoothed out, or "softened," the hard boundaries. The impact of the hard boundary is further reduced later by weight-averaging the grades of the different zones into a "diluted average gold grade" within each block that straddled these boundaries. This set of composites was used for modeling gold and core recovery and for calculating distances, number of samples, and number of drill holes. Gold composite statistics are given in Table 17.21.

Copper, copper solubility and silver by material type: After capping, the copper assay sample intervals were composited to six-meter lengths. Material types were used to control down-hole compositing. These composites were not re-coded on section as the gold composites were. After compositing, the composites were back coded from the model with the relative elevation of the top of the mixed or sulfide saprolite unit. This relative elevation was used in modeling copper and copper solubility ratios in the saprolite units. Gold composite statistics are given in Table 17.21.

Table 17.21 Statistics by Zone (Au) and Type (Cu) of Conductora Composites

Zones 21, 31, 41		Low-sulfide zone			Capped at 13	g/t		
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Au	20,527	0.35	0.53	1.25	2.36	0.00	73	g/t
AuCap	20,527	0.35	0.51	0.75	1.46	0.00	13	g/t
Difference in grade		0%	-3%		Difference in metal		-3%	

Zones 22, 32, 42		High-sulfide zone			Capped at 33	g/t		
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Au	7,534	1.29	2.29	5.50	2.40	0.01	370	g/t
AuCap	7,534	1.29	2.17	3.32	1.53	0.01	33	g/t
Difference in grade		0%	-5%		Difference in metal		-5%	

Zone 8		Overburden			Capped at 4	g/t		
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Au	4,051	0.12	0.19	0.69	3.55	0.01	43	g/t
AuCap	4,051	0.12	0.18	0.30	1.61	0.01	4	g/t
Difference in grade		0%	-5%		Difference in metal		-5%	

Zone 0		Outside Zones			Capped at 5	g/t		
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Au	788	0.36	0.84	1.35	1.61	0.01	13	g/t
AuCap	788	0.36	0.78	1.08	1.38	0.01	5	g/t
Difference in grade		0%	-6%		Difference in metal		-6%	

Type 1, 2, and 3		Bedrock and Saprock			Capped at 55000	ppm		
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Cu	16,517	1360	3104	4622	1.49	1	82700	ppm
CuCap	16,517	1360	3095	4552	1.47	1	55000	ppm
Difference in grade		0%	0%		Difference in metal		0%	
CuCNA	3,122	106	419	1142	2.73	0	22250	ppm
CuCnCap	3,122	106	419	1142	2.73	0	22250	ppm
CuRatio	3,118	10	18	20	1.08	0	100	ppm

Type 4, 5		Sulfide and Mixed Saprolite			Capped at 55000	ppm		
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Cu	4,728	950	2755	5411	1.96	4	174300	ppm
CuCap	4,728	950	2729	4991	1.83	4	55000	ppm
Difference in grade		0%	-1%		Difference in metal		-1%	
CuCNA	3,694	420	1733	4344	2.51	1	79500	ppm
CuCnCap	3,694	420	1733	4344	2.51	1	79500	ppm
CuRatio	3,694	64	57	31	0.55	0	100	ppm

Type 6		Oxide Saprolite			Capped at 5000	ppm		
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Cu	2,918	192	298	548	1.84	0	16010	ppm
CuCap	2,918	192	290	393	1.35	0	5000	ppm
Difference in grade		0%	-3%		Difference in metal		-3%	
CuCNA	2,039	10	41	382	9.33	1	10910	ppm
CuCnCap	2,039	10	41	382	9.33	1	10910	ppm
CuRatio	2,039	6	12	15	1.32	0	100	ppm

Type 8		Overburden			Capped at 1400	ppm		
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Cu	548	115	191	249	1.31	9	3980	ppm
CuCap	548	115	187	217	1.16	9	1400	ppm
Difference in grade		0%	-2%		Difference in metal		-2%	
CuCNA	430	26	55	163	2.95	1	2229	ppm
CuCnCap	430	26	55	163	2.95	1	2229	ppm
CuRatio	430	26	29	21	0.71	0	97	ppm

17.10.3 Mesones-Sofia – Geostatistics and Estimation

MDA calculated variograms and correlograms at varying lags, cutoffs, azimuths and dips, and with separate and combined zones for Mesones-Sofia. Variograms parallel to the dominant mineralization-controlling geological fabric were used, namely 315° azimuth with a dip azimuth of 225° and dip of -65°. The variograms were calculated on composites of gold, copper, CN-soluble ratio, and silver. No grade restrictions were used in variogram calculations for any of the metals except silver. Silver has a small (~1%) population of very high-grade samples with no continuity. Consequently, the silver variograms portray the low-grade "disseminated" style of mineralization, which was modeled differently from the high-grade spikes.

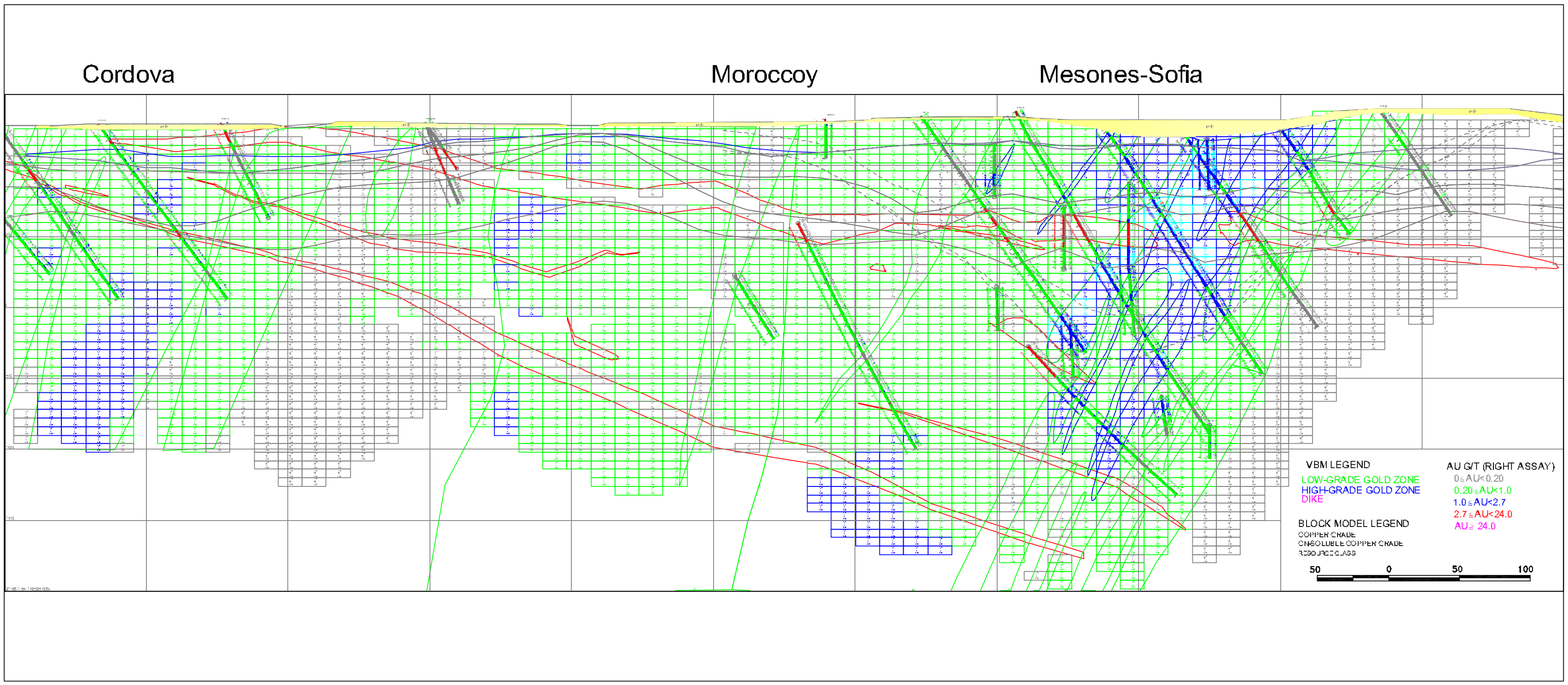
Ordinary Kriging was used for all estimates. The estimation parameters are given in Appendix B. Multiple passes were done for gold and the CN-soluble ratio to compensate for over-smoothing in the single pass. Estimation of CNSCu was done using the CNSCu-to-total-Cu ratios. As at Conductora, gold distribution has not been materially affected by weathering processes, except in the alluvium. Consequently, gold was modeled in gold domains that crossed the bedrock and saprolite contacts, but stopped at the overburden contact. A cross section of the gold model is given in Figure 17.4 and for the copper model in Figure 17.5.

MDA classified the resource by a combination of distance to the nearest sample, the number of samples used to estimate a block, the geological understanding and predictability of the resources, and the quality of the drill samples used, *i.e.*, core recovery. As gold is the dominant metal from a value standpoint and Crystallex has no mining rights to the copper, all blocks were classified based on gold (Table 17.22). The ranges used for resource classification were chosen based on an average of the directional gold variogram ranges.

Table 17.22 Criteria for Classification of Mesones-Sofia Resources

Class	Distance*	Min. No. of Samples	Min. No. Drill Holes
Measured*	0 to 10 m	2	1
Indicated	1 to 10 m	1	1
Indicated	20 to 40 m	2	1
Inferred	40 to 80 m	1	1

* See text in 17.10.3 for explanation; all overburden is classified as Inferred.



Crystallex International Corp.
Las Cristinas
Mesones-Sofia, Moroccoy and Cordova
Block Model Section 950 Au

Bolivar State Venezuela

MINE DEVELOPMENT ASSOCIATES

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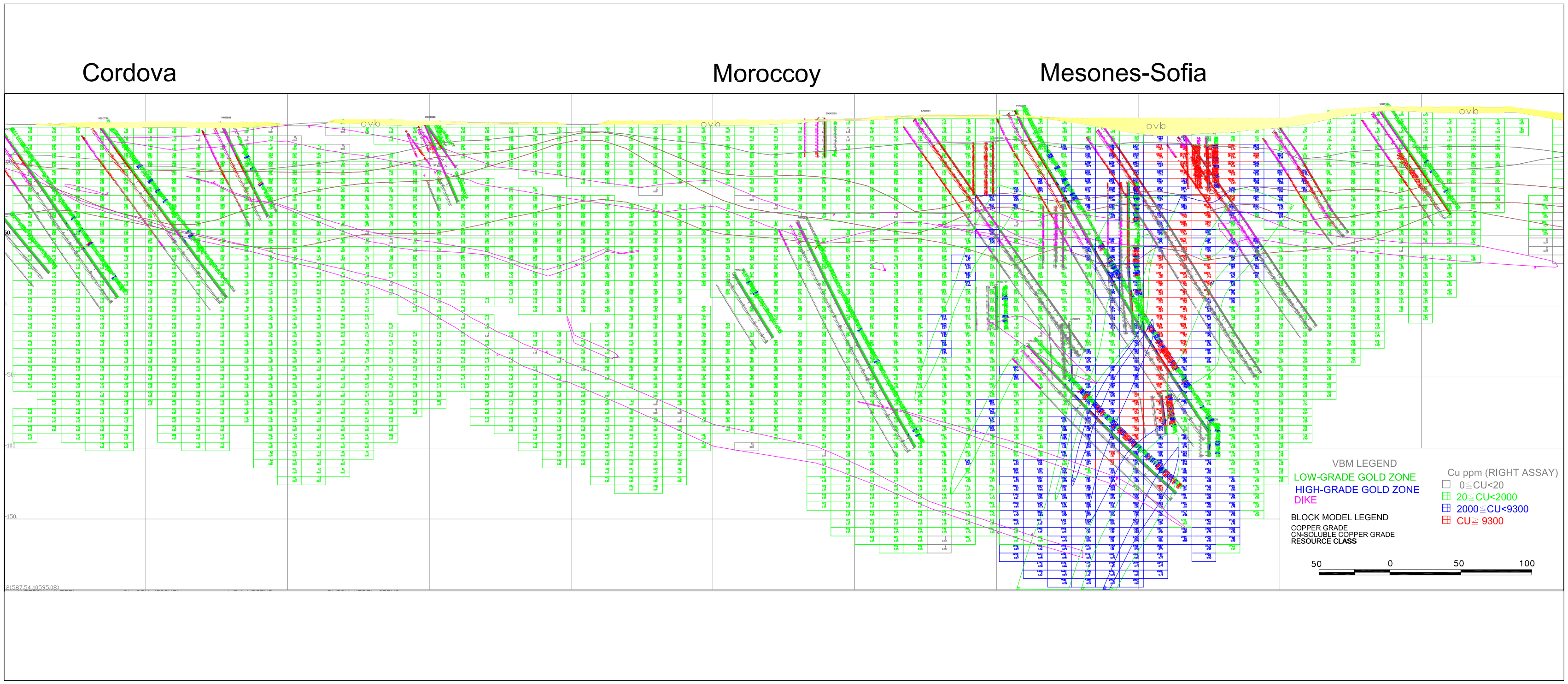
DATE	13-Sep-07
DRAWN BY	S Ristorcelli
CHECKED BY	MDA
SCALE	as shown

FIGURE NO.
17.4

CAD CONTROL BLOCK REF: R:\Las Cristinas_2007\Reports\43-101_2007\Figures\Fig17-4_bg950_2007.dwg
DATE:



DATE	13-Sep-07
DRAWN BY	S Ristorcelli
CHECKED BY	MDA
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Crystallex International Corp.
Las Cristinas
Mesones-Sofia, Moroccoy and Cordova
Block Model Section 950 Cu

Bolivar State Venezuela

FIGURE NO. 17.5

CAD CONTROL BLOCK R:\Steve\projects\Las Cristinas_2007\Reports\43-101_2007\Figures\Fig17-5_bc950.dwg
DATE:9/13/2007

MDA modified the distances used for classification by the percent core recovery. It was shown in an earlier section of this report that core recovery affects gold and copper grades and introduces a bias in the saprolite. The lower core recovery decreases confidence in the results and therefore is introduced into the definition of Measured, Indicated, and Inferred. MDA modified the distance between the closest sample and the model block by the following relationship:

- Estimated core recovery between 80% and 100%, no factor;
- Estimated core recovery between 60% and 80%, distance multiplied by 1.1; and
- Estimated core recovery below 60%, distance multiplied by 1.2.

The modified distance was used for the classification scheme given in Table 17.22. Essentially, those blocks with estimated lower core recovery were downgraded in classification.

The classification and the estimation described above resulted in a Measured, Indicated and Inferred resource at Mesones-Sofia. Measured and Indicated resources are broken out in Table 17.23 and Table 17.24 and are combined in Table 17.25, while the total Inferred resources are given in Table 17.26.

Table 17.23 Mesones-Sofia Measured Resources
(Including Reserves*)

Mesones Sofia Measured								(rounded)
Cutoff (g Au/t)	**Tonnes**	**Gold** (g/t)	**Gold** Ounces	**Silver** (g/t)	**Copper** (ppm)	**CNSolCu** (ppm)	**Silver** Ounces	**Copper** Kilograms
0.2	16,285,000	0.85	445,000	0.72	2,778	546	375,000	45,241,000
0.4	11,910,000	1.05	402,000	0.78	3,240	677	299,000	38,590,000
0.5	**9,361,000**	**1.21**	**365,000**	0.82	3,612	776	246,000	33,813,000
0.6	7,566,000	1.37	334,000	0.85	3,938	873	207,000	29,797,000
0.7	6,283,000	1.52	307,000	0.89	4,235	967	179,000	26,608,000
0.8	5,397,000	1.65	286,000	0.92	4,471	1,046	159,000	24,129,000
0.9	4,772,000	1.76	269,000	0.94	4,661	1,109	144,000	22,238,000
1.0	4,240,000	1.86	253,000	0.96	4,801	1,150	131,000	20,357,000
1.5	2,264,000	2.42	175,800	1.01	4,991	1,409	73,400	11,299,000
2.0	1,234,000	3.00	118,900	1.05	5,405	1,733	41,800	6,670,000
2.5	741,000	3.52	84,000	1.06	5,752	1,928	25,100	4,263,000
3.0	462,000	4.01	60,000	1.10	5,972	2,056	16,000	2,761,000
3.5	289,000	4.47	41,000	1.13	5,849	1,683	10,000	1,689,000
4.0	178,000	4.91	28,000	1.14	6,131	1,688	7,000	1,091,000
5.0	53,000	6.08	10,000	0.93	5,908	813	2,000	316,000
Note: inconsistencies between tonnes, grade, and ounces are caused by rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

Table 17.24 Mesones-Sofia Indicated Resources
(Including Reserves*)

Mesones Sofia Indicated								(rounded)
Cutoff (g Au/t)	**Tonnes**	**Gold** (g/t)	**Gold** Ounces	**Silver** (g/t)	**Copper** (ppm)	**CNSolCu** (ppm)	**Silver** Ounces	**Copper** Kilograms
0.2	73,955,000	0.59	1,412,000	0.58	2,025	341	1,374,000	149,744,000
0.4	45,125,000	0.78	1,136,000	0.64	2,453	448	934,000	110,706,000
0.5	**32,248,000**	**0.92**	**953,000**	0.69	2,742	513	711,000	88,432,000
0.6	23,349,000	1.06	798,000	0.73	3,066	595	545,000	71,586,000
0.7	17,289,000	1.21	673,000	0.77	3,419	687	427,000	59,101,000
0.8	13,002,000	1.37	571,000	0.81	3,772	779	339,000	49,045,000
0.9	10,256,000	1.51	497,000	0.85	4,064	873	280,000	41,678,000
1.0	8,322,000	1.64	438,000	0.88	4,281	948	235,000	35,625,000
1.5	3,656,000	2.20	258,700	0.93	4,634	1,200	109,400	16,939,000
2.0	1,812,000	2.69	156,700	0.96	4,976	1,438	55,700	9,014,000
2.5	885,000	3.20	91,000	1.03	5,482	1,760	29,200	4,853,000
3.0	433,000	3.72	52,000	1.07	5,232	1,647	15,000	2,266,000
3.5	211,000	4.24	29,000	1.10	5,326	1,369	7,000	1,122,000
4.0	101,000	4.80	16,000	1.18	5,499	1,439	4,000	555,000
5.0	30,000	5.87	6,000	0.74	5,211	549	1,000	154,000
Note: inconsistencies between tonnes, grade, and ounces are caused by rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

Table 17.25 Mesones-Sofia Measured and Indicated Resources
(Including Reserves*)

Mesones/Sofia Measured and Indicated								(rounded)
Cutoff (g Au/t)	**Tonnes**	**Gold** (g/t)	**Gold** Ounces	**Silver** (g/t)	**Copper** (ppm)	**CNSolCu** (ppm)	**Silver** Ounces	**Copper** Kilograms
0.2	90,240,000	0.64	1,857,000	0.60	2,355	378	1,749,000	194,985,000
0.4	57,036,000	0.84	1,538,000	0.67	2,618	496	1,233,000	149,297,000
0.5	**41,609,000**	**0.99**	**1,318,000**	0.72	2,938	573	957,000	122,245,000
0.6	30,916,000	1.14	1,132,000	0.76	3,279	663	752,000	101,384,000
0.7	23,572,000	1.29	981,000	0.80	3,636	762	606,000	85,709,000
0.8	18,399,000	1.45	857,000	0.84	3,977	857	498,000	73,174,000
0.9	15,027,000	1.59	766,000	0.88	4,253	948	424,000	63,915,000
1.0	12,562,000	1.71	691,000	0.91	4,456	1,016	366,000	55,982,000
1.5	5,919,000	2.28	434,400	0.96	4,770	1,280	182,900	28,238,000
2.0	3,046,000	2.81	275,600	1.00	5,150	1,557	97,500	15,684,000
2.5	1,626,000	3.35	175,000	1.04	5,605	1,837	54,300	9,116,000
3.0	896,000	3.87	111,000	1.09	5,614	1,858	31,000	5,028,000
3.5	499,000	4.37	70,000	1.11	5,628	1,551	18,000	2,811,000
4.0	279,000	4.87	44,000	1.15	5,903	1,598	10,000	1,646,000
5.0	83,000	6.00	16,000	0.86	5,659	719	2,000	470,000
Note: inconsistencies between tonnes, grade, and ounces are caused by rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

Table 17.26 Mesones-Sofia Inferred Total Resources
(Including Reserves*)

Mesones Sofia Inferred								(rounded)
Cutoff (g Au/t)	**Tonnes**	**Gold** (g/t)	**Gold** Ounces	**Silver** (g/t)	**Copper** (ppm)	**CNSolCu** (ppm)	**Silver** Ounces	**Copper** Kilograms
0.2	33,617,000	0.47	505,000	0.46	1,149	129	493,000	38,632,000
0.4	18,140,000	0.61	355,000	0.49	1,183	131	286,000	21,465,000
0.5	**10,245,000**	**0.74**	**242,000**	0.50	1,081	110	164,000	11,073,000
0.6	5,605,000	0.90	162,000	0.53	1,002	88	96,000	5,615,000
0.7	3,765,000	1.03	124,000	0.56	891	75	68,000	3,354,000
0.8	2,552,000	1.16	95,000	0.59	803	60	48,000	2,050,000
0.9	1,782,000	1.30	74,000	0.62	743	50	36,000	1,324,000
1.0	1,326,000	1.42	61,000	0.62	700	41	26,000	928,000
1.5	654,000	1.65	34,700	0.57	576	19	11,900	377,000
2.0	57,000	2.47	4,500	1.13	323	68	2,100	18,000
2.5	18,000	3.07	1,800	1.43	364	58	800	7,000
3.0	9,000	3.46	1,000	1.57	336	73	-	3,000
3.5	4,000	3.59	-	2.06	213	72	-	1,000
4.0	-	-	-	-	-	-	-	-
5.0	-	-	-	-	-	-	-	-
Note: inconsistencies between tonnes, grade, and ounces are caused by rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

17.11 Morrocoy Grade Model

17.11.1 Morrocoy - Assays

The Morrocoy assay database used for modeling is described in Table 17.27. There are 9,114 samples with gold grades and 8,674 samples with copper grades in the defined Morrocoy area. There are some "contaminated" samples but no trench samples in the Morrocoy database. Capping limits were assessed considering:

- the context of modeled zones, material types,
- trade distribution plot profiles of each metal,
- the affected "contained" metal content,
- the geology, and
- the resulting coefficient of variation ("CV").

Table 17.27 Descriptive Statistics of the Morrocoy Assay Database

ALL DATA **Moroccoy**

	Valid N	Mean	Median	Std. Dev.	CV	Min	Max.	Units
East	9,263					21,403	21,991	m
North	9,263					10,736	11,656	m
Elevation	9,263					(139)	142	m
From	9,263	103.22				0.0	338.0	m
To	9,263	104.25				0.1	339.0	m
Length	9,263	1.03				0.0	40.2	m
Au	9,114	0.57	0.25	1.78	3.10	0.00	93.6	ppm
AuCap	9,114	0.51	0.25	0.84	1.65	0.00	14.4	ppm
Cu	8,674	288	114	734	3	0	56,200	ppm
CuCap	8,674	279	114	567	2	0	6,000	ppm
CuCNA	1,629	128	28	551	4	1	30,200	ppm
CuCnCap	1,629	128	28	551	4	1	30,200	ppm
CuRatio	1,629	31	16.00	31	1	0.00	100.0	%
Ag	4,941	0.89	0.20	12.92	14.54	0.00	1700.0	ppm
AgCap	4,941	0.52	0.20	1.38	2.67	0.00	31.0	ppm
CREC	8,779	93	98	13	0.1	0	125	%
RQD	6,779	72	79	22	0.3	0	106	%
MaterialCode NA								
Zone	9,263					8	99	
Code	9,263					0	0	
Area	9,263					4	4	
Type	9,263					0	9	
Use	9,263					0	2	
DHorTR	9,204					1	1	

The final capping limits are given in Table 17.28. The "contained" metal was reduced by a relatively large 9% in the low-grade primary mineralization. This was necessary because the continuity of the high-grade zones in the low-grade was not sufficient to define their own zones. Copper capping levels were substantial on the "contained" amount of metal, but the mixed/sulfide saprolite still has a high CV, much of which was caused by the relatively low mean grade. Overall the copper grades are relatively low at Morrocoy.

Table 17.28 Capping Limits and Assay Statistics at Morrocoy

Zones	31	Low-sulfide zone			Capped at	7	g/t	
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Au	4,986	0.40	0.75	2.02	2.70	0.01	94	g/t
AuCap	4,986	0.40	0.68	0.96	1.42	0.01	7	g/t
Difference in grade		0%	-9%		Difference in metal		-9%	
Zones	**32**	**High-sulfide zone**			**Capped at**	**14**	**g/t**	
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Au	58	1.42	2.08	2.35	1.13	0.32	14	g/t
AuCap	58	1.42	2.08	2.35	1.13	0.32	14	g/t
Difference in grade		0%	0%		Difference in metal		0%	
Zone	**8**	**Overburden**			**Capped at**	**3**	**g/t**	
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Au	129	0.86	1.16	1.53	1.32	0.04	11	g/t
AuCap	129	0.86	0.98	0.72	0.73	0.04	3	g/t
Difference in grade		0%	-16%		Difference in metal		-16%	
Zone	**0**	**Outside Zones**			**Capped at**	**3**	**g/t**	
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Au	3,136	0.13	0.36	1.49	4.18	0.00	51	g/t
AuCap	3,136	0.13	0.28	0.46	1.66	0.00	3	g/t
Difference in grade		0%	-22%		Difference in metal		-22%	

Type	1, 2, and 3	Bedrock and Saprock			Capped at	ppm	ppm	
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Cu	6,049	129	332	736	2.22	0	18700	ppm
CuCap	6,049	129	323	644	1.99	0	6000	ppm
Difference in grade		0%	-2%		Difference in metal		-2%	
CuCNA	684	44	123	322	2.61	1	5392	ppm
CuCnCap	684	44	123	322	2.61	1	5392	ppm
CuRatio	684	14	30	28	0.95	2	99	ppm
Type	**4, 5**	**Sulfide and Mixed Saprolite**			**Capped at**	**ppm**	**ppm**	
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Cu	864	146	348	1244	3.57	0	56200	ppm
CuCap	864	146	315	464	1.47	0	3500	ppm
Difference in grade		0%	-10%		Difference in metal		-10%	
CuCNA	436	97	277	991	3.58	1	30200	ppm
CuCnCap	436	97	277	991	3.58	1	30200	ppm
CuRatio	436	62	53	31	0.59	1	100	ppm
Type	**6**	**Oxide Saprolite**			**Capped at**	**ppm**	**ppm**	
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Cu	864	112	143	119	0.83	0	821	ppm
CuCap	864	112	143	119	0.83	0	821	ppm
Difference in grade		0%	0%		Difference in metal		0%	
CuCNA	416	5	14	32	2.22	1	271	ppm
CuCnCap	416	5	14	32	2.22	1	271	ppm
CuRatio	416	4	10	16	1.53	0	100	ppm
Type	**8**	**Overburden**			**Capped at**	**ppm**	**ppm**	
	Valid N	Median	Mean	Std. Dev.	CV	Min	Max.	Units
Cu	89	124	153	90	0.59	20	381	ppm
CuCap	89	124	143	72	0.50	20	250	ppm
Difference in grade		0%	-7%		Difference in metal		-7%	
CuCNA	22	15	14	10	0.71	2	34	ppm
CuCnCap	22	15	14	10	0.71	2	34	ppm
CuRatio	22	15	15	15	1.04	2	81	ppm

17.11.2 Morrocoy - Composites

The same logic and methodology were used in compositing at Morrocoy as at Conductora and Mesones-Sofia. Composite statistics are given in Table 17.29. As stated in earlier sections:

> Gold by zone: After capping, the gold assay sample intervals were composited to six-meter lengths. The gold grades were down-hole composited using geological restrictions for some material types. Pertinent material types were overburden (material type 8) and dikes (material type 9) because there is a discontinuity between both of these and the primary gold mineralization. Both post-date mineralization, and while the dike is barren, the overburden has remobilized, dispersed, and/or re-concentrated gold. Sample data from dikes and overburden were used as hard boundaries for compositing. After compositing, the six-meter composites were coded from the cross-sectional gold zone interpretations. This effectively smoothed out, or "softened", the hard boundaries. The impact of the hard boundary is further reduced later by weight averaging the grades of the different zones into a "diluted average gold grade" within each block that straddled these boundaries. This set of composites was used for modeling gold and core recovery and for calculating distances, number of samples, and number of drill holes. Statistics of gold composites statistics are given in Table 17.29.
>
> Copper, copper solubility and silver by material type: After capping, the copper assay sample intervals were composited to six-meter lengths. Material types were used to control down-hole compositing. These composites were not recoded on section as the gold composites were. After compositing, the composites were back coded from the model with the relative elevation of the top of the mixed or sulfide saprolite unit. This relative elevation was used in modeling copper and copper solubility ratios in the saprolite units. Statistics of copper composite statistics are given in Table 17.29.

Table 17.29 Statistics by Zone (Au) and Type (Cu) of Morrocoy Composites

Zone 31							Moroccoy	
	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Au	868	0.52	0.75	0.93	1.24	0.02	17.18	g Au/t
AuCap	868	0.52	0.68	0.52	0.77	0.02	3.67	g Au/t

Zone 32							Moroccoy	
	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Au	10	1.73	2.02	1.32	0.66	0.79	5.57	g Au/t
AuCap	10	1.73	2.02	1.32	0.66	0.79	5.57	g Au/t

Zone 8							Moroccoy	
	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Au	54	0.88	1.09	1.21	1.11	0.07	7.32	g Au/t
AuCap	54	0.88	1.09	1.21	1.11	0.07	7.32	g Au/t

Zone 9							Moroccoy	
	Valid N	Median	0	Std.Dev.	CV	Minimum	Maximum	Units
Au	29700	0.00	0.62	0.95	1.54	0.00	226.54	g Au/t
AuCap	29700	0.00	0.57	0.74	1.28	0.00	19.84	g Au/t

Zone 99							Moroccoy	
	Valid N	Median	0	Std.Dev.	CV	Minimum	Maximum	Units
Au	29700	0.00	0.62	0.95	1.54	0.00	226.54	g Au/t
AuCap	29700	0.00	0.57	0.74	1.28	0.00	19.84	g Au/t

Type 1, 2, 3							Moroccoy	
	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Cu	1082	179.0	331.8	449.8	1.4	0.0	4558.0	ppm
CuCap	1082	179	324	413	1.28	0	3599	ppm
CuCN	197	35.00	97.25	171.74	1.77	2.00	1235	ppm
CuCNCap	197	35	97	172	1.77	2	1235	ppm
Ratio	197	9	22	24	1.07	3	99	%

Type 4, 5							Moroccoy	
	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Cu	174	175.5	347.4	529.8	1.5	9.0	4921.0	ppm
CuCap	174	176	314	336	1.07	9	2261	ppm
CuCN	99	120.00	285.56	488.20	1.71	4.00	3325	ppm
CuCNCap	99	120	286	488	1.71	4	3325	ppm
Ratio	99	54	51	28	0.55	2	97	%

Type 6							Moroccoy	
	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Cu	166	117.0	142.6	98.2	0.7	11.0	621.0	ppm
CuCap	166	117	143	98	0.69	11	621	ppm
CuCN	90	8.00	17.14	35.44	2.07	1.00	235	ppm
CuCNCap	90	8	17	35	2.07	1	235	ppm
Ratio	90	7	11	15	1.32	0	82	%

Type 8							Moroccoy	
	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Cu	47	124.0	153.4	86.0	0.6	21.0	376.0	ppm
CuCap	47	124	143	67	0.47	21	250	ppm
CuCN	10	13.50	13.53	6.87	0.51	5.00	24	ppm
CuCNCap	10	14	14	7	0.51	5	24	ppm
Ratio	10	12	14	13	0.90	2	81	%

Type 9							Moroccoy	
	Valid N	Median	0	Std.Dev.	CV	Minimum	Maximum	Units
Cu	26238	0.0	309.3	429.4	1.4	0.0	44344.0	ppm
CuCap	26238	0	309	429	1.39	0	37125	ppm
CuCN	7247	0.00	124.51	291.50	2.34	1.00	40294	ppm
CuCNCap	7247	0	125	291	2.34	1	40294	ppm
Ratio	7237	0	27	27	1.00	0	100	%

17.12 Morrocoy – Geostatistics and Estimation

MDA calculated variograms and correlograms at varying lags, cutoffs, azimuths and dips for combined zones for Morrocoy. Variograms parallel to the dominant mineralization-controlling geological fabric were used, namely 315° azimuth with a dip azimuth of 225° and dip of -60°. The variograms were calculated on composites of gold and copper, but not CN-soluble ratio or silver, since there were few to no values of the latter two.

Ordinary Kriging was used for gold, copper and CNSCu-to-total-copper ratio estimation (Appendix B). As at Conductora, gold distribution has not been materially affected by weathering processes, except in the alluvium. Consequently, gold was modeled in gold domains that crossed the bedrock and saprolite contacts, but stopped at the overburden and dike contacts.

MDA classified the resource by a combination of distance to the nearest sample, the number of samples used to estimate a block, the geological understanding and predictability of the resources, and the quality of the drill samples used, *i.e.*, core recovery. As gold is the dominant metal from a value standpoint and Crystallex has no mining rights to the copper, all blocks were classified based on gold (Table 17.30). The ranges used for resource classification were chosen based on an average of the directional gold variogram ranges. A typical section of the Morrocoy gold model is given in Figure 17.4.

Table 17.30 Criteria for Classification of Morrocoy Resources

Class*	Distance*	Min. No. of Samples	Min. No. Drill Holes
Measured	0 to 10 m	2	1
Indicated	0 to 10 m	1	1
Indicated	10 to 40 m	2	1
Inferred	40 to 80 m	1	1

* See text in next paragraph for explanation; all overburden is classified as Inferred.

MDA modified the distances used for classification by the percent core recovery. It was shown in an earlier section of this report that core recovery affects gold and copper grades and introduces a bias in the saprolite. The lower core recovery decreases confidence in the results and therefore is introduced into the definition of Measured, Indicated, and Inferred. MDA modified the distance between the closest sample and the model block by the following relationship:

- Estimated core recovery between 80% and 100%, no factor;
- Estimated core recovery between 60% and 80%, distance multiplied by 1.1; and
- Estimated core recovery below 60%, distance multiplied by 1.2.

The modified distance was used for the classification scheme given in Table 17.30. Essentially, those blocks with estimated lower core recovery were downgraded in classification. The classification and the estimation described above resulted in a Measured, Indicated and Inferred resource at Morrocoy. Measured and Indicated resources are broken out in Table 17.31 and Table 17.32 and combined in Table 17.33, while the total Inferred resources are given in Table 17.34.

Table 17.31 Morrocoy Measured Resources
(Including Reserves*)

Moroccoy Measured								(rounded)
Cutoff (g Au/t)	**Tonnes**	**Gold** (g/t)	**Gold** Ounces	**Silver** (g/t)	**Copper** (ppm)	**CNSolCu** (ppm)	**Silver** Ounces	**Copper** Kilograms
0.2	2,385,000	0.71	55,000	NA	355	82	NA	848,000
0.4	1,858,000	0.83	50,000	NA	377	94	NA	700,000
0.5	**1,559,000**	**0.90**	**45,000**	NA	387	96	NA	603,000
0.6	1,286,000	0.98	40,000	NA	405	101	NA	520,000
0.7	976,000	1.09	34,000	NA	430	112	NA	419,000
0.8	749,000	1.19	29,000	NA	435	112	NA	326,000
0.9	570,000	1.30	24,000	NA	441	102	NA	252,000
1.0	418,000	1.43	19,000	NA	445	100	NA	186,000
1.5	109,000	2.19	7,700	NA	411	49	NA	45,000
2.0	66,000	2.51	5,400	NA	352	22	NA	23,000
2.5	26,000	2.99	2,500	NA	336	16	NA	9,000
3.0	14,000	3.30	2,000	NA	259	12	NA	4,000
3.5	2,000	3.92	-	NA	196	10	NA	-
4.0	-	-	-	NA	-	-	NA	-
5.0	-	-	-	NA	-	-	NA	-
Note: inconsistencies between grade, tonnes, and ounces are due to rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

Table 17.32 Morrocoy Indicated Resources
(Including Reserves*)

Moroccoy Indicated								**(rounded)**
Cutoff (g Au/t)	**Tonnes**	**Gold** (g/t)	**Gold** Ounces	**Silver** (g/t)	**Copper** (ppm)	**CNSolCu** (ppm)	**Silver** Ounces	**Copper** Kilograms
0.2	45,135,000	0.56	810,000	NA	317	57	NA	14,299,000
0.4	28,084,000	0.72	652,000	NA	366	65	NA	10,267,000
0.5	**22,702,000**	**0.79**	**576,000**	NA	376	68	NA	8,534,000
0.6	17,934,000	0.85	492,000	NA	391	70	NA	7,005,000
0.7	13,052,000	0.93	391,000	NA	407	75	NA	5,316,000
0.8	8,899,000	1.02	292,000	NA	415	80	NA	3,689,000
0.9	5,822,000	1.11	209,000	NA	421	80	NA	2,448,000
1.0	3,729,000	1.21	145,000	NA	430	76	NA	1,603,000
1.5	363,000	1.92	22,300	NA	397	47	NA	144,000
2.0	92,000	2.60	7,700	NA	389	31	NA	36,000
2.5	48,000	3.00	4,600	NA	353	15	NA	17,000
3.0	24,000	3.28	3,000	NA	381	19	NA	9,000
3.5	7,000	3.66	1,000	NA	261	13	NA	2,000
4.0	-	-	-	NA	-	-	NA	-
5.0	-	-	-	NA	-	-	NA	-
Note: inconsistencies between grade, tonnes, and ounces are due to rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

Table 17.33 Morrocoy Measured and Indicated Resources\
(Including Reserves*)

Moroccoy Measured and Indicated								(rounded)
Cutoff (g Au/t)	Tonnes	Gold (g/t)	Gold Ounces	Silver (g/t)	Copper (ppm)	CNSolCu (ppm)	Silver Ounces	Copper Kilograms
0.2	47,521,000	0.57	864,000	NA	345	58	NA	15,147,000
0.4	29,942,000	0.73	701,000	NA	366	67	NA	10,967,000
0.5	**24,260,000**	**0.80**	**621,000**	NA	377	69	NA	9,137,000
0.6	19,220,000	0.86	533,000	NA	392	72	NA	7,525,000
0.7	14,027,000	0.94	425,000	NA	409	78	NA	5,735,000
0.8	9,648,000	1.03	321,000	NA	416	82	NA	4,014,000
0.9	6,392,000	1.13	232,000	NA	422	82	NA	2,700,000
1.0	4,146,000	1.23	165,000	NA	431	78	NA	1,788,000
1.5	471,000	1.98	30,000	NA	400	47	NA	189,000
2.0	158,000	2.57	13,100	NA	373	27	NA	59,000
2.5	74,000	2.99	7,200	NA	347	15	NA	26,000
3.0	38,000	3.29	4,000	NA	336	17	NA	13,000
3.5	10,000	3.73	1,000	NA	245	12	NA	2,000
4.0	-	-	-	NA	-	-	NA	-
5.0	-	-	-	NA	-	-	NA	-
Note: inconsistencies between grade, tonnes, and ounces are due to rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

Table 17.34 Morrocoy Inferred Resources
(Including Reserves*)

Moroccoy Inferred								(rounded)
Cutoff (g Au/t)	Tonnes	Gold (g/t)	Gold Ounces	Silver (g/t)	Copper (ppm)	CNSolCu (ppm)	Silver Ounces	Copper Kilograms
0.2	73,593,000	0.55	1,301,000	NA	316	40	NA	23,278,000
0.4	45,076,000	0.72	1,038,000	NA	359	42	NA	16,178,000
0.5	**36,480,000**	**0.78**	**915,000**	NA	365	43	NA	13,319,000
0.6	28,535,000	0.85	775,000	NA	374	45	NA	10,681,000
0.7	22,192,000	0.90	644,000	NA	387	45	NA	8,579,000
0.8	15,492,000	0.97	483,000	NA	401	44	NA	6,215,000
0.9	8,714,000	1.07	299,000	NA	406	45	NA	3,541,000
1.0	5,349,000	1.15	198,000	NA	426	49	NA	2,276,000
1.5	202,000	1.71	11,100	NA	337	41	NA	68,000
2.0	21,000	2.28	1,500	NA	384	87	NA	8,000
2.5	5,000	2.81	400	NA	345	-	NA	2,000
3.0	-	-	-	NA	-	-	NA	-
3.5	-	-	-	NA	-	-	NA	-
4.0	-	-	-	NA	-	-	NA	-
5.0	-	-	-	NA	-	-	NA	-
Note: inconsistencies between grade, tonnes, and ounces are due to rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

17.13 Cordova Grade Model

17.13.1 Cordova - Assays

The Cordova assay database used for modeling is described in Table 17.35. There are 29,003 samples with gold grades, and 28,134 samples with copper grades in the defined Cordova area. There are some "contaminated" samples but no trench samples in the Cordova database. Capping limits were assessed considering:

- the context of modeled zones, material types,
- grade distribution plot profiles of each metal,
- the affected "contained" metal content,
- the geology, and
- the resulting coefficient of variation ("CV").

Table 17.35 Descriptive Statistics of the Cordova Assay Database

ALL DATA **Cordova**

	Valid N	Mean	Median	Std. Dev.	CV	Min	Max.	Units
Hole	1,420							
East	29,074					20,804	21,913	m
North	29,074					10,400	11,430	m
Elevation	29,074					(91)	146	m
From	29,074	74.16				0.0	248.0	m
To	29,074	75.08				0.1	249.0	m
Length	29,074	0.92				0.0	16.7	m
Au	29,003	0.42	0.08	4.82	11.60	0.00	617.0	ppm
AuCap	29,003	0.31	0.08	0.94	3.00	0.00	25.0	ppm
Cu	28,134	184	84	897	5	0	62,000	ppm
CuCap	28,134	166	84	415	3	0	11,400	ppm
CuCNA	81	17	5	35	2	5	376	ppm
CuCnCap	81	17	5	35	2	5	376	ppm
CuRatio	81	27	25.00	19	1	3.00	77.0	%
Ag	27,955	0.75	0.30	7.25	9.61	0.00	1070.0	ppm
AgCap	27,955	0.66	0.30	1.34	2.03	0.00	75.2	ppm
CREC	28,355	95	100	10	0.1	0	125	%
RQD	14,808	79	87	22	0.3	0	125	%
MaterialCode	-					0	0	
Zone	29,074					0	99	
Code	29,074					0	0	
Area	29,074					3	3	
Type	29,074					0	9	
Use	29,074					0	0	
DHorTR	29,074					1	1	

The final capping limits are given in Table 17.36. The "contained" metal was reduced by a relatively large 9% in the low-grade primary mineralization. This was necessary because the continuity of high-grades zones or intersections was not sufficient for to define their own zones. Copper capping levels were substantial on the "contained" amount of metal, but the mixed/sulfide saprolite still has a high CV, much of which was caused by the relatively low mean grade. Overall the copper grades are relatively low at Cordova.

Table 17.36 Capping Limits and Assay Statistics at Cordova

Zones	**21, 31, 41**	**Low-sulfide zone**			**Capped at**	**7**	**g/t**	
	Valid N	**Median**	**Mean**	**Std. Dev.**	**CV**	**Min**	**Max.**	**Units**
Au	8,799	0.29	0.84	8.45	10.05	0.00	617	g/t
AuCap	8,799	0.29	0.57	0.94	1.64	0.00	7	g/t
Difference in grade		0%	-32%		Difference in metal		-32%	
Zones	**22, 32, 42**	**High-sulfide zone**			**Capped at**	**25**	**g/t**	
	Valid N	**Median**	**Mean**	**Std. Dev.**	**CV**	**Min**	**Max.**	**Units**
Au	728	1.21	2.78	6.66	2.40	0.01	88	g/t
AuCap	728	1.21	2.47	4.09	1.66	0.01	25	g/t
Difference in grade		0%	-11%		Difference in metal		-11%	
Zone	**8**	**Overburden**			**Capped at**	**3**	**g/t**	
	Valid N	**Median**	**Mean**	**Std. Dev.**	**CV**	**Min**	**Max.**	**Units**
Au	475	0.41	0.69	1.02	1.48	0.02	15	g/t
AuCap	475	0.41	0.63	0.67	1.07	0.02	3	g/t
Difference in grade		0%	-8%		Difference in metal		-8%	
Zone	**0**	**Outside Zones**			**Capped at**	**3**	**g/t**	
	Valid N	**Median**	**Mean**	**Std. Dev.**	**CV**	**Min**	**Max.**	**Units**
Au	15,757	0.05	0.14	1.02	7.21	0.00	86	g/t
AuCap	15,757	0.05	0.12	0.27	2.26	0.00	3	g/t
Difference in grade		0%	-16%		Difference in metal		-16%	
Type	**1, 2, and 3**	**Bedrock and Saprock**			**Capped at**	**6000**	**ppm**	
	Valid N	**Median**	**Mean**	**Std. Dev.**	**CV**	**Min**	**Max.**	**Units**
Cu	16,379	81	216	1141	5.29	0	62000	ppm
CuCap	16,379	81	187	500	2.67	0	6000	ppm
Difference in grade		0%	-13%		Difference in metal		-13%	
CuCNA	16	52	67	73	1.10	10	376	ppm
CuCnCap	16	52	67	73	1.10	10	376	ppm
CuRatio	16	49	48	24	0.49	4	77	ppm
Type	**4, 5**	**Sulfide and Mixed Saprolite**			**Capped at**	**3500**	**ppm**	
	Valid N	**Median**	**Mean**	**Std. Dev.**	**CV**	**Min**	**Max.**	**Units**
Cu	2,516	110	255	588	2.30	0	13050	ppm
CuCap	2,516	110	242	440	1.82	0	3500	ppm
Difference in grade		0%	-5%		Difference in metal		-5%	
CuCNA	1	68	68		NA	68	68	ppm
CuCnCap	1	68	68		NA	68	68	ppm
CuRatio	1	64	64		NA	64	64	ppm
Type	**6**	**Oxide Saprolite**			**Capped at**	**7300**	**ppm**	
	Valid N	**Median**	**Mean**	**Std. Dev.**	**CV**	**Min**	**Max.**	**Units**
Cu	11,348	99	126	171	1.35	0	12300	ppm
CuCap	11,348	99	124	132	1.06	0	7300	ppm
Difference in grade		0%	-2%		Difference in metal		-2%	
CuCNA	6,842	5	6	2	0.32	1	9700	ppm
CuCnCap	6,842	5	6	2	0.32	1	9700	ppm
CuRatio	6,795	11	13	10	0.78	0	100	ppm
Type	**8**	**Overburden**			**Capped at**	**250**	**ppm**	
	Valid N	**Median**	**Mean**	**Std. Dev.**	**CV**	**Min**	**Max.**	**Units**
Cu	395	98	116	91	0.78	3	870	ppm
CuCap	395	98	109	60	0.55	3	250	ppm
Difference in grade		0%	-6%		Difference in metal		-6%	
CuCNA	0							ppm
CuCnCap	0							ppm
CuRatio	0							ppm

17.13.2 Cordova - Composites

The same logic and methodology were used in compositing at Cordova as at Conductora and Mesones-Sofia. Composite statistics are given in Table 17.37. As stated in earlier sections:

> Gold by zone: After capping, the gold assay sample intervals were composited to six-meter lengths. The gold grades were down-hole composited using geological restrictions for some material types. Pertinent material types were overburden (material type 8) and dikes (material type 9) because there is a discontinuity between both of these and the primary gold mineralization. Both post-date mineralization, and while the dike is barren, the overburden has remobilized, dispersed, and/or re-concentrated gold. Sample data from dikes and overburden were used as hard boundaries for compositing. After compositing, the six-meter composites were coded from the cross-sectional gold zone interpretations. This effectively smoothed out, or "softened", the hard boundaries. The impact of the hard boundary is further reduced later by weight-averaging the grades of the different zones into a "diluted average gold grade" within each block that straddled these boundaries. This set of composites was used for modeling gold and core recovery and for calculating distances, number of samples, and number of drill holes. Statistics of gold composites statistics are given in Table 17.37.

> Copper, copper solubility and silver by material type: After capping, the copper assay sample intervals were composited to six-meter lengths. Material types were used to control down-hole compositing. These composites were not recoded on section as the gold composites were. After compositing, the composites were back coded from the model with the relative elevation of the top of the mixed or sulfide saprolite unit. This relative elevation was used in modeling copper and copper solubility ratios in the saprolite units. Statistics of copper composite statistics are given in Table 17.37.

Table 17.37 Statistics by Zone (Au) and Type (Cu) of Cordova Composites

Zone 31							Cordova	
	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Au	1457	0.40	0.86	3.43	3.98	0.01	96.68	g Au/t
AuCap	1457	0.40	0.59	0.57	0.96	0.01	5.69	g Au/t
Zone 32							**Cordova**	
	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Au	106	1.85	2.49	2.84	1.14	0.05	24.32	g Au/t
AuCap	106	1.82	2.21	1.67	0.76	0.05	10.59	g Au/t
Zone 8							**Cordova**	
	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Au	162	0.61	0.73	0.75	1.03	0.02	5.82	g Au/t
AuCap	162	0.61	0.68	0.55	0.81	0.02	2.70	g Au/t
Zone 99							**Cordova**	
	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Au	2736	0.07	0.15	0.42	2.81	0.00	14.59	g Au/t
AuCap	2736	0.07	0.13	0.18	1.42	0.00	2.43	g Au/t
Type 1, 2, 3							Cordova	
	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Cu	2833	92.0	215.6	553.5	2.6	0.0	26300.0	ppm
CuCap	2833	92	187	294	1.57	0	6000	ppm
CuCN	6	46.50	71.58	82.50	1.15	10.00	232	ppm
CuCNCap	6	47	72	83	1.15	10	232	ppm
Ratio	6	46	35	27	0.75	4	66	%
Type 4, 5							**Cordova**	
	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Cu	503	125.0	255.5	390.0	1.5	0.0	3818.0	ppm
CuCap	503	125	242	319	1.32	0	2539	ppm
CuCN	1	68.00	68.00		NA	68.00	68	ppm
CuCNCap	1	68	68		NA	68	68	ppm
Ratio	1	64	64		NA	64	64	%
Type 6							**Cordova**	
	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Cu	1033	103.5	126.6	121.3	1.0	0.0	1498.0	ppm
CuCap	1033	104	124	106	0.85	0	1012	ppm
CuCN	11	5.00	5.50	1.51	0.27	5.00	10	ppm
CuCNCap	11	5	5	2	0.27	5	10	ppm
Ratio	11	12	12	7	0.61	3	28	%
Type 8							**Cordova**	
	Valid N	Median	Mean	Std.Dev.	CV	Minimum	Maximum	Units
Cu	146	91.5	115.9	67.3	0.6	15.0	387.0	ppm
CuCap	146	91	109	52	0.48	15	246	ppm
CuCN	0				NA			ppm
CuCNCap	0				NA			ppm
Ratio	0				NA			%

17.14 Cordova – Geostatistics and Estimation

MDA calculated variograms and correlograms at varying lags, cutoffs, azimuths and dips for combined zones for Cordova. Variograms parallel to the dominant mineralization-controlling geological fabric were used, namely 315° azimuth with a dip azimuth of 225° and dip of -60°. The variograms were calculated on composites of gold and copper, but not CN-soluble ratio or silver, since there were few to no values of the latter two.

Ordinary Kriging was used for gold, copper and CNSC-to-total-copper ratio estimation (Appendix B). As at Conductora, gold distribution has not been materially affected by weathering processes, except in the alluvium. Consequently, gold was modeled in gold domains that crossed the bedrock and saprolite contacts, but stopped at the overburden and dike contacts.

MDA classified the resource by a combination of distance to the nearest sample, the number of samples used to estimate a block, the geological understanding and predictability of the resources, and the quality of the drill samples used, *i.e.*, core recovery. As gold is the dominant metal from a value standpoint and Crystallex has no mining rights to the copper, all blocks were classified based on gold (Table 17.38). The ranges used for resource classification were chosen based on an average of the directional gold variogram ranges. A typical Section of the Cordova gold model is given in Figure 17.4.

Table 17.38 Criteria for Classification of Cordova Resources

Class*	Distance*	Min. No. of Samples	Min. No. Drill Holes
Measured	None	NA	NA
Indicated	None	NA	NA
Inferred	0 to 80 m	1	1

* See text in next paragraph for explanation; all overburden is classified as Inferred.

MDA modified the distances used for classification by the percent core recovery. It was shown in an earlier section of this report that core recovery affects gold and copper grades and introduces a bias in the saprolite. The lower core recovery decreases confidence in the results and therefore is introduced into the definition of Measured, Indicated, and Inferred. MDA modified the distance between the closest sample and the model block by the following relationship:

- Estimated core recovery between 80% and 100%, no factor;
- Estimated core recovery between 60% and 80%, distance multiplied by 1.1; and
- Estimated core recovery below 60%, distance multiplied by 1.2.

The modified distance was used for the classification scheme given in Table 17.38. Essentially, those blocks with estimated lower core recovery were downgraded in classification. The classification and the estimation described above resulted in only Inferred resources at Cordova (Table 17.39).

Table 17.39 Cordova Inferred Resources
(Including Reserves*)

Cordova/Hoffman Inferred								(rounded)
Cutoff (g Au/t)	Tonnes	Gold (g/t)	Gold Ounces	Silver (g/t)	Copper (ppm)	CNSolCu (ppm)	Silver Ounces	Copper Kilograms
0.2	110,221,000	0.50	1,758,000	NA	235	NA	NA	25,880,000
0.4	56,100,000	0.71	1,272,000	NA	296	NA	NA	16,622,000
0.5	**39,555,000**	**0.81**	**1,035,000**	NA	317	NA	NA	12,551,000
0.6	27,883,000	0.93	831,000	NA	346	NA	NA	9,650,000
0.7	19,379,000	1.05	656,000	NA	370	NA	NA	7,163,000
0.8	13,033,000	1.20	504,000	NA	406	NA	NA	5,285,000
0.9	8,884,000	1.37	392,000	NA	434	NA	NA	3,856,000
1.0	6,478,000	1.53	319,000	NA	450	NA	NA	2,914,000
1.5	1,570,000	2.72	137,100	NA	531	NA	NA	833,000
2.0	827,000	3.62	96,200	NA	570	NA	NA	471,000
2.5	490,000	4.57	72,100	NA	645	NA	NA	316,000
3.0	311,000	5.63	56,000	NA	643	NA	NA	200,000
3.5	222,000	6.61	47,000	NA	609	NA	NA	135,000
4.0	170,000	7.49	41,000	NA	616	NA	NA	105,000
5.0	108,000	9.23	32,000	NA	589	NA	NA	64,000
Note: inconsistencies between grade, tonnes, and ounces are due to rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

17.15 Total Resources of Las Cristinas Project

The total Las Cristinas resource is given in Table 17.40 to Table 17.43. Significant increases have occurred since the previous resource update in 2005. These increases are the result of drilling that expanded Conductora-Cuatro Muertos down dip, drilling that expanded and allowed for inclusion of Morrocoy, and the first-time inclusion of Cordova resources.

Table 17.40 Las Cristinas Total Measured Resources
(Including Reserves*)

Las Cristinas Measured								(rounded)
Cutoff (g Au/t)	Tonnes	Gold (g/t)	Gold Ounces	Silver (g/t)	Copper (ppm)	CNSolCu (ppm)	Silver Ounces	Copper Kilograms
0.2	213,607,000	0.90	6,190,000	0.51	1,119	163	3,535,000	233,170,000
0.4	176,444,000	1.02	5,812,000	0.54	1,162	179	3,051,000	205,073,000
0.5	**146,141,000**	**1.14**	**5,380,000**	0.56	1,222	193	2,617,000	178,643,000
0.6	118,806,000	1.28	4,903,000	0.58	1,292	211	2,202,000	153,554,000
0.7	98,523,000	1.42	4,485,000	0.60	1,354	227	1,885,000	133,432,000
0.8	83,674,000	1.53	4,129,000	0.61	1,402	242	1,640,000	117,303,000
0.9	73,560,000	1.63	3,855,000	0.62	1,438	255	1,465,000	105,770,000
1.0	66,061,000	1.71	3,628,000	0.63	1,467	264	1,334,000	96,904,000
1.5	38,124,000	2.05	2,512,200	0.66	1,567	313	811,400	59,744,000
2.0	15,852,000	2.51	1,278,000	0.71	1,784	425	360,800	28,277,000
2.5	5,694,000	3.05	559,000	0.76	2,079	568	138,900	11,835,000
3.0	2,246,000	3.59	259,000	0.83	2,474	741	60,000	5,555,000
3.5	887,000	4.18	119,000	0.89	3,010	864	26,000	2,671,000
4.0	389,000	4.77	60,000	0.93	3,683	1,030	12,000	1,434,000
5.0	92,000	6.06	18,000	0.86	4,048	632	3,000	372,000
Note: inconsistencies between grade, tonnes, and ounces are due to rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

Table 17.41 Las Cristinas Total Indicated Resources
(Including Reserves*)

Las Cristinas Indicated								(rounded)
Cutoff (g Au/t)	Tonnes	Gold (g/t)	Gold Ounces	Silver (g/t)	Copper (ppm)	CNSolCu (ppm)	Silver Ounces	Copper Kilograms
0.2	954,888,000	0.66	20,387,000	0.43	991	109	13,078,000	883,581,000
0.4	617,674,000	0.87	17,297,000	0.45	1,041	124	8,875,000	643,224,000
0.5	**483,242,000**	**0.99**	**15,381,000**	0.46	1,092	130	7,138,000	527,700,000
0.6	374,292,000	1.12	13,474,000	0.47	1,142	138	5,639,000	427,384,000
0.7	288,197,000	1.26	11,692,000	0.48	1,198	146	4,437,000	345,249,000
0.8	228,567,000	1.40	10,271,000	0.49	1,238	153	3,579,000	283,042,000
0.9	188,062,000	1.52	9,176,000	0.49	1,269	159	2,993,000	238,588,000
1.0	160,762,000	1.62	8,348,000	0.50	1,290	164	2,594,000	207,368,000
1.5	82,225,000	1.99	5,257,000	0.52	1,363	184	1,379,200	112,072,000
2.0	31,194,000	2.42	2,432,000	0.54	1,467	233	536,900	45,765,000
2.5	9,931,000	2.91	930,000	0.56	1,634	342	179,900	16,228,000
3.0	2,933,000	3.40	320,000	0.61	1,845	440	57,000	5,412,000
3.5	763,000	4.01	98,000	0.71	2,374	588	17,000	1,811,000
4.0	244,000	4.70	37,000	0.80	3,027	744	6,000	737,000
5.0	66,000	5.81	12,000	0.57	3,075	332	1,000	202,000

Note: inconsistencies between grade, tonnes, and ounces are due to rounding

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

Table 17.42 Las Cristinas Total Measured and Indicated Resources\
(Including Reserves*)

Las Cristinas Measured and Indicated								(rounded)
Cutoff (g Au/t)	**Tonnes**	**Gold** (g/t)	**Gold** Ounces	**Silver** (g/t)	**Copper** (ppm)	**CNSolCu** (ppm)	**Silver** Ounces	**Copper** Kilograms
0.2	1,168,496,000	0.71	26,578,000	0.44	1,017	119	16,613,000	1,116,751,000
0.4	794,119,000	0.91	23,109,000	0.47	1,068	136	11,926,000	848,297,000
0.5	**629,383,000**	**1.03**	**20,761,000**	0.48	1,122	145	9,755,000	706,343,000
0.6	493,098,000	1.16	18,377,000	0.49	1,178	155	7,841,000	580,939,000
0.7	386,720,000	1.30	16,177,000	0.51	1,238	167	6,322,000	478,680,000
0.8	312,241,000	1.43	14,400,000	0.52	1,282	177	5,219,000	400,345,000
0.9	261,622,000	1.55	13,032,000	0.53	1,316	186	4,458,000	344,359,000
1.0	226,823,000	1.64	11,977,000	0.54	1,341	193	3,928,000	304,272,000
1.5	120,348,000	2.01	7,769,200	0.57	1,428	225	2,190,700	171,816,000
2.0	47,045,000	2.45	3,709,900	0.59	1,574	298	897,700	74,042,000
2.5	15,625,000	2.96	1,488,900	0.63	1,796	424	318,800	28,063,000
3.0	5,178,000	3.48	579,000	0.70	2,118	570	117,000	10,967,000
3.5	1,650,000	4.10	218,000	0.81	2,716	736	43,000	4,482,000
4.0	633,000	4.74	96,000	0.88	3,430	920	18,000	2,171,000
5.0	158,000	5.96	30,000	0.74	3,642	507	4,000	574,000
Note: inconsistencies between grade, tonnes, and ounces are due to rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

Table 17.43 Las Cristinas Total Inferred Resources
(Including Reserves*)

Las Cristinas Inferred								(rounded)
Cutoff (g Au/t)	**Tonnes**	**Gold** (g/t)	**Gold** Ounces	**Silver** (g/t)	**Copper** (ppm)	**CNSolCu** (ppm)	**Silver** Ounces	**Copper** Kilograms
0.2	626,333,000	0.51	10,334,000	0.29	666	54	5,869,000	398,760,000
0.4	322,410,000	0.73	7,594,000	0.29	680	54	3,051,000	219,361,000
0.5	**229,626,000**	**0.85**	**6,276,000**	0.30	691	52	2,206,000	158,773,000
0.6	167,940,000	0.96	5,194,000	0.30	707	50	1,641,000	118,772,000
0.7	121,631,000	1.08	4,240,000	0.31	721	48	1,219,000	87,746,000
0.8	89,339,000	1.21	3,467,000	0.33	748	46	954,000	66,848,000
0.9	64,278,000	1.35	2,788,000	0.37	783	45	758,000	50,337,000
1.0	49,247,000	1.47	2,334,000	0.39	815	44	617,000	40,115,000
1.5	17,659,000	1.98	1,126,700	0.48	918	43	270,700	16,215,000
2.0	5,718,000	2.53	464,900	0.42	918	46	78,100	5,247,000
2.5	1,636,000	3.37	177,300	0.30	880	46	15,600	1,439,000
3.0	548,000	4.72	83,000	0.21	765	30	4,000	419,000
3.5	288,000	6.07	56,000	0.15	687	24	1,000	198,000
4.0	192,000	7.25	45,000	0.04	672	6	-	129,000
5.0	122,000	8.82	35,000	0.05	649	7	-	79,000
Note: inconsistencies between grade, tonnes, and ounces are due to rounding								

*Note: Mineral Resources which are not Mineral Reserves do not have demonstrated economic viability.

17.16 Resource Estimate Checking and Changes over Time

Since the first estimate made of the Las Cristinas deposit resources by Crystallex (Ristorcelli and Hardy, 2003), numerous efforts have been made validating and modifying the modeling procedures used; also extensive work has been done on sample variability and heterogeneity as described in Section 14.0. The modeling checks included simple polygonal estimates, independent reviews contracted by Crystallex (Thalenhorst, 2005) and MDA (Sandefur, 2004), multiple iterations assessing sensitivity to estimation procedures (Ristorcelli, 2004a), and comparisons of the model to post-modeling drill-hole data (Ristorcelli and Hardy, 2004b). Importantly and most convincingly, all new drilling done in 2004 (18 holes), 2005 (14 holes), and 2006-2007 (46 holes) supported the model in that the defined zones needed little modification even at a drill-hole spacing of over 100m, *i.e.*, the high-grade/high-sulfide and low-grade/low-sulfide zone gradational contacts needed only minor changes to fit the new drill holes. This fact is a testament to the predictability of the Las Cristinas deposit in general, but Conductora particularly, where most of the drilling took place.

Summaries of the various studies follow:

Ristorcelli and Hardy (2004a) stated that MDA "*checked the modeling procedures and parameters and the model results. The model was checked for bias against the composites from which they were estimated. Multiple runs were made to assess sensitivity to modeling parameters. An independent geostatistician was commissioned to perform an independent review of the modeling procedures. In the end, very few changes were made to the estimation procedures.*"

Ristorcelli and Hardy (2004b) concluded that the grade differences between the 2003 drilling completed after modeling and the model could be a result of the Crystallex drill core being smaller than Placer's. They stated:

- *"The sometimes large differences in mean grades between individual drill holes and the model is a result of the wide-spaced drilling in the deeper parts of the model and partly due to high local variability in the deposit (or our perception of the variability of the deposit which may be a function of the sample size, sub-sampling procedures and the heterogeneity) and/or the effect of smoothing during estimation;*
- *Local grade variability is high; and*
- *Large differences in grade exist in the background and sub-ore grade cutoff mineralization lying outside of the defined mineralized zones.*

The high variance between individual drill holes and the model is more common in the down dip Inferred areas (2004 drilling) though it is still high in the area of twin hole drilling (2003), even where the drill spacing is considered tight at 40m centers. As evidenced by this comparison and the variograms calculated for the gold mineralization, local variability cannot be estimated with any certainty from the existing data. In spite of this last statement, the 2004 drilling intersected the high-grade and low-grade zones where they were predicted to be."

MDA requested a check on its estimation procedures by independent geostatistician, Mr. Robert Sandefur. Sandefur (2004) reviewed MDA's capping levels and estimation parameters, calculated variograms, and performed cross validation. The following is a summary of these reviews:

Capping: Mr. Sandefur concurred with the capping levels used by MDA, which were 40 g Au/t in the high-grade and 7 g Au/t in the low grade, and Mr. Sandefur suggested they might be conservative.

Estimation: The estimation procedures and run files are acceptable and utilize "standard industry practices."

Variograms: Mr. Sandefur's calculated variograms provided similar results to MDA's in the ranges, nuggets and sills.

Cross validation: His review suggested that the high-grade zone was behaving well, while the low-grade zone seems to be overstating its higher grades (plus one gram gold per tonne).

Risk assessment on mean grade: Sandefur made a brief assessment of the risk of mean grades based on existing composited sample grades. He noted that "*On balance, RLS* [Mr. Robert L. Sandefur] *believes that contained ounces for profit are within + or - 6% for the above cutoff [0.5 g Au/t] blocks estimated from the above noted composites.*" Sandefur goes on to state that "*This plus or minus a 6% is of the same order as the bias between various core sizes and so probably is not a great concern. However, on annual bases the fluctuation in contained ounces may be beyond the acceptable plus or -15%.*" MDA believes that this may, in part, be due to the heterogeneity of the deposit which has since been studied.

Mr. Sandefur's criticisms included the "chopping up" of a good log-normal distribution into two not so well-behaved log-normal distributions. MDA felt that distinguishing these two zones is a preferred method for estimation, in part because the deeper parts of the deposit have insufficient drilling to control the estimate. Furthermore, though not defined by hard contacts, Conductora does have higher-grade zones which are recognizable macroscopically as containing higher concentrations of sulfides. The fact is that these same higher-grade zones were also predictable with the model.

Thalenhorst (2005) made the following more significant observations during his review of the estimates and the concepts that have been followed for the Las Cristinas resource modeling:

"1. Parts of the Las Cristinas deposit have a low gold-grade bias due to the occurrence of the gold in clusters that are not adequately sampled even with sampling one half of the relatively large diameter PQ core (85 mm). Conversely, core losses appear to result in the recovered core having a high gold-grade bias in the saprolite, and while extreme cases of core loss have been removed from the database, there remains an unquantified residual high bias in the current gold grades used for resource estimation in the saprolite. The size of either of the two biases cannot currently be quantified, but at least they are in opposite directions.
2. There is a question of whether sufficient dilution has been built into the grade model. We have a sense that an appropriate allowance has been incorporated for the upper part of the deposit that will be mined on six-meter benches in the early years, but there may be a risk of "losing" grade in the lower part of the deposit that will be mined on twelve-meter benches, but which received the same treatment during grade modelling as the closerspaced benches in the upper levels of the deposit.

3. Grade control will be a considerable challenge in those parts of the deposit where the gold cut-off grade is close to the average grade — affecting perhaps 80% of the reserve tonnage. Incorrect classification of either ore or waste is a lose-lose proposition, and an appropriate but somewhat costly sample collection, preparation and assaying protocol as recommended in the recent heterogeneity study is required to keep the grade control errors to a minimum.

The grade control question is complicated in the sulfide saprolite (SAPS) and to a lesser degree in the saprock (SAPR) materials by the lack of accuracy with respect to the grade interpolation of the cyanide-soluble copper in the current resource model on a local scale, a key determinant for the gold cut-off grade in those zones. Successful grade control that minimizes incorrect classification will require early and reliable gold assay grades based on large samples from reverse circulation drill holes with a 1000-gram gold assay aliquot subjected to screen metallics assaying. In addition, reliable cyanide-soluble copper assays will be required in the sulfide-stable saprolite rock types…

Other than the foregoing observations for consideration, our review of the Las Cristinas resource and reserve estimates did not identify any issues that might have a significant impact on those estimates. The mineral reserves for the Las Cristinas deposit that have been estimated by MDA, and classified as proven and probable reserves, with a total of 295 million tonnes with a gold grade of 1.3 grams per tonne (g/t) for a contained gold content of 12.5 million ounces are a reasonable estimate for the Las Cristinas project based on the data available to date and the economic parameters used in preparing the estimates."

Considering the studies that took place to validate and check the model, the following items were changed from the 2003 block model estimate (Ristorcelli and Hardy, 2004b):

- In the areas outside the defined mineralized zones, MDA restricted the projection of high grades by limiting the search distances to eight meters for grades above a cutoff. This cutoff was decreased from 2.0 g Au/t in the 2003 estimate to 1.0 g Au/t in this estimate.
- Capping was dropped to 40 g Au/t from 41 g Au/t in the high-grade zone.
- Search distances for composites over 5 g Au/t in the low-grade zone were reduced to 80% of the total search, and search distances for composites over 20 g Au/t in the high-grade zone were also reduced to 80% of the total search distance. The search distances range from 50m to 200m depending upon the zone.
- MDA also capped outliers in four holes which were causing local overestimates.

Changes were made during this last update in resource classification including the dropping of all material from Measured and Indicated to Inferred for those blocks that are at or within six meters of the surface or that have 80% or more of the block estimated to be overburden. Simultaneously, the classification of Measured in the Conductora deposit has been increased from 15m to the nearest sample to 20m. As in all estimates, as more information becomes available, additional modifications may be warranted.

17.17 Mineral Reserve Estimates

Mineral reserves for the Las Cristinas project were developed by applying relevant economic criteria in order to define the economically extractable portions of the MDA resource model. MDA developed the reserves for Las Cristinas to meet the NI 43-101 standards set for mineral reserves. The NI 43-101 standard uses the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") Definition Standards on Mineral Resources and Mineral Reserves ("CIM Definition Standards") adopted by the CIM Council on November 14, 2004:

Mineral Reserve

Mineral Reserves are sub-divided in order of increasing confidence into Probable Mineral Reserves and Proven Mineral Reserves. A Probable Mineral Reserve has a lower level of confidence than a Proven Mineral Reserve.

A 'Mineral Reserve' is the economically mineable part of a Measured or Indicated Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified. A Mineral Reserve includes diluting materials and allowances for losses that may occur when the material is mined.

Mineral Reserves are those parts of Mineral Resources which, after the application of all mining factors, result in an estimated tonnage and grade which, in the opinion of the Qualified Person(s) making the estimates, is the basis of an economically viable project after taking account of all relevant processing, metallurgical, economic, marketing, legal, environment, socio-economic and government factors. Mineral Reserves are inclusive of diluting material that will be mined in conjunction with the Mineral Reserves and delivered to the treatment plant or equivalent facility. The term 'Mineral Reserve' need not necessarily signify that extraction facilities are in place or operative or that all governmental approvals have been received. It does signify that there are reasonable expectations of such approvals.

Probable Mineral Reserve

A 'Probable Mineral Reserve' is the economically mineable part of an Indicated, and in some circumstances a Measured Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified.

Proven Mineral Reserve

A 'Proven Mineral Reserve' is the economically mineable part of a Measured Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction is justified.

Application of the Proven Mineral Reserve category implies that the Qualified Person has the highest degree of confidence in the estimate with the consequent expectation in the minds of the readers of the report. The term should be restricted to that part of the deposit where production planning is taking place and for which any variation in the estimate would not significantly affect potential economic viability.

The economic and design criteria used in determining the reserves in this report were derived from the 2003 Technical Report (Ristorcelli and Hardy, 2003) and the 2005 Development Plan (SNC-Lavalin, 2005a). MDA believes that there is enough information in this feasibility study and update concerning the appropriate mining, processing, economic and other factors to support Proven and Probable reserves. The work undertaken by MDA in 2007 consisted of updating mining costs using factors and estimates provided by Crystallex, developing Lerchs-Grossmann ("LG") ultimate pits using current economics, redesigning the ultimate pits, and reporting reserves. Because the updated economic data have not been rigorously verified by MDA, the 2007 work should be considered pre-feasibility level.

As noted in the 2003 study, Crystallex does not yet have the right to retain profits from the extracted copper. Crystellex's legal opinion states: "*Therefore, under this scenario Crystallex would not be entitled to profit from the extracted copper, but to recover the expenses it incurred on its extraction that are fully demonstrated in the proceedings.*" Because of this, copper is not included in the reserve. There is no mention of silver revenue, so it has been excluded from the reserve as well.

17.17.1 Applied Methodologies

The Las Cristinas reserves were derived from the resource model built by MDA. MDA used Medsystem/MineSight® computer software to develop and report the reserves using the following procedure:

1. Review and update parameters and economics from the 2005 update;
2. Using these inputs, generate multiple "pit shells" with Medsystem's Lerchs-Grossmann ("LG") ultimate pit program;
3. Design interior pits and a final (ultimate) pit using the pit shells as guides. This design includes haul roads and eliminates any areas that could not be mined because of practical mining limitations;
4. Tabulate Measured and Indicated resources inside the designed pit that meet the economic criteria for reserve classification and reporting as Proven and Probable reserves, respectively; and
5. Check and compare overall economic results.

17.17.2 Pit Design Parameters

Economic parameters used to develop the LG pit shells and cutoff grades are listed in Table 17.44. Table 17.45 is a summary of the physical parameters that were used to define the LG ultimate pit and ultimate pit design.

Table 17.44 Economic Parameters

Value		Description	Units
$	550	Gold price	$/oz
$	1.36	Bedrock Mining Cost	$/DMT
$	1.36	Saprolite Mining Cost	$/DMT
$	6.12	Bedrock Processing Cost	$/DMT Ore
$	3.15	Saprolite Processing Cost	$/DMT Ore
$	5.29	Saprolite Sulfide Processing Cost *	$/DMT Ore
$	0.72	General and Administration Cost	$/DMT Ore
	98.50%	Dore Refinery Recovery	%
$	1.50	Gold Refining Cost	$/oz
	3%	Excise Tax	%
		Gold Recovery by Material	
	87.6%	Carbonate Bedrock	
	86.8%	Saprolite Sulfide	
	98.0%	Saprolite Oxide	
GSR Royalty		Gold Price Range	
	1.00%	$AU < $280	
	1.50%	$280 <= $AU < $350	
	2.00%	$350 <= $AU < $400	
	3.00%	$400 <= $AU	

*Saprolite sulfide process cost = 0.0036440 * Soluble Cyanide Cu% + 2.9150

Table 17.45 Physical Parameters

Physical Parameters	
1.56 - 2.79	Specific Gravity (Varies by Material)
6m	Saprolite Mining Bench Height
12m	Bedrock Mining Bench Height
30m	Road Width
10%	Maximum Road Grade
31°	Overall Slope in Saprolite
55°	Overall Slope in CSB west & south walls
45°	Overall Slope in CSB east wall
45°	Overall Slope in CLB

17.17.3 Dilution

MDA believes that the combination of Kriging, model block size, and averaging of grades across multiple zones during the modeling and the compositing processes adequately accounts for dilution in the reserve. In addition, the anticipated mining equipment is small enough to selectively mine individual blocks smaller than the 12m by 12m block size.

Nevertheless, it will be necessary to practice detailed grade control in some areas of the deposit. Specifically, mining at the oxide-sulfide boundary in saprolite needs to be controlled to avoid mixing of the two material types going to the plant. The oxide sulfide boundary is essentially sub-horizontal, and mining benches will more often than not include both oxide and sulfide. There is a noticeable color change between these two material types, which can be used as a guide.

17.17.4 Lerchs-Grossman Pits

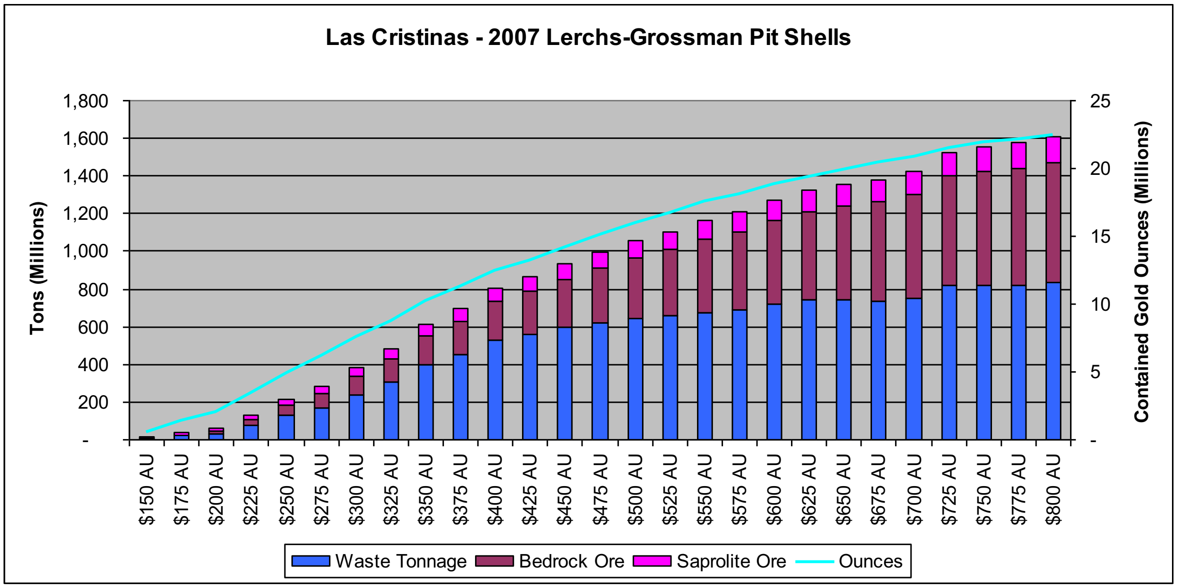
The LG-pit-design program is used to define pit shells that represent material that can be mined at a profit based on varied economics. For this process, the gold price was varied to determine the deposit's sensitivity to gold price, and the resulting pit shells were used as a basis for pit design. Gold prices used ranged from $150 to $800 in $25 increments. Table 17.46 shows the resulting tonnes, grade, and contained ounces within the various LG pits. This is also illustrated in the graph of Figure 17.6.

Table 17.46 Lerchs-Grossman Results by Gold Price

	Total Ore					Total	Strip
	Tonnes	gAu/t	Grams Au	Ounces Au	Total	Tons	Ratio
$150 AU	8,231	1.99	16,420	528	5,538	13,769	0.67
$175 AU	20,721	2.00	41,427	1,332	19,719	40,440	0.95
$200 AU	32,395	1.92	62,060	1,995	31,497	63,892	0.97
$225 AU	58,200	1.82	105,974	3,407	73,987	132,187	1.27
$250 AU	87,848	1.75	153,644	4,940	127,843	215,691	1.46
$275 AU	114,512	1.67	191,386	6,153	171,349	285,861	1.50
$300 AU	145,552	1.61	234,338	7,534	238,396	383,948	1.64
$325 AU	175,807	1.55	272,861	8,773	303,166	478,973	1.72
$350 AU	211,507	1.50	318,276	10,233	400,250	611,757	1.89
$375 AU	241,308	1.45	350,344	11,264	454,521	695,829	1.88
$400 AU	274,672	1.41	386,458	12,425	530,656	805,328	1.93
$425 AU	303,179	1.36	411,539	13,231	560,721	863,900	1.85
$450 AU	337,483	1.30	440,324	14,157	595,230	932,713	1.76
$475 AU	377,081	1.25	470,307	15,121	619,295	996,376	1.64
$500 AU	414,202	1.20	496,952	15,977	643,481	1,057,683	1.55
$525 AU	448,022	1.16	520,125	16,722	657,779	1,105,801	1.47
$550 AU	488,717	1.12	546,302	17,564	677,206	1,165,923	1.39
$575 AU	516,678	1.09	563,628	18,121	689,882	1,206,560	1.34
$600 AU	552,301	1.06	585,539	18,825	719,693	1,271,994	1.30
$625 AU	583,684	1.03	603,870	19,415	741,540	1,325,224	1.27
$650 AU	613,716	1.01	619,395	19,914	740,788	1,354,504	1.21
$675 AU	643,107	0.99	633,918	20,381	739,052	1,382,159	1.15
$700 AU	675,300	0.96	650,031	20,899	750,457	1,425,757	1.11
$725 AU	706,334	0.95	668,410	21,490	819,905	1,526,239	1.16
$750 AU	734,797	0.93	681,294	21,904	818,640	1,553,437	1.11
$775 AU	753,877	0.91	689,355	22,163	820,572	1,574,449	1.09
$800 AU	773,744	0.90	698,404	22,454	835,127	1,608,871	1.08

Note: All tonnes, grams, and ounces are in Thousands

Figure 17.6 Lerchs-Grossmann Pits Graph



17.17.5 Ultimate Pit Design

The ultimate pit was designed to allow ramp access for haulage and equipment as well as to incorporate catch benches for safe operations. This ultimate design was based on the $550 gold-price LG pit that was used as a template during the design process. Starting and ending points are designated for ramp access, and the pit is smoothed to provide realistic mining shapes and maintain geotechnically sound walls. The ultimate pit design is shown in Figure 17.7.

Pit-slope angles and dump designs were based on work done and summarized in SNC-Lavalin (2004c). Additional work was done during 2005, the results of which indicate that the south-wall slopes could be increased to the same angles as the west wall. Because of the increased depth of the 2007 designed ultimate pit, a review of the slope angles was undertaken by Ms. Ljiljana Josic (Appendix C). The existing slope parameters as prescribed in SNC-Lavalin (2004) were found to be acceptable, as described in the report by Josic (2007) (Appendix C).

The west wall in carbonate-stable bedrock has a steeper overall angle (55°) than the east wall (45°) due to the westward dip of the foliation. All of the recommended slope angles are based on using appropriate controlled-blasting techniques and dewatering the pit walls.

The east wall of the pit follows the dip of the mineralization closely, resulting in an overall slope angle of 40° to 45° in the bedrock. This is the only location where the pit slope angles are not designed at the recommended maximum. The design shows a constant elevation for the slope change between leached bedrock and saprolite, which is accompanied by an extra-wide catch bench. The bedrock-saprolite contact elevation varies, and it will be necessary to adjust slope-angle changes in detailed pit designs to reflect the elevation changes of the contact. The wide bench acts as a catch bench to contain any material that may slough from the saprolite faces.

Due to the physical location of the deposit relative to the plant and the area available for waste dumps, the entrances to the pits are on the west side. Ramp grades are 10%, and ramp widths are 30m.

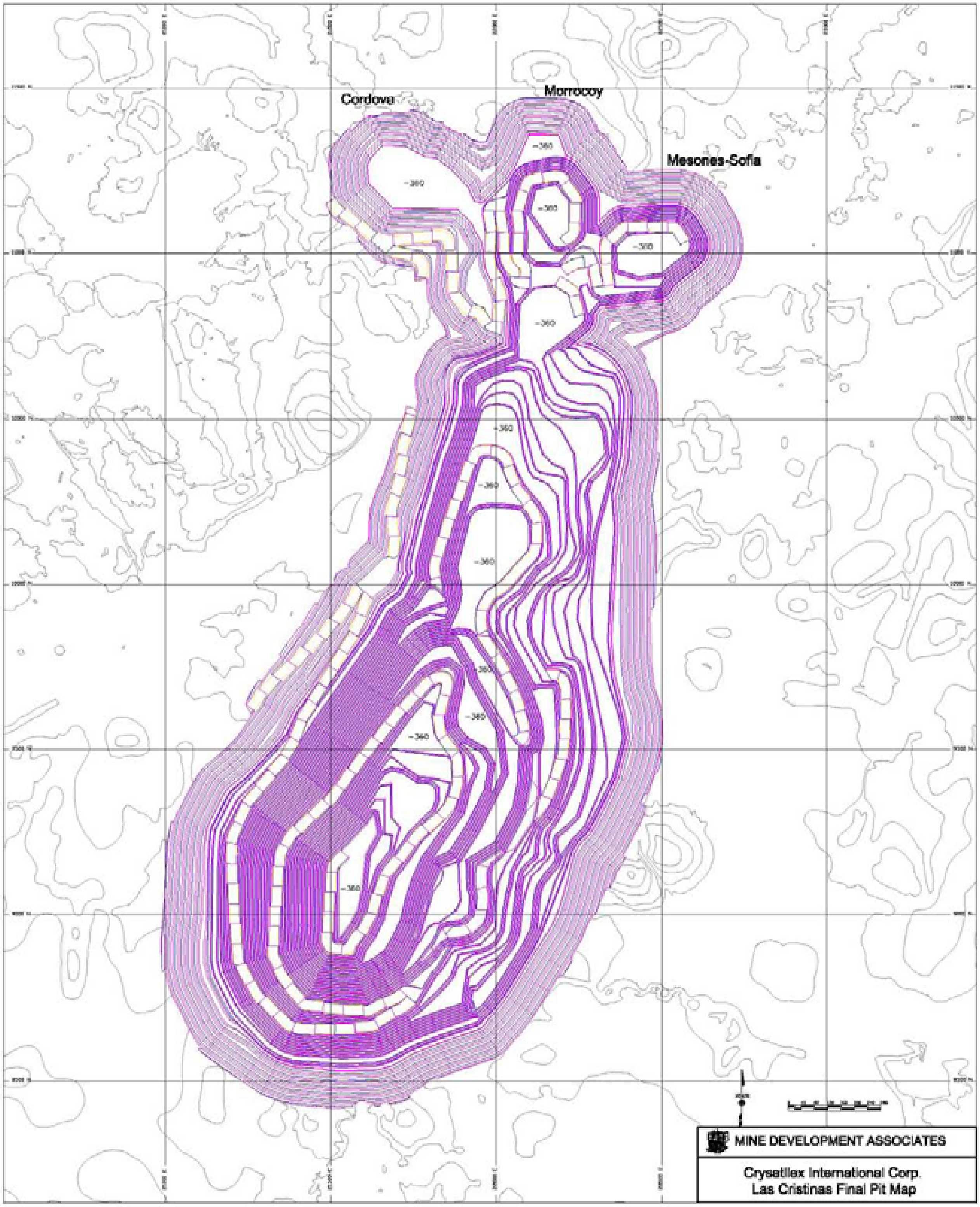
17.17.6 Cutoff Grades

Reserves are based on break-even economics on a block-by-block basis for those blocks falling within the ultimate pit design. This is done to account for the differences in costs and recoveries between material types and the variability of cutoff grades within the saprolite sulfide material varying with soluble copper grade. Gold cutoff grades for the deposits have been calculated considering the average soluble-copper content for the saprolite sulfide and are listed in Table 17.47.

Table 17.47 Gold Cutoff Grades

Material	Cutoff (gAu/t)
Saprolite Oxide	0.33
Saprolite Sulfide	0.52
Bedrock	0.57

Figure 17.7 Ultimate Pit Design



17.17.7 Mineral Reserve Estimate

The mineral reserve estimate has been detailed by material type and is given in Table 17.48.

Table 17.48 Las Cristinas Gold Reserve Estimate

Summary of Proven Reserves (Tonnes, Grams, and Ozs in Thousands)

	Total Ore			
	Tonnes	gAu/t	Grams Au	Ounces Au
Conductora	112,761	1.24	139,423	4,483
Mesones/Sofia	-	-	-	-
Morrocoy	-	-	-	-
Total Proven	**112,761**	**1.24**	**139,423**	**4,483**

Summary of Probable Reserves (Tonnes, Grams, and Ozs in Thousands)

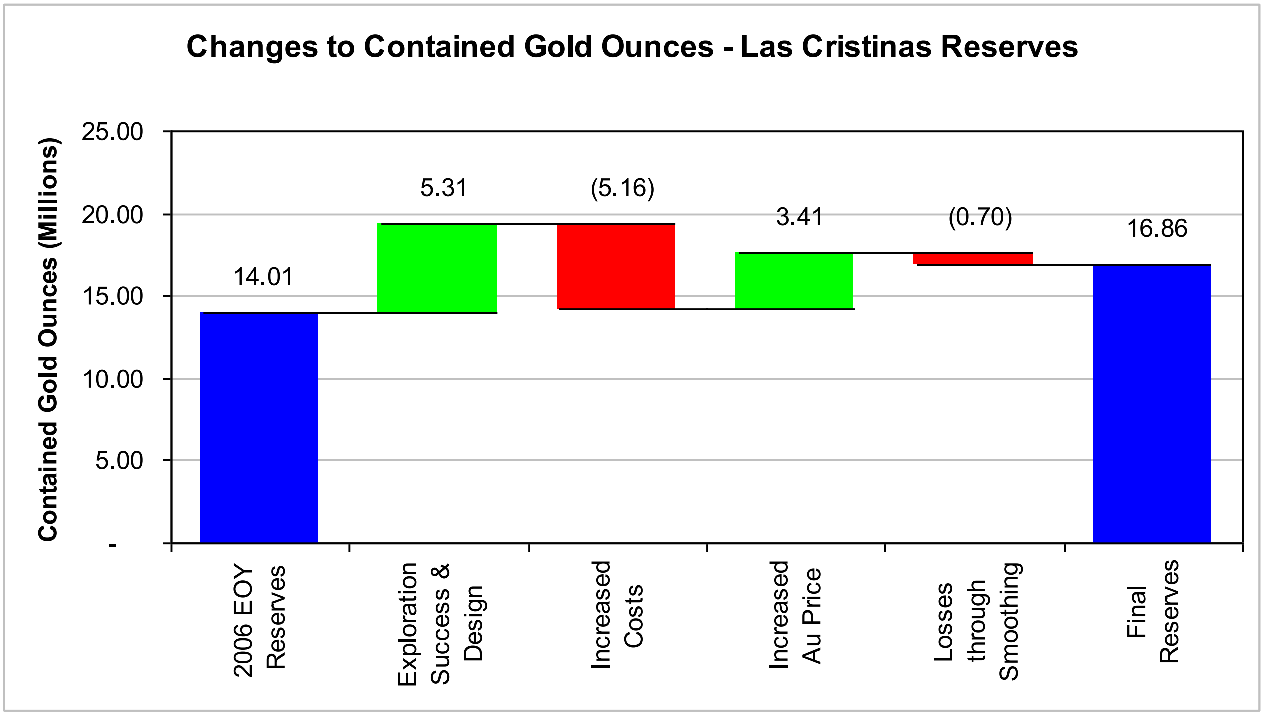
	Total Ore			
	Tonnes	gAu/t	Grams Au	Ounces Au
Conductora	317,662	1.10	349,906	11,250
Mesones/Sofia	27,556	1.10	30,216	971
Morrocoy	6,383	0.77	4,910	158
Total Probable	**351,601**	**1.10**	**385,032**	**12,379**

Summary of Proven & Probable Reserves (Tonnes, Grams, and Ozs in Thousands)

	Total Ore				Total	Total	Strip
	Tonnes	gAu/t	Grams Au	Ounces Au	Waste	Tonnes	Ratio
Conductora	430,423	1.14	489,329	15,732	595,380	1,025,803	1.38
Mesones/Sofia	27,556	1.10	30,216	971	34,624	62,180	1.26
Morrocoy	6,383	0.77	4,910	158	9,915	16,298	1.55
Total Probable	**464,362**	**1.13**	**524,455**	**16,862**	**639,919**	**1,104,281**	**1.38**

Significant changes to Las Cristinas Proven and Probable contained-ounces changes from 2006 end-of-year reserves are illustrated in the waterfall chart in Figure 17.8 . Data for this chart were derived from end-of-year 2006 reserves, LG pit designs, and the ultimate pit design used for reserves.

Figure 17.8 Changes to Reserves – 2006 EOY to Final



The following should be noted with respect to Figure 17.8:

- Increase of 5.31M ounces due to exploration results and design impacts. The design impacts are due to the 2006 end-of-year reserves using a gold price of $450 and pit designs for a $350 gold price;
- decrease of 5.16M ounces due to increased costs;
- increase of 3.41M ounces due to increase in the price of gold; and
- decrease of 0.70M ounces due to effect of providing access and detailed pit design.

Along with the reserves reported, within the boundaries of the pit design there are an additional 1.6M contained ounces of inferred material (Table 17.49).

Table 17.49 Las Cristinas Inferred Gold within Pit Design

In Pit Inferred Summary (Tonnes, Grams, and Ozs in Thousands)				
	Total Ore			
	Tonnes	**gAu/t**	**Grams Au**	**Ounces Au**
Conductora	46,985	0.97	45,569	1,465
Mesones/Sofia	1,651	0.65	1,080	35
Morocoy	3,103	0.73	2,252	72
Total Proven	51,739	0.95	48,901	1,572

18.0 OTHER RELEVANT DATA AND INFORMATION

MDA is not aware of any other relevant information related to the resources and reserves that is not described in this document and that would change the conclusions or interpretations.

However, none of the authors is familiar with the regulatory environment in Venezuela and in particular those issues that concern granting permits and permissions to commence mining. The authors do not have, have not attempted to have, and could not have relevant data or information concerning granting permits and permissions to commence mining. Because the authors cannot assess the situation, they have therefore relied entirely on the expert and legal opinions given by Crystallex for classifying the resources and reserves from a legal and environmental standpoint.

19.0 ADDITIONAL REQUIREMENTS FOR TECHNICAL REPORTS ON DEVELOPMENT PROPERTIES AND PRODUCTION PROPERTIES

This section of the report describes those anticipated aspects of development and production at Las Cristinas, much of which are illustrated in Figure 19.1 and Figure 19.2, which are the 15-year and end-of-mine-life surface facilities and infrastructure, respectively.

19.1 Mining Operations

19.1.1 Open Pit Hydrogeology and Dewatering

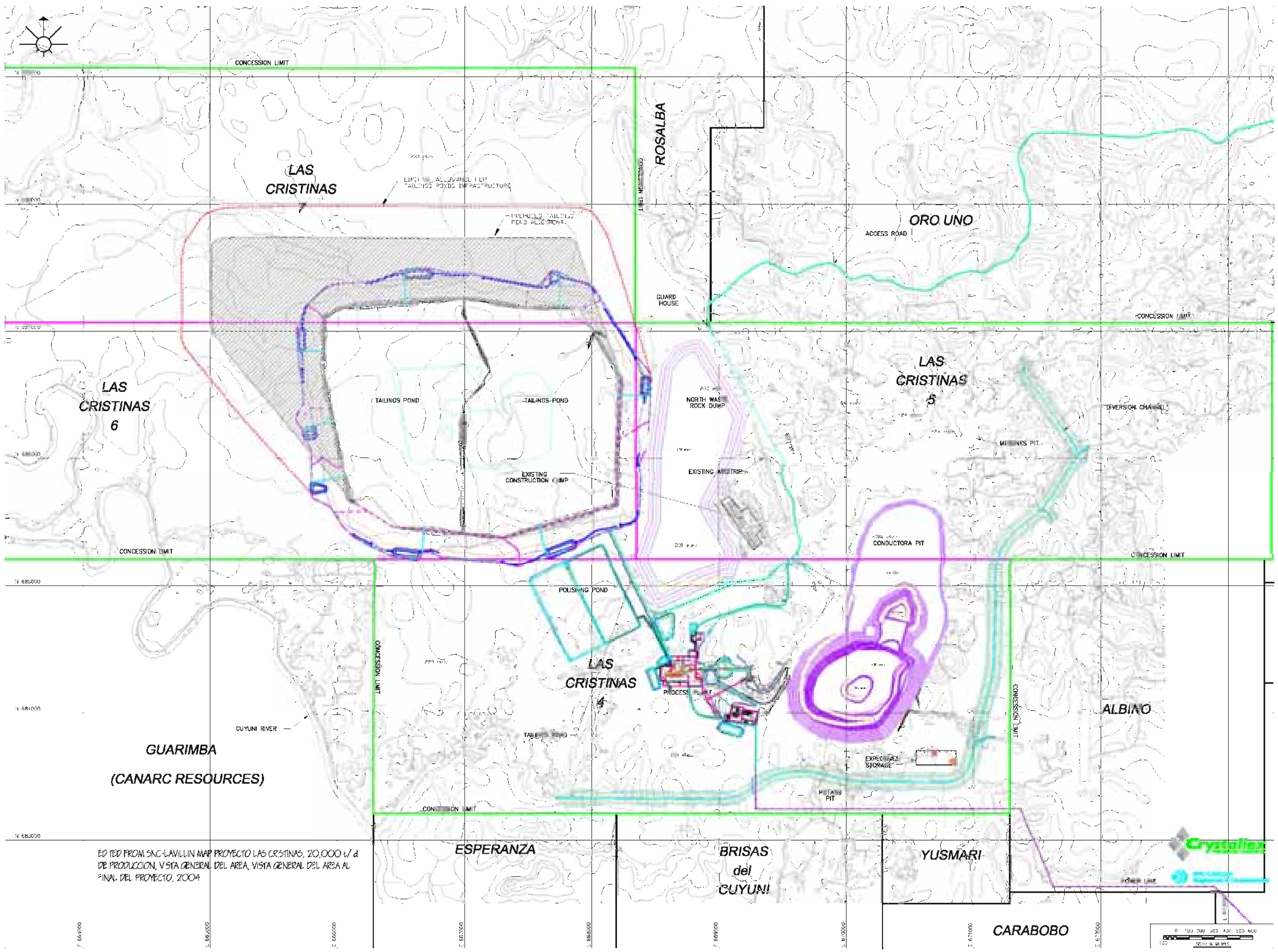
One of the most significant physical issues Crystallex faces in mining the Las Cristinas deposit is the amount of water that will be encountered. Rainfall data, supplied by Crystallex, indicate that the average rainfall for that period exceeded three meters per year. MDA has accounted for anticipated time lost due to rainfall in scheduling production and determining equipment requirements (assumed 22 days per year lost due to rain). Nevertheless, actual mining experience with the combination of wet saprolite and high rainfall rates may require adjustment of these numbers. Groundwater flows (see below under Groundwater Numerical Modeling) also require attention.

It is very important that the surface water be diverted away from the pit. Besides the additional pumping costs associated with the removal of surface runoff, large flows of water over the pit rim could degrade the integrity of the high wall, especially in the saprolite. A diversion trench and berm will be constructed around the east side of the pit rim, between the river diversion channel and the pit rim, to divert surface runoff away from the pit. This diversion trench is relatively small because the maximum drainage area requiring diversion is about 170ha (between the river diversion and the pit rim at the end of the mine life). This diversion will be built in segments as the pit size increases. The ultimate length of the diversion is 8,800m.

Because the west side of the pit is bounded by roads, potential runoff from the plant site and dumps into the pit will be controlled by water diversion channels designed for these facilities. Nevertheless, small ditches and berms may be required in lower-lying locations in the early years of mining to divert runoff away from the first pit phases.

A berm is required between the south end of the pit and the Potaso “pond.” The berm, which is part of the river diversion channel, is of particular importance due to the close proximity of the pit rim to the pond. It is imperative that the Potaso pond not be allowed to run into the pit since this could allow the entire flow in the diversion channel to enter the pit.

It is important to keep the active mining areas of the pit as dry as possible in order to reduce tire costs, minimize damage to equipment and to keep blasting costs near the estimated values. This will involve the construction of interim sumps and diversion ditches to route both rainfall and groundwater to primary pumping collection points.



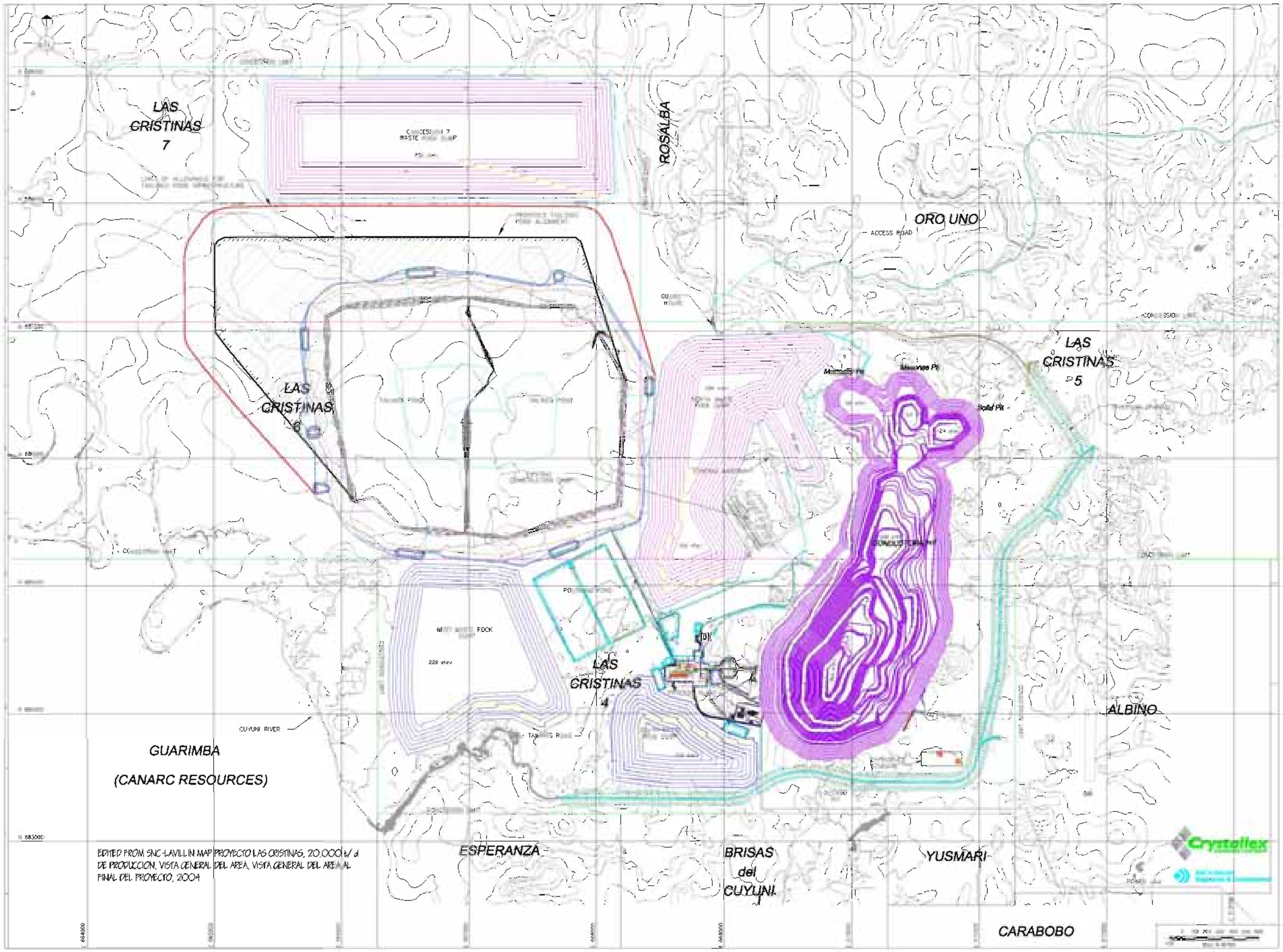
MINE DEVELOPMENT ASSOCIATES
Reno Nevada

DATE	Oct 15, 2007
DRAWN BY	S Hardy / T. Dyer
CHECKED BY	MDA
SCALE	as shown

Crystallex International
Las Cristinas
Bolivar State Year 15 Pit Design & Site Map Venezuela

FIGURE NO. 19.1

CAD CONTROL BLOCK REF: scott/proj/lascristinas/reports/finalreport/figs/sitemap.dwg



Crystallex International
Las Cristinas
Final Pit Design & Site Map

Bolivar State Venezuela

MINE DEVELOPMENT ASSOCIATES
Reno Nevada

DATE	Oct 15, 2007
DRAWN BY	S Hardy / T Dyer
CHECKED BY	MDA
SCALE	as shown

FIGURE NO.
19.2

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DATE 4/15/03

Groundwater Numerical Modeling

SNC-Lavalin and SRK Consultants of Santiago, Chile reviewed Placer's data and conclusions concerning both groundwater and surface water as they affect the pit. Preliminary groundwater modeling was conducted by SRK in early 2003 using historic data (SRK, 2003). Pumping tests and an update of the numerical groundwater modeling were undertaken by SNC-Lavalin from April to June 2005 in order to refine the estimate of the volume of groundwater flow into the pit (Jackson, 2005). A summary of the Jackson (2005) report follows:

> *An update of the groundwater numerical modeling was undertaken in order to refine the estimate of the volume of groundwater flow into the Conductura and Mesones open-pit mines. It was based on results from large-scale pumping tests at three locations and was referenced to the 2004 Mine Operation Plan that had a mine life of 35 years and an open pit with a final elevation of -189 m above sea level* [189m below mean sea level].
>
> *In order to conduct the numerical modeling update, field investigations consisted of drilling two new pumping wells - DW-B (two tests) and DW-C - and two new observation wells (one at DW-C and the other in the vicinity of the existing Camp Well). A total of four 24-hour constant-rate pumping tests were undertaken on the three pumping wells (DW-B, DW-C and the Camp Well). During the pumping tests, water levels were measured in nearby observation wells.*
>
> *The four data sets were analyzed with the assistance of a computer curve-matching program (AquiferTest). The pumping-test results indicated good hydraulic connection among the various strata; therefore, the original model used was simplified by reducing the number of layers from seven to two. Geological mapping indicated several presumed structural features, which were also incorporated into the model.*
>
> *Three scenarios were evaluated, depending on the ratio of horizontal to vertical hydraulic conductivity (Kh/Kv). In Scenario 1, the vertical hydraulic conductivity is assumed to be 33% of the horizontal hydraulic conductivity. In Scenario 2, the vertical hydraulic conductivity is assumed to be 10% of the horizontal hydraulic conductivity, and in Scenario 3, the vertical and horizontal hydraulic conductivities are equivalent. Scenario 3 estimates the highest groundwater inflows; yet it is considered the most unlikely of the three scenarios.*
>
> *Table 19.1 below shows the estimated rate of groundwater inflow to the open pit from year one to five and then in five-year increments up to Year 35 of mine operation on the basis of the modeling undertaken.*

Table 19.1 Simulated Groundwater Inflow

Mine	Scenario 1	Scenario 2	Scenario 3
Year End	Estimated Groundwater Inflow (L/sec)	Estimated Groundwater Inflow (L/sec)	Estimated Groundwater Inflow (L/sec)
1	23	12	44
2	35	NA	NA
3	57	NA	NA
4	63	NA	NA
5	73	39	126
10	650	270	1,106
15	936	NA	NA
20	1,091	615	1,472
25	1,775	NA	NA
30	1856	1,200	2,295
35	2,065	1,368	2,585

It should be noted that these estimates are considerably higher than the volumes estimated in the preliminary modeling, where the maximum groundwater inflow to the open pit at Year 35 was 432 L/sec.

Based on the updated modeling described above, it is estimated that there will be significant groundwater inflows into the open pit mine, and flows are predicted to increase as the size/volume of the excavation increases. The pump-test analysis and modeling suggest that the effects from structural zones could be significant, particularly beyond Year 5.

Recent amendments to the Mine Operation Plan indicated a mine life of up to 64 years and an open-pit depth with a final elevation of -360 m above sea level [360m below mean sea level]. *The mine extent has shifted significantly westwards of the original west pit wall and as much as double the original depth of -189 m above sea level* [189m below mean sea level]. *The increased size and depth of the mine will have an impact on groundwater inflow to the pit and increase the cone of depression beyond that which was modeled in the scenarios considered to date. It is recommended that the groundwater model be updated to incorporate these new changes so as to more accurately predict the pit-dewatering requirements.*

Once mining starts, it is recommended that the quantity of water pumped out of the mine in terms of daily rates and monthly totals be measured. It is also recommended that rainfall be measured daily in the mine area, prior to and during startup of mining operations, until patterns are established.

SNC-Lavalin recommends the numerical model should be updated during the early stages of development and operation of the mine, particularly within and immediately beyond the first five years. After the first year of mining, the model predictions can be compared to the actual pumped water flow, and the model can be calibrated to refine predictions. The model calibration should be done on a regular basis (yearly or every couple of years) based on actual *operations. This process should be ongoing until the effects of encountering the structural zones in the excavation on volume of water pumped have been determined.*

MDA has not addressed the potential flow increase in detail, but given the significance of dewatering to the project, more detailed analyses and engineering are needed. Dewatering costs are estimated at $0.185 per tonne mined, based on the pit inflow rates used in SNC-Lavalin (2005a). Currently the dewatering cost estimate is thought to be within accuracy for pre-feasibility work. Nevertheless, MDA cautions that the practical aspects of dealing with the extra volume of water will be challenging. If these costs increase significantly, the depth of the pit may be affected with potential loss in reserves. To mitigate this issue, ongoing modeling and cost estimating must be undertaken during mining operations and prior to mining the final pit wall. In addition, the dewatering costs may be decreased through future expansion of the mining rate on a per tonne basis.

19.1.2 Pit Phases

The Conductora pit is divided into six phases or pushbacks in order to improve productivity, enhance revenue streams, and delay waste mining. The Mesones-Sofia pit is a single-phase pit. Phases are based on LG pit shells similar to those used for the ultimate pit. The pit shells are used to locate the most profitable materials nearest the surface, which are the preferred areas for the start-up pit, or first phase. The shells used for pit phases are based on increasing gold price and are closest to:

- Phase 1 & 2 – $225 Au LG pit shell
- Phase 3 – southern portion of the $275 Au LG pit shell
- Phase 4 – northern portion of the $275 Au LG pit shell
- Phase 5 – northern portion of the Conductora $550 Au LG pit shell
- Phase 6 – southern portion of the $550 Au LG pit shell
- Mesones / Sofia / Morrocoy – northern end of the $550 Au LG pit shell

In general, each successive phase has a higher strip ratio than the previous phase and reaches greater depth. The phases are designed to the same requirements as the ultimate pit. The phases are illustrated in Figure 19.3, while the ultimate pit is shown in Figure 19.4. Because none of the ultimate pit walls are reached until the third phase, a period exists during which time slopes are monitored, water inflows are measured and haul-road designs and equipment performance are evaluated. During this "learning period," it is possible to incorporate any changes required by actual mining experience in the ultimate pit design.

Figure 19.3 Phased Pits

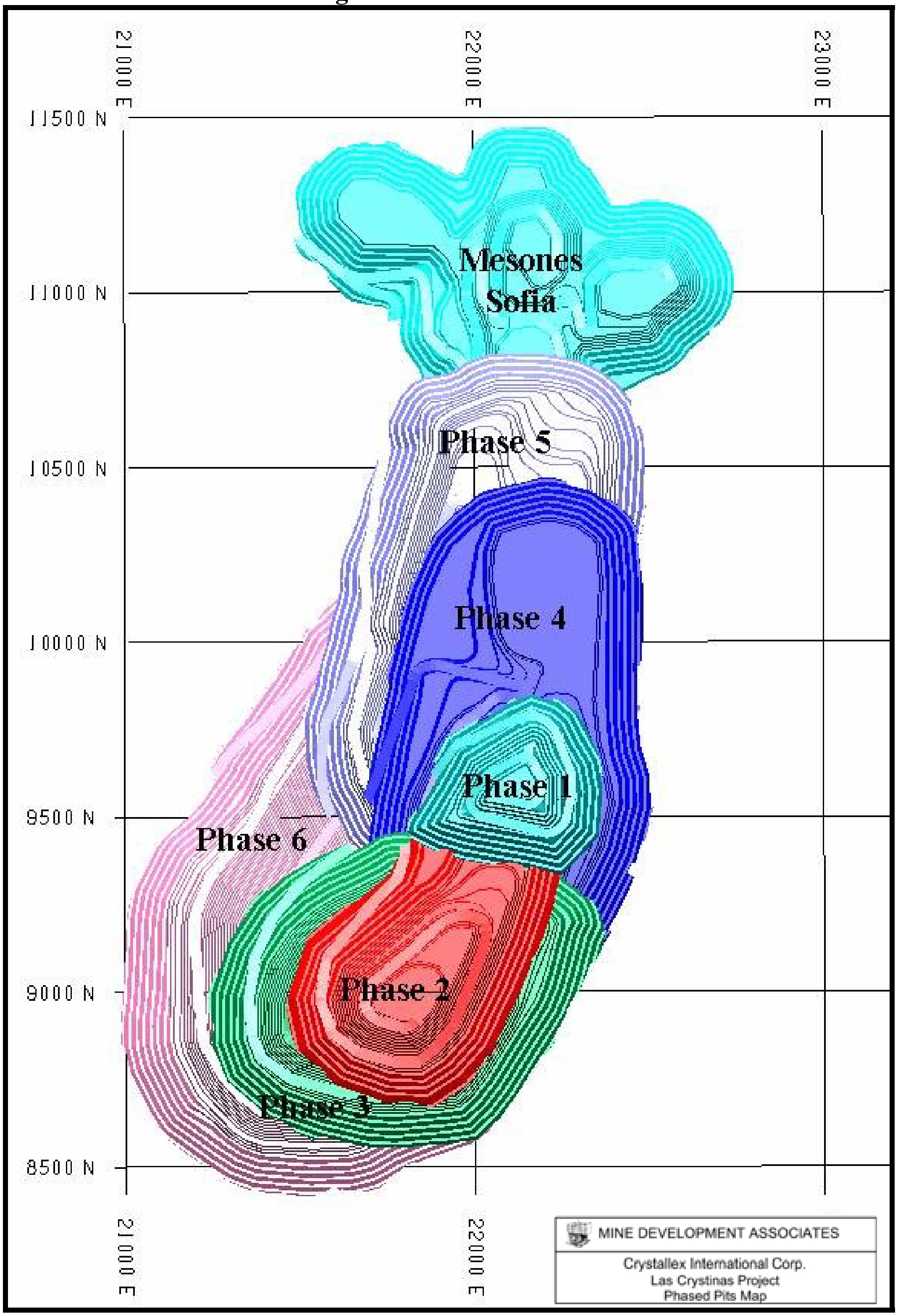
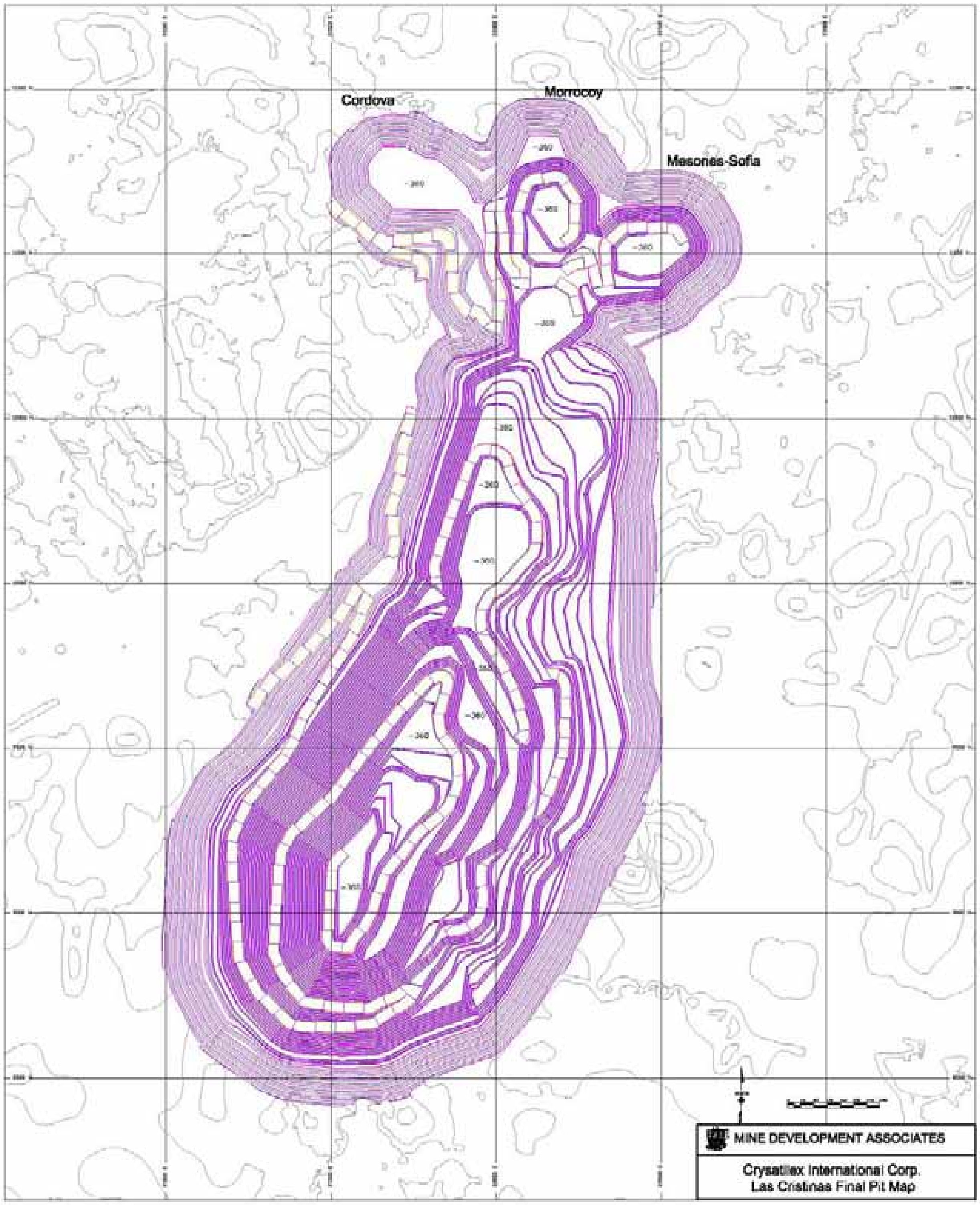


Figure 19.4 Ultimate Pit Design



19.1.3 Pre-Production Work

See SNC-Lavalin (2005) for details.

19.1.4 Mining

Saprolite Mining

Saprolite will be mined on 6m benches and will not require blasting. Nevertheless, grade-control drilling is required and is planned to 12m depths on a 6m-square pattern. This allows grade-control information to be developed for two benches at a time and saves drilling time. The pattern should be adjusted as actual grade-control conditions dictate. While blasting is not planned in the saprolite, it may be required at the transition from saprolite to saprock or bedrock. For the purposes of mine planning, saprock is considered to be part of the CLB bedrock due to the amount of bedrock material it contains.

It is anticipated that mining in the saprolite will be difficult, due to the soft nature of the material and the amount of ground water and rain that could make working in any given area temporarily impossible. In order to facilitate working in these wet conditions, mining will be on several benches simultaneously, advancing them together in slices to the phase limits rather than working only one bench at a time. This method has several advantages. Should rainfall make the lower work areas too wet for efficient mining to continue, the trucks could be moved to higher benches that should be somewhat drier until the lower levels are adequately dewatered. Another advantage is with construction of temporary roads. By mining a slice on a bench, the road is advanced behind the excavator working area. When the excavator reaches the end of a slice, the road material could be recovered and moved over to the face of the next slice, eliminating the need to constantly bring new road-base material into the pit. Grade control, access, and general flexibility are also improved by mining multiple benches.

In the wet environment, good road construction, even of temporary roads to the working face, is critical. During the pre-production period and the first year of production, outside materials will need to be brought into the pit for road construction. After that, all roads can be constructed with material from in the pit. Whenever road material other than bedrock ore is placed on top of saprolite ore, it must be removed prior to mining to avoid dilution.

Another consideration in saprolite mining is the boundary between saprolite oxide and sulfide materials. The boundary is fairly flat lying and characterized by a visible color change but will seldom be coincident with bench floors. This requires a balance between mining on partial-height benches and mixing oxide and sulfide materials. Operating experience will lead to the best method of separating the materials.

Bedrock Mining

Crystallex will mine all bedrock materials on a schedule of two 12-hour shifts per day, seven days per week. Bedrock mining begins in year one of the operation at a rate of 6,000 tonnes per day. Bedrock mining will be on 12m benches, except for the transition bench from saprolite to bedrock, which will remain at 6m.

Drilling and blasting are necessary in the bedrock. For the purposes of this report, MDA considered the weaker CLB rock to have the same characteristics as the stronger CSB, which introduces a slight level of conservatism for CLB drilling and blasting. The saprock is considered to be CLB for purposes of estimating drilling, blasting, loading, and hauling productivities and costs.

Bedrock material will be blasted using two products, an ANFO/emulsion (70/30) mixture and straight ANFO. Because of the expected amount of water in the pit, it is anticipated that 60% of the holes will require the emulsion blend and 40% can be straight ANFO, assuming that excellent water control practices are implemented.

Explosives will be purchased in bulk, with the manufacturer responsible for delivery to the hole. Crystallex personnel will complete tying in the pattern and actual blasting. An emulsion-blending plant and basic powder magazine will be required and are the responsibility of the explosives vendor. Locations for these facilities are shown on the site facilities maps (Figure 19.1 and Figure 19.2). Fuel oil will be obtained from the equipment fuel tanks on site.

19.1.5 Waste Dumps

Waste dumps serve two primary purposes, the storage of uneconomic material that must be removed from the pit and the encapsulation of materials that may produce acidic effluents. The general concept for the dumps is that the north dump will contain the majority of the saprolite waste, surrounded by bedrock waste. The west and south dumps are primarily bedrock with some saprolite depending on when the materials are mined. The dump north of the Tailings Management Facility ("TMF") is designed primarily for bedrock, although it may hold some additional sulfide saprolite waste. The dumps are surrounded by berms to contain and channel any runoff to appropriate locations at the site.

Dump Design
Design criteria for dumps were developed by SNC-Lavalin and are:

1. Saprolite density placed in dump 1.35 t/m3
2. Bedrock density placed in dump 1.90 t/m3
3. Angle of repose, all materials 37°
4. Designed overall dump slope 3H:1V
5. Maximum height for any dump is 100m

Steeper overall slopes (2.25H:1V) are possible if only bedrock is placed on the dump, but MDA designed all the dumps at the shallower angle to allow for saprolite placement in any of the dumps should the need arise. MDA designed four separate waste dumps and two saprolite ore stockpiles as shown in Figure 19.1 and Figure 19.2. Because it will be difficult to travel over and handle saprolite in the dumps and stockpiles, it will be necessary to place road-base material on all traveled surfaces built on saprolite. Dump capacities are summarized in Table 19.2.

Table 19.2 Dump Capacities

Dump Name	Designed Capacity m^3 x1000	kt[1]	Designed Height m	Maximum Height m
South	27,724	49,626	90	100
West	87,057	155,833	100	100
North	87,244	156,166	100	100
North of TMF	161,291	288,760	100	100
TOTAL	363,316	650,385		

[1]Based on 20% saprolite and 80% bedrock

Note that the required capacity for Proven and Probable reserves is 640 million tonnes. The dumps that have been designed exceed the required capacity by 2%. This provides some flexibility for operations in the management of dumping facilities as well as providing some additional capacity in the event that reserves would expand based on future exploration or studies.

The Cordova deposit is covered by one of the planned dumps, and a change to the dump design will be necessary if that deposit is to be mined. There is sufficient area north of the TMF to contain the displaced dump and additional waste from the Cordova deposit at its present size.

Potentially Acid-Generating Material

Tests for acid-generating and acid-neutralizing potential indicate that the SAPS waste and possibly some of the CLB waste could contain acid-generating material and that the CSB contains acid-neutralizing material. SAPS waste will need to be encapsulated with the CSB. As such, for the purposes of dump design and scheduling, the SAPS waste will be placed in the center of the dumps and will be surrounded with CSB waste. MDA is not qualified nor a QP for acid-generating material management and has relied on SNC-Lavalin (2005) for the following sulfide encapsulation details:

During the first 8 years of mining about 12.5 million tonnes of SAPS waste, 11.6 million tonnes of CLB waste and 2.9 million tonnes of CSB waste are mined. Of the total 14.5 million tonnes of CLB and CSB, 12.6 million are needed for the TMF, leaving 1.9 million tonnes available to encapsulate the 15 million tonnes of SAPS waste in the north dump. This will require the use of large cells of SAPS surrounded by thin layers of bedrock until more bedrock waste becomes available. After year eight, the amount of bedrock waste mined increases substantially, making encapsulation easier.

19.1.6 Stockpiles

The saprolite-ore stockpiles are situated as close as practical to the plant to minimize re-handling haulage. Nevertheless, it is necessary to use trucks to haul the stockpiled material to the plant due to the distances involved. The maximum amount of material stored in the stockpiles at any one time is just over 10 million tonnes.

19.1.7 Mining Equipment

See SNC-Lavalin (2005) for details on the mine equipment fleet because these have not been modified since that report. As of this writing, Crystallex has purchased all of the mining equipment needed to start the project and mine for the pre-production period. The only additional items that need to be acquired during the pre-production period are two 94-t haul trucks that are required at the beginning of the first production year and thereafter.

19.1.8 Mine Manpower

Crystallex updated labor rates for this reserve update. The authors did not rigorously check the amounts although some expatriate wages were increased based on current mining labor conditions.

See SNC-Lavalin (2005) for details concerning mine manpower requirements.

19.2 Processing

Processing facilities detailed in 2005 (SNC-Lavalin, 2005a) will require modifications due the increased reserves and enlarged pit. Because the newly designed pit comes within 30m of the crusher, the crusher location and access to the crusher will require additional study and review and may require modification.

Otherwise, see SNC-Lavalin (2005) for details.

19.2.1 General

See SNC-Lavalin (2005) for details.

19.2.2 Primary Crushing

See SNC-Lavalin (2005) for details.

19.2.3 Ore Storage and Reclaim

See SNC-Lavalin (2005) for details.

19.2.4 Saprolite Handling

See SNC-Lavalin (2005) for details.

19.2.5 Grinding

See SNC-Lavalin (2005) for details.

19.2.6 Carbon-in-Leach

See SNC-Lavalin (2005) for details.

19.2.7 Carbon Desorption and Regeneration

See SNC-Lavalin (2005) for details.

19.2.8 Electrowinning and Refining

See SNC-Lavalin (2005) for details.

19.2.9 Cyanide Destruction

SNC-Lavalin describes the cyanide destruction process as air/SO_2 using sodium metabisulphite as the source of SO_2. Originally it was envisioned that the excess reclaim water from the TMF would be treated, however, it is now Crystallex's intent to treat the entire stream of CIL tailings. An additional cyanide destruction tank will be added to the current circuit in order to provide sufficient retention time. The cyanide destruction tanks are fitted with agitators consisting of dual impellers supported from bridges mounted on the tank shells. Air is introduced through a bottom entering line to an inverted cone under the centre shaft of the agitators. The air bubbles then travel upward into the maximum shear zone of the impeller blades.

Sodium metabisulfite solution will be added at a rate sufficient to reduce the free cyanide and weak acid dissociable ("WAD") cyanide complexes in the tailing slurry to levels described in Section 16.11.

19.3 Geotechnical Studies

19.3.1 Process Plant

See SNC-Lavalin (2005) for details.

19.3.2 Tailings Management Facility ("TMF")

Bruce Geotechnical Consultants Inc. ("BGC") undertook the first field program for the Tailings Management Facility ("TMF") area 1994 and 1995, which was reported in the Las Cristinas Feasibility Study in 1996. BGC drilled nine boreholes, dug 27 test pits and carried out geological mapping of outcrops. In 2004, SNC-Lavalin undertook an extensive program of 15 boreholes and over 30 test pits.

Although remarkably non-homogeneous over the entire TMF site, the subsurface generally, in descending order from surface to bedrock, consists of a thin, discontinuous local layer of laterite, a 5- to 50m-thick saprolite layer, followed by up to 25m of saprock, and carbonate-leached bedrock and carbonate-stable bedrock. Although the stratigraphy is not uniform, design parameters are recommended for the sequence of geological units most representative of the area. The foundation material immediately beneath the tailings area appears to consist of predominantly firm to hard, low permeability saprolite with permeability values on the order of $1x10^{-6}$ cm/s, which is considered a good foundation for dam construction and hydraulic containment of mine tailings. Unacceptable soft soils beneath the dam will have to be identified during foundation preparation and removed to expose fresh, firm *in situ* low permeability soil.

Pinhole dispersion and Emerson dispersion classification tests and X-ray diffraction analyses were undertaken to identify the presence of any potentially swelling minerals. The results indicate that most of the saprolite soil tested will not pose a problem.

Low-lying flooded and swampy areas within the TMF basin and embankment footprint areas were manually probed to define the bathymetry and thickness of soft sediments. Typically water depths ranged from 0.4 to 3.6 m, and the soft sediments ranged from 0.1 to 1.1m in thickness. Additional investigation is recommended at the low-lying areas for the detailed design of the dam shell in conjunction with the dam raises.

The field investigation in the TMF area included several types of field tests to measure the *in situ* hydraulic conductivity using either the rising/falling head or constant head method. Packer tests were carried out in selected boreholes to provide a quantitative indication of the rock mass permeability.

An updated study of the TMF modifications are given in Appendix D and that study's conclusions (SNC-Lavalin, 2007c;) are given. "In the 2005 Tailings Management Facility (TMF) design report, it was estimated that to accommodate tailings resulting from the 2005 ore reverses of 333 Mt, an ultimate dam elevation of 202 m would be required for a basin of approximately 3,780,900 m^2. Due to the recent increase in ore reserves to 464 Mt, the TMF needs to be updated to store the resulting tailings.

If the 2005 TMF basin is maintained, it is estimated that an ultimate dam crest elevation of 230 m would be required to accommodate tailings resulting from 2007 ore reserve estimate of 464 Mt. This estimate was based on an average tailings density of 1.36 t/m^3. A more accurate crest elevation should be calculated at the next level of design using densities based on different ore types identified in the mine development plan and simulation of consolidation process.

The slope stability analysis showed that the ultimate dam with a crest elevation at 230 m and a downstream slope of 2.5H:1V should be stable for both static and seismic loading conditions. However, there is no available case history that a 100 m high dam using saprolite can be constructed and on potentially collapsible saprolite foundation. Therefore, monitoring of pore water pressure response and performance in the foundation soil during initial and subsequent construction phases will be paramount in order to acquire relevant information that will help to decide and optimize on the approach and precautions to take during the raising of the dam to the new ultimate elevation.

The analysis indicated that flattening the downstream slope to 3:1 would significantly enhance the stability of the slope. However, flattening the slope will result in significant increase in material quantities required for the construction of the dam. The analysis results also showed that an addition of a toe berm to the 2.5:1 slope will also enhance the stability but would require less construction material than for a flatter slope of 3:1.

Based on the monitoring results during the construction and mine operation, a toe berm may be added as required to enhance the stability of the downstream slope. It is noted that erosion protection of the dam slope will also be required.

Increasing the dam crest elevation from 202 m (2005 design) to 230 m (based on 2007 reserves) will result in an increase of the dam base by about 70 to 100 m, depending on the final stable slope configurations.

One alternative that needs to be examined is to expand the TMF footprint to increase the storage volume without significantly increasing the ultimate dam crest elevation. The potential size of the expansion estimated based on preliminary sizing iteration as illustrated on Figure 13 [Appendix D], will provide storage for tailings resulting from the 2007 ore reserve estimates of 464 Mt without any or significant increase of the ultimate dam crest elevation. The proposed expansion is to the north and to the west of the 2005 TMF footprint.

Note that, should the option to expand the TMF footprint be carried forward; substantial dam alignment optimization and geotechnical field investigation would be required for the detail design.

The stability analysis presented herein is solely based on data/parameters inferred from previous investigations carried out for a lower height dam. Due to the height increase to about 100 m, additional field investigation and tests are required to confirm the analysis.

The additional soil tests will include, but are not necessarily limited to, consolidation tests, collapse potential, triaxial shear tests, in-situ permeability testing, etc. It is also recommended to carry out seepage and contaminant transport analysis to evaluate the impact of increased tonnage of tailings on the environment and identify required mitigation measures that should be implemented, if any.

Recommendations presented in 2005 design report regarding site preparation, construction and monitoring should be still followed."

19.3.3 Open Pit

SNC-Lavalin conducted a preliminary slope stability analysis for the proposed 2007 pit slope design for Conductora Pit, based on the recent updated ore resource and reserve estimates presented in this report. The 2007 pit will be developed from the current ground elevation of approximately 130 m to a depth of about -360 m (approximately 171 m deeper than the previously analyzed 2004 pit). The analysis was carried out using parameters and approaches detailed in "Field Investigation Report, Open Pit Slope and Waste Dump Stability Study" (SNC-Lavalin, 2004c).

Both west and east walls of a critical section (Section 9000N) provided by MDA were analyzed. The factor of safety for the slopes was calculated for both static and pseudo-static loading conditions identical to conditions used to analyze the 2004 pit. The required minimum factor of safety ("FS") with respect to the stability requirements of the pit slope are 1.2-1.3 and 1.0 for static and pseudo static loading conditions, respectively.

The analysis results indicate that the 2007 open-pit-slope geometry as proposed by MDA is stable for both static and pseudo-static cases under analysis conditions provided by SNC-Lavalin (Appendix C; Josic, 2007). Details of the analysis as well as recommendations for the operation of the pit are also provided in the memorandum.

19.3.4 Waste Rock Dumps and Ore Stockpiles

Due to the additional reserves, additional waste dump capacity is needed. Thus, for the purpose of this study, an additional waste dump was designed north of the Tailings Management Facility ("TMF"). The following is a summary of geotechnical assessment of this additional dump design. See SNC-Lavalin (2005) for details from original work regarding all other waste dumps and ore stockpiles.

Subsurface Conditions
No geotechnical work was undertaken in the proposed north dump area. However, a series of four test pits were excavated in the area of the planned air strip at the north side of the TMF (see Drawings 334401-4400-4GDD-0001). The closest test pit (AS-TP4) is located approximately 200 m west of the proposed north dump.

Near surface conditions observed at the above test pit locations suggest that the subsurface comprises organic soil (topsoil) consisting of poorly consolidated silt or sandy silt with some gravels, organic matter and some roots and rootlets. The thickness of this layer varies from 0.2 m to 0.5 m. The topsoil is underlain by a 2.8m- to 4.0m- thick saprolite layer. The saprolite material consists of light brown to orange-red, clayey silt, and some sub-angular quartz fragments and gravel. Based on pocket penetrometer measurements, the saprolite soil is very stiff to hard with the strength of the soil increasing with depth. The moisture content ranges from 18 to 55 % for test-pit samples tested.

The soil conditions appear to be similar to those encountered in soils located in the areas in which previously designed dumps are proposed to be sited.

Feasibility of the Proposed Dump
If one assumes that the subsurface conditions at the base of the dump will be similar to conditions encountered at the above described test pit locations, then it is therefore conceivable that the proposed waste rock dump can be constructed as recommended for previous dumps.

As presented in the "Field Investigations Report: Open Pit Slope and Waste Dump Stability Study, Volume 3 of 3" (SNC-Lavalin, 2004c), the stability of the previous waste rock dumps was analyzed for both static and seismic loading conditions. The minimum required safety factor for the waste dumps was 1.3 under static loading conditions, and 1.1 under seismic loading conditions, based on common engineering practice for non-water retaining earth embankments.

Based on above, the preliminary recommendations for the proposed waste rock dump are as follows:

- Maximum dump design height: 100 m.
- No section of the dump should be raised to its maximum height in a short period of time to avoid rapid loading of the foundation. An intermediate height of about 30 to 40 m should be maintained for 1 – 2 years before the next major rise.
- Lift height: 10 m.
- Bench width: 9.23 m.
- Lift face angle (angle of repose): 37°.
- Overall dump slope: 2.25 H:1V.
- The collection ditch should be located a minimum distance of 20m from the toe of the dump.

Recommendations
1) SNC-Lavalin strongly recommends that a geotechnical investigation program be carried out to confirm the subsurface conditions under the proposed dump location and stability analysis undertaken to verify design recommendations provided above.

2) General recommendations related to site preparation and construction as provided in the "Field Investigations Report: Open Pit Slope and Waste Dump Stability Study, Volume 3 of 3" (SNC-Lavalin, 2004c) should be followed.

19.3.5 Construction Borrow Materials

See SNC-Lavalin (2005) for details.

19.3.6 Clay Borrow

See SNC-Lavalin (2005) for details.

19.3.7 Sand, Granular B and Fine Concrete Aggregates

See SNC-Lavalin (2005) for details.

19.3.8 Granular A, Structural Rockfill and Coarse Concrete Aggregates

See SNC-Lavalin (2005) for details.

19.3.9 Water Management Facilities

See SNC-Lavalin (2005) for details.

19.3.10 Infrastructure

See SNC-Lavalin (2005) for details.

19.3.11 Geotechnical Design Recommendations

See SNC-Lavalin (2005) for details on Plant Site Foundations, TMF Site Foundation, Open Pit Slopes, Waste Dump and Ore Stockpiles, Open Pit Hydrogeology and Dewatering, Infrastructure Foundations, Haulage and Service Roads, Diversion Channel, Water Management Ponds, Landfill and Airstrip.

19.4 Tailings Management Facilities and Water Management

See SNC-Lavalin (2005) for details.

19.4.1 Design Basis and Criteria

See SNC-Lavalin (2005) for details.

19.4.2 Tailings Characteristics

See SNC-Lavalin (2005) for details.

19.4.3 TMF Design

See SNC-Lavalin (2005) for details.

19.4.4 Planned Construction

See SNC-Lavalin (2005) for details.

19.4.5 Planned Operations

See SNC-Lavalin (2005) for details.

19.4.6 Closure

See SNC-Lavalin (2005) for details.

19.5 Infrastructure and Ancillary Services

See SNC-Lavalin (2005) for details with modifications shown in Figure 19.1 and Figure 19.2 above and for details on Site Access, Site Development, Existing Facilities, Power Supply, Site Water Supply, Sewage Treatment, Ancillary Buildings, Communications, Explosives Storage, Site Drainage, Solid Waste Management, Fire Protection, and Main Control System.

19.6 Project Implementation

Delays in acquiring the environmental permits allowing construction to commence have impacted the overall project completion. According to Mr. Evans of SNC-Lavalin (written communication, 2007), it is now expected that mechanical completion will be achieved approximately 24 months following the receipt of the full permits and the mobilization of the early works-construction contractors. See SNC-Lavalin (2005) for details current as of 2005 on Engineering, Permitting, Procurement, Construction Management, Temporary Construction Facilities, and Environmental and Construction Management Plan.

19.7 Project Costs

19.7.1 Taxes

The information in this sub-section has been provided by Mr. Robert Crombie of Crystallex. Co-authors of this report are not qualified to assess the economics and taxes in Venezuela.

Crystallex's Las Cristinas operation is subject to the following taxes, duties and royalties:

i. Income Tax
ii. Value Added Tax ("VAT")
iii. Import Duties
iv. Exploitation Tax
v. Royalty payable to CVG
vi. Municipal Tax

Income Tax

The Venezuelan income tax system is composed of three main elements. The first element includes the Company's operating income arising from its activities in Venezuela, minus the costs and expenses incurred onshore during the applicable fiscal year. The second element arises from the adjustments for inflation of the taxpayer's non-monetary Venezuelan assets and liabilities and is levied on the actual operating income of the Company. This system of adjustment for inflation either reduces or increases the Company's operating net income. The third element comprises operating income arising from the taxpayer's extraterritorial activities (if applicable), minus the costs and expenses incurred abroad and accrued during the given fiscal year. The combination of these three elements is considered total net income, to which the relevant tax rates will apply. The applicable deductions and the income tax paid abroad will be subtracted from the resulting income tax, provided such foreign tax does not exceed the maximum Venezuelan tax rate of 34%.

A foreign legal entity is deemed to be domiciled in Venezuela if it has permanent operations in Venezuela, for which purpose it must be registered with the Commercial Registry in the jurisdiction in which it operates. According to the Organic Tax Code, for tax purposes a corporation incorporated abroad that has a permanent business establishment in Venezuela is considered domiciled in Venezuela with respect to the transactions carried out in the country. This applies even if such corporation is not domiciled in the country according to the Venezuelan Commercial Code.

The economic model in this report does not include the inflation adjustment mechanism noted above and assumes that the profits from Las Cristinas will be taxed at 34%.

Income tax losses can be carried forward for up to three years in the case of pre-inflation adjusted operating losses, or one year in the case of losses generated as a result of inflation-adjusted accounting.

VAT

A value-added tax, ("VAT") of 9% is levied on the value of most goods and services, except wages, salaries and employee benefits. Goods and services imported into Venezuela are also subject to VAT. In general, corporations can recover the VAT paid by them (VAT credit) from the VAT charged and collected by them (VAT debit) on goods and services sold by them in Venezuela. VAT paid in excess of VAT collected can be carried forward and applied to future VAT collected. Export sales are subject to VAT of 0%. Exporters can recover VAT previously paid by them through certificates, (VAT CERTs) issued by SENIAT, the tax authority. The certificates may be used as a credit against future VAT and income taxes or may be transferred to third parties for value and thereby monetized.

VAT is not in practice easily recoverable during the construction phase of a mining project, so is typically added to the capital cost estimate. VAT paid during the construction period is accumulated and is recoverable, together with VAT paid during the operating phase, once gold sales begin. Under the Tax Law it is possible to apply for recovery of VAT. If the gold is exported by Crystallex, the VAT credits accumulated for VAT paid can be recovered by requesting reimbursement from SENIAT. After a series of steps, the reimbursement is made in the form of VAT certificates (VAT CERTs), which are negotiable instruments and can be sold at a moderate discount to face value. Recent experience has indicated that the time taken from outlay to final recovery can take as long as 18 to 24 months, before the CERTS, which are denominated in Venezuelan bolivars, are approved and negotiated. During this period the value of the claim is subject to exchange risk.

Venezuelan law allows for the discretionary granting of exoneration of VAT on goods and services, including expenses in Venezuela, related to the construction and development of mining projects. Crystallex will apply for an exoneration of VAT during the construction phase of Las Cristinas. For this study, it is assumed that the construction phase exoneration will be obtained, so VAT has not been included in the capital cost estimate.

During the operating phase, this study assumes all gold is exported by Crystallex so VAT paid on operating costs and sustaining capital is recovered, after a period of 18 months, as VAT CERTs which are then sold at 95% of face value.

Import Duties

Import duties are levied on equipment and goods purchased outside of Venezuela. The Venezuelan Mines Law allows for the exoneration of import duties on most items specifically related to mining and processing activities. Crystallex has applied for the exoneration of import duties during the construction phase of Las Cristinas and for this study it is assumed this exoneration will be obtained. Crystallex also intends to apply periodically for import duty exoneration on certain equipment and supplies during the operating phase of the project. This study assumes import duty exonerations are obtained during the operating phase for most significant imported items. An amount of approximately $600,000 per year is included to account for miscellaneous spares and supplies that are either not duty free, or for which Crystallex might not file an application for exoneration.

Exploitation Tax

Under the Mines Law, Las Cristinas is subject to a royalty of three percent (3.0%) of the commercial value in Caracas of the refined gold.

CVG Royalty

In accordance with the Mining Operation Agreement ("MOA") between Crystallex and CVG, the royalty, based upon the commercial value of the gold, is payable to CVG:

Table 19.3 CVG Royalty

Commerical Value (Gold Price)	Royalty
Less than $280 per ounce	1.0%
Equal to or more than $280 per ounce and less than $350 per ounce	1.5%
Equal to or more than $350 per ounce and less than $400 per ounce	2.0%
More than $400 per ounce	3.0%

Municipal Tax

The Municipal tax is a tax payable to the municipality in which the Las Cristinas properties are located. Typically, the tax base is related to the value of the property, the income derived from the property or its productivity; however, the actual tax base applicable depends on the municipality. The economic model used in this report assumes a municipal tax of 1% of gross revenues, which is based on an assessment received from the Sifontes municipality.

19.7.2 Capital Costs

The following information has been provided by Mr. Evans of SNC-Lavalin (written communication, 2007). SNC-Lavalin prepared the original capital cost estimates and current forecast costs, followed methodology and procedures, and exercised due care consistent with the intended level of accuracy, using its professional judgment and reasonable care, and is thus of the opinion that there is a high probability that actual costs will fall within the specified error margin. However, the reader is cautioned that no warranty should be implied as to their accuracy. Note that the figures below represent the mathematical results of the cost estimation and forecast process and are provided for completeness with a greater number of significant digits than is consistent with the intended level of accuracy; a greater level of accuracy than stated above should not be inferred.

The reader should further note that the cost estimate presented herein is an interim cost estimate. It is the intention of Crystallex to further update the estimate of capital costs following the receipt of the environmental permit and successful negotiation of the construction contracts.

The Las Cristinas estimated project capital costs are summarized in Table 19.5. All costs are expressed in United States dollars. The estimate is intended to have an accuracy of ±20%. The estimate includes all direct costs, indirect costs, and Owner's costs and includes an allowance for contingency.

Comparison of 2005 and 2007 Cost Estimates

It is estimated that the total cost of the project has increased from $293 million dollars as reported in 2005 (SNC-Lavalin, 2005a) to approximately $356 million in the third quarter of 2007 as detailed in Table 19.4.

Table 19.4 Comparison of 2005 Estimate and 2007 Update

DESCRIPTION	2005	2007	% Increase
Total Direct Costs	218.7	238.3	8.9%
Indirect Costs	30.4	66.4	118.4%
Owner's Costs	24.9	27.5	10.4%
Contingency	19.0	23.8	25.3%
TOTAL PROJECT COST	**293.0**	**356.0**	**21.5%**

<u>Changes to Owner's Costs and Contingency</u>
Updated Owner's costs were estimated by Crystallex. The increase from $24.9 million in 2005 to $27.9 million in 2007 primarily reflects reassigning $5,394,000 for Pre-Stripping and Stocking, $750,000 for Mine Roads and $500,000 for Mine Truck Shop Equipment from the 2005 Owner's Costs estimate to Direct Costs in 2007, which was principally offset by higher estimates for general and administrative labor, environmental work, community relations programs and site security.

The present contingency of $23.8 million is equal to approximately 7% of all capital costs. At this point in time, no further effort was made to calculate an appropriate amount for contingency.

Crystallex has spent, through August 2007, approximately $112 million on items included in the revised cost estimate of $356 million.

Table 19.5 2007 Capital Costs Update

SNC-LAVALIN

SNC-Lavalin Engineers & Constructors Inc.
2200 Lake Shore Blvd. West
Toronto, Ontario M8V 1A4
(416) 252-5311

LOCATION - AREA 1st - AREA 4th

CRYSTALLEX INTERNATIONAL

LAS CRISTINAS

UPDATE OF FEASIBILITY 20,000 TPD

Job No: 334408
Currency: US$ 3Q2007
Estimator: Deachman

VENEZUELA		Tot Mhrs	Tot Lab	Tot Mat	Tot Equip	Tot Sub	TOTAL
DIRECT COSTS							
AREA: 1000	MINE						
1100	MINE SITE DEVELOPMENT & MINE ROADS	124,440	239,600	310,000	765,930	8,414,890	9,730,420
1300	MINE EQUIPMENT	20,000	480,000	20,000	26,493,085	0	26,993,085
AREA: 1000	MINE	144,440	719,600	330,000	27,259,015	8,414,890	36,723,505
AREA: 2000	GENERAL SITE						
2110	SITE DEVELOPMENT (CLEARING, EMBANKMENTS, GRADIN	184,416	935,432	666,630	0	10,716,977	12,319,040
2120	IN-PLANT ROADS	24,290	211,931	293,500	0	2,343,730	2,849,161
2130	MAIN ACCESS ROAD	15,600	269,100	616,000	0	3,016,903	3,902,003
2140	STORM WATER MANAGEMENT (INCL DIVERSION CHANNEL)	197,310	27,940	615,000	36,000	15,642,636	16,321,576
2145	STORM WATER PONDS	52,686	1,039,568	706,722	320,463	1,503,415	3,570,168
2150	SOLID WASTE MANAGEMENT	23,594	481,172	257,095	721,646	738,485	2,198,398
2210	WATER (INCL WATER SUPPLY, PROCESS, FIRE, POTABLE &	26,857	708,532	386,411	1,345,805	63,657	2,504,405
2220	SEWAGE SYSTEM	4,245	104,236	99,005	201,810	34,560	439,611
2250	FUEL, OIL (INCL STORAGE)	2,714	63,153	29,974	393,172	8,145	494,443
2270	COOLING TOWERS	4,565	123,398	40,719	170,890	5,535	340,542
2300	YARD ELECTRICAL (INCLUDING LIGHTING, COMMUNICATIO	36,601	662,171	946,717	1,876,789	106,000	3,591,678
2310	MAIN SUBSTATION	20,549	414,716	136,864	1,665,537	320,125	2,537,242
2330	EMERGENCY POWER	3,143	69,717	0	1,033,760	0	1,103,477
2400	OVERHEAD TRANSMISSION LINES	0	0	0	0	1,600,000	1,600,000
AREA: 2000	GENERAL SITE	596,571	5,111,066	4,794,637	7,765,872	36,100,168	53,771,743
AREA: 3000	PROCESS PLANT						
3110	BEDROCK PRIMARY CRUSHING	79,111	1,609,238	1,696,484	1,863,847	1,168,658	6,338,228
3120	SAPROLITE PRIMARY CRUSHING	17,736	213,148	120,803	1,317,417	875,215	2,526,583
3130	COARSE ORE CONVEYING	18,259	499,602	170,682	1,593,030	120,465	2,383,780

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(continued from previous page)

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CRYSTALLEX INTERNATIONAL

LAS CRISTINAS

UPDATE OF FEASIBILITY 20,000 TPD

Job No: 334408
Currency: US$ 3Q2007
Estimator: Deachman

VENEZUELA		Tot Mhrs	Tot Lab	Tot Mat	Tot Equip	Tot Sub	TOTAL
3140	COARSE ORE STOCKPILE & RECALIM	112,916	2,734,820	2,231,916	2,270,394	494,685	7,731,815
3150	PEBBLE CRUSHING	19,679	486,920	338,082	2,004,576	82,170	2,911,748
3210	GRINDING	23,986	695,594	0	14,772,052	0	15,467,646
3220	GRAVITY CIRCUIT	5,922	171,739	20,461	1,493,666	0	1,685,867
3300	LEACH	600	17,400	0	270,788	0	288,188
3310	THICKENING	12,980	376,420	0	649,114	0	1,025,534
3320	CIL	98,192	2,847,568	0	7,992,416	0	10,839,984
3330	TAILINGS PUMPING	4,347	126,063	0	334,236	0	460,299
3340	CYANIDE DESTRUCT	3,508	101,732	0	344,932	0	446,664
3400	CARBON STRIPPING & REACTIVATION	13,124	380,595	17,665	1,961,280	0	2,359,539
3500	ELECTROWINNING & REFINING	10,190	295,510	16,844	854,694	0	1,167,047
3610	DRY LIME	0	0	0	0	0	0
3615	SLAKED LIME	4,987	144,621	0	387,509	0	532,130
3620	CYANIDE	1,515	43,935	0	989,920	0	1,033,855
3630	SODIUM HYDROXIDE	1,019	29,551	1,000	95,853	0	126,404
3640	HYDROCHLORIC ACID	541	15,689	0	93,126	0	108,815
3650	FLOCCULANT	1,244	36,076	0	164,533	0	200,609
3680	SODIUM METABISULPHITE	1,950	56,550	1,000	180,261	0	237,811
3685	COPPER SULPHATE	1,532	44,428	1,000	70,707	0	116,135
3690	HYDROGEN PEROXIDE	296	8,584	0	26,300	0	34,884
3710	COMPRESSED AIR	4,348	126,092	0	762,987	0	889,079
3810	PROCESS BUILDGS(CIVIL, STRUCT, ARCH & SERVICES)	331,435	7,558,408	8,417,413	12,720	4,838,675	20,827,216
3820	PIPING	80,311	2,007,775	3,314,360	0	0	5,322,135
3830	ELECTRICAL	133,337	2,533,401	4,287,640	3,318,730	119,550	10,259,321
3840	AUTOMATION	11,763	235,260	66,340	1,845,148	332,820	2,479,568
3890	ELECTRICAL AND CONTROL ROOMS	1,245	30,373	77,065	0	0	107,438
3910	MILL CHANGE HOUSE	25,000	0	0	0	550,000	550,000
3920	ADMINSTRATION BUILDING	25,000	0	0	0	550,000	550,000
3940	LABORATORY	7,808	183,957	96,484	1,128,608	40,706	1,449,755
3950	WAREHOUSE	4,000	116,000	0	0	0	116,000

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CRYSTALLEX INTERNATIONAL
LAS CRISTINAS
UPDATE OF FEASIBILITY 20,000 TPD

Job No: 334408
Currency: US$ 3Q2007
Estimator: Deachman

VENEZUELA		Tot Mhrs	Tot Lab	Tot Mat	Tot Equip	Tot Sub	TOTAL
3950	MAINTENANCE SHOP	51,156	1,321,375	1,647,127	781,167	243,090	3,992,759
3980	GUARD HOUSE (INCLUDES TRUCK SCALES)	8,188	222,130	51,747	239,772	12,145	525,794
AREA: 3000	PROCESS PLANT	1,117,224	25,270,653	22,574,112	47,819,784	9,428,179	105,092,629
AREA: 4000	TAILINGS						
4300	TAILINGS PIPELINE (INCLUDING DISTRIBUTION)	23,664	509,902	1,789,380	0	225,422	2,524,704
4400	TAILINGS IMPOUNDMENT (INCLUDING STARTER DAM)	506,328	2,639,111	0	0	26,239,720	28,878,831
4500	RECLAIM WATER SYSTEM	16,394	433,366	1,200,000	1,161,017	90,000	2,884,383
AREA: 4000	TAILINGS	546,385	3,582,379	2,989,380	1,161,017	26,555,142	34,287,918
AREA: 5000	OTHER DIRECTS						
5200	CAPITALIZED SPARES	900	24,300	2,975	4,948,673	0	4,975,948
5400	SUSPENSE & BACKCHARGES	0	0	0	1,100,175	1,605,727	2,705,902
5500	BORROW PIT CRUSHING & SCREENING FACILITY	500	14,500	0	745,335	0	759,835
AREA: 5000	OTHER DIRECTS	1,400	38,800	2,975	6,794,184	1,605,727	8,441,686
TOTAL DIRECT COSTS		2,406,021	34,722,398	30,691,104	90,799,872	82,104,107	238,317,481
TOTAL	VENEZUELA	2,406,021	34,722,398	30,691,104	90,799,872	82,104,107	238,317,481

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CRYSTALLEX INTERNATIONAL
LAS CRISTINAS
UPDATE OF FEASIBILITY 20,000 TPD

Job No: 334408
Currency: US$ 3Q2007
Estimator: Deachman

INDIRECT COSTS		Tot Mhrs	Tot Lab	Tot Mat	Tot Equip	Tot Sub	TOTAL
INDIRECT COSTS							
AREA: 6000	INDIRECT COSTS - GROUP 1						
6200	TEMPORARY SITE SERVICES (SECURITY, MAITENANCE)	0	0	200,000	31,640	997,867	1,229,507
6300	TEMPORARY CAMP	400,500	0	0	0	12,915,193	12,915,193
6500	FREIGHT	0	0	0	0	6,952,000	6,952,000
6600	TAX	0	0	0	0	1,670,000	1,670,000
AREA: 6000	INDIRECT COSTS - GROUP 1	400,500	0	200,000	31,640	22,535,060	22,766,700
AREA: 7000	INDIRECT COSTS - GROUP 2						
7000	INDIRECT COSTS - GROUP 2	0	0	0	0	26,800	26,800
7100	OFFSHORE (HOME OFFICE) COSTS	0	0	0	0	35,701,086	35,701,086
7200	ONSHORE (FIELD MGT) COSTS	99,000	27,000	115,000	915,000	6,860,000	7,917,000
AREA: 7000	INDIRECT COSTS - GROUP 2	99,000	27,000	115,000	915,000	42,587,886	43,644,886
TOTAL INDIRECT COSTS		499,500	27,000	315,000	946,640	65,122,946	66,411,586
TOTAL	**INDIRECT COSTS**	499,500	27,000	315,000	946,640	65,122,946	66,411,586

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CRYSTALLEX INTERNATIONAL
LAS CRISTINAS
UPDATE OF FEASIBILITY 20,000 TPD

Job No: 334408
Currency: US$ 3Q2007
Estimator: Deachman

OWNER'S COSTS	Tot Mhrs	Tot Lab	Tot Mat	Tot Equip	Tot Sub	TOTAL
OWNER'S COSTS						
AREA: 9000 OWNER COSTS						
9200 OWNER'S CONTRACT FINANCIAL	0	0	0	0	2,754,270	2,754,270
9300 OWNER'S PROJECT ADMINISTRATION SERVICES	0	0	0	0	1,730,800	1,730,800
9400 ENVIRONMENTAL & COMMUNITY RELATIONS	0	0	0	0	4,872,461	4,872,461
9500 TEMPORARY SITE FACILITIES	0	0	0	0	1,058,156	1,058,156
9600 TEMPORARY SITE SERVICES	0	0	0	0	16,760,906	16,760,906
9800 FACILITY TRAINING COSTS	0	0	0	0	305,000	305,000
9900 CAPITAL ASSET EXPENDITURE	0	0	0	567,100	515,000	1,082,100
AREA: 9000 OWNER COSTS	0	0	0	567,100	27,996,593	28,563,693
TOTAL OWNER'S COSTS	0	0	0	567,100	27,996,593	28,563,693
TOTAL OWNER'S COSTS	0	0	0	567,100	27,996,593	28,563,693
CONTINGENCY						
AREA: 8000 ESCALATION & CONTINGENCY						
8210 CONTINGENCY	0	0	0	0	22,707,240	22,707,240
AREA: 8000 ESCALATION & CONTINGENCY	0	0	0	0	22,707,240	22,707,240
TOTAL CONTINGENCY	0	0	0	0	22,707,240	22,707,240
TOTAL CONTINGENCY	0	0	0	0	22,707,240	22,707,240

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CRYSTALLEX INTERNATIONAL
LAS CRISTINAS
UPDATE OF FEASIBILITY 20,000 TPD

Job No: 334408
Currency: US$ 3Q2007
Estimator: Deachman

CONTINGENCY	Tot Mhrs	Tot Lab	Tot Mat	Tot Equip	Tot Sub	TOTAL
GRAND TOTAL	2,905,521	34,749,398	31,006,104	92,313,612	197,930,886	356,000,000

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Basis of Estimate

The following information has formed the basis for this estimate of capital costs:

- A study on gravel costs produced in 2006 as part of detailed engineering;
- Purchase orders and bids issued during 2005 and 2006
- Collective labor agreement with Cámara Venezolana De La Industria Construcción dated February, 2007
- Indices from Banco Central De Venezuela published on their website on August, 2007 (http://www.bcv.org.ve);
- Indices on steel from the Cru Steel Price Index published on their website on August 2007, www.cruspi.com;
- Indices on currency conversions from the Ondada Corporation published on their website on August, 2007, http://www.oanda.com/convert/classic;
- Indices on the American Producer Price Index published in August 2007 at the website http://www.economagic.com/blsppi.htm;
- Published data from RS Means cost manuals dated 1999 and 2007;
- Updated estimate of EPCM costs produced by SNC-Lavalin for the June of 2007 Updated Capital Cost Estimate and
- Summarized costs received from Crystallex regarding owner's capitalized costs from 2003 to 2006.

Methodology

Changes Due to Venezuelan Currency Fluctuations

The only currency conversion considered was the Venezuelan bolivar. Currency conversions were taken from the Oanda website at: http://www.oanda.com/convert/classic. When the original estimate was done in 2004, the conversion rate for the bolivar was 1,920 bolivars per US dollar. The present conversion rate is 2,145 bolivars to the US dollar. For the items assumed to be purchased in Venezuela, Venezuelan indices were converted to a US dollar base. The items assumed to be purchased in Venezuela include labor, concrete, concrete block, furniture, windows, doors, paint, and some miscellaneous architectural materials

Changes Due to Corrections to the Original Estimate

The original work breakdown structure ("WBS") and commodity resource codes ("CRC") are maintained. A few cost items are reassigned to new WBS or CRC classifications to correct errors in the original estimate. The proportion of re-assigned costs is not significant. Some quantities were altered based on final design criteria reflected in purchase orders and bid documents. Some unit rates for labor were adjusted to create consistency between similar items. The net effect of these adjustments amounts to less than 1% change to the total cost of the project.

Changes Due to Updated Labor Rates

The 2004 estimate used approximately 137 different crew rates. These 137 different crew rates have been reduced to 12 crew rates. When comparing the estimate before the crew rates were simplified and after, the total cost for labor differed by only a fraction of a percentage point. The excessive division of labor into different crews did not increase the accuracy.

New crew rates were developed for these 12 crew rates based on information from the 2003-2006 collective agreement with the local construction union, Cámara Venezolana de la Industria Construcción. A new collective agreement is presently being negotiated. A call was made to the union office in Venezuela to confirm the current increase in construction wages between December 2006 and May 2007. Wage escalation is also reflected in published data by the central bank of Venezuela. The Central Bank's indices agree with information received from the union.

Changes Due to Delay Costs

The costs to date for delaying the project have been added to the estimate. No escalation was added to these costs.

Changes Due to Recent Information from Purchase Orders

Portions of the work have been completed since 2004. Purchase orders document the final costs and changes in final quantities. The current estimate reflects these final costs and quantities. No escalation was added to these costs.

Portions of the work went out for bid in 2005 and 2006, but these orders were either not purchased or only partially purchased. The 2004 estimate was revised to reflect the bids received in 2005 and 2006. These costs were escalated as per Table 19.6 below.

Changes Due to Escalation of Costs Between 2004 and 2007

Escalation was applied as per Table 19.6 below.

Table 19.6 Escalation of Costs Between 2004 and 2007
(from David Evans, 2007, written communication)

ESCALTION RATES	%
Labor	38%
Civil Subcontract	35%
Fences, Hydrants	20%
Concrete	34%
Structural Steel	5%
Architectural General	13%
Prefab Buildings	10%
Mechanical	20%
Pipe HDPE	100%
Pipe CS	20%
Electrical Transformer	80%
Electrical Cable	100%
Motor Control Center	50%
Electrical Tray & Terminations	30%
Generators, UPS, Security, Lights	15%
Instrumentation	5%
Expatriate Services	8%
Indirect Miscellaneous Costs	15%
Owner's Service Costs	10%
Owner's Material Costs	15%

19.7.3 Operating Cost Estimates

General

SNC-Lavalin has, in preparing the operating cost estimates, followed methodology and procedures, and exercised due care consistent with the intended level of accuracy, using its professional judgment and reasonable care, and is thus of the opinion that there is a high probability that actual costs will fall within the specified error margin. However, the reader is cautioned that no warranty should be implied as to the accuracy of estimates. Note that the figures below represent the mathematical results of the cost estimation process, and are provided for completeness with a greater number of significant digits that is consistent with the intended level of accuracy of the estimate; a greater level of accuracy than stated above should not be inferred.

The estimated Operating Costs for Las Cristinas, based on life-of-project averages, excluding royalties, are presented in Table 19.7. The table shows both the estimates presented in 2005 (SNC-Lavalin, 2005a) and the current estimates:

Table 19.7 Operating Cost Estimates

Item	Operating Cost/t Ore (Aug 2005)	Operating Cost/t Ore (Oct 2007)	Operating Cost /oz Gold * (Aug 2005)	Operating Cost /oz Gold * (Oct 2007)
Mining	$2.68	$3.22	$72	$101
Processing	$4.45	$5.86	$119	$183
G & A	$0.52	$0.72	$13	$22
TOTAL	$7.66	9.80	$204	$306

Note: *Does not include royalties; MDA responsible for Mining otherwise SNC-Lavalin

Operating costs have changed from 2005 (SNC-Lavalin, 2005a) due to a number of factors including:

- Revisions to the costs and quantities of operating supplies, maintenance supplies and power as provided by Crystallex; and
- Revisions to staffing levels and labor rates for all areas of the operations as provided by Crystallex;
- Several changes in mining plans, including those related to the updated mineral resource and mineral reserve estimates reported in this update, extending the mining operation to 64 years and processing to 64 years. It is currently planned to include a MARC ("Maintenance and Repair Contract") for the first six years of operation.

Mine Operating Costs

The life-of-mine mine operating cost is estimated to be $3.22 per tonne of ore or $1.36 per tonne mined. Pre-production mining is considered a capital cost and is not included in operating costs.

Costs for major consumables and labor are based on prices reported by Crystallex. Fuel prices are low in Venezuela; $0.04 per liter is used for this work.

Currently in Venezuela the prices for explosives are established by a non-competitive market and consequently are higher than prices in most other South American countries. The costs used in this study of $2416/tonne for emulsion and $1320/tonne for ANFO are based on the actual prices paid by Crystallex at their existing operations and averages of other quotes received by MDA and Crystallex.

19.8 Economic Analysis

This economic analysis and the sensitivity analysis in Section 19.9 were written by Mr. Robert Crombie of Crystallex.

Crystallex completed a base case economic analysis of Las Cristinas using a discounted cash-flow model to estimate annual cash flow for the life of the mine. At a 20,000 tpd processing rate, the mine life is 64 years. The model is based on the Proven and Probable reserve estimate, production schedule, and capital and operating cost estimates discussed in this report. The cash-flow model incorporates capital and operating costs in 2007 United States dollars. No allowances for inflation or foreign exchange fluctuations were included. The base case uses a gold price of US$550 per ounce, which is the same price used in the reserve estimation. The model assumes all equity financing of the development costs. Summaries of the principal model inputs and financial analysis results are presented below as Table 19.8 and Table 19.9, respectively.

Table 19.8 Principal Base Case Financial Model Inputs

Gold Reserves – Estimated at $550/oz	465 million tonnes grading 1.13 g/t
	16.86 million ounces
Daily Mill Processing Rate	20,000 tonnes/day
Annual Mill Processing Rate	7,300,000 tonnes
Mine Life	64 years
Total Ore Mined	465 million tonnes
Total Waste Mined	638 million tonnes
Strip Ratio	1.37
Metallurgical Recovery	88.3%
Total Gold Recovered	14.9 million ounces
Gold Price	$550/oz
Capital Cost	$356 million
Sustaining Capital	$573 million
Average Operating Cost Life of Mine	$9.82/tonne ore
CVG Royalty @ $550/oz	3% of Gross Revenue
Exploitation Tax	3% of Gross Revenue
Municipal Tax	1% of Gross Revenue
Depreciation	Straight Line basis using 20 year useful life
Investment Tax Credit	10% of initial capital cost
Income Tax Rate	34%
Import Duty During Construction[1]	0%
Import Duty During Operations[1]	See Tax section
VAT During Development[2]	0%
VAT During Operations[2]	9%

[1]The Venezuelan Mines Law allows for the exoneration of import duties on most items specifically related to mining and processing activities. Crystallex has applied for the exoneration of import duties during the construction phase of Las Cristinas and intends to apply periodically for import duty exoneration on certain equipment and supplies during the operating phase of the project. This study assumes import duty exoneration is granted during the construction phase and for most significant imported items during operations. Refer to Capital Costs – Import Duties.

[2] This study assumes exoneration from VAT during the development stage of the project. During the operating phase, 9% VAT is charged on goods and services and is recovered as VAT certificates (CERTs) which are sold at 95% of face value. It is assumed that VAT claims are made monthly and recovery of VAT CERTs takes 18 months.

On the basis of the updated reserve and revised capital and operating cost estimates, as disclosed in this report, the base case economic model demonstrates that the Las Cristinas project is economically viable.

To allow for direct comparisons with previously reported economic results, the base case model in this report assumes that the entire capital cost of $356 million is still to be spent. Under this scenario, the base case model returns undiscounted net present values of $2.1 billion before tax and $1.27 billion after tax. When discounted at 5%, the net present value is $540 million before tax and $290 million after tax. Before and after tax, Internal Rates of Return ("IRR") in the base case are 17.0% and 12.3%, respectively.

A scenario was also modeled that accounted for the fact that approximately $112 million of the $356 million capital estimate has already been spent. Under this scenario, which assumes development expenditures of $244 million, representing the unspent balance of capital estimate, the before-tax net present value discounted at 5% increases from $540 million to $647 million, while the after-tax figure increases from $290 million to $304 million. The IRR, before tax, increases to 25.6% from 17.0%, while the after-tax IRR increases to 17.9% from 12.3%.

The model results in the tables below are based on the full development capital estimate of $356 million.

Table 19.9 Base Case Summary Results (Unleveraged)

Gold Price $550/oz	Before Tax	After Tax[1]
NPV @ 0% ($millions)	$2,060	$1,273
NPV @ 5% ($millions)	$540	$290
NPV @ 8% ($millions)	$286	$123
IRR	17.0%	12.3%
Payback	5.1 years	7.3 years

[1]After corporate income taxes of 34% and VAT and Import Duties paid during the operating phase.

19.9 Sensitivity Analysis

A sensitivity analysis was conducted that measured the impact on the project's cash flow to changes in key variables, including gold price (as it impacts revenues, reserves are held constant at the $550/oz estimate, Table 19.10), capital costs (Table 19.11), and operating costs (Table 19.12). The sensitivity analysis was performed on an unleveraged, before-tax basis.

The sensitivity analysis indicated that the project's cash flows are most sensitive to variations in the gold price. Cash flow is much less sensitive to changes in operating costs and is least sensitive to changes in development capital costs. Net Present Value ("NPV") figures below are in US$ millions.

Table 19.10 Sensitivity to Gold Price (Before-Tax)

Gold Price	$450	$500	$550	$600	$650
NPV @ 0%	$680	$1,370	$2,060	$2,750	$3,440
NPV @ 5%	$134	$337	$540	$743	$946
IRR	9.0%	13.3%	17.0%	20.5%	23.8%

Table 19.11 Sensitivity to Development Capital Costs (Before-Tax)

% of Base	90%	95%	100%	105%	110%
NPV @ 0%	$2,095	$2,078	$2,060	$2,042	$2,024
NPV @ 5%	$574	$557	$540	$523	$506
IRR	19.2%	18.0%	17.0%	16.1%	15.3%

Table 19.12 Sensitivity to Operating Costs (Before-Tax)

% of Base	90%	95%	100%	105%	110%
NPV @ 0%	$2,518	$2,289	$2,060	$1,831	$1,602
NPV @ 5%	$660	$600	$540	$480	$420
IRR	18.8%	17.9%	17.0%	16.1%	15.2%

20.0 INTERPRETATIONS AND CONCLUSIONS

Las Cristinas is a gold deposit with associated low-grade copper that is unique in terms of its geological characteristics as well as its size. The geometry and size of the deposit give the project operational flexibility that will allow optimal exploitation. As described in all previous reports, the deposit is still open ended at depth and, with increasing exploration and metal prices, decreasing costs, or increasing metallurgical recoveries, reserves could yet again increase. The project will always have the issue that incrementally more ounces down dip will be ever increasingly more costly and these tonnes will become very sensitive to operational costs, especially mining costs.

20.1 Geology and Exploration

Two styles of mineralization are evident at Las Cristinas. Breccia-hosted mineralization at Mesones-Sofia constitutes the core of the mineralized system; it has a higher copper content, is associated with silicification, and cross-cuts stratigraphy. The vast majority (>95%) of the gold mineralization, the Conductora style, is located lateral to the breccia bodies and is essentially stratiform.

Drilling by Crystallex in 2004, 2005, 2006, and 2007 was designed to increase the resources and reserves at Las Cristinas and was successful in meeting that objective. Drilling extended the resource down dip at Conductora-Cuatro Muertos and also along strike into the Morrocoy area, allowing estimation of a defined resource for the mineralization at Morrocoy. The Inferred resource estimated for the Cordova deposit was included in the global Las Cristinas resource for the first time. The total estimated resource for Las Cristinas, since Crystallex obtained the mining rights from CVG, was increased from about 21 million ounces of gold in 2003 to about 27 million ounces in this report. Proven and Probable reserves increased from about 9.5 million ounces of gold in 2003 to about 17 million ounces in this report. Through its analysis of drill results, Crystallex has further defined the controls on mineralization at Las Cristinas, which will aid in continued exploration, and has made great strides in understanding sample heterogeneity and behavior in sub-sampling procedures.

Drilling in the 2006-2007 campaign proved the continuity of mineralization at depth between the Cuatro Muertos area of Conductora and Sofia, and the shallower component of this zone needs to be drill tested; this recommended testing is discussed in Section 21.0. Crystallex's work at Las Cristinas has also provided insight into the definition of folding in the Morrocoy area, which may be helpful in analyzing the structures in the Cordova area and in guiding additional drilling; this work is also discussed further in Section 21.0.

20.2 Resources

MDA is not reporting copper resources or resources for any commodity other than gold. The rights to other commodities have not been granted to the CVG by MIBAM, the owner of the concessions on which the Las Cristinas deposit is located, and thereby have not been passed on to Crystallex. Inclusion of the copper mineralization in the estimate, however, was done as it represents a negative to processing costs and recovery when in the form of supergene copper minerals such as chalcocite and covellite. Although silver is particularly low grade, it was modeled. Silver would add slightly to the overall economics if the rights to produce it were granted to CVG and in turn Crystallex.

There is some concern about sample integrity of core samples with low recoveries as it was noted that there is an inverse relationship of grade and core recovery. In some of the extreme cases, these samples were eliminated from the database. But overall, this subtle relationship could add a bias to the underlying data set and in turn, to the modeled grades. This relationship of lower core recovery and higher grade dominantly occurs in the saprolite, which represents about one fifth of the reserve. Although this issue has been addressed by lowering the resource classification (Measured to Indicated and/or Indicated to Inferred) when grades are based on lower-core-recovery samples, there exists a possibility that this bias may manifest itself during saprolite mining as lower than estimated grades. Because of the modeling methodology, the impact of this core recovery/grade relationship is greater for copper than for gold.

Although in some verification work Crystallex samples were lower grade on average than Placer's, most often this could be explained by a few high-grade samples that were not reproduced by Crystallex. It is further explained by the effect on average grade by sample size. Most Crystallex samples were smaller (NQ core vs. HQ core by Placer), which has been demonstrated to potentially instill a lower-grade bias.

20.3 Development and Production

Mining the Las Cristinas deposit presents unique opportunities and risks. MDA believes that the single most important factor influencing mining is the amount of water entering the pit. It is very important to further characterize groundwater flows, and to that end MDA has made a recommendation regarding further study in Section 21.3. Pit pumping requirements can be reduced by capturing as much water as practical on upper benches and channeling it to sumps in the upper elevations of the pit. The catch benches at the base of the carbonate-leached bedrock are a logical choice for collecting water, since about half of the pit inflow is anticipated to be from the carbonate-leached bedrock and that water could be captured.

Crystallex has taken steps to deal effectively with residual cyanide and with acid mine waste. At the request of MinAmb, Crystallex has agreed to move the cyanide-destruction plant such that it treats tailings from the plant prior to their reaching the TMF. The tailings that flow onto the TMF will have low residual-cyanide concentrations, which will be further degraded by reaction with sunlight. Consequently, the risk of leakage of cyanide into natural water courses, and the environment in general, is extremely low. Further characterization of potentially acid-generating waste rock and further remediation planning should be done to lower risks and avoid extra costs. During the first seven years, there is limited acid-neutralizing waste available in the mine plan to encapsulate the potentially acid-generating waste. However, after year seven, the situation is reversed and there is more than enough acid-neutralizing waste to encapsulate the SAPS waste. The low risk of cyanide contamination and acid mine drainage in the long term is fundamental to the success of the Las Cristinas project and plans for its closure at the end of the mine life. With proper management, the mine site should be left without environmental flaws after closure.

Explosives prices in Venezuela are high by general world-wide standards and reduction of these costs will improve the economics of the project. On the other hand, the Venezuelan agency that controls explosives within the country is a monopoly and may not readily reduce prices. Accordingly an allowance has been made in the operating costs to reflect uncertain explosives costs.

Detailed production scheduling should be undertaken with the goal of improving project economics. Equipment requirements should be further evaluated and alternative mining methods considered. Other enhancements to the existing mine plan are possible which could result in improved economics. There is time during the first years of mining to optimize designs and methodology to enhance the operation, specifically:

- Pit wall angles should be monitored over as long a period as possible prior to committing to mining the final wall thus giving time to analyze wall designs and improve on them. The early pit phases have been designed to be sufficiently inside the ultimate pit walls to allow for changes to the ultimate pit design without significant impact to mining productivity.
- Opportunities may be sought to utilize backfill as a way to reduce haulage costs and the overall footprint of external dumps. This work would need to be coordinated with environmental permitting issues.

The long mine life coupled with focused joint initiatives with local government and local communities provides an opportunity for the Las Cristinas project to play a leading role in the development of a sustainable local economy.

21.0 RECOMMENDATIONS

At this stage of pre-production, while waiting for final government permission to begin construction, multiple tasks in differing disciplines should be done to optimize expected production. Crystallex should continue with certain projects: exploration and geological studies, sub-sampling evaluation for production samples, metallurgical testing, water flow studies, detailed engineering work, and optimizing the production schedule, for example. Some particular recommendations that Crystallex should consider are discussed below.

21.1 Geology

There are two areas in the Las Cristinas project that would benefit from additional drilling with the intention of upgrading what are now Inferred resources to Measured and Indicated.

The area beneath the Quebrada Amarilla, located immediately south of the Sofia area, requires infill drilling in order to upgrade Inferred resources there to Measured and Indicated and, hopefully, also to Proven and Probable reserves. Drilling in the 2006-2007 campaign demonstrated continuity of mineralization at depth between the Cuatro Muertos area of Conductora and Sofia, and the shallower component of this zone needs to be drill tested. This would require three holes about 400m in length, totaling approximately 1,200m of drilling.

The definition of the mineralized zones and stratigraphy in the steep-dipping north-striking and shallower-dipping west-striking fold limbs in the Morrocoy area may provide a template on which the Cordova area geology may be unraveled. Cordova is an area in which closely spaced drilling by Placer demonstrated a lack of continuity of gold zones. Given the shape of folding defined in the adjacent Morrocoy zone, it is suspected that the apparent lack of continuity of the gold zones in Cordova may be due to more intense folding. The greater intensity of folding suspected to occur in Cordova is consistent with the stratigraphy consisting largely of relatively weak, bedded sedimentary and volcaniclastic facies interlayered with relatively few competent volcanic units. The evaluation of this possibility requires a thorough and detailed review of mineralized zones on section in Cordova and also requires relogging of core in an effort to correlate stratigraphy between drill holes. Since correlation of stratigraphy is not simple due to the lack of distinct units or marker beds, lithogeochemistry of volcanic units may provide a means of distinguishing between units that are macroscopically similar. The objective of an intense review of the stratigraphy and structure of the Cordova area would be to upgrade Inferred resources there to Measured and Indicated through a small amount of orientated drilling precisely located to test changes in orientation of the limbs of folds. It is anticipated that such a structural interpretation could be demonstrated with approximately 1,500m of drilling (5 holes of approximately 300m long).

21.2 Resources

As in all projects, there are certain aspects of the project and resource estimate that can use additional study. The following recommendations regarding the geology and resources are given not to show deficiencies, but rather to provide a higher level of understanding of the project.

- There remains an issue of accuracy when using a hard boundary between CSB and CLB materials. The contact between the two material types is probably more irregular and/or gradational. As MDA used the appropriate specific gravity samples from each unit, the present estimation methodology should assign correct specific gravity, but the changes spatially may vary from what is modeled.

- As the effect of copper on the cyanide recovery of gold is potentially negative, further study should be made on the CNSCu distribution in the SAPS and CLB.

21.3 Development and Production

Due to the importance of the amount of water entering the pit, MDA recommends that a program of testing be undertaken prior to or during the detailed engineering stage of project development. Results are available from the existing well tests, but a higher level of understanding is needed.

From a pre-production standpoint, Crystallex should consider further study on water management and de-watering, optimize the encapsulation of the acid-generating saprolite sulfide material in the dumps, and, with the expanded pit, modify designs between the crusher and the new western edge of the designed pit.

Water management and de-watering
One of the most significant physical issues Crystallex faces in mining the deposit is the amount of water that will be encountered. Rainfall data gathered over a nine-year period indicate that the average rainfall for that period exceeded three meters per year. In addition, recent studies show that the inflow from groundwater will be significant as well. The amount of water entering the pit from the natural water table through fractures can be as high as 2,585 L/sec (Jackson, 2005).

MDA has taken into account possible delays in the production in determining cash flows for this study. Important to the success of the project, detailed water production scheduling needs to be coordinated with site hydrologists to ensure that the required sumps, vertical wells, horizontal wells, and other dewatering infrastructure are in place and operating effectively and efficiently.

Encapsulation of sulfide material
The acid-generating material management plans (SNC-Lavalin, 2005a) that are depicted in this report require mining of saprolite-sulfide waste material which must be encapsulated within waste dumps to prevent the production of acid drainage. This will require detailed short-term planning to ensure that potential acid-generating material being dumped is properly managed. This includes the containment and treatment of runoff water in addition to encapsulation of the material. The resulting plans should be coordinated between the company's mine operations and environmental staff.

New Waste Dump
SNC-Lavalin strongly recommends that a geotechnical investigation program be carried out to confirm the subsurface conditions under the proposed new dump location and stability analysis undertaken to verify design recommendation provided above.

Crusher/pit conflict

The expanded pit, which is a result of the increase in reserves, is now within about 30m of the project's primary crusher. Consideration should be made to minor relocation of the crusher. This would provide a cushion against any future modifications to pit designs based on slope reconfigurations or further expansion of reserves.

Tailings Management Facilities

Note that, should the option to expand the TMF footprint be carried forward, substantial dam alignment optimization and geotechnical field investigation would be required for the detail design. The stability analysis presented herein is solely based on data/parameters inferred from previous investigations carried out for a less high dam. Due to the height increase to about 100 m, additional field investigation and tests are required to confirm the analysis.

The additional soil tests will include, but are not necessarily limited to, consolidation tests, collapse potential, triaxial shear tests, in-situ permeability testing, *etc*. It is also recommended to carry out seepage and contaminant transport analysis to evaluate the impact of increased tonnage of tailings on the environment and identify required mitigation measures that should be implemented, if any.

Recommendations presented in 2005 design report regarding site preparation, construction and monitoring should be still followed.

22.0 REFERENCES

A.R. MacPherson Consultants Ltd., 1994 (January 12), Grindability study on Las Cristinas ore types, ARMC Project 8254: Letter report to Placer Dome Ltd.

AmbioConsult, C.A., 1996a (August), Environmental impact study for Las Cristinas mining project, Volume 1, Project description: Report for Placer Dome de Venezuela.

AmbioConsult, C.A., 1996b (August), Environmental impact study for Las Cristinas mining project, Volume 2, Environmental characterization: Report for Placer Dome de Venezuela.

AmbioConsult, C.A., 1996c (August), Environmental impact study for Las Cristinas mining project, Volume 3, Environmental impacts and control measures: Report for Placer Dome de Venezuela.

Bruce Geotechnical Consultants Inc., 1996 (August 16), Feasibility study tailing disposal area & waste dump area, Las Cristinas project, Venezuela, Volume 1: Report prepared for Placer Dome Technical Services Inc.

Day, W.C., Tosdal, R.M., Acosta, E.L., Aruspon, J.C., Carvajal, L., Cedeño, E., Lowry, G., Martinez, L.F., Noriega, J.A., Nuñez, F.J., Rojas, J. and Prieto, F., 1995, Geology of the Lo Increible mining district and U-Pb age of the Early Proterozoic Yuruari Formation of the Pastora Supergroup, Guayana Shield, Venezuela, *in* Geology and Mineral Deposits of the Venezuelan Guayana Shield, Sidder, G.B., Garcia, A.E. and Stoeser, J.W. (eds): U.S. Geological Survey Bulletin 2124, p. E1-E13.

Gordon, R., 2005, Structural assessment of the Las Cristinas deposit, Bolivar State, Venezuela: Unpublished internal report for Crystallex International Corp., 17p.

Grill, E. C., 1999 (March), Las Cristinas project exploration closure report: Internal report for Minera Las Cristinas.

Hardy, S., 2006 (February 28), Las Cristinas January 1, 2006 reserves: Memo to Crystallex International Corporation, 1 p.

Hardy, S., 2007 (February 21), Las Cristinas January 1, 2007 reserves: Memo to Crystallex International Corporation, 1 p.

Jackson, H., 2005 (December 12), Pumping test analysis and numerical modeling of the Las Cristinas open pit: Report prepared for Crystallex International Corporation by SNC-Lavalin Engineers and Constructors, Inc.

Josic, L., 2007 (October 5), Preliminary open pit slope stability analysis – updated: Memorandum prepared by SNC-Lavalin Engineers and Constructors, Inc. for Crystallex International Corporation, 18 p.

Laplante, A. R., 2003 (May 25), Report on the characterization of gravity recoverable gold in samples of saprolite (SAPO) and carbonate stable bedrock (CSB) from the Las Cristinas deposit.

Mine Development Associates and Kappes, Cassiday and Associates, 2003 (January 6), Las Cristinas internal prefeasibility study – Based on data provided by CVG, Bolivar State, Venezuela: Report for Crystallex International Corporation.

Nicholson, T., 2007, Las Cristinas 2006/2007, drill program QA/QC, procedures and compiled results: Prepared by Nicholson Analytical Consulting for Crystallex International Corporation.

Outokumpu Mintec Canada Ltd., 2003a (May 12-16), Test report TH-309, Crystallex Las Cristinas, testwork performed at Lakefield Research, thickening of CIL feed.

Outokumpu Mintec Canada Ltd., 2003b (July 16-18), Test report TH-309 continued, Crystallex Las Cristinas, testwork performed at Lakefield Research, thickening of CIL feed.

Pitard, F. F., 2005 (June 28), Study of the heterogeneity of gold at the "Las Cristinas" project; Effects on gold resource estimates and future production: Prepared for Crystallex International Corporation and Mine Development Associates.

Placer Dome Inc., Metallurgical Research Centre, 1994 (February 8), Las Cristinas project, El Callo, Bolivar, Venezuela, Report No. 3, Prefeasibility study metallurgical test report.

Placer Dome Exploration and Placer Dome Technical Services Ltd., 1996a (March), Las Cristinas project feasibility study, Volume 1 – Geology.

Placer Dome Technical Services Ltd., 1996b (March), Las Cristinas project, Venezuela, feasibility study, Volume 2 – Mining.

Placer Dome Technical Services Ltd., 1996c (March), Las Cristinas project feasibility study, Volume 3 – Metallurgy.

Placer Dome Technical Services Ltd., 1996d (March), Las Cristinas project feasibility study, Volume 4 – General Matters.

Placer Dome Technical Services Ltd., 1996e (March), Las Cristinas project feasibility study, Volume 5 – Cost Estimates.

Placer Dome Technical Services Ltd., 1996f (March), Las Cristinas project, Venezuela, feasibility study, Volume 6 – Summary.

Placer Dome Exploration and Placer Dome Technical Services, July 1998a, Las Cristinas project feasibility study update, Volume I – Geology.

Placer Dome Exploration and Placer Dome Technical Services, July 1998b, Las Cristinas project feasibility study update appendices.

Placer Dome Technical Services Ltd., 1998c (February), Las Cristinas project, El Callao, Bolivar, Venezuela, process amendments to the sulphide flotation, leach and cyanide management.

Pocock Industrial Inc., 1995 (August), Gravity sedimentation pressure filtration and pulp rheology studies: Report prepared for Placer Dome Inc. Las Cristinas project.

Ristorcelli, S., 2003 (October 26), Las Cristinas reevaluation of the grade differences between Placer and Crystallex: Internal memorandum to Luca Riccio, Ken Thomas, and Richard Spencer, Crystallex International Corporation.

Ristorcelli, S., 2005 (July 15), 2005 Las Cristinas resource update QA/QC, Bolivar State, Venezuela: Prepared for Crystallex International Corporation.

Ristorcelli, S., and Hardy, S., 2003 (April 30), Technical report – Resources and reserves, Las Cristinas gold and copper deposits, Bolivar State, Venezuela: Technical report prepared for Crystallex International Corporation, 93 p.

Ristorcelli, S., and Hardy, S., 2004a (October 26), 2004 Las Cristinas resource update, Bolivar State, Venezuela: Prepared for Crystallex International Corporation.

Ristorcelli, S., and Hardy, S., 2004b (October 26), Review of the Las Cristinas model, Crystallex's Conductora and Mesones-Sofia drilling and recommendation for a heterogeneity study for the Las Cristinas, Bolivar State, Venezuela: Prepared for Crystallex International Corporation.

Ristorcelli, S., and Hardy, S., 2004c (November), Technical report on resources and reserves of the Las Cristinas gold and copper deposits, Bolivar State, Venezuela: Unfiled technical report prepared for Crystallex International Corporation, 92 p.

Ristorcelli, S., Hardy, S., and Prenn, N., 2002 (December 6), Technical summary and recommendations on the Las Cristinas gold deposits, Bolivar State, Venezuela: Technical report prepared for Crystallex International Corporation, 50 p.

SGS Lakefield Research Limited, 2003a (July 6), The recovery of gold from Las Cristinas samples, LR10574-001 – Progress Report No.1.

SGS Lakefield Research Limited, 2003b (July 15), The liquid solid separation and rheological properties of slurry samples from the Las Cristinas project, LR10574-001 – Progress Report No.2.

SGS Lakefield Research Limited, 2003c (December 18), The recovery of gold from Las Cristinas samples, LR10574-002 – Progress Report No.4.

SGS Lakefield Research Limited, 2004a (January 12), The recovery of gold from Las Cristinas samples, Revision #2 - LR10574-001 – Progress Report No.3 (Note added by author: This date is incorrectly given as 2003 on the cover of the report.).

SGS Lakefield Research Limited, 2004b (December 8), The recovery of gold and environmental characterization of Las Cristinas samples, LR10574-003 – Progress Report No.5, Revision 1.

SNC-Lavalin Engineers and Constructors, Inc., 2003 (September), Las Cristinas project, Crystallex International Corporation, feasibility study: Report for Crystallex International Corp., 561 p.

SNC-Lavalin Engineers and Constructors, Inc., 2004a (January), Las Cristinas project, Venezuela – Feasibility study 40,000 t/d production rate.

SNC-Lavalin Engineers and Constructors, Inc., 2004b (April), Las Cristinas project, Venezuela, Environmental Impact Study. Addendum #1: Expansion of the TMF borrow pit and development of the Potaso quarry (which was subsequently determined to be unsuitable). Addendum #2: Response to observations raised by MARN during presentation of the Las Cristinas Project Environmental Impact Study, Sept. 23, 2004; Response to observations raised by MARN during presentation of the Las Cristinas Project Environmental Impact Study Part II, Sept. 23, 2004. Addendum #3: Detailed evaluation of socio-economic impacts of Las Cristinas Project (This study was undertaken for the project by Proconsult C.A., a Venezuelan Consultant company.).

SNC-Lavalin Engineers and Constructors, Inc., 2004c (December), Field investigations report, open pit slope and waste dump stability study, v. 3 of 3: Report for Crystallex International Corporation.

SNC-Lavalin Engineers and Constructors, Inc., 2005a (August), Crystallex International Corporation Development plan – 2005 (update to the feasibility study issued September 2003), 127 p.

SNC-Lavalin Engineers and Constructors, Inc., 2005b, Simulation of contaminant transport in tailings disposal at Las Cristinas.

SNC-Lavalin Engineers and Constructors, Inc., 2005c, TMF Dam Stability Analysis – 2007 Updated.

SNC-Lavalin Engineers and Constructors, Inc., 2005d, Environmental and Social Impact Assessment, Las Cristinas Project, Venezuela.

SNC-Lavalin Engineers and Constructors, Inc., 2005e, 20,000 to 40,000 t/d Expansion Plan, Las Cristinas Project, Venezuela.

SRK Consulting Engineers and Scientists, 2003 (August), Las Cristinas project, groundwater and surface water management issues for feasibility study (draft): Report prepared for Crystallex International Corporation.

Sandefur, R.L., 2004 (November 1), Specified Las Cristinas comment items: Internal memorandum to Steve Ristorcelli, MDA (Final edits November 21, 2004).

Spencer, R., 2006 (January 31), Review of standards and QAQC procedures used during the 2005 drilling programme at Las Cristinas: Internal report prepared for Crystallex International Corp.

Thalenhorst, H., 2005 (September 28), Review of mineral resources and reserves, Las Cristinas gold project, Bolivar State, Venezuela: Prepared for Crystallex International Corporation by Strathcona Mineral Services Limited.

23.0 DATE AND SIGNATURE PAGE

Effective Date of report:	November 7, 2007
Completion Date of report:	November 7, 2007

	November 7, 2007
"Steven Ristorcelli"	Date Signed:
Steven Ristorcelli, P. Geo.	
	November 7, 2007
"Thomas Dryer"	Date Signed:
Thomas Dryer, P. Eng.	
	November 7, 2007
"Richard Spencer"	Date Signed:
Richard Spencer, P. Geo.	
	November 7, 2007
"David Evans"	Date Signed:
David Evans, P. Eng.	
	November 7, 2007
"John Goode"	Date Signed:
John Goode, P. Eng.	
	November 7, 2007
"Helen Jackson"	Date Signed:
Helen Jackson, P. Geo.	
	November 7, 2007
"Ljiljana Josic"	Date Signed:
Ljiljana Josic, P. Eng.	
	November 7, 2007
"Henri Sangam"	Date Signed:
Henri Sangam, P. Eng.	

24.0 AUTHORS' CERTIFICATES

STEVEN RISTORCELLI, P. GEO.

I, Steven Ristorcelli, P. Geo., do hereby certify that I am currently employed as Principal Geologist by Mine Development Associates, Inc., 210 South Rock Blvd., Reno, Nevada 89502 and:

1. I graduated with a Bachelor of Science degree in Geology from Colorado State University in 1977 and a Master of Science degree in Geology from the University of New Mexico in 1980. I have worked as a geologist for a total of 28 years since my graduation from undergraduate university.
2. I am a Registered Professional Geologist in the states of California (#3964) and Wyoming (#153) and a Certified Professional Geologist (#10257) with the American Institute of Professional Geologists.
3. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101. I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.
4. I am responsible or jointly responsible for the preparation of Sections 1 to 3, 5 to 15, 17.1 to 17.6, and 18, 20 and 21 of this report titled Technical Report Update on the Las Cristinas Project, Bolivar State, Venezuela for Crystallex International Corporation and dated November 7, 2007 (the "Technical Report") except those sections that apply to land title, environmental, reserves, metallurgy, processing, and production. I visited the site numerous times over the years and most recently the project January 15th to 17th, 2007.
5. I have had prior involvement with the property and project having visited working on prior resource estimates.
6. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
7. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
8. I consent to the filing of the Technical Report with any securities regulatory authority, stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 7th day of November 2007.

"Steven Ristorcelli"

Steven Ristorcelli
Print Name of Qualified Person

THOMAS DYER, P. E.

I, Thomas Dyer, P. E., do hereby certify that I am currently employed as Senior Engineer by Mine Development Associates, Inc., 210 South Rock Blvd., Reno, Nevada 89502 and:

1. I graduated with a Bachelors of Science degree in Mine Engineering from South Dakota School of Mines & Technology in 1996. I have worked as a Mining Engineer for 11 years since graduation.
2. I am a registered as a Professional Engineer – Mining in the State of Nevada (# 15729). I am also a Registered Member of SME (# 4029995RM) in good standing.
3. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101. I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.
4. I am responsible for the preparation of the Mining Section (19.1) and Reserve Estimate sections (17.17) of this report titled Technical Report Update on the Las Cristinas Project, Bolivar State, Venezuela for Crystallex International Corporation and dated November 7, 2007 (the "Technical Report. I have not visited the site.
5. I have had no prior involvement with the property.
6. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
7. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
8. I consent to the filing of the Technical Report with any securities regulatory authority, stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 7th day of November 2007.

"Thomas Dyer"

Thomas Dyer
Print Name of Qualified Person

CERTIFICATE OF AUTHOR

Richard Mark Spencer, P. Geo., do hereby certify that I am currently employed as Vice President, Exploration, by Crystallex International Corporation, 18 King Street East, Suite 1210, Toronto, Ontario M5C 1C4 and:

1. I graduated with a Bachelor of Science (Honours) degree in Geology from the University of the Witwatersrand, Johannesburg, South Africa in 1985 and a Doctor of Philosophy degree in Geology from the same university in 1992. I have worked as a geologist for a total of 20 years since my graduation from undergraduate university.
2. I am registered with the Association of Professional Geoscientists of Ontario (#1243) and with the Geological Society of London, England, as a Chartered Geologist (#17538).
3. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101. I am not independent of the issuer as defined in section 1.5 (4) of National Instrument 43-101.
4. I am responsible for Sections 7, 8, and 9, jointly responsible for Sections 5 through 14 and 20 and 21, but am generally familiar with the content, having reviewed most of the titled Technical Report Update on the Las Cristinas Project, Bolivar State, Venezuela for Crystallex International Corporation and dated November 7, 2007 (the "Technical Report).
5. I have been extensively involved in the exploration of the property since September 2004 and have spent approximately 25% of my working time on the property since that date.
6. I am not independent of the issuer under the terms of section 1.5 of National Instrument 43-101 since I own common shares of Crystallex International Corporation.
7. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
8. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
9. I consent to the filing of the Technical Report with any securities regulatory authority, stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 7th day of November 2007.

"Richard Spencer"

Richard Spencer
Print Name of Qualified Person

CERTIFICATE OF AUTHOR

To accompany Report entitled "Technical Report Update on the Las Cristinas Project, Bolivar State, Venezuela", dated November 7th, 2007 and pertaining to the Las Cristinas Project in Venezuela

I, John R. Goode, P. Eng., do hereby certify that:

1. I am a Consulting Metallurgical Engineer with J.R. Goode and Associates of Suite 1010, 65 Spring Garden Avenue, Toronto, Ontario, Canada, M2N 6H9.
2. I graduated with a Bachelor of Science (Engineering) in Metallurgy degree from the Royal School of Mines, London University, U.K. in 1963.
3. I am registered as a Professional Engineer with Professional Engineers Ontario with registration number 16561011.
4. I have worked as a metallurgist for a total of 44 years since my graduation from university.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I have not visited the Las Cristinas property in Venezuela.
7. I am responsible, in part, for the preparation of Section 16.0 "Mineral Processing and Metallurgical Testing" of the technical report titled "Technical Report Update on the Las Cristinas Project, Bolivar State, Venezuela", dated November 7th, 2007 (the "Technical Report") relating to the Las Cristinas property.
8. I have had prior involvement with the property that is the subject of the Technical Report through earlier work for Crystallex International Corporation.
9. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the above referenced Section 16 of the Technical Report, the omission to disclose which makes the Technical Report misleading.
10. I am not independent of the issuer under the terms of section 1.5 of National Instrument 43-101 since I own 1,000 common shares of Crystallex International Corporation.
11. I have read National Instrument 43-101 and Form 43-101F1, and Section 16 of the Technical Report has been prepared in compliance with that instrument and form.
12. I consent to the filing of the Technical Report with any securities regulatory authority, stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 7th Day of November, 2007

J.R. Goode

CERTIFICATE OF QUALIFIED PERSON

As an author of the preparation of parts the report entitled Technical Report Update on the Las Cristinas Project Bolivar State, Venezuela prepared for the Crystallex International Corporation and dated November 7, 2007, I hereby state:

1. My name is David Evans and I am employed by SNC-Lavalin Engineers & Constructors Inc. at 2200 Lake Shore Blvd., Toronto, Ontario Canada.

2. I am practicing as a professional engineer registered with Professional Engineers Ontario.

3. I graduated from the B.Sc (Eng) mineral process engineering program at Queen's University, Kingston, Ontario in 1988.

4. I have practiced my profession since 1988.

5. I am a "qualified person" as that term is defined in National Instrument 43-101 (Standard of Disclosure for Mineral Projects).

6. I last personally visited the Las Cristinas property in October, 2007.

7. I am responsible for the preparation, in part, of the Operating and Capital Costs (19.7.2 and 19.7.3) and the balance of Section 19 excluding Mining Operations (19.1.1 to 19.1.8), Waste Rock Dumps and Ore Stockpiles (19.3.2), Open Pit (19.3.3), TMF Design (19.3.4), Taxes (19.7.1), Economic Analysis (19.8) and Sensitivity Analysis (19.9)of the technical report titled Technical Report Update on the Las Cristinas Project Bolivar State, Venezuela prepared for Crystallex International Corporation and dated November 7, 2007 relating to the Las Cristinas property in Venezuela.

8. I am not aware of any material fact or material change with respect to the subject matter of the Report, which is not reflected in the Report, the omission of which would make the Report misleading.

9. I am independent of Crystallex International Corporation pursuant to section 1.5 of the Instrument.

10. I do not have nor do I expect to receive a direct or indirect interest in the Las Cristinas property of Crystallex International Corporation and I do not beneficially own, directly or indirectly any securities of Crystallex International Corporation or any associate or affiliate of such company.

11. I have read National Instrument 43-101 and Form 43-101F1 and of Operating and Capital Costs (19.7.2 and 19.7.3) and the balance of Section 19 excluding Mining Operations (19.1.1 to 19.1.8), Waste Rock Dumps and Ore Stockpiles (19.3.2), Open Pit (19.3.3), TMF Design (19.3.4), Taxes (19.7.1), Economic Analysis (19.8) and Sensitivity Analysis (19.9) of the of the technical report titled Technical Report Update on the Las Cristinas Project Bolivar State, Venezuela prepared for the Crystallex International Corporation and dated November 7, 2007, have been prepared in compliance with that instrument and form.

Dated at Toronto, Ontario on the November 7th, 2007.

David P. Evans, P. Eng.
Manager, Process

CERTIFICATE OF QUALIFIED PERSON

As an author of the preparation of parts the report entitled Technical Report Update on the Las Cristinas Project Bolivar State, Venezuela prepared for Crystallex International Corporation and dated November 7, 2007, I hereby state:

1. My name is Helen E. Jackson and I am employed by SNC-Lavalin Engineers & Constructors Inc. at 2200 Lake Shore Blvd., Toronto, Ontario Canada.

2. I am practicing as a professional geologist registered with Professional Geoscientists of Ontario.

3. I graduated from the B.Sc. (Hons.) Biology program at Queen's University, Kingston, Ontario in 1980; and received a B.Sc. (Specializations in Geology) from the University of Alberta in Edmonton in 1983.

4. I have practiced my profession since 1984.

5. I am a "qualified person" as that term is defined in National Instrument 43-101 (Standard of Disclosure for Mineral Projects).

6. I last personally visited the Las Cristinas property in 2004.

7. I am responsible for the preparation of the section pertaining to Groundwater Numerical Modeling within the Open Pit Hydrogeology and Dewatering section (19.1.1) of the technical report titled Technical Report Update on the Las Cristinas Project Bolivar State, Venezuela prepared for Crystallex International Corporation and dated November 7, 2007 relating to the Las Cristinas property in Venezuela.

8. I am not aware of any material fact or material change with respect to the subject matter of the Report, which is not reflected in the Report, the omission of which would make the Report misleading.

9. I am independent of Crystallex International Corporation pursuant to section 1.5 of the Instrument.

10. I do not have nor do I expect to receive a direct or indirect interest in the Las Cristinas property of Crystallex International Corporation and I do not beneficially own, directly or indirectly any securities of Crystallex International Corporation or any associate or affiliate of such company.

11. I have read National Instrument 43-101 and Form 43-101F1, and the section pertaining to Groundwater Numerical Modeling within the Open Pit Hydrogeology and Dewatering section (19.1.1) of the technical report titled Technical Report Update on the Las Cristinas Project Bolivar State, Venezuela prepared for the Crystallex International Corporation and dated November 7, 2007, have been prepared in compliance with that instrument and form.

Dated at Toronto, Ontario on the November 7th, 2007.

Helen Jackson

Helen E. Jackson, P. Geo.
Senior Hydrogeologist

SNC•LAVALIN
Engineers & Constructors

Certified ISO 9001

CERTIFICATE OF QUALIFIED PERSON

As an author of the preparation of parts the report entitled Technical Report Update on the Las Cristinas Project Bolivar State, Venezuela prepared for the Crystallex International Corporation and dated November 7, 2007, I hereby state:

1. My name is Ljiljana Josic and I am employed by SNC-Lavalin Engineers & Constructors Inc. at 2200 Lake Shore Blvd., Toronto, Ontario Canada.

2. I am practicing as a professional engineer registered with Professional Engineers Ontario.

3. I completed B.Sc (Eng) at the Faculty of Mining and Geological Engineering, The University of Tuzla, Bosnia and Herzegovina in 1989 and M.E.Sc. in Civil and Environmental Engineering, The University of Western Ontario, London, Ontario in 2001.

4. I have practiced my profession since 1989.

5. I am a "qualified person" as that term is defined in National Instrument 43-101 (Standard of Disclosure for Mineral Projects).

6. I have never visited the Las Cristinas property.

7. I am responsible for the preparation of Open Pit section (19.3.3) of the technical report titled Technical Report Update on the Las Cristinas Project Bolivar State, Venezuela prepared for Crystallex International Corporation and dated November 7, 2007 relating to the Las Cristinas property in Venezuela.

8. I am not aware of any material fact or material change with respect to the subject matter of the Report, which is not reflected in the Report, the omission of which would make the Report misleading.

9. I am independent of Crystallex International Corporation pursuant to section 1.5 of the Instrument.

10. I do not have nor do I expect to receive a direct or indirect interest in the Las Cristinas property of Crystallex International Corporation and I do not beneficially own, directly or indirectly any securities of Crystallex International Corporation or any associate or affiliate of such company.

11. I have read National Instrument 43-101 and Form 43-101F1and Open Pit section (19.3.3) of the technical report titled Technical Report Update on the Las Cristinas Project Bolivar State, Venezuela prepared for the Crystallex International Corporation and dated November 7, 2007, have been prepared in compliance with that instrument and form.

Dated at Toronto, Ontario on the November 7th, 2007.

Ljiljana Josic, M.E.Sc., P. Eng.
Geotechnical Engineer

SNC•LAVALIN
Engineers & Constructors

Certified ISO 9001

CERTIFICATE OF QUALIFIED PERSON

As an author of the preparation of parts the report entitled Technical Report Update on the Las Cristinas Project Bolivar State, Venezuela prepared for Crystallex International Corporation and dated November 7, 2007, I hereby state:

1. My name is Henri Pilakani Sangam and I am employed by SNC-Lavalin Engineers & Constructors Inc. at 2200 Lake Shore Blvd., Toronto, Ontario Canada.

2. I am practicing as a professional engineer registered with Professional Engineers Ontario.

3. I received a BEng from the civil engineering program at the Université du Benin, Lomé, Togo in 1989, a B.Sc.A. and a M.Sc.A. (Geotechnical) from the Université de Moncton, Moncton, NB in 1994 and 1996, respectively, and a Ph.D. (Geo-environmental) program at from The University of Western Ontario, London, ON in 2001.

4. I have over 16 years of experience in an engineering consulting environment, research and academic work.

5. I am a "qualified person" as that term is defined in National Instrument 43-101 (Standard of Disclosure for Mineral Projects).

6. I last personally visited the Las Cristinas property in July, 2005.

7. I am responsible, in part, for the preparation of the Waste Rock Dumps and Ore Stockpiles and TMF Design sections (19.3.2, 19.3.4) of the technical report titled Technical Report Update on the Las Cristinas Project Bolivar State, Venezuela prepared for Crystallex International Corporation and dated November 7, 2007, relating to the Las Cristinas property in Venezuela

8. I am not aware of any material fact or material change with respect to the subject matter of the Report, which is not reflected in the Report, the omission of which would make the Report misleading.

9. I am independent of Crystallex International Corporation pursuant to section 1.5 of the Instrument.

10. I do not have nor do I expect to receive a direct or indirect interest in the Las Cristinas property of Crystallex International Corporation and I do not beneficially own, directly or indirectly any securities of Crystallex International Corporation or any associate or affiliate of such company.

11. I have read National Instrument 43-101 and Form 43-101F1, and Sections 19.3.2 and 19.3.4 of the technical report titled Technical Report Update on the Las Cristinas Project Bolivar State, Venezuela prepared for Crystallex International Corporation and dated November 7, 2007 have been prepared in compliance with that instrument and form.

Dated at Toronto, Ontario on the November 7th, 2007.

H. Sangam

Dr. Henri P. Sangam, P. Eng.
Senior Geo-Environmental Engineer

Appendix A

Contract with CVG

MINISTERIO DEL INTERIOR Y JUSTICIA

República Bolivariana de Venezuela
Dirección General de Registros y Notarias

NOTARIA PUBLICA CUARTA DE PUERTO ORDAZ

República Bolivariana de Venezuela
Ministerio del Interior y Justicia
Notaría Pública Cuarta
Municipio Autónomo Caroní - Pto. Ordaz

Centro Comercial Cristal - 1er Piso - Locales 110 y 111
Teléfono.: (0286) 962.40. 57
Alta Vista - Puerto Ordaz - Estado Bolívar

OTORGANTES(S): Francisco José Rangel Gómez y Marc J. Oppenheimer. TOMO: 86

Nº: 16 Nº DE PLANILLA: 38890 FECHA: 17-09-02

República Bolivariana de Venezuela Ministerio del Interior y Justicia Notaría Pública Cuarta

ABOG. FIRELY C. NAVARRO A
I.P.S.A N° 11.121
VPC ASUNTOS LEGALES

16/86

CONTRATO DE OPERACIÓN MINERA
CRISTINA 4, CRISTINA 5, CRISTINA 6 y CRISTINA 7

Entre la **CORPORACION VENEZOLANA DE GUAYANA**, Instituto Autónomo, creado por Decreto N° 430 de fecha 29 de Diciembre de 1.960, publicado en la Gaceta Oficial de la República de Venezuela N° 26.445 de fecha 30 de Diciembre de 1.960, reformado este por Decreto N° 1.531 de fecha 7 de Noviembre de 2.001, publicado en la Gaceta Oficial de la República Bolivariana de Venezuela N° 5-553 de fecha 12 de Noviembre de 2.001, la cual goza de las prerrogativas y privilegios otorgados por la Ley de la República y esta exento del pago de todos los impuestos, tasas y contribuciones conforme lo determinan los artículos 24 y 25 del citado Decreto Ley, representada en este acto por su Presidente ciudadano **FRANCISCO JOSE RANGEL GOMEZ**, venezolano, hábil en derecho, titular de la Cédula de Identidad N° 2.520.281, de este domicilio, cuya designación consta en Decreto N° 1.034, de fecha 10 de Octubre de 2.000, publicado en la Gaceta Oficial de la República Bolivariana de Venezuela N° 37.054 del 10 de Octubre de 2.000, que en lo sucesivo y a los efectos de este Contrato se denominará **LA CORPORACION**, en ejecución a lo aprobado en el Directorio según Resolución N° 8.700, y Resolución DIR- N° 8.705, de fechas 02 de septiembre de 2002 y 16 de septiembre de 2002, respectivamente, por una parte y por la otra **CRYSTALLEX INTERNATIONAL CORPORATION**, compañía domiciliada en la Provincia de Columbia Británica de Canadá, cuya vigencia fue prorrogada bajo la Ley de Corporaciones Mercantiles del Canadá, como Corporación N° 345631-5, mediante Certificado de fecha 23 de enero de 1998, representada en este acto por su Presidente **MARC J. OPPENHEIMER**, de nacionalidad estadounidense, Pasaporte N°152092004, debidamente autorizado para este acto según Resolución de Junta Directiva de fecha 16 de septiembre de 2002 y, en lo sucesivo denominada **CRYSTALLEX**, cada una de las cuales es individualmente denominada la "Parte" o en conjunto, las "Partes", han convenido en celebrar como en efecto lo celebran, el presente contrato de operación minera de las Cristinas 4,5,6 y 7, el cual se basa en los siguientes:

CONSIDERANDOS

1.-Que la **CORPORACIÓN VENEZOLANA DE GUAYANA** es un Instituto Autónomo con personalidad juridica propia y con patrimonio distinto e independiente de la República, adscrito al Ministerio de la Secretaria de la Presidencia, la cual tiene como objetivo promover el desarrollo equilibrado de la Región Guayana, realizar los trabajos de exploración, prospección y explotación de las minas o yacimientos que a tales efectos le otorgue el Ministerio de Energía y Minas.

2.-Que entre el **MINISTERIO DE ENERGÍA Y MINAS** y la **CORPORACIÓN VENEZOLANA DE GUAYANA** se celebró un contrato en fecha 16 de Mayo de 2.002, donde el Ministerio autoriza a la Corporación para la ejecución de los trabajos de explotación, extracción y venta del mineral de Oro que se encuentra en los yacimientos comprendidos en las áreas de las concesiones denominadas Cristina 4, Cristina 5, Cristina 6 y Cristina 7, ubicadas en el Municipio Sifontes del Estado Bolivar, denominado "PROYECTO LAS CRISTINAS 4,5,6 y 7," en lo adelante el Proyecto.

NOTARIA PUBLICA CUARTA
DE PUERTO ORDAZ
Planilla N° 38890
Derechos: N/C
Otorgamientos: 17-09-02

3.-Que el **MINISTERIO DE ENERGÍA Y MINAS** autorizó a la **CORPORACIÓN VENEZOLANA DE GUAYANA** a través del referido Contrato para el uso de los bienes afectos a dichas concesiones que pasaron a la República de conformidad con la Resolución N° 035 de fecha 06 de marzo de 2.002, publicado en la Gaceta Oficial de la República Bolivariana de Venezuela N° 37.400 de fecha 08 de marzo de 2.002.

4.-Que a los efectos del adecuado cumplimiento del referido Contrato la **CORPORACION VENEZOLANA DE GUAYANA**, podrá celebrar contratos de **DISEÑO, CONSTRUCCION Y OPERACIÓN CON TERCEROS**, previa información escrita al Ministerio de Energía y Minas.

5.-Que previo al inicio de las actividades operativas del proyecto se deberá cumplir con toda la permisería ambiental correspondiente.

CLAUSULA PRIMERA
INTERPRETACION

1.1 **Definiciones**. En el presente Contrato, a menos que se establezca lo contrario de manera expresa, las siguientes palabras y frases tendrán el significado establecido más abajo:

"Contrato", significa el presente contrato de **operación minera** con sus Anexos y modificaciones hechas por escrito entre las Partes.

"Fecha Efectiva": significa la fecha de suscripción del presente Contrato por las Partes ante Notario Público.

"Incumplimiento Material", significa cualquier acto u omisión proveniente de alguna de las Partes que cause un perjuicio esencial en: (i) el negocio, el resultado de la operación o en la condiciones financieras de la otra Parte; (ii) la capacidad de la otra Parte para cumplir con sus obligaciones previstas en este Contrato de manera oportuna y cabalmente, de conformidad con los términos aquí previstos; (iii) la validez o vigencia del Contrato o de los derechos de la otra Parte.

"Ley de Minas", significa el Decreto con Rango y Fuerza de Ley de Minas, publicado en Gaceta Oficial No. 5.382 de fecha 28 de septiembre de 1999, así como sus Reglamentos, decretos, resoluciones y demás leyes aplicables.

"MEM" , significa el Ministerio de Energía y Minas.

"Partes" significa en plural ambas partes signatarias del presente Contrato, es decir la Corporación Venezolana de Guayana y CRYSTALLEX, y en singular (Parte) a cada una de ellas.

"Permisos Ambientales", significa el Permiso de Afectación de Recursos para Exploración de oro, cobre y otros minerales otorgado por el Ministerio del Ambiente y de los Recursos Naturales; así como cualquier otro permiso o autorización ambiental que dicho Ministerio o cualquier otra autoridad competente pueda requerir o que sea requerido por Ley, para la realización de actividades en Las Cristinas.

"Pequeños Mineros", significa grupos de pequeños mineros organizados e identificados como: Nuevas Claritas, Siete estrellas, Los Rojas y la Bolivariana, instaladas en áreas delimitadas dentro del proyecto Las Cristinas.

"Plan de Producción Anual", se refiere al documento presentado anualmente por **CRYSTALLEX** a consideración y aprobación por parte de **LA CORPORACION**, el cual comprende en su contenido un estimado sobre los siguientes puntos: - inversiones, - volumen de producción, - capacidad de procesamiento, - costos operativos, - logística, - número de trabajadores, - producción de oro, - precio del oro, - ingresos por ventas, y cualesquiera otros elementos vinculados al desarrollo y ejecución del proyecto.

"Precio Mensual del Oro", significa el promedio mensual del precio del oro, el cual será calculado dividiendo la suma de todos los "London Buillion Market Association P.M. BID Gold Fix prices" (el cual fija el precio de cierre de dicho mineral para ese día por onza Troy de oro refinado), reportados para el mes correspondiente, entre el número de días para los cuales los referidos precios fueron establecidos.

"Producción", se refiere a la cantidad de mineral aurífero procesado por día, expresado en tonelada por día (tn/día).

"Tenor", significa el contenido de oro en el material aurífero proveniente del yacimiento, medido a la entrada del molino de la planta procesadora, expresado en gramos por toneladas secas (gr/tn).

CLAUSULA SEGUNDA
Objeto del contrato

2.1 LA CORPORACIÓN, conforme a autorización expedida por el MEM, mediante Contrato de fecha 16 de mayo de 2002, autenticado por ante la Notaría Pública Segunda de Puerto Ordaz, Municipio Caroní, estado Bolívar, quedando asentado en los Libros de Autenticaciones bajo el N° 08, Tomo 82, de fecha 13 de Junio de 2002, y Notaría Publica Primera, del Municipio Baruta del estado Miranda, quedando asentado bajo el N° 28, Tomo 40, de los Libros de Autenticaciones, de fecha 19 de Junio de 2002, en lo adelante Contrato CVG-MEM, el cual se anexa formando parte indivisible del presente Contrato, autoriza a **CRYSTALLEX**, y ésta así lo acepta, para efectuar todas las inversiones y trabajos necesarios para reactivar y ejecutar en su totalidad el proyecto minero de las **CRISTINA 4, CRISTINA 5, CRISTINA 6 y CRISTINA 7**, diseñar, construir la planta, operarla y procesar el material de oro para su posterior comercialización y venta, y transferir la mina y sus instalaciones a **LA CORPORACIÓN** al término del Contrato, **conforme a lo establecido en el artículo 102 de la Ley de Minas.** El proyecto Las Cristinas 4,5,6 y 7, está ubicado en el Municipio Sifontes del estado Bolívar de la República Bolivariana de Venezuela, cuya localización esta descrita en el Plano que se anexa identificado como **anexo marcado "A"**, el cual firmado por **CRYSTALLEX** y **LA CORPORACION** forman parte de este Contrato. Conforme al plano a que se hace referencia, **LA CORPORACION** autoriza a **CRYSTALLEX** a explotar y extraer mineral de oro presente en el área de Las Cristinas 4,5,6 y 7, dentro de los siguientes linderos definidos, en el referido plano, por una poligonal cerrada y por vértices expresados en coordenadas U.T.M (Universal Transversal de Mercator):

ÁREA DENOMINADA CRISTINA 4. Superficie total mil hectáreas (1.000 ha.)

PUNTO	NORTE (m)	ESTE (m)
BOT - 1	683.208,00	666.284,00
BOT - 2	685.208,00	666.284,00
BOT - 3	685.208,00	671.28400
BOT - 4	683.208,00	671.284,00

ÁREA DENOMINADA CRISTINA 5. Superficie total novecientos treinta y nueve hectáreas, con cuatro áreas (939.4 ha.)

PUNTO	NORTE (m)	ESTE (m)
BOT - 1	685.208,00	671.284,00
BOT - 2	685.208,00	668.340,00
BOT - 3	687.070,00	668.340,00
BOT - 4	687.070,00	673.340,00
BOT - 5	685.208,00	673.340,00

ÁREA DENOMINADA CRISTINA 6 Superficie total novecientas cuarenta y cuatro hectáreas con dos áreas (944,2 ha.)

PUNTO	NORTE (m)	ESTE (m)
BOT - 1	685.208,00	668.340,00
BOT - 2	685.208,00	663.340,00
BOT - 3	687.070,00	663.340,00
BOT - 4	687.070,00	668.340,00

ÁREA DENOMINADA CRISTINA 7 Superficie total: un mil dos hectáreas (1.002 ha.)

PUNTO	NORTE (m)	ESTE (m)
BOT - 1	687.070,00	663.340,00
BOT - 2	689.070,00	663.340,00
BOT - 3	689.070,00	668.340,00
BOT - 4	687.070,00	668.340,00

Los trabajos que deberá realizar **CRYSTALLEX** para el diseño, construcción, puesta en operación y explotación de la mina objeto del Proyecto "Las Cristinas 4, 5, 6 y 7", comprenden la planificación geológica-minera y el suministro de todos los materiales, mano de obra, maquinarias, equipos, repuestos y otros recursos materiales o elementos necesarios para el desarrollo, explotación, procesamiento, comercialización y venta del mineral de oro presente en dicha mina, de acuerdo a los términos de este contrato.

2.2.ESTUDIO DE FACTIBILIDAD

2.2.1.-**CRYSTALLEX** se compromete a presentar a **LA CORPORACIÓN** el Estudio de Factibilidad Técnico, Económico, Financiero, en un plazo no mayor de un (1) año contado a partir de la fecha de la firma de este contrato, para su análisis y consideración y aprobación antes de iniciarse los trabajos. Durante este período **CRYSTALLEX** deberá mantener un mínimo de actividad de campo que permita generar empleos en las comunidades aledañas al área del Proyecto.

2.2.2.- El Estudio de Factibilidad debe responder a los lineamientos establecidos en el presente contrato y en beneficio de ambas partes. La aprobación de este Estudio de Factibilidad deberá constar en escrito que se anexará **marcado "B"**, que formará parte indivisible de este contrato.

CAUSULA TERCERA

PROGRAMA DE INVERSIÓN

CRYSTALLEX se compromete a efectuar todas las inversiones necesarias para la reactivación y ejecución del Proyecto minero "Las Cristinas 4, 5, 6 y 7", estimada de acuerdo al Estudio de Factibilidad aprobado por **LA CORPORACIÓN** para lo cual **CRYSTALLEX** deberá presentar a **LA CORPORACIÓN**, en la misma oportunidad y como parte del Estudio de Factibilidad a que se refiere la cláusula anterior, un programa y/o cronograma de desembolso y ejecución de las inversiones, así como las fuentes de financiamiento y sus condiciones. Este programa y/o cronograma de inversión será aprobado y suscrito por **CRYSTALLEX** y **LA CORPORACIÓN**, en escrito que se anexará **marcado "C"** y será parte integrante de este contrato.

CLAUSULA CUARTA

PLANES DE EXPLOTACIÓN

1.-**CRYSTALLEX** deberá presentar a **LA CORPORACIÓN** los Planes de Explotación para la Vida del Proyecto y los Planes de Explotación Anuales detallados. Tanto el Plan de Explotación para la Vida del Proyecto, como los planes anuales deberán ser conformados por escrito por **LA CORPORACIÓN** para su implementación.

Dichos Programas de Inversión y los Planes de Explotación deben contener la información técnica necesaria, a solicitud de **LA CORPORACIÓN**, la cual podrá solicitar en cualquier momento a **CRYSTALLEX** información adicional o podrá proponerle modificaciones o ajustes que considere razonablemente necesarios.

2.-**CRYSTALLEX** deberá especificar en dichos Planes los volúmenes de excavación de mineral y estéril, disposición de desechos, manejo de efluentes, protección ambiental, seguridad industrial y cualquier otro aspecto que **LA CORPORACIÓN** considere pertinente, lo cual le comunicará a **CRYSTALLEX**, con la suficiente antelación, dependiendo de las características técnicas de la información requerida.

CLÁUSULA QUINTA

VOLUMEN DE PRODUCCIÓN

1. **CRYSTALLEX** se compromete a poner en producción el proyecto minero "Las Cristinas 4, 5, 6 y 7", dentro del plazo fijado en la cláusula Novena del Contrato CVG-MEM, celebrado el 16 de mayo de 2002.

2. **CRYSTALLEX** se compromete a extraer anualmente de la mina objeto del Proyecto "Las Cristinas 4, 5, 6 y 7", un volumen promedio de producción diaria de mineral de oro presente, según lo indicado en el Plan de Producción Anual acordado entre las partes, que se anexará **marcado "D"** y formará parte de este contrato.

3. **CRYSTALLEX** se compromete a procesar el volumen de mineral de oro especificado en el Plan de Producción Anual, en la planta que instalará conforme al Proyecto, incorporando la mayor cantidad de valor agregado.

4. **CRYSTALLEX** explotará y extraerá el material estéril que no pueda almacenar en la mina y lo dispondrá en un sitio que habilitará conservando la normativa ambiental.

CLÁUSULA SEXTA

COMPENSACIONES ECONÓMICAS

1- **CRYSTALLEX** efectuará a **LA CORPORACIÓN** los siguientes pagos obligatorios:

- **Pago Inicial:** La cantidad de **QUINCE MILLONES DE DOLARES DE LOS ESTADOS UNIDOS DE AMERICA (US$ 15.000.000,oo)**, en función del ocho por ciento (8%) del valor de las inversiones realizadas dentro del Proyecto, tales como: informes, información digitalizada, campamento, perforaciones, cuyo pago hará CRIYSTALLEX dentro de los cinco (5) días hábiles bancarios siguientes al otorgamiento del presente contrato, previa instrucciones de LA CORPORACIÓN.

- **Pago mínimo mensual por concepto de regalía** calculado sobre el valor comercial de la producción mensual bruta en términos porcentuales, a cancelar una vez culminada la etapa de construcción:
  ORO:

Precio US$/Onz Troy	**%**
menor de 280 $/onz	1.00
mayor o igual a 280 $/onz y menor a 350$/onz	1.50
mayor o igual a 350 $/onz y menor a 400$/onz	2.00
mayor de 400$/onz	3.00

Estas regalías son distintas del Impuesto de Explotación establecido en la Ley de Minas, que pagará **CRYSTALLEX** a la REPUBLICA y están sujetas a revisión en conformidad con las leyes que regulan la materia.

CLÁUSULA SÉPTIMA

VENTAJAS ESPECIALES

CRYSTALLEX se compromete a cumplir con el siguiente Plan de Empleo y Programa de Desarrollo Social Comunitario:

PARA EL AÑO 2002:

- Generación de 50 empleos y asumir los costos del mantenimiento de las instalaciones y de las 24 personas que laboran actualmente.
- Continuar con el apoyo técnico a las cinco (05) Asociaciones de Pequeña Minería organizada instaladas en el área de Pequeña Minería del Proyecto.
- Asumir los costos de mantenimiento, suministros y demás gastos de funcionamiento del Centro Médico Asistencial de las Claritas, el cual servirá tanto al personal del Proyecto como a la comunidad, transformándolo de Ambulatorio Rural tipo II a Ambulatorio Urbano tipo I.

PARA EL AÑO 2003:

- Generación de 50 empleos adicionales a lo largo de lo doce (12) meses del año.
- Construcción de al menos 30 viviendas en la Comunidad local de Santo Domingo.
- Entrenamiento al personal de la Comunidad en manejo de maquinarias y equipos necesarios para las operaciones mineras.
- Desarrollo de Programas Sociales en beneficio de la Comunidad:
    1. **Instalación e integración de plantas de tratamiento de aguas blancas:**
        - Km 88 – Santa Lucia de Inaguay – Las Claritas – Nuevas Claritas – Santo Domingo.
        - Las Manacas – El Granzón – Araymatepuy.
    2. **Construcción de redes de cloacas:**
        - Las Claritas – Nuevas Claritas – Santo Domingo.
    3. **Mejoramiento y pavimentación de la vialidad existente desde Km. 85 hasta Las Cristinas.**

PARA LOS AÑOS SUBSIGUIENTES DE VIGENCIA DEL PRESENTE CONTRATO, CRYSTALLEX continuará con: asistencia técnica a las asociaciones de pequeños mineros instaladas en el área de pequeña minería del Proyecto; cubrir los costos de mantenimiento, suministros y demás gastos de funcionamiento del Centro Médico Asistencial de las Claritas; mantener el programa de becas y pasantías de estudiantes, así como el de entrenamiento de personal; ejecutar las actividades de mantenimiento de la vialidad a la que se refiere el aparte del año 2003.

CLÁUSULA OCTAVA

OBLIGACIONES DE CRYSTALLEX

1.- **CRYSTALLEX** garantiza que las operaciones de la mina objeto del Proyecto "Las Cristinas 4, 5, 6 Y 7", serán llevadas a cabo por personal competente y con experiencia en el área de minería de oro, a cuyo efecto establecerá Programas de Formación y Adiestramiento de personal. De conformidad con el artículo 27 de la Ley Orgánica del Trabajo, el noventa por ciento (90%), por lo menos, tanto de empleados como de obreros durante la ejecución de este contrato deberán ser Venezolanos, salvo las excepciones establecidas en el artículo 28 de la misma Ley. Asimismo, CRYSTALLEX asume a partir de la fecha de suscripción del presente contrato el personal administrativo y obrero que labora en las instalaciones de operación y mantenimiento del Campamento afecto al Proyecto Las Cristinas 4,5,6 y 7 según nómina que suministre LA CORPORACIÓN, marcado con la letra "E".

2.- **CRYSTALLEX** utilizará las tecnologías más avanzadas con el fin de lograr estándares internacionales y costo competitivo. Asimismo, se obliga a que la extracción de mineral de oro se realice apegada a las mejores técnicas en materia de minería para lograr la óptima recuperación del recurso, cuidando conservar el yacimiento y preservar el ambiente, en la ejecución de los trabajos de explotación. **CRYSTALLEX** se ajustará a las previsiones establecidas en el Plan de Producción Anual aprobado por **LA CORPORACIÓN.**

3.- **CRYSTALLEX** está obligada a cumplir con el compromiso de producción y tenor de mineral de oro extraído, de acuerdo a lo establecido en el Plan de Producción Anual, por lo que se compromete a:

3.1.- Adoptar las precauciones y medidas necesarias para prevenir y evitar accidentes de trabajo y tomará especial interés en el cumplimiento de las disposiciones del Ministerio del Trabajo sobre higiene y seguridad industrial, en acatamiento de la normativa legal aplicable.

3.2.- Suministrar los equipos, materiales consumibles y servicios anexos, tales como drenajes, diques, instalaciones de control y distribución eléctrica, aire comprimido, sistema de ventilación, sistemas de bombeo, instalaciones de procesamiento de agua potable, instalaciones de aguas negras, vías internas y externas de comunicación y transporte, comedores y en general todas las instalaciones que opere en el área de la mina.

3.3.- **CRYSTALLEX** es el único patrono del personal asignado a la ejecución de los trabajos objeto de este contrato, por lo cual deberá asumir el pago de todas las obligaciones que deriven de su relación laboral y dará estricto cumplimiento a las disposiciones de las leyes que le sean aplicables.

CRYSTALLEX acepta expresamente relevar a **LA CORPORACIÓN** de cualquier responsabilidad solidaria según lo establezca la Ley Orgánica del Trabajo. En virtud de lo anterior **CRYSTALLEX** se obliga a reembolsar todos los gastos o pagos que **LA CORPORACIÓN** se viere obligada a hacer en razón de demandas de naturaleza laboral que se intentaren en su contra por causa de la solidaridad establecida en los dispositivos legales antes señalados.

3.4.- **CRYSTALLEX** deberá suministrar la documentación técnica a **LA CORPORACIÓN** para la gestión de los permisos ambientales necesarios para la operación de la mina objeto del Proyecto "Las Cristinas 4, 5, 6 y 7". Por su parte **CRYSTALLEX** deberá darle estricto cumplimiento a la normativa ambiental aplicable en la ejecución de los trabajos objeto de este contrato.

3.5.- **CRYSTALLEX** gestionará conjuntamente con **LA CORPORACIÓN** la obtención de todos aquellos permisos de uso de explosivos y otros que estipulen las leyes y reglamentos venezolanos al respecto

3.6.- **CRYSTALLEX** con el apoyo de **LA CORPORACIÓN** deberá obtener los permisos o autorizaciones municipales, estadales o nacionales para su legal operación, si fuere procedente.

3.7.- **CRYSTALLEX** se compromete a contratar según su requerimiento operativo, empresas de servicio venezolanas, preferiblemente empresas locales y regionales, y a comprar insumos y materiales venezolanos para ser utilizados en este proyecto, de conformidad con lo dispuesto en el Decreto Presidencial N° 1.892, de fecha 25 de julio de 2002, publicado en la Gaceta Oficial de la República Bolivariana de Venezuela N° 37.494 del 30 de julio de 2002.

3.8.- **CRYSTALLEX** se obliga a entregarle a **LA CORPORACIÓN**, bajo inventario, al final del período de este contrato, todas las instalaciones y equipos existentes a esa fecha, y en buen estado de funcionamiento, salvo su desgaste normal, que deberá coincidir con el inventario o listado de equipos o instalaciones notificado por **CRYSTALLEX** a **LA CORPORACIÓN** en la oportunidad de su adquisición o construcción, según sea el caso, durante la vigencia de este contrato. A tales fines **CRYSTALLEX** se compromete a entregar a **LA CORPORACIÓN** la lista de los equipos a importar con sus características y especificaciones, incluyendo su valor comercial.

3.9.- **CRYSTALLEX** consignará **LA CORPORACIÓN,** a través del Gerente de enlace, en los primeros siete (7) días de cada mes un informe de actividades realizadas (estudios técnico realizados incluyendo información de campo y producción), asi como cualesquiera otra información que les sea requerida, a fin de darle seguimiento al desarrollo del proyecto.

3.10.- **CRYSTALLEX** se obliga a desistir de cualquier pretensión o acción judicial que pudiera tener contra **LA CORPORACIÓN** y ésta se obliga a su aceptación.

CLÁUSULA NOVENA

OBLIGACIONES DE LA CORPORACIÓN.

1.- **LA CORPORACIÓN** se compromete entregar a **CRYSTALLEX** los estudios técnicos existentes que hayan sido realizados sobre el área a contratar, a fin de que esta realice la Certificación de los mismos y posteriormente elabore el Estudio de Factibilidad.

2.- LA CORPORACIÓN podrá proponer a **CRYSTALLEX** personal técnico especializado que **LA CORPORACIÓN** considere que puede ser apto para el desarrollo de este proyecto y **CRYSTALLEX** queda en libertad de contratar dicho personal sugerido.

3.- **LA CORPORACIÓN** entregará a **CRYSTALLEX** mediante Inventario, anexo marcado **"F"**, al comienzo del período de vigencia de este contrato las instalaciones actuales de la mina objeto del Proyecto "Las Cristinas 4,5 6 y 7" a los fines de este contrato.

4.- **LA CORPORACIÓN** tramitará lo concerniente a la obtención de los permisos ambientales y mineros requeridos para la ejecución de este Proyecto. En todo caso los lapsos que se establecen en el presente contrato no comenzaran a computarse sino a partir de la obtención de estas autorizaciones o permisos.

5.- Todas las notificaciones al MEM objeto de este contrato serán por parte de **LA CORPORACIÓN**

CLÁUSULA DÉCIMA

FIANZAS O GARANTÍAS

1.- **CRYSTALLEX** deberá presentar dentro de los primeros sesenta (60) días, a partir de la firma del contrato, y cada año, fianza bancaria de fiel cumplimiento para la ejecución del contrato, correspondiente al cinco por ciento (5%) del valor de la producción del tiempo que dure la construcción, a ser liberada con el Acta de Inicio de la producción comercial levantada por **LA CORPORACIÓN.** Igualmente, **CRYSTALLEX** deberá mantener vigente póliza de seguro para equipos e instalaciones a fin de cubrir daños tales como: robo, hurto, incendio e inundaciones. También, deberá constituir fianza laboral para garantizar los pasivos laborales que se causen cada año.

2.- **CRYSTALLEX** constituirá a favor del Ministerio del Ambiente y de los Recursos Naturales, antes de iniciar tanto la construcción como la explotación, las fianzas ambientales que garanticen la reparación de los daños ambientales que se pudieren causar con motivo de la construcción y explotación previstos en el Proyecto, a fin de proceder conforme a lo establecido en el artículo 59 de la Ley de Minas.

CLÁUSULA DÉCIMA PRIMERA

SUPERVISIÓN TÉCNICA

1.- **LA CORPORACIÓN** creará una Gerencia Técnica de Enlace, formada por un equipo de profesionales, quienes estarán encargados de la supervisión de la buena marcha de los trabajos, bajo la reponsabilidad de un Gerente de Enlace, de su libre nombramiento y remoción. **LA CORPORACION** entregará por escrito a **CRYSTALLEX**, como resultado de la supervisión, las observaciones o recomendaciones que considere conveniente y **CRYSTALLEX** deberá atenderlas en los términos indicados, salvo que **CRYSTALLEX** tuviere criterios distintos sobre los particulares señalados, los cuales deberá informar de manera razonada a **LA CORPORACION** para su discusión respectiva y llegar a un acuerdo satisfactorio para las partes. Asimismo **CRYSTALLEX** deberá asumir los gastos de remuneración del referido personal de la Gerencia Técnica y le prestará el apoyo logístico necesario: dispondrá de espacio físico con su respectivo mobiliario de oficina y equipo de computación, suministrará el transporte, alojamiento y comida; asi como permitirá el libre acceso al área del Proyecto al personal de esta Gerencia Técnica.

CLÁUSULA DÉCIMA SEGUNDA

PEQUEÑOS MINEROS

CRYSTALLEX se compromete a prestar asistencia técnica, bajo la orientación de **LA CORPORACIÓN**, a grupos de Pequeños Mineros organizados e identificados como: Nuevas Claritas, Siete Estrellas, Los Rojas y La Bolivariana, instaladas en áreas delimitadas dentro del Proyecto Las Cristinas, y cualesquiera otra que se constituya y que sea aprobada por **CRYSTALLEX**, a fin de garantizar buenas prácticas operativas y menor impacto ambiental.

CLÁUSULA DÉCIMA TERCERA

NOTIFICACIONES

Todas las notificaciones que deban darse de conformidad con éste contrato se darán por escrito en idioma castellano y se entregarán personalmente. Las notificaciones deberán enviarse a las siguientes direcciones:

COPORACION VENEZOLANA DE GUAYANA
Edificio CVG – Alta Vista
Puerto Ordaz, Estado Bolívar.
REPUBLICA BOLIVARIANA DE VENEZUELA
Atención: Gral (Div) Francisco José Rangel Gómez
Presidente de la Corporación Venezolana de Guayana.
Teléfono: 0286 9661474 -9661475
Telefax: 0286 9624805

NOMBRE DE CRYSTALLEX
Dirección: Torre Forum, Piso 12, Avenida Principal de las Mercedes con calle Guaicaipuro, Urbanización El Rosal, Municpio Chacao.
Atención : Ing. Luis Felipe Cottin.
Cargo : Presidente de Crystallex de Venezuela, C.A.
Teléfono : 0212-9526061
Telefax : 0212-9525011

Cualquiera de las partes, mediante notificación escrita, podrá designar otro funcionario como destinatario de las notificaciones, así como una nueva dirección para el envío de las notificaciones correspondientes. Todas las notificaciones se tendrán como hechas en la fecha de su recepción por parte del destinatario respectivo.

CLÁUSULA DÉCIMA CUARTA

INCUMPLIMIENTOS

1 - Si durante la ejecución de los trabajos previstos en este contrato, en un periodo de un año, **CRYSTALLEX** no pudiera cumplir con el promedio diario de producción o tenor del mineral extraído contemplado en el Plan de Producción Anual, **CRYSTALLEX** compensará económicamente de manera proporcional a **LA CORPORACION** por los beneficios dejados de percibir.

Para cuantificar este efecto de incumplimiento se contará el año a partir del primer dia de trabajo previsto en el Plan de Producción Anual y para el promedio diario se tomará la producción total del año dividida entre trescientos sesenta y cinco (365) dias.

Se exceptúan de considerarse como incumplimiento las suspensiones de operación por motivos de fuerza mayor, conforme a lo dispuesto en la Cláusula Décima Quinta del presente contrato.

2.- Asimismo, serán considerados como incumplimientos las causales descritas en el Artículo 98 de la Ley de Minas.

3.- De igual modo son motivo de sanción el incumplimiento de las condiciones ambientales emitidas por el Ministerio de Ambiente y de los Recursos Naturales (MARN).

4.- Las causas definidas como Incumplimiento Material en la cláusula Primera de este contrato.

CLÁUSULA DÉCIMA QUINTA

FUERZA MAYOR

Ninguna de las partes será responsable de cualquier incumplimiento de las obligaciones asumidas bajo este contrato, cuando dicho incumplimiento sea el resultado de fuerza mayor, la cual consistirá en cualquier circunstancia más allá del control de cualquiera de las partes que no haya sido razonablemente prevista y superada, y que pueda impedir o demorar excesivamente el cumplimiento de cualquier obligación establecida en el contrato. Tales circunstancias incluyen, pero no estan limitadas, a los hechos de la naturaleza tales como inundaciones, terremotos, vientos huracanados, así como guerras, sedición, epidemia, incendios o cualquier otro de igual magnitud, sino que abarcan asimismo nuevas leyes, decretos, reglamentos, ordenanzas o actos administrativos del gobierno en sus diferentes niveles o ramas del Poder Público emanados de cualquier autoridad pública legalmente competente en la materia correspondiente, siempre que en la ocurrencia de tales hechos la parte afectada haya ejercido el debido cuidado y diligencia para razonablemente controlar, evitar o prevenir el hecho y las consecuencias dañosas del mismo. Cualquiera de las partes, notificará a la otra parte por escrito, en el caso que no pudiesen cumplir algunas de sus obligaciones en razón de fuerza mayor, tan pronto como le sea posible, así como la causa de dicho incumplimiento, debiendo reiniciar el cumplimiento, si fuere el caso, dentro de un periodo razonable después que haya desaparecido la fuerza mayor. Pero en ningún caso y por causa alguna se extenderá la duración de este contrato más allá del periodo establecido más adelante.

CLÁUSULA DÉCIMA SEXTA

RESOLUCIÓN DEL CONTRATO

1.-**LA CORPORACION** y **CRYSTALLEX** podrán acordar la resolución de mutuo acuerdo de éste contrato cuando la circunstancia así lo aconsejen. Acordado un lapso entre las partes para la resolución del contrato ambos se comprometen a cumplir cabalmente con las obligaciones contraídas de acuerdo a este contrato.

2.-En caso de incumplimiento de alguna de las partes, conforme a lo dispuesto en la cláusula Décima Sexta, la parte afectada tendrá derecho a terminar este contrato inmediatamente después de transcurridos noventa (90) días, contados dias a partir de la fecha en que una parte notifique por escrito a la otra, imputándole, en forma razonada el incumplimiento de cualquiera de las obligaciones asumidas en este contrato, siempre que dentro de dicho plazo no se hubiere subsanado el incumplimiento. Si la parte que invoca el incumplimiento considera que este puede ser subsanado antes de los mencionados noventa (90) dias, deberá indicar expresamente a la otra en el escrito de notificación, el plazo razonable en que deba corregir el incumplimiento, con señalamiento de las motivaciones que fundamenten ese plazo. Si el incumplimiento se subsana en un lapso mayor del razonablemente señalado por la parte agraviada, o del lapso aceptado por ésta a proposición de la otra parte, siempre que no excediere el límite máximo de noventa (90) días, la parte que hubiere incumplido pagará a la otra los correspondientes daños y perjuicios ocasionados por el retardo.

Las estipulaciones de este numeral se aplicarán en todos los casos de incumplimiento de este contrato, salvo en los que la propia cláusula establezca el modo y oportunidad de rescisión por incumplimiento y, lo dispuesto en la Clausula Vigésima Cuarta del mismo.

CLÁUSULA DÉCIMA SÉPTIMA

NORMATIVA AMBIENTAL

1.- Será responsabilidad de **CRYSTALLEX** el cumplimiento de las normativas vigentes en materia de conservación, defensa y mejoramiento ambiental, en especial las referidas al control del impacto ambiental de las actividades mineras y la corrección, recuperación y mejoramiento de las áreas intervenidas.

2.- Las actividades mineras que se desarrollen en las parcelas deberán llevarse a cabo de forma racional y científica, con arreglo al principio de desarrollo sostenible, la conservación del ambiente y la ordenación del territorio, conforme a los artículos 5 y 15 de la Ley de Minas.

3.- **CRYSTALLEX** tiene derecho al uso y aprovechamiento racional de las aguas del dominio público siempre y cuando se sujete a las disposiciones ambientales respectivamente. Igualmente, de ser necesario, podrá utilizar las aguas del dominio privado bien a través del establecimiento de servidumbres o por vía de expropiación, siempre que se cumpla con los requisitos establecidos en la Legislación aplicable.

4.- **CRYSTALLEX** deberá preparar el Programa de Manejo Ambiental y **LA CORPORACION** lo revisará, validará y se encargará de los trámites ante en Ministerio del Ambiente y los Recursos Naturales.

CLÁUSULA DÉCIMA OCTAVA

VIGENCIA DEL CONTRATO

1.- Este contrato estará vigente desde la fecha de su firma hasta por un período de veinte (20) años, prorrogable por uno (01) o dos (02) períodos de diez (10) años, previo acuerdo escrito entre las partes, dicha prórroga deberá notificarse con antelación a la vigencia del contrato.

2.- **CRYSTALLEX** se compromete a que faltando un (01) año para la culminación de este contrato, deberá de común acuerdo con **LA CORPORACIÓN** definir y establecer un plan de transferencia de los activos de la mina "Las Cristinas 4,5,6 y 7" y sus operaciones a **LA CORPORACIÓN**.

CLAUSULA DECIMA NOVENA

SOLUCIÓN DE CONFLICTOS

Las dudas y controversias de cualquier naturaleza que pudieran suscitarse con motivo de la ejecución de este contrato y que no puedan ser resueltas amigablemente por las partes, serán decididas por los tribunales competentes de la República Bolivariana de Venezuela, de conformidad con sus leyes, sin que por ningún motivo ni causa puedan dar origen a reclamaciones ante Tribunales extranjeros.

CLÁUSULA VIGÉSIMA

CESIÓN DEL CONTRATO

CRYSTALLEX no podrá ceder, directa o indirectamente, parcial o totalmente sus derechos y/o delegar sus obligaciones en virtud del presente contrato a otra persona natural o jurídica. Cualquier cesión y/o delegación hecha en violación de lo previsto en ésta clausula será nula y no surtirá efecto legal alguno, salvo las sanciones legales que de ello se deriven.

CLAUSULA VIGÉSIMA PRIMERA

DECLARACIONES

1.- Las partes concientes de la imposibilidad de prever todas las contigencias que puedan surgir durante la ejecución del presente contrato, acuerdan que su intención es convenir entre ellas con base a la equidad y sin perjuicios de los intereses de ambas. Si en el curso de la ejecución de este contrato surge alguna desigualdad, perjuicio, o injusticia contra alguna de las partes, éstas de mutuo acuerdo harán los esfuerzos para tomar las acciones que sean necesarias, a efectos de eliminar o subsanar tal desigualdad o perjuicio.

2.- El Ministerio de Energía y Minas ha otorgado a **LA CORPORACIÓN** mediante contrato celebrado en fecha 16 de mayo de 2002, de conformidad con lo establecido en el Decreto No. 1.757 del Presidente de la República de fecha 29 de abril de 2002, publicado en Gaceta Oficial de la República Bolivariana de Venezuela No.37.437 de fecha 07 de mayo de 2002, las áreas denominadas Cristinas 4, 5, 6 y 7 ubicadas en el Municipio Sifontes del Edo. Bolívar para la exploración, extracción y venta del mineral de oro que se encuentra en yacimientos ubicados en estas áreas. Asimismo ha sido autorizado para el uso de los bienes afectos a dichas áreas que pasaron a la República de conformidad con la resolución N° 035 de fecha 06 de marzo de 2002, publicada en la Gaceta Oficial de la República Bolivariana de Venezuela No. 37.400, de fecha 08 de marzo de 2002, por lo tanto no se transfieren derechos de propiedad a **CRYSTALLEX** por efectos de este contrato ni de sus **Anexos.**

3.- El presente contrato se complementa y sostiene material y jurídicamente, además de lo estipulado en este documento con los **Anexos** citados en el texto de este contrato, los cuales pasan a formar parte integrante e indivisible de este contrato.

4.- Se entenderá a los fines de este contrato que del conocimiento técnico, geológico y legal que **CRYSTALLEX** tiene del Proyecto Las Cristinas, está dispuesta "a su propio riesgo y cuenta" a invertir sus recursos humanos, técnicos y financieros para la explotación del yacimiento, sin que tenga nada que reclamar en el presente y en el futuro por los resultados que obtenga en el ejercicio de estas actividades, ya que como profesional especializado en el área minera tomó las previsiones, realizó los estudios pertinentes y pudo prever las situaciones existentes en cuanto a geología, producción, cifras históricas de producción, conformación mineralogía, potenciales y estimaciones de los resultados obtenidos y por obtener. Conforme el Artículo 34 de La **Ley de Minas,** se presume, hasta prueba en contrario, la existencia del mineral y que este es industrial y económicamente explotable; pero con el otorgamiento del contrato no se hace responsable **LA CORPORACIÓN** de la verdad de tales hechos. A estos fines, **LA CORPORACION** y **CRYSTALLEX** deberán verificar la información técnica existente que será entregada por **LA CORPORACION,** dentro del plazo de noventa (90) días contados a partir de la firma del presente contrato, de lo cual se dejará constancia en Acta que se levantará al efecto.

<u>CLÁUSULA VIGÉSIMA SEGUNDA</u>

DISPOSICIONES COMPLEMENTARIAS

1. Las partes elaborarán y suscribirán, dentro del plazo de treinta (30) días hábiles, contados a partir del otorgamiento del presente contrato, Inventario detallado de las instalaciones, bienes y equipos propiedad de la República, existentes en el área de Las Cristinas 4,5,6, y 7 para la fecha de suscripción de dicho inventario, de conformidad a lo establecido en el numeral 3 de la Cláusula Novena de este contrato, el cual se tendrá como parte integrante del mismo.

2. **LA CORPORACION** se compromete, en el caso que le sea otorgada por el **MEM** autorización para la exploración, explotación, comercialización y venta del mineral de cobre existente en el área Las Cristinas 4,5,6, y 7, a celebrar con **CRYSTALLEX** el addendum correspondiente y complementario al presente contrato, a fin de fijar las condiciones en que dichas actividades serán ejecutadas por **CRYSTALLEX**.

3. El presente contrato podrá ser modificado de mutuo acuerdo entre las partes, mediante addendum celebrado al efecto, sin cambiar el espíritu, propósito y razón que los animó a celebrarlo.

<u>CLÁUSULA VIGÉSIMA TERCERA</u>

LEY APLICABLE

Las partes contratantes declaran expresamente que el presente contrato y sus anexos será gobernado por las leyes de la República Bolivariana de Venezuela.

<u>CLÁUSULA VIGÉSIMA CUARTA</u>

RESCISIÓN DEL CONTRATO

Este contrato podrá ser rescindido unilateralmente por **LA CORPORACIÓN** sin indemnización alguna para **CRYSTALLEX**, en caso de darse un retardo en el inicio, paralización de cualquiera de las actividades o incumplimiento contractual por un periodo de un (01) año sin motivo debidamente justificado.

<u>CLAUSULA VIGÉSIMA QUINTA</u>

DOMICILIO

Sin perjuicio de la competencia que corresponde a la Sala Político-Administrativa del Tribunal Supremo de Justicia, para el conocimiento de las controversias relativas a los contratos administrativos, se elige como domicilio especial a la ciudad de Ciudad Guayana, Municipio Caroní del Estado Bolívar a cuyos tribunales deberán someterse.

Se hacen tres (03) ejemplares de un mismo tenor y a un solo efecto, en Ciudad Guayana a los diecisiete (17) días de mes de septiembre del 2.002.

POR LA CORPORACIÓN **POR CRYSTALLEX**

marc [illegible] Pres. CEO

REPUBLICA BOLIVARIANA DE VENEZUELA. DR. PEDRO E. ALFARO. NOTARIO PUBLICO DE LA NOTARIA PUBLICA CUARTA DE PUERTO ORDAZ. MUNICIPIO AUTONOMO CARONI DEL ESTADO BOLIVAR. Puerto Ordaz, Diecisiete (17) De Septiembre de Dos Mil Dos. 192º y 143º. El anterior documento redactado por el Abogado: **FIRELY C. NAVARRO** inscrito en el Inpreabogado bajo el Nº **11121**, fue presentado para su autenticación y devolución según planilla Nº **38890** de fecha: **17-09-2002.** Presente(s) su(s) Otorgante(s) dijo(eron) llamarse: **FRANCISCO JOSE RANGEL GOMEZ Y MARC J. OPPENHEIMER,** Mayor(es) de edad, domiciliado(s) en: **PUERTO ORDAZ, ESTADO BOLIVAR,** de nacionalidad(es): **VENEZOLANO, ESTADOUNIDENSE,** de estado(s) civil(es): Casados, titular(es) de la(s) Cédula(s) de Identidad Nº(s): **2.520.281 Y PASAPORTE Nº 152092004.** Leídole(s) y confrontado el original con sus fotocopias y firmadas éstas y el original en presencia del Notario, el (los) otorgante(s) expuso(ieron): **"SU CONTENIDO ES CIERTO Y MIA(NUESTRAS) LA(S) FIRMA(S) QUE APARECE(N) AL PIE DEL INSTRUMENTO".** El Notario en tal virtud lo declara Autenticado en presencia de los testigos: **YANNINA GUILLÉN** y **GABRIELA RODRIGUEZ,** con Cédula de Identidad Nº **11.995.595** y **11.636.896** Dejándolo inserto bajo el Nº **16** Tomo **86** de los Libros de Autenticaciones llevados en ésta Notaria. El Notario Público que suscribe, hace constar que en el presente acto se dio cumplimiento a lo establecido en el Artículo 78 Ordinal 2 del Decreto con Fuerza de Ley de Registro Público y del Notariado. Así mismo hace constar que tuvo a su vista: 1) Decreto Nº 430, de la **CORPORACIÓN VENEZOLANA DE GUAYANA,** del 29-12-1.960, publicado en la Gaceta Oficial de la Republica de Venezuela Nº 26.445 de fecha 30-12-1.960, siendo su ultima reforma mediante Decreto de Ley Nº 1.531 del 07-11-2001, Publicado en la Gaceta Oficial de la Republica Bolivariana de Venezuela Nº 5.553, el 12-11-2001, el cual goza de las prerrogativas y privilegios que el Fisco Nacional confiere en el Titulo Preliminar de la Ley Orgánica de Hacienda Pública Nacional y está exento del pago de todos los impuestos, tasas y contribuciones conforme lo determinan los artículos 24 y 25 del citado Decreto representada por su Presidente Francisco Rangel Gómez, según designación que hiciere el Ciudadano Presidente de la Republica mediante Decreto Presidencial Nº 1.034, Publicado en la Gaceta Oficial De la Republica Bolivariana de Venezuela Nº 37.054, el 10-10-2000, suficientemente autorizado para este acto conforme a lo establecido en el artículo 36 y 37 del referido Decreto Ley. 2) Resolución Nº 8.700 y Resolución DIR-Nº 8.705 de fechas: 02-09-2002 y 16-09-2002 respectivamente. 3) Resolución de Junta Directiva de CRYSTALLEX INTERNATIONAL CORPORATION, de fecha: 16-09-2002. 4) La Notaria se trasladó y constituyó en la sede de la C.V.G, Alta Vista Puerto Ordaz, hoy a las 1:00 pm horas a petición de parte interesada.

EL NOTARIO PUBLICO LOS OTORGANTES

El Notario Publico quien suscribe hace constar que tuvo a su vista Estatuto Nº 1, Estatutos referidos en general a la realización de los negocios y asuntos de **CRYSTALLEX INTERNATIONAL CORPORATION,** de fecha: 23-01-de 1998.

EL NOTARIO PUBLICO

República Bolivariana de Venezuela
Ministerio del Interior y Justicia
Notaría Pública Cuarta
Municipio Autónomo Caroní - Pto. Ordaz

Dr. PEDRO E. MARCANO
NOTARIO PUBLICO CUARTO
DE PUERTO ORDAZ

República Bolivariana de Venezuela
Ministerio del Interior y Justicia
Notaría Pública Cuarta
Municipio Autónomo Caroní - Pto. Ordaz

I, Diana Blachitz, a certified public translator in and for the Republic of Venezuela in the English language, pursuant to authorization published in Official Gazette of the Republic of Venezuela number 35.986, of June 21, 1996, registered before the Principal Public Registry Office of the Federal District on July 1, 1996, under number 2, page 2, tome 3, and registered before the Court of First Instance in Civil, Mercantile and Transit matters of the Metropolitan Area of Caracas, on November 6, 1996, DO HEREBY CERTIFY that the following is a verbatim translation of the attached document submitted to me for its translation into English reads as follows:

LOGO
MINISTRY OF INTERIOR AND JUSTICE
GENERAL DIRECTION OF REGISTRIES AND NOTARIES

FOURTH PUBLIC NOTARY OF PUERTO ORDAZ

SEAL
(Bolivarian republic of Venezuela
Ministry of Interior and Justice
Fourth Notary Public
Autonomous Municipality of Caroní – Puerto Ordaz)

CRYSTAL COMMERCIAL CENTRE – 1ST FLOOR – OFFICES 110 AND 111
TELEPHONE (0286) 962.40.57
Alta Vista - Puerto Ordaz – Estado Bolivar

SIGNATORIES: Francisco Rangel Gómez and Marc J. Oppenheimer. **TOME**: 86.
NUMBER: 16. **APPLICATION NUMBER:** 38890. **DATE:** 9 – 17 - 02

<u>MINING OPERATION AGREEMENT</u>
<u>CRISTINA 4, CRISTINA 5, CRISTINA 6 and CRISTINA 7</u>

Between **Corporación Venezolana de Guayana**, an Autonomous Institute created through Decree # 430 of December 29, 1960, published in the Official Gazette of the Republic of Venezuela # 26.445 of December 30, 1960, reformed through Decree 1.531 of November 7, 2001, published in the Official Gazette of the Bolivarian Republic of Venezuela # 5553 of November 12, 2001, which enjoys the prerogatives and privileges granted by Law to the Republic, and is exempt from the payment of all taxes, tariffs and contributions in accordance to articles 24 and 25 of the above referred decree, represented hereat by its President Francisco José Rangel Gómez, Venezuelan, of legal age, domiciled in Ciudad Bolívar, bearer of identity card # V-2.520.281, of this domicile, whose designation was made through Decree 1.034 of October 10, 2000, published in the Official Gazette of the Bolivarian Republic of Venezuela # 37.054, of October 10, 2000, hereinafter referred to as the "CORPORATION", in execution of Resolution 8.700 and Resolution DIR-N° 8.705, of September 2, 2002 and September 16, 2002, respectively, as one party; and as the other party CRYSTALLEX INTERNATIONAL CORPORATION, a company domiciled in the Province of British Columbia of Canada, continued under the Canada Business Corporations Act as Corporation # 345631-5, through certificate of January 23, 1998, represented hereat by its President, Marc J. Oppenheimer, a citizen of the United States of America, bearer of Passport # 152092004, duly authorized for this act in accordance to Resolution of the Board of Directors of September 16, 2002, hereinafter referred to as "CRYSTALLEX", each of the parties to be referred to also as "Party", and jointly referred to as the "Parties", it has been agreed to celebrate this Agreement of Mining Operation of Cristinas 4, 5, 6 and 7, based on the following:

CONSIDERING:

1- That the Corporación Venezolana de Guayana is an Autonomous Institute with juridical personality distinct and independent from the Republic, ascribed to the Ministry of the Secretary of the Presidency, which has as objectives to promote the balanced development of the Guayana Region, and to do the works of exploration, prospecting, and exploitation of the mines and deposits that to such effect the Ministry of Energy and Mines may grant it.

2- That between the Ministry of Energy and Mines and the Corporación Venezolana de Guayana was entered an agreement of May 16, 2002, where the Ministry authorizes the Corporation the execution of the works of exploitation, extraction and sale of the gold mineral that is in the deposits comprised in the areas of the concessions denominated Cristina 4, Cristina 5, Cristina 6 and Cristina 7, located in the Municipality of Sifontes of the State of Bolivar, referred to "PROJECT LAS CRISTINAS 4, 5, 6 and 7", hereinafter the "Project".

3- That the Ministry of Energy and Mines authorized the Corporación Venezolana de Guayana, through the above agreement, for the use of the assets affected to said concessions that reverted to the Republic in accordance to Resolution # 035 of March 6, 2002, published in the Official Gazette of the Bolivarian Republic of Venezuela # 37.400, of March 8, 2002.

4- That to the effects of the adequate fulfillment of the above referred agreement, the Corporación Venezolana de Guayana may celebrate agreement for the DESIGN, CONSTRUCTION AND OPERATION with third parties, through previous notice to the MEM.

5- That previous to the start of activities of the project all environmental regulations must be fulfilled.

FIRST CLAUSE

INTERPRETATION

1.1 **Definitions**. In this Contract, unless expressly established otherwise, the following words and phrases shall have the meaning established hereunder:

"Contract", shall mean the present Contract of **mining operation** with its Annexes and Modifications made in writing by the Parties.

"Effective Date", means the date of subscription of the present Agreement by the Parties before a Notary Public.

"Material Breach", means any act or omission by any of the Parties that causes an essential prejudice in: (i) the business, the result of the operation or the financial conditions of the other Party; (ii) the capacity of the other Party to fulfill with its obligations foreseen in this Contract in a timely and thorough manner, in accordance to the terms herein foreseen; the validity or force of the Contract or the rights of the other Party.

"Law of Mines", means the Decree with Rank and Force of Law of Mines, published in the Official Gazette # 5.382 of September 28, 1999, as well as its Regulations, decrees, resolutions and other applicable laws.

"MEM", means the Ministry of Energy and Mines.

"Parties" means in plural both signatory Parties of the present Contract, that is the Corporación Venezolana de Guayana and CRYSTALLEX, and in singular (Party) each of them.

"Environmental Permits", means the Permit of Affectation of Resources of gold, copper and other minerals granted by the Ministry of Environment and Renewable Resources; as well as any other permit or environmental authorization that said Ministry or another competent authority may require or is required by Law, for the activities in Las Cristinas.

"Annual Production Plan" refers to the document presented annually by CRYSTALLEX for the consideration and approval of the CORPORATION, which includes in its contents an estimate over the following issues: -investments, -production volume, -processing capacity, -operative costs, - logistics, -number of workers, -gold production, -price of gold, -income from sales, -and any other elements related to the development and execution of the project.

"monthly Price of Gold", means the monthly average of the price of gold, which shall be calculated dividing the sum of all "London Bullion Market Association P.M.BID Gold Fix prices" (which sets the closing price of each mineral for that day per Troy ounce of refined gold), reported for the correspondent month, by the number of days for which the referred prices were established.

"Production", refers to the amount of gold mineral processed per day, expressed in tons per day (tn/day).

"Grade", means the content of gold in the gold material obtained from the deposit, measured at the entry of the mill of the processing plant, expressed in grams per dry tons (gr/tn).

SECOND CLAUSE

OBJECT OF THE CONTRACT

2.1 The CORPORATION, in accordance to the authorization issued by the MEM, through contract of May 16, 2002, authenticated before the Second Notary Public of Puerto Ordaz, Municipality of Caroní, State of Bolivar, recorded in the Book of Authentications under # 8, tome 82, of June 13, 2002, and First Notary Public of the Municipality of Baruta, State of Miranda, recorded in the Book of Authentications under number 28, tome 40, on June 19, 2002, hereinafter referred to as Contract CVG-MEM, which is annexed and forms an indivisible part of the present Contract, authorizes CRYSTALLEX, and the latter so accepts, to make all the investments and works necessary to reactivate and execute in its totality the Mining Project of CRISTINA 4, CRISTINA 5, CRISTINA 6 and CRISTINA 7, design, construct the plant, operate it, process the gold material for its subsequent commercialization and sale, and return the mine and its installations to the CORPORATION upon the termination of the Contract, in accordance to article 102 of the Law of Mines. The project Las Cristinas 4, 5, 6 and 7 is located in the Municipality of Sifontes of the State of Bolivar of the Bolivarian Republic of Venezuela, which location is described in the map that is annexed identified as Annex "A", which signed by CRYSTALLEX and the CORPORATION, forms part of this Contract. In accordance to this map referred to in the previous provision, the CORPORATION authorizes CRYSTALLEX to exploit and extract gold in the area of Cristina 4, 5, 6 and 7, within the following limits defined by the closed polygonal and vertex expressed with coordinates U.T.M. (Universal Transversal Mercator):

The area denominated Cristina 4. Total surface of one thousand hectares (1000 Ha).

POINT	NORTH (m)	EAST (m)
BOT – 1	683,208.00	666,284.00
BOT – 2	685,208.00	666,284.00
BOT – 3	685,208.00	671,284.00
BOT – 4	683,208.00	671,284.00

The area denominated Cristina 5. Total surface of nine hundred thirty nine (939 Ha).

POINT	NORTH (m)	EAST (m)
BOT – 1	685,208.00	671,284.00
BOT – 2	685,208.00	668,340.00
BOT – 3	687,070.00	668,340.00
BOT – 4	687,070.00	673,340.00
BOT – 5	685,208.00	673,340.00

The area denominated Cristina 6. Total surface of nine hundred forty four hectares and two areas (944,2 Ha).

POINT	NORTH (m)	EAST (m)
BOT - 1	685,208.00	668,340.00
BOT - 2	685,208.00	663,340.00
BOT - 3	687,070.00	663,340.00
BOT - 4	587,070.00	668,340.00

The area denominated Cristina 4. Total surface of one thousand two hectares (1002 Ha).

POINT	NORTH (m)	EAST (m)
BOT - 1	687,070.00	663,340.00
BOT - 2	689,070.00	663,340.00
BOT - 3	689,070.00	668,340.00
BOT - 4	687,070.00	668,340.00

The works to be made by CRYSTALLEX for the design, construction and start of operation and exploitation of the mine object of the Project Las Cristinas 4, 5, 6 and 7" comprise the geological-mining planning and the supply of all the materials, work force, machinery, equipment, replacements, and other material resources or necessary elements for the development, exploitation, processing, commercialization and sale of the gold mineral in the deposits of the mine, in accordance to the terms of this Contract.

2.2 FEASIBILITY STUDY

2.2.1- CRYSTALLEX agrees to present the CORPORATION the economical-financial technical Feasibility Study, within a period no longer than one (1) year counted from the date of the signature of this agreement, for its analysis, consideration and approval before the start-up of works. During this period CRYSTALLEX shall maintain a minimum of field activity that permits to generate employment in the surrounding communities to the area of the Project.

2- The Feasibility Study must respond to the objectives established in this Contract and to the benefit of both Parties. The approval of this Feasibility Study must exist through separate writ which shall form an indivisible part of this Contract as Annex B.

<u>THIRD CLAUSE</u>

INVESTMENT PROGRAM

CRYSTALLEX agrees to make the necessary investment for the reactivation and execution of the mining Project Las Cristinas 4, 5, 6 and 7, estimated in accordance to the Feasibility Study approved by the CORPORATION for which CRYSTALLEX shall present the CORPORATION, at the same opportunity and as part of the Feasibility Study referred to in the previous clause, a program and/or chronogram of disbursement and execution of the investments, as well as the sources of financement and its conditions.

This program and/or chronogram of investment shall be approved and subscribed by CRYSTALLEX and the CORPORATION, through separate document that shall form an integral part of this Contract as Annex C.

<u>FOURTH CLAUSE</u>

EXPLOITATION PLANS

1- CRYSTALLEX shall present the CORPORATION the Plans of Exploitation for the Life of the Project and the Yearly Exploitation Plans in detail. Both the Plans of Exploitation for the Life of the Project as well as the annual plans must be approved in writing by the CORPORATION for their implementation.

Said Programs of Investment and the Plans of Exploitation must contain the necessary technical information, as requested by the CORPORATION, which may require at any moment from CRYSTALLEX additional information or may propose modifications or adjustments that it may consider reasonably necessary.

2- CRYSTALLEX must specify in these Plans the volumes of excavation of the waste and the ore, the disposal of waste, handling of effluents, environmental protection, industrial security and any other aspect that the CORPORATION considers pertinent, which it will communicate to CRYSTALLEX with sufficient anticipation, depending on the technical characteristics of the required information.

<u>FIFTH CLAUSE</u>

PRODUCTION VOLUME

1- CRYSTALLEX agrees to start production of the mining project Las Cristinas 4, 5, 6 and 7" within the period of time defined in Clause Nine of the Contract CVG-MEM, entered May 16, 2002.

2- CRYSTALLEX agrees to extract annually from the mine object of the project Las Cristinas 4, 5, 6 and 7, an average daily volume of gold mineral present, in accordance to the Annual Production Plan approved between the Parties, which will become part of this Contract as Annex D.

3- CRYSTALLEX agrees to process the volume of gold mineral specified in the Annual Production Plan, at the plant that it shall install according to the Project, seeking to incorporate the highest quantity of added value.

4- CRYSTALLEX shall exploit and extract the waste material that it is not able to deposit in the mine and shall place it in a site to be prepared in accordance with environmental regulations.

SIXTH CLAUSE

ECONOMICAL COMPENSATION

1- CRYSTALLEX shall make to the CORPORATION the following obligatory payments for services rendered:

. Initial Payment: The amount of FIFTEEN MILLION DOLLARS OF THE UNITED STATES OF AMERICA (US$ 15,000,000.00), as eight per cent (8%) of the value of the investments made in the Project, such as: reports, digitalized information, camp, perforations, which payment shall be made by CRYSTALLEX within five (5) working banking days following the granting of the present Contract, subject to previous notification of instructions by the CORPORATION.

. Minimum monthly payment for royalty, calculated on the commercial value of the gross monthly production in percentage terms, to be paid upon termination of the construction phase:

Price US$/ Troy Ounce	%
Less than 280 $/ounce	1.00
More or equal to 280$/ounce and less than 350$/ounce	1.50
More or equal to 350$/ounce and less than 400$/ounce	2.00
More than 400$/ounce	3.00

These royalties are apart from the Exploitation Tax established in the Law of Mines, which will be paid by CRYSTALLEX to the Republic and are subject to revision in accordance to the laws that regulate such matter.

SEVENTH CLAUSE

SPECIAL ADVANTAGES

CRYSTALLEX agrees to fulfill the following Employment Plan and Program for the Social Development of the Region:

FOR THE YEAR 2002:

- Contracting of 50 employees and assumption of the costs of maintenance of the installations and the 24 persons currently working there.

- Continuance of the technical assistance to the five (5) Small Miners Associations organized and installed in the area for Small Mining of the Project.

- Assumption of the maintenance, supply and other expenses for the functioning of the Center of Medical Assistance of Las Claritas, which will serve both the personnel of the Project as well as the community, transforming it from Ambulatory Rural Type II to Ambulatory Urban Type I.

FOR THE YEAR 2003:

- Contracting of 50 additional employees throughout the twelve (12) months of the year.

- Construction of at least 30 homes in the local community of Santo Domingo.

- Training of personnel at the community in the handling of machinery and equipment necessary for mining operations.

- Development of Social programs for the benefit of the community:

    1. Installation and integration of drinking water treatment plants:
        . Km 88 – Santa Lucia de Inaguanay – Las Claritas – New Claritas - Santo Domingo.
        . Las Manacas – El Granzón – Araymantepui.

    2. Construction of sewage systems:
        . Las Claritas – Nuevas Claritas – Santo Domingo.

    3. Improvement and pavement of the roads existent between Km 85 to las Cristinas.

FOR THE YEARS SUBSEQUENT DURING THE FORCE OF THE PRESENT CONTRACT, CRYSTALLEX shall continue with: technical assistance of the small miners installed in the area for small mining of the project; cover the costs of maintenance , supply and other expenses for the functioning of the Medical Center of Las Claritas; maintenance of scholarship and internships of students, as well as training of personnel; execution of activities of maintenance of the road referred to in the above paragraph year 2003.

EIGHTH CLAUSE:

OBLIGATIONS OF CRYSTALLEX

1- CRYSTALLEX shall guarantee that the operations of the mine object of the Project “Las Cristinas 4, 5, 6 and 7” shall be carried out by competent personnel with experience in gold mining, to which effect it shall establish training programs for personnel. In accordance to article 27 of the Organic Labor Law of the Bolivarian Republic of Venezuela ninety per cent (90%) at least of both employees and workers during the execution of this Contract must be Venezuelans, save for the exceptions established in article 28 of said Organic Law. Furthermore, CRYSTALLEX shall contract as of the date of signature of this Contract the administrative and work personnel that currently labors at the installations in operation and maintenance of the Camp of the project Las Cristinas 4, 5, 6 and 7, in accordance to the payroll that the CORPORATION shall supply, as Annex E.

2- CRYSTALLEX shall use the most advanced technology with the purpose of reaching international standards and competitive prices. Moreover, it agrees that the extraction of the gold mineral be made according to the best techniques in mining to reach maximum recuperation of the resource, taking care of conserving the deposit and preserving the environment, in the execution of the exploitation works. CRYSTALLEX shall comply with the requirements established in the Annual Production Plans approved by the CORPORATION.

3- CRYSTALLEX is obliged to fulfill the obligations of production and grade of the mineral of gold in accordance to the Annual Production Plan, so it agrees to:

3.1- Adopt the precautions and measures necessary to prevent and avoid work accidents and shall take special interest in the fulfillment of the dispositions of the Ministry of Labor regarding hygiene and industrial security, and compliance with the applicable legal regulations.

3.2- Supply the equipment, consumable materials and related services such as drainage, dikes, electric control and distribution installations, compressed air, ventilation system, pump systems, drinking water processing installations, sewer installations, internal and external systems for communication and transport, dining rooms, and in general all the installations that it shall operate at the mine site.

3.3- CRYSTALLEX is the sole employer of the personnel assigned to the execution of the works object of this Contract, so it shall pay for all obligations derived from the labor contractual relationship and shall strictly comply with the provisions of the applicable laws.

CRYSTALLEX expressly accepts to relieve the CORPORATION of any responsibility as established in the Organic Labor Law. By virtue of this provision, CRYSTALLEX agrees to reimburse all expenses or payments that the CORPORATION may be obliged to make due to labor lawsuits against it based on its shared responsibility from the legal regulations above mentioned.

3.4- CRYSTALLEX shall supply the technical information to the CORPORATION for the processing of the environmental permits necessary for the operation of the mine "Cristina 4, 5, 6 and 7". For its part, CRYSTALLEX shall strictly comply with the applicable environmental regulations in the execution of the works object of this Contract.

3.5- CRYSTALLEX shall participate jointly with the CORPORATION in the obtaining of all the permits for the use of explosives and any other required by Venezuelan Law and regulations in this respect.

3.6- CRYSTALLEX with the backing of the CORPORATION shall obtain the municipal, state and national permits for its legal operation, if these should be required.

3.7- CRYSTALLEX agrees to contract according to its operative requirements Venezuelan service companies, preferably regional and local companies, and to purchase Venezuelan consumables and materials to be used in this project, in accordance to presidential Decree # 1892 of july 25, 2002, published in the Official Gazette of the Bolivarian Republic of Venezuela # 37.494 of July 30, 2002.

3.8 CRYSTALLEX agrees to give the CORPORATION, under inventory, at the end of the period of this Contract, all the installations and equipment existent to this date, and good functioning state, which must coincide with the inventory or list of equipments and installations notified by CRYSTALLEX to the CORPORATION in the opportunity of their acquisition or construction, according to the case, during the force of this Contract. To this purpose CRYSTALLEX agrees to give the CORPORATION the list of the equipments to be imported with their characteristics and specifications, including their commercial value.

3.9 CRYSTALLEX shall present during the first seven (7) days of each month a report of carried out activities (technical studies made including information from the field and production), as well as any other information required from it, in order to follow through the development of the project.

3.10 CRYSTALLEX agrees to desist of any pretension or judicial action it has against the CORPORATION, and the CORPORATION agrees to accept it.

NINTH CLAUSE

OBLIGATIONS OF THE CORPORATION

1- The CORPORATION agrees to give CRYSTALLEX the Studies made over the area of the Contract, so that it may do the Certification of the same and subsequently elaborate the Feasibility Study.

2- The CORPORATION may propose CRYSTALLEX specialized technical personnel that the CORPORATION may consider apt for the development of this project and CRYSTALLEX is in liberty to contract said required personnel, as it deems convenient.

3- The CORPORATION shall give CRYSTALLEX under inventory identified Annex F, at the beginning of the duration of this Contract, the installations currently existing at the mine object of the project "Las Cristinas 4, 5, 6 and 7" for the purposes of this Contract.

4- The CORPORATION shall obtain the environmental and mining permits required for the execution of this Project. In any event the periods contemplated in this Contract shall not start counting until the permits have been obtained.

5- All notices to the MEM object of this Contract shall be made by the CORPORATION.

TENTH CLAUSE

BONDS AND GUARANTIES

1- CRYSTALLEX shall present within sixty (60) days from the signature of the Contract, and each year, a bank bond of performance of the execution of the Contract, correspondent to 5% of the value of the production for the duration of construction, to be liberated with the act of initiation of commercial production by the CORPORATION. Moreover, the CRYSTALLEX shall maintain an insurance policy for equipment and installations in order to cover damages such as: theft, fire and inundations. Also, the Operator shall constitute a labor bond to guarantee the labor obligations of each year.

2- CRYSTALLEX shall present in favor of the Ministry of Environment and Renewable Resources, before both construction and exploitation, the environmental bonds that guaranty the reparation of environmental damages that could be caused by construction and exploitation of the Project, in order to proceed in accordance to article 59 of the Law of Mines.

ELEVENTH CLAUSE

TECHNICAL SUPERVISION

1- The CORPORATION shall create a Technical Liaison Office formed by a team of professionals, to be in charge of the supervision of the works, under the responsibility of the Liaison Manager, of its free designation and removal. The CORPORATION shall present in writing to CRYSTALLEX, as a result of this supervision, the observations or recommendations it may deem convenient and CRYSTALLEX shall comply with them in the terms indicated, safe when CRYSTALLEX should have a different criteria over the matters at hand, which it will inform with motivation to the CORPORATION for the correspondent discussion and reach a satisfactory agreement for the Parties. Moreover, CRYSTALLEX shall pay the remuneration expenses of the referred personnel of the Technical Office and shall render it logistic assistance: it shall put at its disposal a physical space with the respective office furniture and computer equipment, supply its transport, lodging and food; and shall permit the personnel of the Technical Office free access to the area of the Project.

CLAUSE TWELVTH

SMALL MINERS

CRYSTALLEX agrees to render technical assistance, under the supervision of the CORPORATION, to organized groups of small miners identified as: Nuevas Claritas, Siete Estrellas, Los Rojas y La Bolivariana, installed in limited areas within the Project Cristinas, and any other that may be created and be approved by CRYSTALLEX, in order to guaranty good operative practices and lesser environmental impact.

CLAUSE THIRTEENTH

NOTICES

All notifications that must be made under this Contract shall be made in Spanish and shall be presented in person. The notifications must be sent to the following addresses:

CORPORACIÓN VENEZOLANA DE GUAYANA
Edificio CVG – Alta Vista
Puerto Ordaz, Estado Bolívar
Republica Bolivariana de Venezuela
Atention: Gral (Div.) Francisco Rangel Gómez
Presidente de la Corporación Venezolana de Guayana
Telephone: 0286 9661474 – 966 1475

CRYSTALLEX INTERNATIONAL CORPORATION:

Address: Torre Forum, piso 12, Avenida principal de Las Mercedes con Calle Guaicaipuro, Urbanización El Rosal, Municipio Chacao.
Atention: Ing Luis Felipe Cottin
President of Crystallex de Venezuela, C.A.
Telephone: 0212-952.6061
Fax: 0212-952.5011

Any of the Parties, through written notice, may designate another functionary to receive notices, as well as a new address for the correspondent notices. All notices shall be deemed to have been made upon reception by the addressee.

CLAUSE FOURTEENTH

BREACH OF CONTRACT

1 If during the execution of the works foreseen in this Contract, during a period of one year, CRYSTALLEX did not fulfill the daily production or grade average of the extracted mineral, contemplated in the Annual Production Plan, CRYSTALLEX shall compensate economically in a proportionate manner the CORPORATION for lost profits.

To quantify the effect of this breach of contract, the year will be counted from the first day of work foreseen in the Annual Production Plan, and for the daily average the production to be taken into account shall be that of the year divided into three hundred sixty five (365) days.

Are exempted from being considered as breach the suspensions of operation due to force majeure, in accordance to the provisions in clause Fifteenth of this Contract.

2. Shall be also considered as breach of contract the causes described in article 98 of decree 295 with rank and force of Law.

3. Same treatment shall be applied to any violations of the environmental conditions set by the Ministry of Environment and Renewable Resources (MARNR)

4. The causes defined as material breach in the First Clause of this Contract.

CLAUSE FIFTEENTH

FORCE MAJEURE

None of the Parties shall be responsible for any non-fulfillment of their obligations under this Contract, when said non-fulfillment is the result of force majeure, which shall consist in any circumstance out of the control of any of the Parties that could not have been reasonably foreseen and overcome, and that may impede or slow excessively the fulfillment of the obligations established in this Contract. Said circumstances include, but are not limited to the acts of nature such as inundations, earthquakes, hurricane winds, and any other of such magnitudes, but also include new laws, decrees, regulations, municipal regulations, or administrative acts by the Government at its different levels or branches of the Public power emanated from any public authority legally competent in the correspondent matter, on condition that upon these acts the affected Party has exercised due care and diligence to reasonably control, avoid or prevent the act and its damaging consequences. Any of the Parties shall notify the other Party in writing, in the case that it may not be able to comply with any of its obligations due to force majeure, as soon as possible, describing the cause of said non-fulfillment and shall reinitiate the fulfillment, if that is the case, within a reasonable period of time after force majeure has disappeared. But in no case and for no reason the duration of the Contract may be extended further than the period hereinafter established.

CLAUSE SIXTEENTH

TERMINATION OF THE CONTRACT

1- The CORPORATION and CRYSTALLEX may mutually agree the termination of this Contract when the circumstances so require. Within a period of time to be agreed by the Parties for the resolution of the Contract, both agree to wholly fulfill the obligations under this Contract.

2- In the case of breach by any of the Parties, under clause Sixteenth of this Contract, the affected Party shall have the right to terminate this Contract immediately after ninety (90) days from the date in which the Party notifies the other in writing, of non-fulfillment of any obligations under this Contract, on condition that within such period of time said breach has not been corrected. If the Party that notifies of the breach considers that it can be corrected before the ninety (90) days mentioned, it must expressly indicate to the other Party in the notification the reasonable period in which the breach of contract must be corrected, with sufficient motivation on which such period is based. If the breach of contract is corrected in a period longer than that reasonably expressed by the aggravated Party, or longer than the period accepted by the latter upon proposal by the aggravating Party, on condition that it not exceed ninety (90) days, the Party that has violated the Contract shall pay the correspondent damages caused by the delay.

The stipulations in this clause shall apply in all cases of breach of contract, except on those cases in which the contract foresees a specific manner and opportunity for the termination of the contract, and the provisions in clause twenty fourth of this contract.

CLAUSE SEVENTEENTH

ENVIRONMENTAL REGULATIONS

1- Shall be the responsibility of CRYSTALLEX the fulfillment of the regulations in force regarding conservation, defense and improvement of the environment, specially those referred to the control of environmental impact of mining activities and the correction, recuperation and improvement of the intervened areas.

2- The mining activities that are developed in the areas shall be carried out in a rational and scientific manner in accordance to the principle of sustained development, the conservation of the environment and the ordering of the territory, in accordance to articles 5 and 15 of the Law of Mines.

3.- CRYSTALLEX shall have the right to use and take advantage of the waters of the public domain on condition that it do so subject to the environmental dispositions in this matter. Moreover, should it be necessary it may use the waters of private domain be it through rights of use or expropriation, on condition that it fulfills the requisites of the applicable legislation.

4.- CRYSTALLEX shall present the program of Environmental Management and the CORPORATION shall review it, validate it, and shall be in charge of the activities before the Ministry of Environment and Renewable Resources.

CLAUSE EIGHTEENTH

DURATION OF THE CONTRACT

1.- This Contract shall have a duration from its date of signature for a period of twenty (20) years, extendable for one (1) or two (2) periods of ten (10) years, previous agreement of the Parties, said extensions shall be notified in anticipation of the force of the Contract.

2. CRYSTALLEX agrees that, one (1) year before the culmination of this Contract, it shall reach an agreement with the CORPORATION in order to define and establish a transfer plan of the assets of the mine "Las Cristinas 4, 5, 6 and 7" and its operations to the CORPORATION.

CLAUSE NINETEENTH

SOLUTION OF CONFLICTS

The doubts and controversies of any nature that could arise from the execution of this Contract and that may not be resolved in an amicable manner by the Parties, shall be decided by the competent tribunals of the Bolivarian Republic of Venezuela, in accordance to its laws, and they may not give origin to reclamations before foreign tribunals.

CLAUSE TWENTIETH

ASSIGNMENT OF THE CONTRACT

Crystallex may not assign, directly or indirectly, partially or totally its rights and/or delegate its obligations by virtue of this Contract to another natural or juridical person. Any Assignment and/or delegation made in violation of this clause shall be null and without legal effects, save for the legal sanctions that may apply.

CLAUSE TWENTY FIRST

DECLARATIONS

1. The Parties, conscious of the impossibility of foreseeing all of the contingencies that may arise during the execution of this Contract, agree that their intention is to agree among themselves according to equity and without prejudice to their correspondent interests. If during the course of the execution of this agreement an inequality prejudice or injustice arises against any of the Parties, both by mutual agreement shall carry out the efforts to take the necessary actions, with the purpose of eliminating or correcting such inequality or prejudice.

2. The Ministry of Energy and mines has granted the CORPORATION through contract entered on May 16, 2002, in accordance to the provisions of decree 1757 of the President of the Republic of April 29, 2002 published in the Official Gazette of the Bolivarian Republic of Venezuela # 37.437 of May 7, 2002, the areas Cristina 4, 5, 6 and 7 located in the Municipality of Sifontes in the State of Bolivar for the exploration, extraction and sale of the mineral of gold that is deposited in these areas. Furthermore, it has been authorized for the use of the assets affected in said areas that were reverted to the Republic in accordance to Resolution 035 of March 6, 2002, published in the Official Gazette of the Bolivarian Republic of Venezuela # 37.400, of March 8, 2002, so no property rights are hereby transferred to CRYSTALLEX for the effects of this Contract and its Annexes.

3 The present Contract complements itself and sustains itself materially and juridically, apart from the provisions in this document with the Annexes mentioned in the text of this Contract, which form an integral and indivisible part of this Contract.

4- Shall be understood for the effects of this Contract that from the technical, geological and legal knowledge that CRYSTALLEX has of the project Las Cristinas, it is disposed "at its own risk and account" to invest its human, technical and financial resources for the exploitation of the deposit, without having the right to claim in the present or the future for the results that it obtains from these activities, since as a professional specialized in mining it has taken the previsions, made the pertinent studies and was able to foresee the existent situations related to geology, production, historical numbers of production, mineralogy conformation, potentials and estimates of the results obtained and to be obtained. In accordance to Article 34 of the Law of Mines, it is presumed, until proof to the contrary, the existence of the mineral and that it is industrial and economically exploitable; with the granting of this Contract the CORPORATION is not responsible for the truth of such facts. To such effects, the CORPORATION and CRYSTALLEX shall verify the technical information existent that shall be presented by the CORPORATION, within a period of ninety (90) days counted from the date of signature of the present Contract, to be certified in writing.

CLAUSE TWENTY SECOND

COMPLEMENTARY PROVISIONS

1. The Parties shall elaborate and subscribe, within a period of thirty (30) working days, counted from the date of signature of this Contract, a detailed inventory of the installations, assets, and equipment property of the Republic, existing in the area of Cristinas 4,5, 6 and 7 for the date of subscription of said inventory, in accordance to the provisions of numeral 3 of clause nine of this Contract, which will form an integral part of this Contract.

2. The CORPORATION agrees, in the case that the MEM it the authorization for the exploration, exploitation, commercialization and sale of the mineral of copper existent in the area Las Cristinas 4,5,6 and 7, to celebrate with CRYSTALLEX the correspondent addendum and complementary to the present Contract, in order to establish the conditions in which said activities shall be carried out by CRYSTALLEX.

3. The present Contract may be modified by the Parties by mutual agreement, through addendum entered to such effect, without changing the spirit, purpose and reason that moved them to enter it.

CLAUSE TWENTY THIRD

APPLICABLE LAW

The Parties agree expressly that the present Contract and its annexes are subject to the Laws of the Bolivarian Republic of Venezuela.

CLAUSE TWENTY FOURTH

RESCITION OF THE CONTRACT

This Contract may unilaterally rescinded by the CORPORATION without indemnity for CRYSTALLEX, in the case of delay in the beginning, suspension of any of its activities or contractual breach for a period of one (1) year without justified motive.

CLAUSE TWENTY FIFTH

DOMICILE

Without prejudice to the competence of the Administrative-Political Chamber of the Supreme Tribunal of Justice, for the review of the controversies related to administrative contracts, the Parties choose as special domicile the city of Ciudad Guayana, Municipality Caroni, State of Bolivar, to which tribunals they agree to submit.

Three (3) originals of the same content and single effect are made in the city of Ciudad Guayana on the seventeenth (17) day of September of the year 2002.

_(illegible signature)______	___(illegible signature)______
BY THE CORPORATION	BY CRYSTALLEX"

BOLIVARIAN REPUBLIC OF VENEZUELA. DR. PEDRO E. ALFARO. NOTARY OF THE FOURTH NOTARY PUBLIC OF PUERTO ORDAZ, AUTONOMOUS MUNICIPALITY OF CARONI, BOLIVAR STATE. Puerto Ordaz, Seventeen (17) of September of two thousand two. 192° and 143°. The afore document drafted by

attorney FIRELY C. NAVARRO, Bar number 11121, was presented for its authentication and devolution according to application number 38890 of September 17, 2002. Its signatories, present before me, said their names were: FRANCISCO JOSÉ RANGEL GÓMEZ and MARC J. OPPENHEIMER, of legal age, domiciled in: PUERTO ORDAZ, BOLIVAR STATE, of nationality: VENEZUELAN AND OF UNITED STATES, of civil status married, bearer of Identity Card number 2.520.281 and PASSPORT N° 152092004. Having read the original and confronted it with its copies, having signed all of them before the Notary, the signatories declared: "ITS CONTENTS ARE TRUE AND THE SIGNATURES AT THE BOTTOM OF THE INSTRUMENTS ARE OURS". The Notary so declared it authenticated in the presence of the following witness: YANNINA GUILLÉN AND GABRIELA RODRÍGUEZ, bearers of identity cards number 11.995595 and 11.636.896. It was inserted under number 16 tome 86 of the Book of Authentications of the Notary. The Public Notary that signs certifies that in the present act article 78 number 2 of the Law of Public Registries and Notaries was fulfilled. It is also certified that: 1) Decree # 430 of the CORPORACIÓN VENEZOLANA DE GUAYANA, of 12-29-1960, published in official Gazette of the Republic of Venezuela # 26445 of 12-30-1960, its last reform through Decree with rank of Law # 1531 of 11-12-2001, Published in the Official Gazette of the Bolivarian Republic of Venezuela # 5553, of 11-12-2001, which enjoys of the prerogatives and privileges that the National Treasury confers in the Preliminary Chapter of the Organic Law of the Public National Treasury and is exempt of the payment of all taxes, tariffs and contributions in accordance to its articles 24 and 25 of the Decree, represented hereat by its President Francisco Rangel Gómez, designated by the President of the Republic through Decree # 1034, published in Official Gazette of the Bolivarian Republic of Venezuela # 37054, of 10-10-2000, sufficiently authorized for this act in accordance to articles 36 and 37 of the above referred Decree. 2) resolution 8700 and Resolution DIR-#8705 of 02-09-2002 and 09-16-2002, respectively. 3) Resolution of the Board of Directors of CRYSTALLEX INTERNATIONAL CORPORATION of 09-16-2002. 4) The Notary moved and constituted itself at the principal office of the CVG, Alta Vista, Puerto Ordaz, today at 11:00am,through request of the interested parties.

THE NOTARY PUBLIC	**THE SIGNATORIES**
(illegible signature) **Seal (Fourth Notary Public of Puerto Ordaz)**	**(illegible signature)** **Francisco Rangel Gómez**
The witnesses **(illegible signatures)**	**(illegible signature)** **Marc J Oppenheimer"**

The foregoing is a true and accurate translation of the attached original, made at the request of the interested party, IN WITNESS WHEREOF I hereunto set my hand and affix my official seal, in Caracas, on this twenty sixth (26) day of September, two thousand two (2002).

Appendix B

Estimation Parameters

Material/Zone	Directions Rotations	Search (Meters)	No. Smpls Min;Max;Max/hole	C_0	C_1	R_1	C_2	R_2	C_3	R_3	Restrictions (g Au/t;m)	Comps Used (zone or code)	Blocks Estimated	Weighting	Elev.	File Name
CONDUCTORA																
Gold																
Low-Grade: Pass 1	15°/0°/35°	200;200;50	2;12;2	0.41	0.42	5;15;15	0.16	216;112;112	NA	NA	NA	Zone-21;31;41	1;4;5;7	length	real	Cga
Low-Grade: Pass 2	15°/0°/35°	100;100;40	2;10;2	0.41	0.42	5;15;15	0.16	216;112;112	NA	NA	NA	Zone-21;31;41	1;4;5;7	length	real	Cgb
High-Grade: Pass 1	15°/0°/35°	100;100;50	2;10;2	0.48	0.41	37;16;11	0.11	119;119;56	NA	NA	NA	Zone-22;32;42	2;4;6;7	length	real	Cgc
High-Grade: Pass 2	15°/0°/35°	50;50;20	2;10;2	0.48	0.41	37;16;11	0.11	119;119;56	NA	NA	NA	Zone-22;32;42	2;4;6;7	length	real	Cgd
Outside Zones	15°/0°/35°	100;100;35	2;12;3	0.53	0.19	21;59;5	0.28	51;169;169	NA	NA	1;8	Zone-99	all	length	real	Cg9
Overburden	0°/0°/0°	100;100;50	1;10;1	0.31	0.69	350;350;350	NA	NA	NA	NA	NA	Type-8	3;5;6;7	length	real	Cg8
Silver																
Overburden	0°/0°/0°	100;100;50	1;12;2	0.13	0.87	46;46;46	NA	NA	NA	NA	NA	Type-8	8	length	real	Cs8
All-but-Overburden	15°/0°/35°	200;200;50	2;12;3	0.21	0.30	5;5;16	0.14	7;7;80	NA	NA	3;20	Type: 1-6	All	length	real	Csa
Copper																
Overburden	15°;0°;0°	100;100;50	1;10;1	0.15	0.85	183;183;183	NA	NA	NA	NA	NA	Type 8	Type 8	length	real	Cc8
Oxide Saprolite	15°;0°;0°	100;100;5	1;10;2	0.40	0.25	56;56;20	0.353	294;486;50	NA	NA	NA	Type 6	Type 6	length	relative*	Cc6
Sulfide/Mixed Saprolite	15°;0°;0°	100;100;50	1;10;2	0.33	0.37	89;25;46	0.295	359;150;79	NA	NA	NA	Types 4,5	Type 4,5	length	relative*	Cc4
Bedrock/Saprock	15°/0°/35°	200;200;50	2;12;3	0.20	0.26	34;32;8	0.21	67;81;21	0.30	335;312;141	NA	Type 1-3	Type 1-3	length	real	Cc1
CN-Soluble Cu Ratio																
Overburden: Pass 1	15°;0°;0°	350;350;50	1;10;2	0.30	0.26	97;97;20	0.44	515;515;50	NA	NA	NA	Type 8	Type 8	length	real	Cr8
Overburden: Pass 2	15°;0°;0°	50;50;25	1;8;2	0.30	0.26	97;97;20	0.44	515;515;50	NA	NA	NA	Type 8	Type 8	length	real	Cra
Overburden: Pass 3	15°;0°;0°	20;20;15	1;8;2	0.30	0.26	97;97;20	0.44	515;515;50	NA	NA	NA	Type 8	Type 8	length	real	Cre
Oxide Saprolite	15°/0°/0°	350;350;50	1;10;2	0.56	0.25	98;98;20	0.19	247;174;50	NA	NA	NA	Type 6	Type 6	length	relative*	Cr6
Oxide Saprolite	15°/0°/0°	50;50;25	1;8;2	0.56	0.25	98;98;20	0.19	247;174;50	NA	NA	NA	Type 6	Type 6	length	relative*	Crb
Oxide Saprolite	15°/0°/0°	20;20;15	1;8;2	0.56	0.25	98;98;20	0.19	247;174;50	NA	NA	NA	Type 6	Type 6	length	relative*	Crf
Sulfide/Mixed Saprolite	15°/0°/0°	350;350;50	1;10;2	0.09	0.50	25;25;20	0.41	329;223;40	NA	NA	NA	Type 4, 5	Type 4, 5	length	relative*	Cr4
Sulfide/Mixed Saprolite	15°/0°/0°	50;50;20	1;8;2	0.09	0.50	25;25;20	0.41	329;223;40	NA	NA	NA	Type 4, 5	Type 4, 5	length	relative*	Crc
Sulfide/Mixed Saprolite	15°/0°/0°	20;20;15	1;8;2	0.09	0.50	25;25;20	0.41	329;223;40	NA	NA	NA	Type 4, 5	Type 4, 5	length	relative*	Crg
Bedrock/Saprock	15°/0°/0°	300;300;70	1;12;2	0.25	0.55	63;63;20	0.20	303;256;63	NA	NA	NA	Type 1, 2, 3	Type 1, 2, 3	length	real	Crd
Bedrock/Saprock	15°/0°/0°	50;50;20	1;8;2	0.25	0.55	63;63;20	0.20	303;256;63	NA	NA	NA	Type 1, 2, 3	Type 1, 2, 3	length	real	Crh
Bedrock/Saprock	15°/0°/0°	20;20;15	1;8;2	0.25	0.55	63;63;20	0.20	303;256;63	NA	NA	NA	Type 1, 2, 3	Type 1, 2, 3	length	real	Crh

NOTES

Core Recovery — This is estimated at the same time as the gold and with the same parameters so that all gold grades have an estimated recovery from the same samples as used in the estimate and the same weighting

relative* is with respect to the top of the mixed/sulfide and oxide saprolite contact

MESONES/SOFIA																
Material/Zone	Directions Rotations	Search (Meters)	No. Smpls Min;Max;Max/hole	C_0	C_1	R_1	C_2	R_2	C_3	R_3	Restrictions (g Au/t;m)	Comps Used (zone or code)	Blocks Estimated	Weighting	Elev.	File Name
Gold																
Low-Grade	315°/0°/65°	100;100;100	2;10;2	0.56	0.26	26;7;17	0.18	67;83;62	NA	NA	NA	Zone 31	1;4;5;7	length	real	Cga
High-Grade	315°/0°/65°	100;100;100	2;10;2	0.43	0.48	25;25;21	0.09	47;119;119	NA	NA	9;80	Zone 32	2;4;6;7	length	real	Cgb
Outside Zones	315°/0°/65°	100;100;35	2;10;2	0.30	0.34	35;35;35	0.36	384;384;384	NA	NA	0.2;30	Zone-99	all	length	real	Mg9
Overburden	315°/0°/0°	100;100;25	1;6;2	0.31	0.02	80;80;40	0.60	490;490;123	NA	NA	2;20	Type-8	3;5;6;7	length	real	Mg8
Silver																
Overburden	315°/0°/0°	100;100;20	1;10;2	0.51	0.49	28;28;28	NA	NA	NA	NA	NA	Type 8	Type 8	length	real	Ms8
All-but-Overburden	315°/0°/65°	100;100;100	2;10;2	0.24	0.31	5;20;20	0.26	33;60;54	0.19	131;134;184	4;20	Types 1-6	All	length	real	Msa
Copper																
Overburden	315°;0°;0°	80;80;20	1;10;2	0.03	0.97	28;28;10	NA	NA	NA	NA	NA	Type 8	Type 8	length	real	Mc8
Oxide Saprolite	315°;0°;0°	80;80;40	1;10;2	0.15	0.25	23;23;11	0.60	114;114;57	NA	NA	NA	Type 6	Type 6	length	relative*	Mc6
Oxide Saprolite	315°;0°;0°	14;14;12	1;10;2	0.15	0.25	23;23;11	0.60	114;114;57	NA	NA	NA	Type 6	Type 6	length	relative*	Mc6
Sulfide/Mixed Saprolite	315°/0°/0°	80;80;40	1;10;2	0.03	0.97	100;100;50	NA	NA	NA	NA	5,000;40	Types 4,5	Type 4,5	length	relative*	Mc4,v
Low-grade	315°/0°/65°	80;80;60	1;10;2	0.33	0.43	8;6;6	0.24	63;96;19	NA	NA	NA	Codes 61	Types 1-3	length	real	Mcm,n,o
High-grade	315°/0°/65°	80;80;60	2;10;2	0.72	0.28	110;110;110	NA	NA	NA	NA	NA	Codes 62	Types 1-3	length	real	Mcp,q,r
Outside zones in bdrk	315°/0°/65°	100;100;60	2;10;2	0.49	0.25	15;15;15	0.26	140;114;114	NA	NA	7,000;50	Code 99	Types 1-3	length	real	Mcs,t,u
CN-Soluble Cu Ratio																
Overburden: Pass 1	315°;0°;0°	100;100;40	1;10;2	0.02	0.98	16;16;8	NA	NA	NA	NA	NA	Type 8	Type 8	length	real	Mr8
Overburden: Pass 2	315°;0°;0°	15;15;10	1;10;2	0.02	0.98	16;16;8	NA	NA	NA	NA	NA	Type 8	Type 8	length	real	Mra
Oxide Saprolite	315°/0°/0°	100;100;50	1;10;2	0.24	0.56	21;21;10	0.20	83;83;41	NA	NA	NA	Type 6	Type 6	length	relative*	Mr6
Oxide Saprolite	315°/0°/0°	25;25;13	1;10;2	0.24	0.56	21;21;10	0.20	83;83;41	NA	NA	NA	Type 6	Type 6	length	relative*	Mrc
Sulfide/Mixed Saprolite	315°/0°/0°	200;200;50	1;10;2	0.24	0.37	48;48;24	0.39	232;232;116	NA	NA	NA	Type 4, 5	Type 4, 5	length	relative*	Mr4
Sulfide/Mixed Saprolite	315°/0°/0°	50;50;12	1;10;2	0.24	0.37	48;48;24	0.39	232;232;116	NA	NA	NA	Type 4, 5	Type 4, 5	length	relative*	Mrc
Bedrock/Saprock	315°/0°/0°	200;200;100	1;12;2	0.17	0.26	16;16;8	0.57	207;207;54	NA	NA	NA	Type 1, 2, 3	Type 1, 2, 3	length	real	Mr1
Bedrock/Saprock	315°/0°/0°	50;50;25	1;12;2	0.17	0.26	16;16;8	0.57	207;207;54	NA	NA	NA	Type 1, 2, 3	Type 1, 2, 3	length	real	Mrd

NOTES

Core Recovery This is estimated at the same time as the gold and with the same parameters so that all gold grades have an estimated recovery from the same samples as used in the estimate and the same weighting

relative* is with respect to the top of the mixed/sulfide and oxide saprolite contact

MOROCCOY

Material/Zone	Directions Rotations	Search (Meters)	No. Smpls Min;Max;Max/hole	C_0	C_1	R_1	C_2	R_2	C_3	R_3	Restrictions (g Au/t;m)	Comps Used (zone or code)	Blocks Estimated	Weighting	Elev.	File Name
Gold																
Low-Grade	315°/0°/60°	100;100;80	2;10;2	0.20	0.64	9;6;9	0.16	43;47;43	NA	NA	NA	Zone 31	1;4;5;7	length	real	Yga
High-Grade	315°/0°/60°	100;100;80	2;10;2	0.20	0.64	9;6;9	0.16	43;47;43	NA	NA	NA	Zone 32	2;4;6;7	length	real	Ygb
Outside Zones	315°/0°/60°	100;100;35	2;10;3	0.38	0.21	40;48;39	0.41	87;87;64	NA	NA	1;20	Zone-99	all	length	real	Yg9
Overburden	315°/0°/0°	100;100;25	1;12;2	NA - Inverse Distance Cubed							2;20	Type-8	3;5;6;7	length	real	Hg8
Silver																
				Silver not estimated due to unverified and suspicous results												
Copper																
Overburden	315°;0°;0°	100;100;50	1;12;2	NA - Inverse Distance Cubed							NA	Type 8	Type 8	length	real	Hc8
Oxide Saprolite	315°/0°/0°	150;150;50	1;10;2	0.33	0.67	60;60;20	NA	NA	NA	NA	NA	Type 6	Type 6	length	relative*	Yc6
Sulfide/Mixed Saprolite	315°/0°/0°	150;150;50	1;10;2	0.32	0.68	100;100;50	NA	NA	NA	NA	NA	Types 4,5	Type 4,5	length	relative*	Yc4
Bedrock	315°/0°/60°	200;200;50	2;12;3	0.39	0.43	55;42;24	0.18	166;188;115	NA	NA	NA	Code 99	Types 1-3	length	real	Yc1
CN-Soluble Cu Ratio																
Overburden: Pass 1	315°;0°;0°	200;200;50	1;10;2	NA - Inverse Distance Cubed							NA	Type 8	Type 8	length	real	Hr8
Overburden: Pass 1	315°;0°;0°	50;50;25	1;8;2	NA - Inverse Distance Cubed							NA	Type 8	Type 8	length	real	Hra
Overburden: Pass 1	315°;0°;0°	20;20;15	1;8;2	NA - Inverse Distance Cubed							NA	Type 8	Type 8	length	real	Hre
Oxide Saprolite	315°/0°/0°	300;300;50	1;10;2	NA - Inverse Distance Cubed							NA	Type 6	Type 6	length	relative*	Hr6
Oxide Saprolite	315°/0°/0°	50;50;25	1;8;2	NA - Inverse Distance Cubed							NA	Type 6	Type 6	length	relative*	Hrb
Oxide Saprolite	315°/0°/0°	20;20;13	1;10;2	NA - Inverse Distance Cubed							NA	Type 6	Type 6	length	relative*	Hrf
Sulfide/Mixed Saprolite	315°/0°/0°	300;300;50	1;10;2	NA - Inverse Distance Cubed							NA	Type 4, 5	Type 4, 5	length	relative*	Hr4
Sulfide/Mixed Saprolite	315°/0°/0°	50;50;20	1;8;2	NA - Inverse Distance Cubed							NA	Type 4, 5	Type 4, 5	length	relative*	Hrc
Sulfide/Mixed Saprolite	315°/0°/0°	20;20;13	1;8;2	NA - Inverse Distance Cubed							NA	Type 4, 5	Type 4, 5	length	relative*	Hrg
Bedrock/Saprock	315°/0°/0°	300;300;70	1;12;2	NA - Inverse Distance Cubed							NA	Type 1, 2, 3	Type 1, 2, 3	length	real	Hr1
Bedrock/Saprock	315°/0°/0°	50;50;20	1;8;2	NA - Inverse Distance Cubed							NA	Type 1, 2, 3	Type 1, 2, 3	length	real	Hrd
Bedrock/Saprock	315°/0°/0°	20;20;15	1;8;2	NA - Inverse Distance Cubed							NA	Type 1, 2, 3	Type 1, 2, 3	length	real	Hrh

NOTES

Core Recovery — This is estimated at the same time as the gold and with the same parameters so that all gold grades have an estimated recovery from the same samples as used in the estimate and the same weighting

relative* is with respect to the top of the mixed/sulfide and oxide saprolite contact

CORDOVA																
Material/Zone	Directions Rotations	Search (Meters)	No. Smpls Min;Max;Max/hole	C_0	C_1	R_1	C_2	R_2	C_3	R_3	Restrictions (g Au/t;m)	Comps Used (zone or code)	Blocks Estimated	Weighting	Elev.	File Name
Gold																
Low-Grade	315°/0°/65°	150;150;50	2;12;4	NA - Inverse Distance Cubed							NA	Zone 31	1;4;5;7	length	real	Hga
Low-Grade	315°/0°/65°	15;15;12	2;12;4	NA - Inverse Distance Cubed							NA	Zone 31	1;4;5;7	length	real	Hgc
High-Grade	315°/0°/65°	100;100;50	1;12;2	NA - Inverse Distance Cubed							NA	Zone 32	2;4;6;7	length	real	Hgb
High-Grade	315°/0°/65°	15;15;12	1;12;2	NA - Inverse Distance Cubed							NA	Zone 32	2;4;6;7	length	real	Hgd
Outside Zones	315°/0°/65°	100;100;50	2;10;2	NA - Inverse Distance Cubed							1;20	Zone-99	all	length	real	Hg9
Overburden	315°/0°/0°	100;100;25	1;12;2	NA - Inverse Distance Cubed							2;20	Type-8	3;5;6;7	length	real	Hg8
Silver																
						Silver not estimated due to unverified and suspicous results										
Copper																
Overburden	315°;0°;0°	100;100;50	1;12;2	NA - Inverse Distance Cubed							NA	Type 8	Type 8	length	real	Hc8
Oxide Saprolite	315°;0°;0°	150;150;50	1;10;2	NA - Inverse Distance Cubed							NA	Type 6	Type 6	length	relative*	Hc6
Sulfide/Mixed Saprolite	315°/0°/0°	150;150;50	1;10;2	NA - Inverse Distance Cubed							NA	Types 4,5	Type 4,5	length	relative*	Hc4
Bedrock	315°/0°/65°	200;200;50	1;12;2	NA - Inverse Distance Cubed							3800;150	Types 1,2,3	Types 1-3	length	real	Hc1
CN-Soluble Cu Ratio																
Overburden: Pass 1	315°;0°;0°	200;200;50	1;10;2	NA - Inverse Distance Cubed							NA	Type 8	Type 8	length	real	Hr8
Overburden: Pass 1	315°;0°;0°	50;50;25	1;8;2	NA - Inverse Distance Cubed							NA	Type 8	Type 8	length	real	Hra
Overburden: Pass 1	315°;0°;0°	20;20;15	1;8;2	NA - Inverse Distance Cubed							NA	Type 8	Type 8	length	real	Hre
Oxide Saprolite	315°/0°/0°	300;300;50	1;10;2	NA - Inverse Distance Cubed							NA	Type 6	Type 6	length	relative*	Hr6
Oxide Saprolite	315°/0°/0°	50;50;25	1;8;2	NA - Inverse Distance Cubed							NA	Type 6	Type 6	length	relative*	Hrb
Oxide Saprolite	315°/0°/0°	20;20;13	1;10;2	NA - Inverse Distance Cubed							NA	Type 6	Type 6	length	relative*	Hrf
Sulfide/Mixed Saprolite	315°/0°/0°	300;300;50	1;10;2	NA - Inverse Distance Cubed							NA	Type 4, 5	Type 4, 5	length	relative*	Hr4
Sulfide/Mixed Saprolite	315°/0°/0°	50;50;20	1;8;2	NA - Inverse Distance Cubed							NA	Type 4, 5	Type 4, 5	length	relative*	Hrc
Sulfide/Mixed Saprolite	315°/0°/0°	20;20;13	1;8;2	NA - Inverse Distance Cubed							NA	Type 4, 5	Type 4, 5	length	relative*	Hrg
Bedrock/Saprock	315°/0°/0°	300;300;70	1;12;2	NA - Inverse Distance Cubed							NA	Type 1, 2, 3	Type 1, 2, 3	length	real	Hr1
Bedrock/Saprock	315°/0°/0°	50;50;20	1;8;2	NA - Inverse Distance Cubed							NA	Type 1, 2, 3	Type 1, 2, 3	length	real	Hrd
Bedrock/Saprock	315°/0°/0°	20;20;15	1;8;2	NA - Inverse Distance Cubed							NA	Type 1, 2, 3	Type 1, 2, 3	length	real	Hrh

NOTES

Core Recovery — This is estimated at the same time as the gold and with the same parameters so that all gold grades have an estimated recovery from the same samples as used in the estimate and the same weighting

relative* is with respect to the top of the mixed/sulfide and oxide saprolite contact

Appendix C

Preliminary Open Pit Slope Stability Analysis – Updated

SNC•LAVALIN
Engineers & Constructors

MEMORANDUM

LAS CRISTINAS PROJECT

TO:	Dave Evans	Date:	October 5, 2007
C.C.:	Bing Wang, Karlis Jansons, Henri Sangam		
FROM:	Ljiljana Josic	Ref.:	**334408-40-4GCA-0023**
Subject:	Preliminary Open Pit Slope Stability Analysis – Updated		

1.0 General

Las Cristinas property is located in the southeast corner of Venezuela in the Municipality of Sifontes, State of Bolivar, approximately 970 km southeast of Caracas. Las Cristinas project consists of a planned large open pit known as Conductora Pit and a smaller pit Mesones Pit located further to north. This memo presents a summary of a preliminary slope stability analysis for the proposed 2007 pit slope design for Conductora Pit, based on the recent updated ore resource estimates.

2.0 Conductora Open Pit Geometry

The ground surface in this area is disturbed with elevations varying in the range from 125 masl to 142 masl with numerous man-made pits and higher ground. The open pit is to be developed from the current elevation of about 135 masl and 132 masl at West Wall and East Wall, respectively to elevation of 360 mbsl. The pit geometry shown on Figure 1 was designed by Mine Development Associates (MDA), Mine Engineering Service.

3.0 Geological Assessment in Pit Area and Pit Slope Design

The structural geological assessment in the pit area was conducted based on the structural map proposed by Klipfel, 1994 and the 8 structural domains developed by Bruce Geotechnical Consultants Inc. (BGC), 1996. The structural geology of domains designated as North Wall, East Wall, South Wall, and West Wall and related design issues are discussed in details in "Field Investigation Report, Open Pit Slope and Waste Dump Stability Study" prepared by SNC-Lavalin, 2004. Based on the geological assessment, the West Wall and East Wall are considered most critical and thus, the sections of West Wall and East Wall were updated as per current design analyzed and discussed in this memo.

Summary of Conductora Pit slope design as proposed by MDA is given in Table 1. Definitions of face and overall angles are given in Sketch 1.

Table 1: Summary of Conductora Pit Slope Design

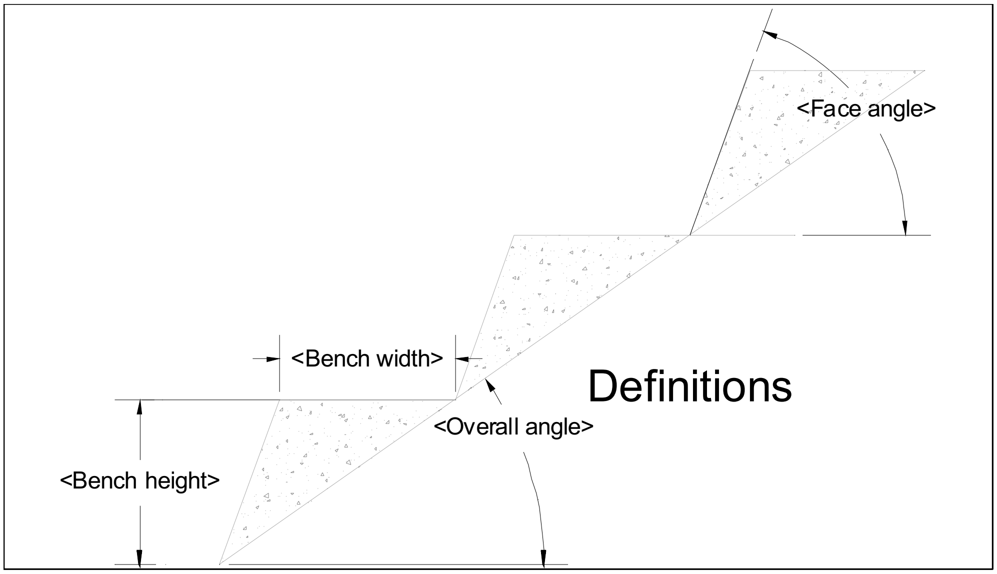
	Unit	Feasibility Study Level Pit Slope Design				2004 Pit Slope Design				2007 Pit Slope Design [d]			
		SAPO	SAPR	CLB	CSB	SAPO	SAPR	CLB	CSB	SAPO	SAPR	CLB	CSB
West Wall													
Face angle	degrees	70	[b]	70	70	70	70 [c]	70	70	45	[b]	70	70
Bench width [a]	metres	13	[b]	8	4	15	15 [c]	8	4	8	[b]	8	4-31
Overall angle	degrees	35	[b]	45	55	31	31 [c]	45	55	30	[b]	44	55
Bench height	metres	12	12	12	12	12	12	12	12	12	[b]	12	12
East Wall													
Face angle	degrees	70	70	70	70	45	45	70	70	44	[b]	43	63-70
Bench width [a]	metres	13	13	8-13	5-10	8	8	8-13	5-10	8	[b]	9	4-18-46
Overall angle	degrees	35	35	35-45	40-50	31	31	35-45	40-50	30	[b]	29	33-41
Bench height	metres	12	12	12	12	12	12	12	12	12	[b]	12	12

Note:

SAPO - Saprolite
SAPR - Saprock

(a) Bench width can be adjusted to fit the face and the overall angles
(b) Saprock is either absent or relatively thin (less than the height of one bench) on the section analyzed
(c) Assumed same as saprolite
(d) Design prepared by Mine Development Associates (MDA), Mine Engineering Services

Sketch 1: Definitions of Slope Geometry



4.0 Analysis Basis and Model Setup

The pit slope sections selected for the analyses are presented on Figures 2 and 3. The various analysed cases are summarized in Table 2.

Table 2: Summary of Pit Slope Analysis Cases

Section	Case No.	Description
A	1	West Wall, overall slope analysis, static condition
		West Wall, overall slope analysis, pseudo-static condition
	2	West Wall, saprolite layer overall stability analysis static condition
		West Wall, saprolite layer overall stability analysis pseudo-static condition
B	1	East Wall, overall slope analysis, static condition
		East Wall, overall slope analysis, pseudo-static condition
	2	West Wall, saprolite layer overall stability analysis static condition
		West Wall, saprolite layer overall stability analysis pseudo-static condition

The phreatic surface has been assumed based on a conservative approach. The CLB and CSB layers are assumed saturated, while the saprolite layer is drained (minimum 40 mbgs – 50 mbgs at West Wall and 20 mbgs at East Wall).

Slope stability analyses were performed using a two dimensional limit equilibrium computer program, “SLIDE”, Version 5, developed by RocScience Inc. of Toronto, Ontario, Canada, using the Bishop simplified method.

The factor of safety for the slopes was calculated for both static and pseudo-static loading conditions. Pseudo-static analysis was employed to check the factor of safety of the slopes for seismic loads imposed on a steady state static loading model. The pseudo-static analyses were carried out using a horizontal ground acceleration (a/g) of 0.1 for an earthquake with a return period of 1 in 475 years. The peak horizontal acceleration is instantaneous, and thus an effective value of 70% of the peak acceleration, i.e., 0.07 g, was applied for the seismic analysis.

The required minimum factor of safety (FS) with respect to the stability requirements of the pit slope are summarized in Table 3.

Table 3: Required Minimum Factor of Safety

Loading Conditions	Required Minimum Factor of Safety	Selected Effective Seismic Acceleration
Static	1.2 - 1.3	None
Pseudo-Static (Seismic)	1.0	0.07g

5.0 Material Parameters

The pit wall stratigraphy consists mainly of 4 layers, i.e. saprolite (SAPO), saprock (SAPR), carbonate leachate bedrock (CLB) and carbonate stable bedrock (CSB) layers.

- **Saprolite (SAPO)**

  The most important relic structure in the saprolitic rocks in terms of stability would be the foliation having a trend NNE and dipping W at 40 to 45^o which will have a direct implication on East Wall. Its impact may be more on the single bench since the overall slope excavation angle of this wall is more gentle than the dip of the foliation. The parameters of the saprolite foundation material were obtained based on laboratory triaxial strength tests on undisturbed samples from the open pit area from both the SNC-Lavalin 2004 investigation and previous investigation and discussed in details in SNC-Lavalin 2004 report.

- **Saprock (SAPR)**

  The saprock is a gradational contact between the saprolite and the carbonate leached bedrock. It may include coarser material than saprolite which increases the friction angle but reduces the cohesion. However, as no shear strength parameters are available for the saprock material, the same shear strength parameters of saprolite were used for saprock in the pit slope evaluation.

- **Carbonate Leachate Bedrock (CLB) and Carbonate Stable Bedrock (CSB)**

  The impact of joint systems and foliation in the bedrock have not been evaluated at this stage. In addition no shear strength parameters were measured on CLB and CSB rocks. As conservative approach at this stage, CLB was considered as poor rock quality and the CSB between poor and average rock quality, and the corresponding shear strength parameters were derived from the tables for typical poor and average rock mass quality given in E. Hoek (Practical Rock Engineering, 2000. Chapter 11).

Table 4 summarizes the material parameters used in the slope stability analyses. For the stability analyses lower shear strength values were assumed for saprolite layer.

Table 4: Material Parameters

Material	Unit Weight (kN/m^3)	Cohesion c' (kPa)	Friction Angle ϕ' (degrees)
Saprolite, Saprock [(a)]	18	17 (lower bound)	28.4 (lower bound)
		26	33
CLB	24	550	24
CSB	28	2000	29

Note: (a) Saprock is either absent or relatively thin (less than the height of one bench) in the section analyzed

6.0 Analyses Results and Discussion

The results of analyses are summarized in Table 5 and presented on Figure 4 to Figure 11.

6.1. Aspects Affecting Saprolite (SAPO) Layer

Based on the results obtained from the slope stability analysis, aspects affecting the saprolite layer stability are summarized as follows:

- Rapid excavation of the pit could leave a high phreatic surface in saprolite as a result of an insufficient time for the soil to drain. Localized undrained saprolite close to the pit wall could result in sloughing and wedge slip. Tension cracks may develop due to stress release and slope movement as the pit advances. In addition, desiccation cracks at the saprolite ground surface could also occur due to evapo-transpiration and drainage of saprolite layer. Therefore, routine inspections will be necessary to observe the formation of cracks and if necessary, carry out remedial measures to ensure slope stability. In this regard, measures such as an installation of horizontal drain pipes may be required to lower phreatic surface, and in case of formation of cracks, flattening of the slope may be necessary.

- FS calculated are satisfactory even with lower bound shear strength values of saprolite as per 2007 open pit slope design at West Wall and East Wall (Table 1). It is recommended to keep the height of the bench i.e. saprolite and sprock to maximum of 12 m. Steepening of the face and overall angles and increase in the bench height may be possible pending the results of monitoring of slope performance as the pit is developed. In that case additional stability analysis is recommended.

Table 5: Summary of Analysis Results

Section	Case No.	Seismic Condition	Factor of Safety	Figure
A	1	Static	1.42	4
		Pseudo-Static 0.07 g	1.28	5
	2	Static	1.19	6
		Pseudo-Static 0.07 g	1.02	7
B	1	Static	1.77	8
		Pseudo-Static 0.07 g	1.55	9
	2	Static	1.65	10
		Pseudo-Static 0.07 g	1.39	11

Note:
(a) The lower bound shear strength values of saprolite were used for the FS calculation

6.2. Aspects Affecting Carbonate Leached Bedrock (CLB) and Carbonate Stable Bedrock (CSB)

Based on the results obtained from the slope stability analyses, aspects affecting the CLB and CSB layer stability are summarized as follows:

- CLB and CSB rock mass will not pose a problem regarding the final overall slope stability. However, the existing joint sets and discontinuities may have an impact on local wedge stability during mining and the impact will be increased if blasting is not controlled.

- Localized overstressed zones may occur, especially in interberms, as a result of the pit geometry selected. Unfavorable combinations of joint sets and slope faces may result in wedge failure, although the overall stability will not be affected.

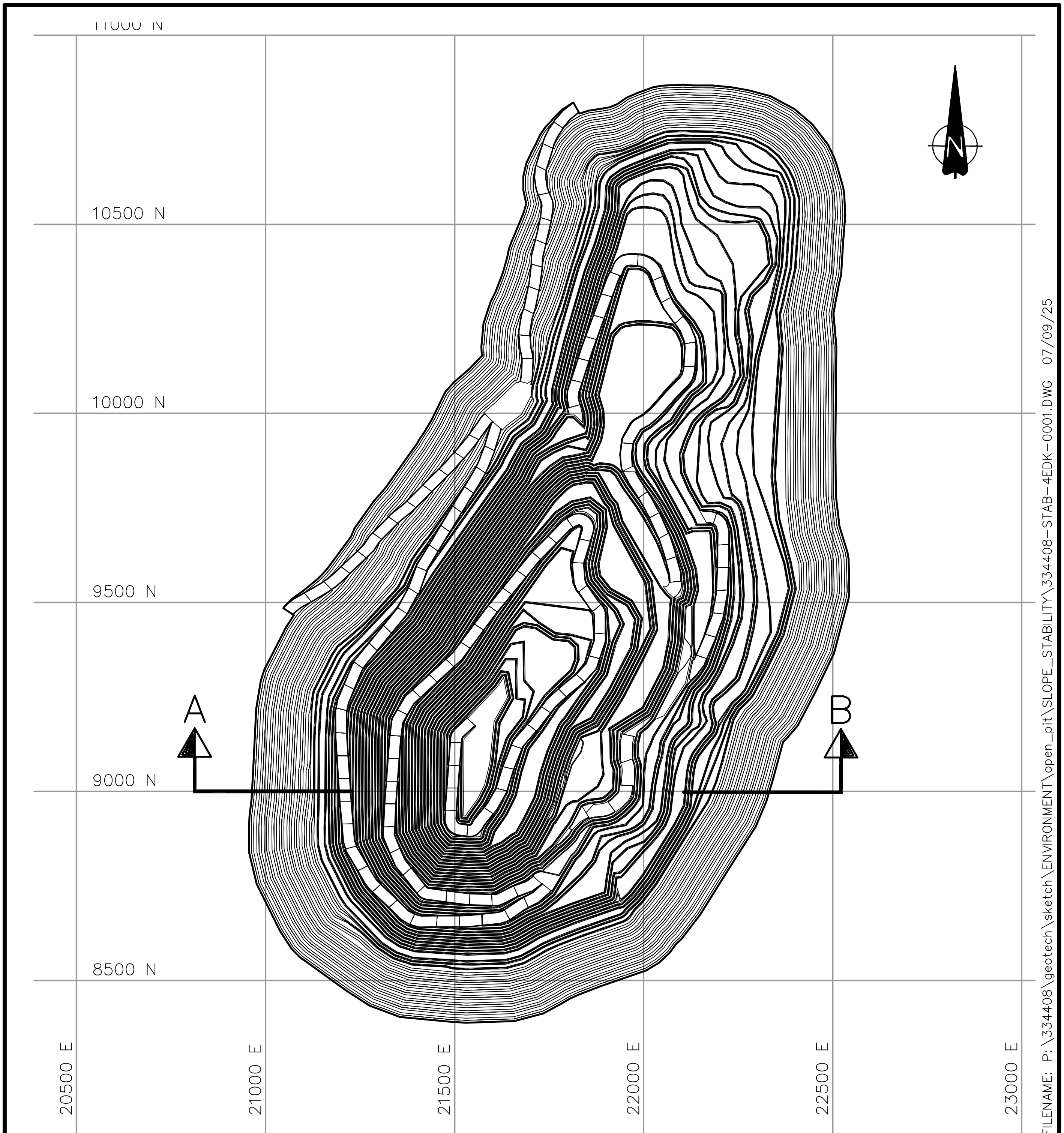
7.0 Tentative Conclusion

The stability analyses carried out herein indicates the 2007 open pit slope geometry as proposed by MDA is stable for both static and pseudo-static conditions. The geotechnical parameters used in the analyses need to be verified and slope behavior monitored as discussed in this memo report.

8.0 Reference

SNC Lavalin, 2004. Field Investigation Report, Open Pit Slope and Waste Dump Stability Study

Hoek, Evert, 2000. Practical Rock Engineering



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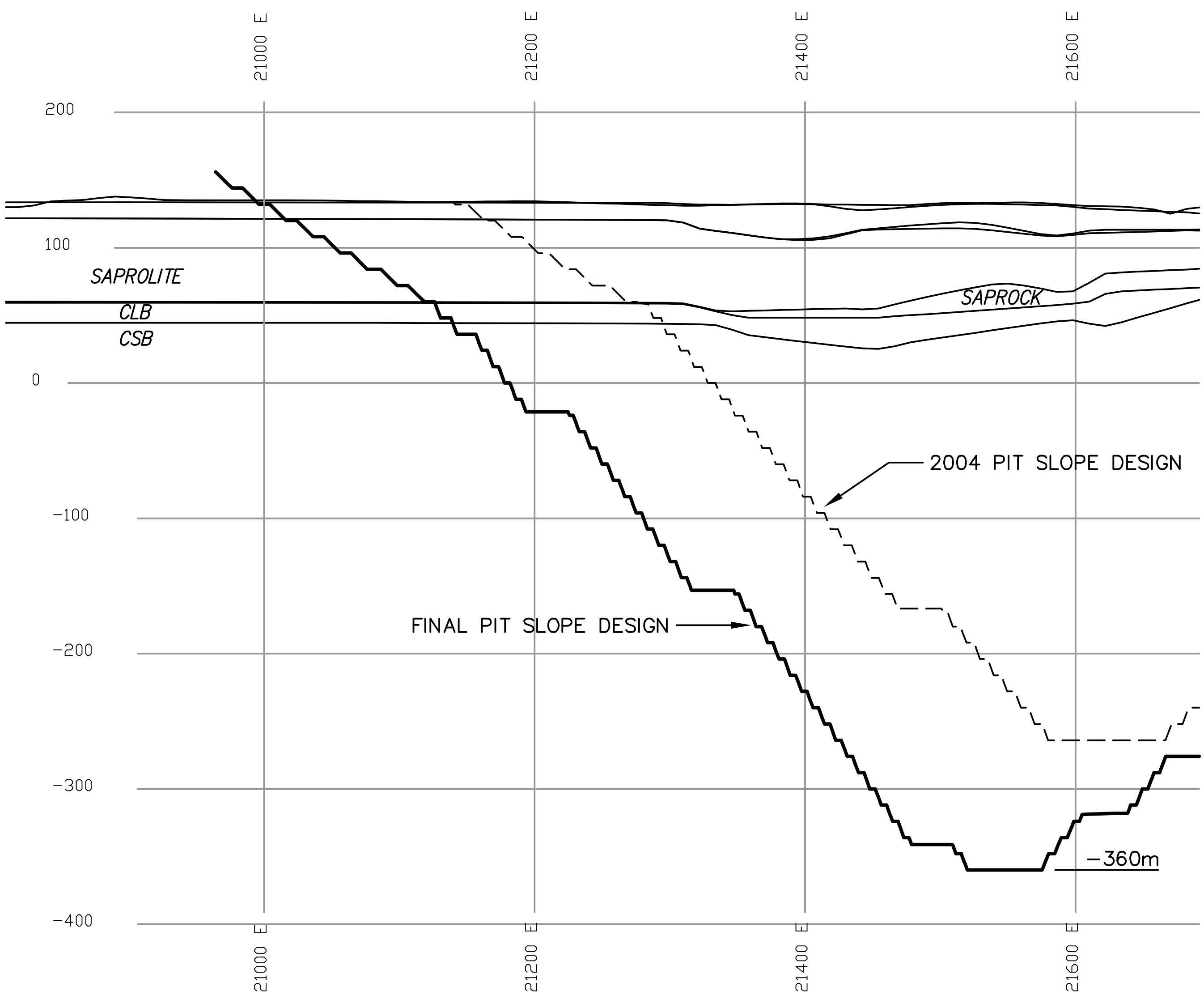
TITLE

LAS CRISTINAS PROJECT
CONDUCTORA OPEN PIT STABILITY STUDY

CONDUCTORA PIT LAYOUT

FIGURE 1



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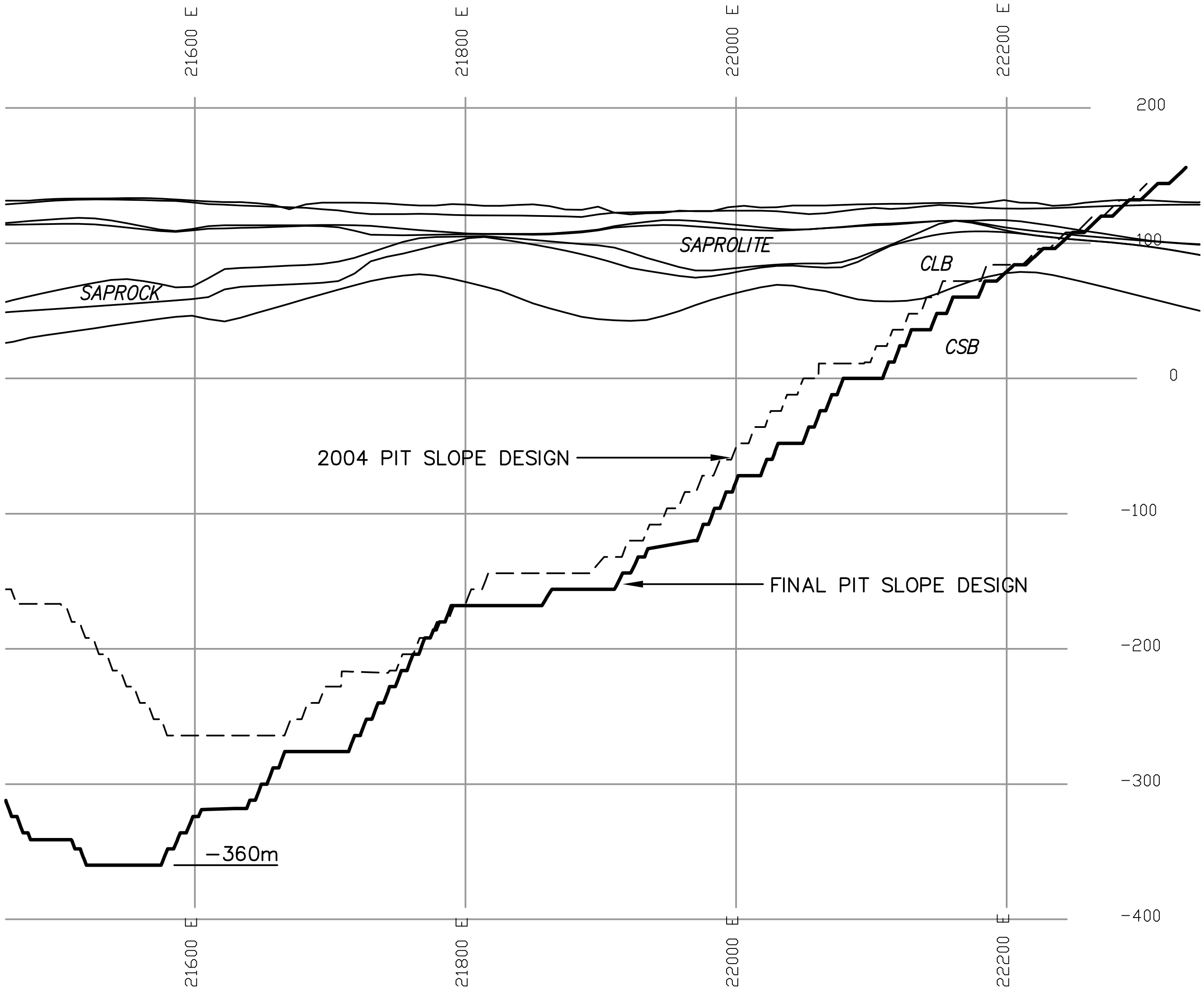
TITLE

LAS CRISTINAS PROJECT
CONDUCTORA OPEN PIT STABILITY STUDY

CROSS SECTION A
WEST WALL

FIGURE 2



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CONDUCTORA OPEN PIT STABILITY STUDY

CROSS SECTION B
EAST WALL

FIGURE 3

Figure 4: Section A, Case 1, Static Condition

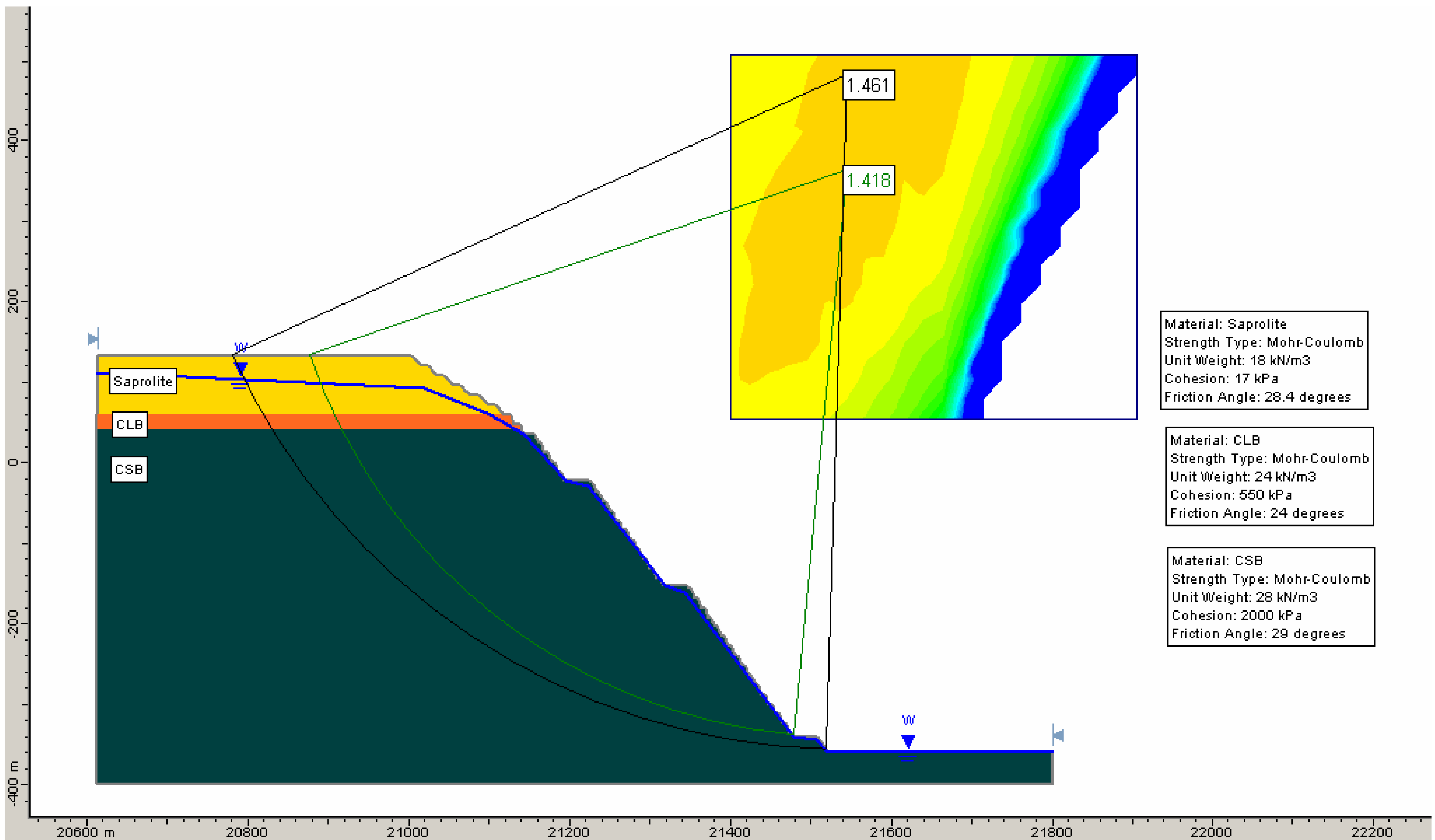


Figure 5: Section A, Case 1, Pseudo-Static Condition

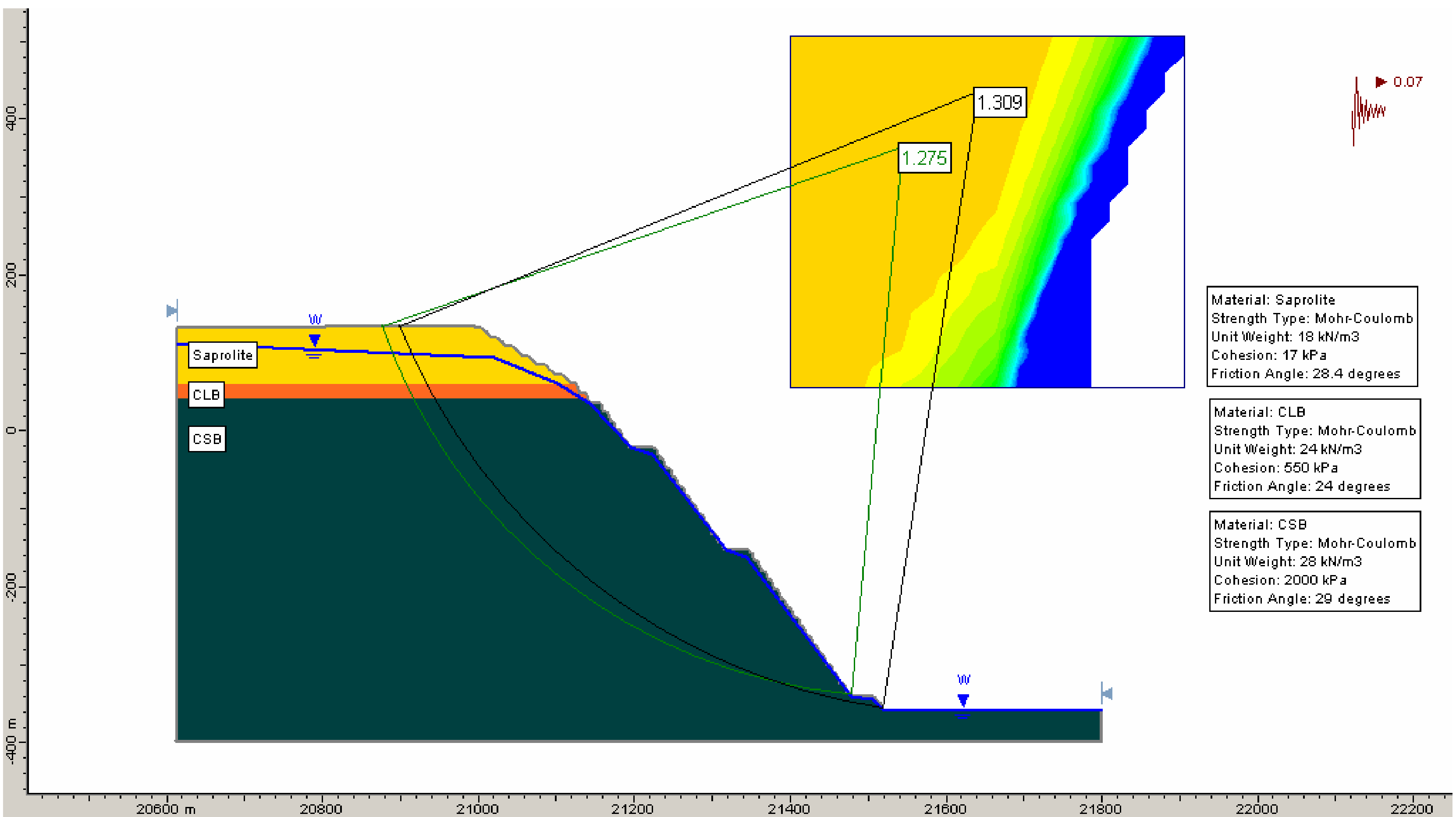


Figure 6: Section A, Case 2, Static Condition

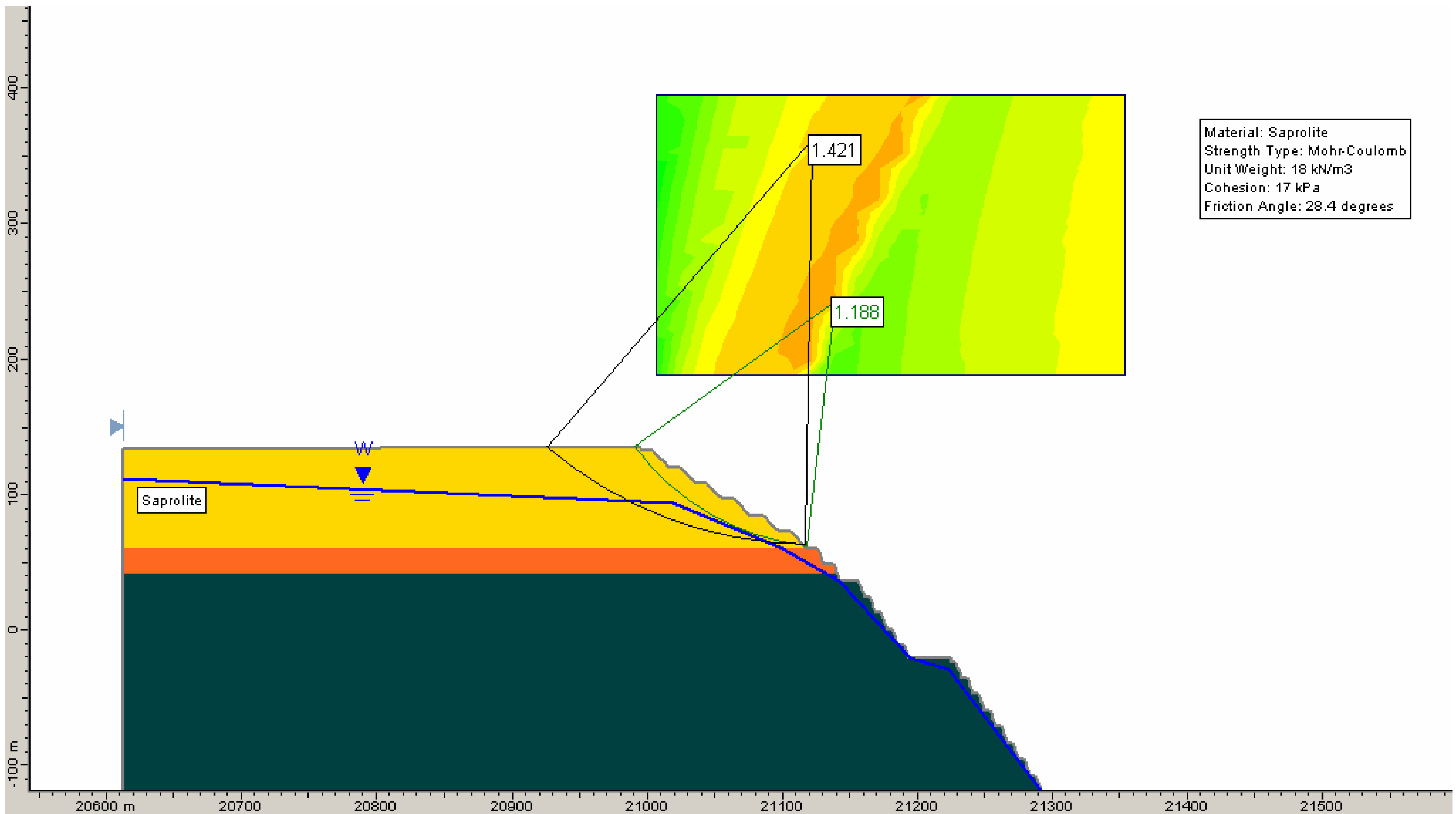


Figure 7: Section A, Case 2, Pseudo-Static Condition

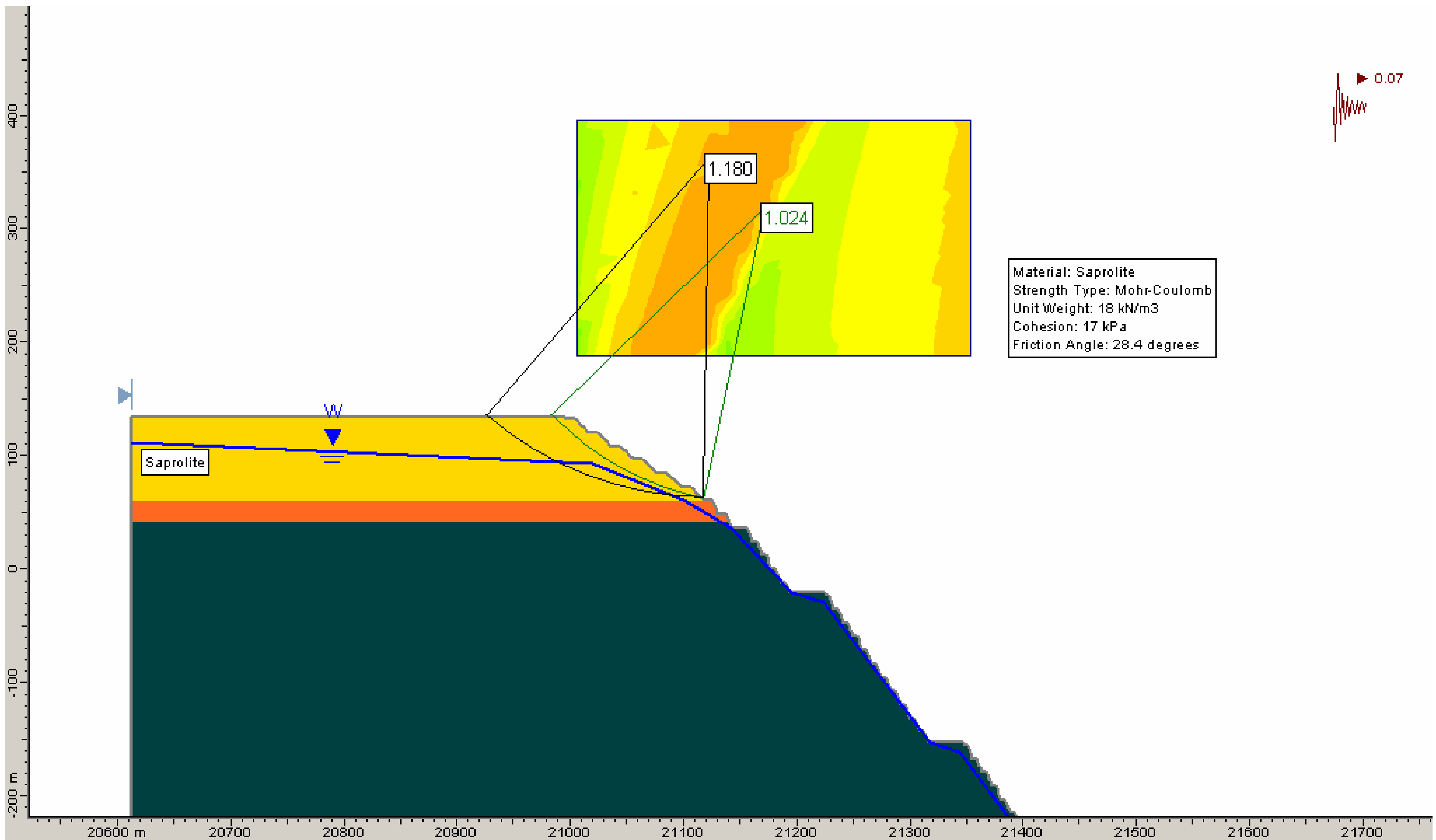


Figure 8: Section B, Case 1, Static Condition

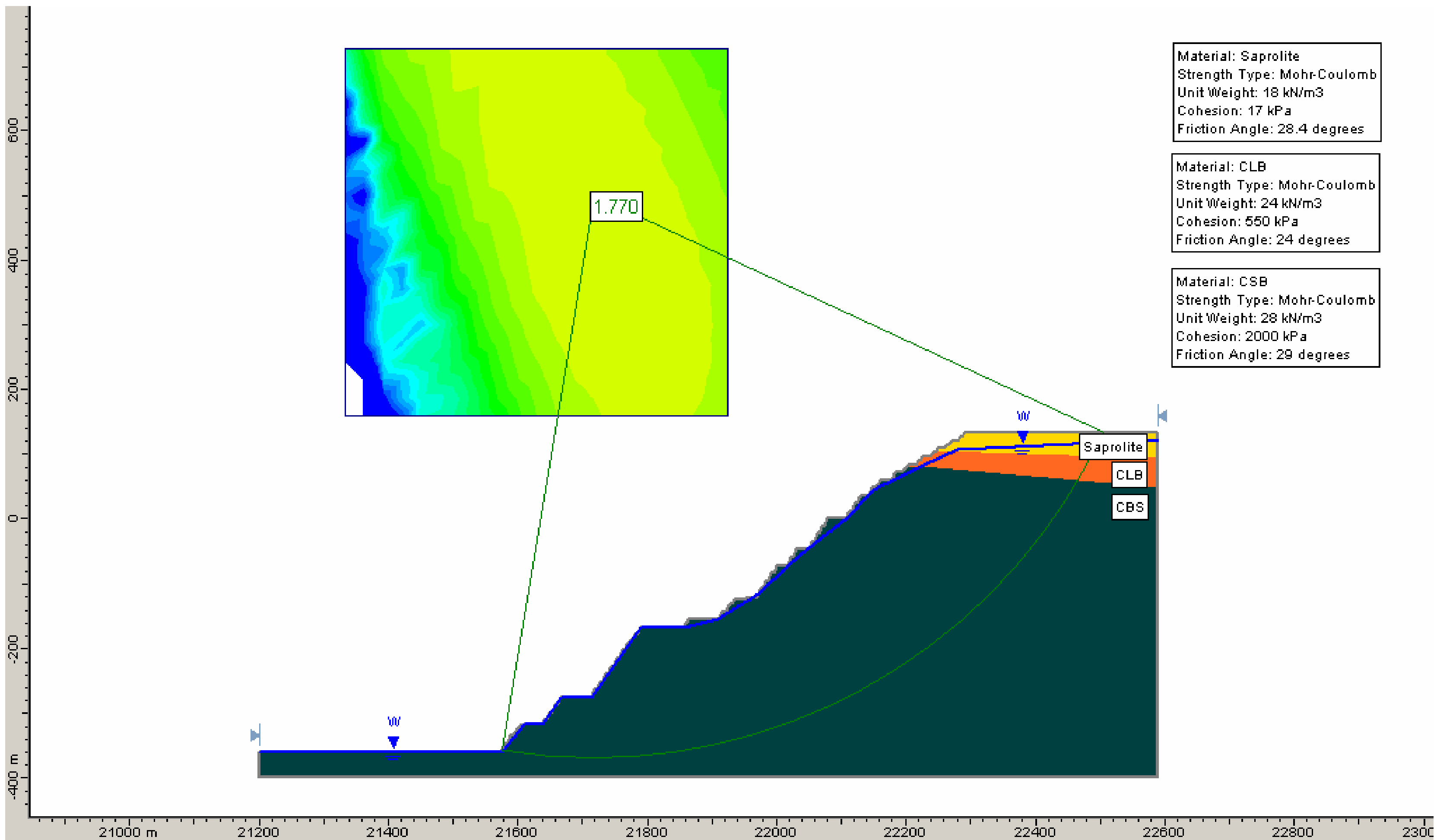


Figure 9: Section B, Case 1, Pseudo-Static Condition

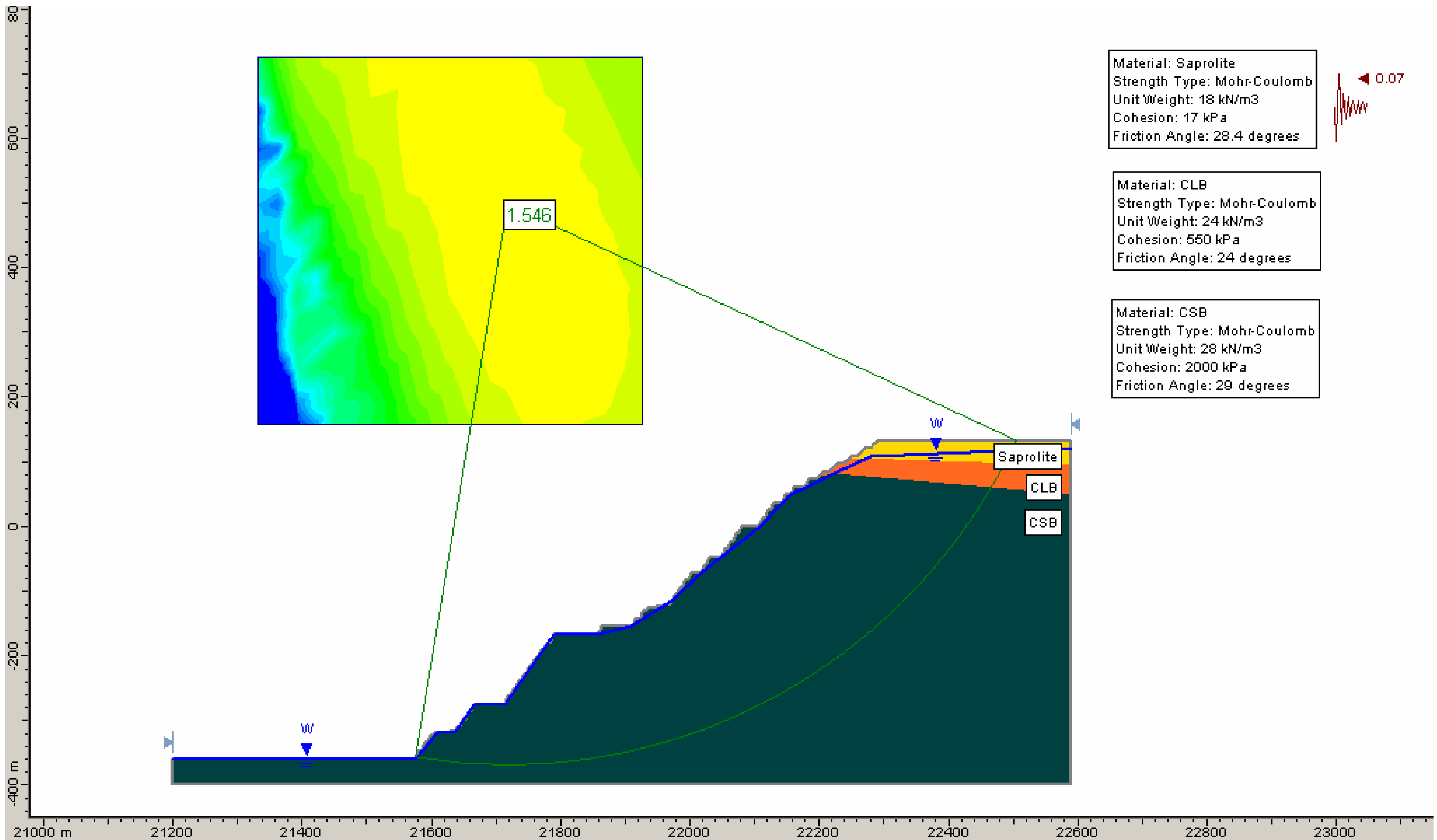


Figure 10: Section B, Case 2, Static Condition

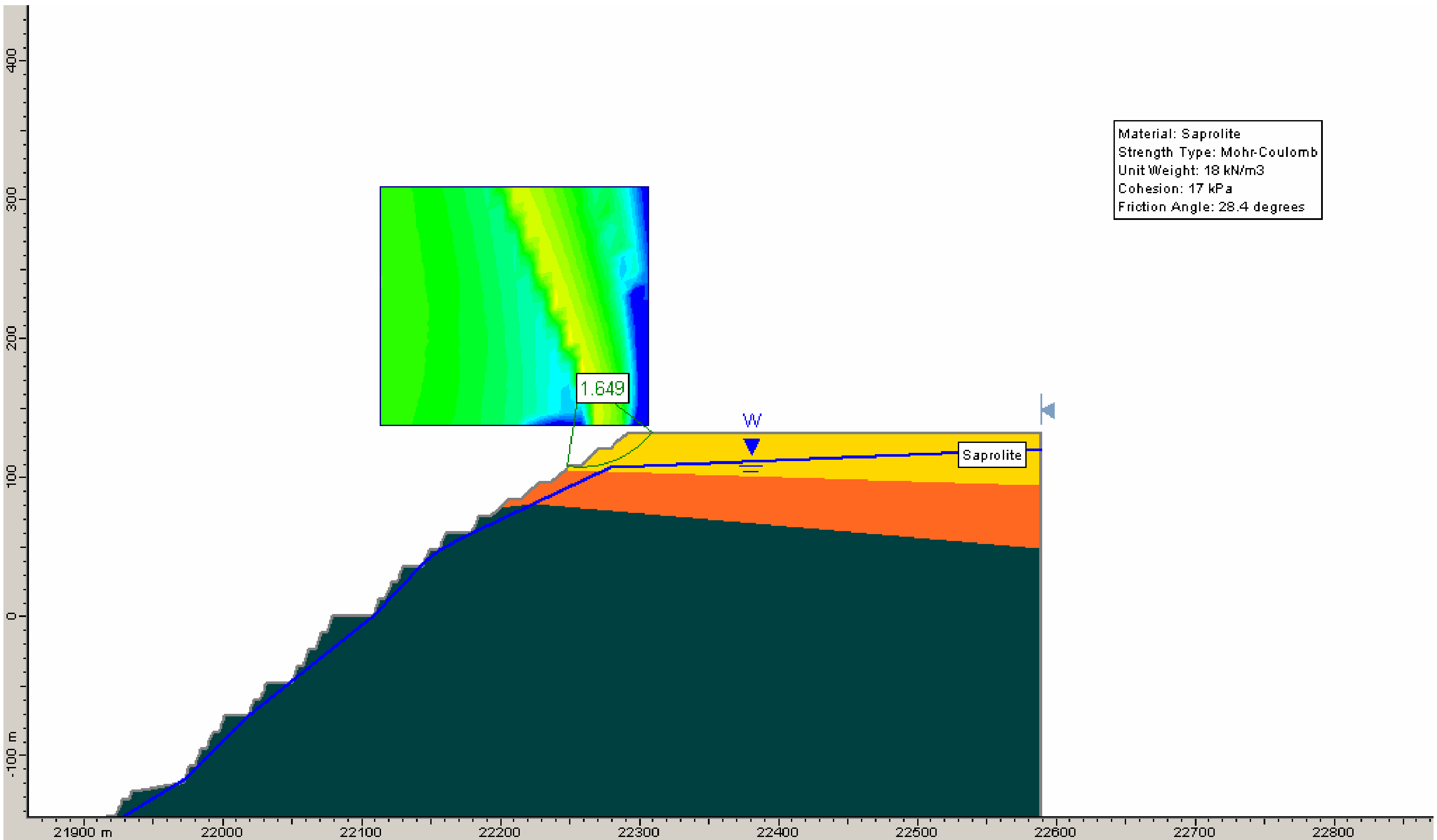
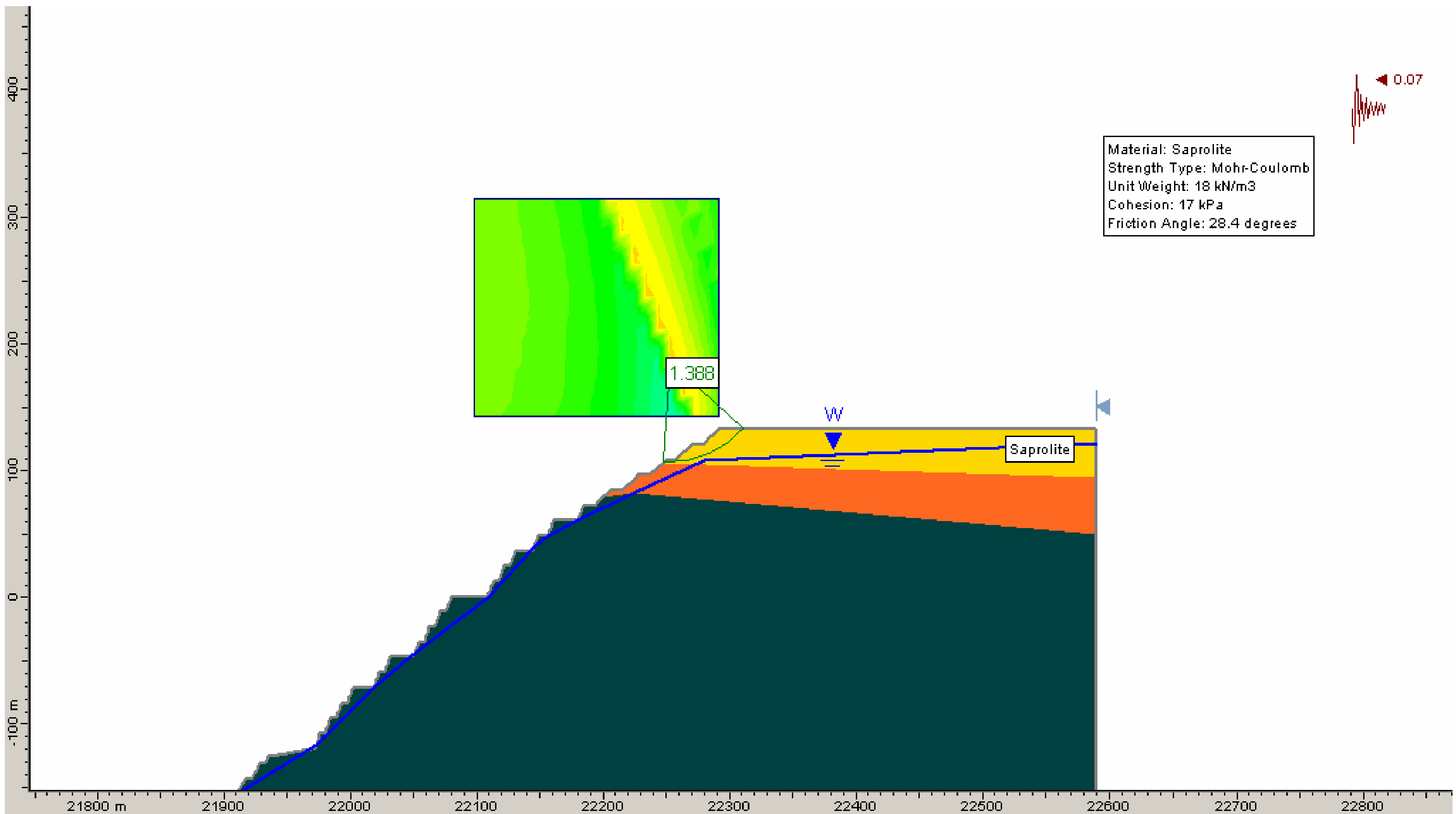


Figure 11: Section B, Case 2, Pseudo-Static Condition



Appendix D

TMF Dam Stability Analysis – 2007 Updated

SNC•LAVALIN
Engineers & Constructors

MEMORANDUM

LAS CRISTINAS PROJECT

TO:	Tom Dyer (MDA)	Date:	November 04, 2007
C.C.:	Bing Wang, Dave Evans		
FROM:	Henri Sangam/Ruijie Chen	Ref.:	**334408-40-4GCB-0009**
Subject:	TMF Dam Stability Analysis – 2007 Updated		

1 General

Las Cristinas property is located in the southeast corner of Venezuela in the Municipality of Sifontes, State of Bolivar, approximately 970 km southeast of Caracas. A Tailings Management Facility (TMF) design report was prepared by SNC-Lavalin in March 2005. It was estimated that to accommodate tailings resulting from the 2005 ore reserves of 333 Mt, an ultimate dam elevation of 202 m would be required for a basin of approximately 3,780,900 m^2. Due to the recent increase in ore reserves to 464 Mt, the TMF needs to be updated to store the resulting increased quantity of tailings. This memo presents an update of TMF dam requirements and a preliminary slope stability analysis for the TMF, based on the recent updated ore reserves estimates.

2 Estimation of the New Dam Crest

A revised dam crest was estimated at El. 230 m for the increased total ore reserve of 464 Mt using the same tailings basin as in the Tailings Management Facility Design Report (2005). The dam crest elevation was estimated based on average tailings density used in the previous design as presented in the Tailings Management Facility Design Report (SNC-Lavalin, 2005). In the next level of design the dam crest elevation should be determined more accurately based on density determined from the various ore types from the mine development plan and a simulation of consolidation process.

An average settled tailings dry density of 1.36 t/m^3 was assumed based on the variable dry densities provided in the Tailings Management Facility Design Report (SNC-Lavalin, 2005). In addition, the same normal operating pond volume, extreme storage and free board were assumed for the dam crest estimate.

Considering the difference between the settled dry density of saprolite dominate tailings and bedrock dominate tailings and the possible further tailings consolidation for longer mine life, substantial change of the dam crest is expected subsequent to developing a new mine plan and mine life.

3 Dam Stability Analysis

3.1 Analysis Basis and Considerations

Preliminary stability analyses were carried out for the highest dam section for the ultimate dam, crest at El. 230 m. The phreatic surfaces were assumed based on previous seepage modelling results presented in Tailings Management Facility Design Report (SNC-Lavalin, 2005). In order to evaluate the dam stability with respect to the presence of soft, disturbed, potentially low shear strength saprolite clay foundation, sensitivity analyses were carried out for both the starter dam and ultimate dam.

Effective stress analyses have been used for the ultimate dam stability since total stress analysis is judged not applicable to the present condition due to the fact the dam raising will be slow, and there is an expected quick consolidation of the saprolite foundation, resulting in no appreciable amount of porewater increase in the dam foundation

The two analyzed cases are summarized below.

Tailings Beach Saturated – Stability analyses were carried out for the ultimate dam when it is filled with tailings using the effective stress approach. The foundation saprolite was assumed to have a friction angle of 34 degrees and an effective cohesion of 50 kPa. The tailings beach was assumed saturated in this case and both static and seismic loading conditions were analyzed. The effective horizontal acceleration of the maximum design earthquake (MDE), 0.17 *g,* was applied in the seismic analysis. As discussed in the Tailings Management Facility Design Report (SNC-Lavalin, 2005), the design earthquake was selected as a 1/10,000 annual probability earthquake which was estimated with a peak ground acceleration (PGA) of 0.2g. A 30% amplification was applied to the PGA to account for the possible amplification generated by the overburden saprolite. In addition, since the peak ground acceleration is instantaneous during earthquake, 2/3 of the PGA, i.e., 0.17g has been selected based on common practice.

Tailings Beach Saturated (Sensitivity Analysis) – Sensitivity analysis was carried out for the ultimate dam with the presence of potentially low shear strength saprolite in the upper 3 m of the foundation. The lower shear strength was reflected by using a friction angle of 25 degrees and 10 kPa of effective cohesion in the upper 3 m of saprolite foundation soil. This condition was selected to simulate the possibility of lower strength saprolite in the low lying areas. The effective horizontal acceleration of the MDE, 0.17 *g,* was applied in the seismic analysis. This analysis represents the worst case scenario.

To examine what factor of safety will be achieved with a flatter slope, the above two cases were examined using a downstream slope of 3:1 and a toe berm, respectively.

3.2 Model Set-up and Material Parameters

The stability analyses were performed using a computer software program, "SLIDE", Version 5, developed by RocScience Inc. of Toronto, Ontario, using the Bishop simplified method.

The material strength parameters were obtained based on laboratory test data from the TMF area and engineering judgement as discussed in "Tailings Management Facility Design Report" (SNC-Lavalin, 2005). The material parameters used in the analyses are summarized in Table 1.

Table 1: Material Properties for Stability Analyses

<table>
<tr><th>Material</th><th>Description</th><th>Unit Weight (kN/m^3)</th><th>Angle of Internal Friction (°)</th><th>Cohesion (kPa)</th></tr>
<tr><td colspan="2">Compacted Saprolite Fill</td><td>19.0</td><td>29.0</td><td>28.0</td></tr>
<tr><td colspan="2">Granular Filter</td><td>20.0</td><td>35.0</td><td>0</td></tr>
<tr><td colspan="2">Rockfill</td><td>21.0</td><td>35.0</td><td>0</td></tr>
<tr><td rowspan="3">Tailings</td><td>Tailings SAPO (fresh)</td><td>16.3</td><td>15.0</td><td>0</td></tr>
<tr><td>Tailings SAPO (consolidated)</td><td>17.0</td><td>20.0</td><td>0</td></tr>
<tr><td>Tailings (MIXED)</td><td>19.4</td><td>25.0</td><td>0</td></tr>
<tr><td rowspan="4">Foundation</td><td>0-3 m Saprolite</td><td rowspan="2">17.8</td><td>34.0 (25.0)</td><td>50.0 (10)</td></tr>
<tr><td>3-20 m Saprolite</td><td>34.0</td><td>50.0</td></tr>
<tr><td>20-75m CLB</td><td>24.0</td><td rowspan="2" colspan="2">Hard Bottom</td></tr>
<tr><td>75 m below, CSB</td><td>28.0</td></tr>
</table>

Note: The values in brackets denote the parameters used in sensitivity analysis.

3.3 Stability Criteria

The design criteria with respect to the stability requirements of the dams are summarized in Table 2. The minimum required factor of safety (FOS) for the dam slopes under static loading conditions is 1.3 during construction, 1.5 for operating conditions with a full tailings pond and also 1.5 for long-term closure conditions. These minimum factors of safety are based on the Canadian Dam Association's "Dam Safety Guidelines" (1999). It is noted that the minimum factors of safety given on Table 2 for the pseudo-static analyses are for screening purposes only and that a factor of safety of less than one can be accepted, but this condition triggers a deformation analyses.

Table 2: Required Minimum Factors of Safety

<table>
<tr><th colspan="3">Loading Conditions</th><th>Required Minimum Factor of Safety</th></tr>
<tr><td>Static</td><td colspan="2">End of Construction, Operation and Closure</td><td>1.3* (End of Construction)
1.5* (Operation and Closure)</td></tr>
<tr><td rowspan="2">Pseudo-Static (Earthquake)</td><td rowspan="2">End of Construction, Operation and Closure</td><td>Starter and Intermediate Dams</td><td>1.0** (End of Construction, Upstream Slips)</td></tr>
<tr><td>Ultimate Dam</td><td>1.1** (Operation and Closure)</td></tr>
</table>

Notes: (*) Canadian Dam Association, Dam Safety Guidelines, 1999.
(**) Based on common engineering practice.

3.4 Analysis Results

The analysis results are summarized in Table 3 for the dam with a downstream slope of 2.5:1. The potential slip surfaces for the dams were analyzed as illustrated on Figures 1 to 4. Note that on the stability analysis figures, besides the minimum FOS given, higher FOS values related to different slip surfaces are also provided for information.

The stability analyses demonstrate that the ultimate dam is stable for the current design with a downstream slope of 2.5:1, with a calculated FOS value of 1.87 for static loading conditions and 1.19 for seismic loading conditions, satisfying the minimum required under both static and seismic loading conditions (Table 2).

The increase of dam crest from El 202 m (2005 design) to 230 m (based on 2007 ore reserves) with a downstream slope of 2.5:1 will result in an increase of the dam base by about 70 m.

Table 3: Factor of Safety - Ultimate Dam Stability Analyses (2.5:1 Slope)

Case	Downstream Slope	
	Static	Seismic Loading (0.17g)
Tailings Beach Saturated, effective stress analysis	1.87 (Fig. 1)	1.19 (Fig. 2)
Tailings Beach Saturated, Sensitivity Analysis, effective stress analysis	1.69 (Fig.3)	1.05 (Fig. 4)

Notes: 1) The figure number showing the critical slip surface is in brackets below the factor of safety.

Due to a marginal factor of safety obtained for the dam with a downstream slope of 2.5:1, scenarios to increase the FOS were examined. The two scenarios examined include a flatter downstream slope of 3.0:1 and 2.5:1 slope with a toe berm. The results of the analysis for the dam with a downstream slope of 3.0:1 are presented in Table 4. The potential slip surfaces for the dams are shown on Figures 5 to 8.

Table 4: Factor of Safety - Ultimate Dam Stability Analyses (3:1 Slope)

Case No. and Name	Downstream Slope	
	Static	Seismic Loading (0.17g)
Tailings Beach Saturated, effective stress analysis	2.23 (Fig. 5)	1.29 (Fig. 6)
Tailings Beach Saturated, Sensitivity Analysis, effective stress analysis	1.96 (Fig. 7	1.17 (Fig. 8)

Notes: 1) The figure number showing the critical slip surface is in brackets below the factor of safety.

As can be seen, the FOS values are higher than for the dam with a downstream 2.5:1 and compare very well with FOS obtained for dam with a crest elevation at 202 m as presented in Tailings Management Facility Design Report (SNC-Lavalin, 2005). However, the increase of dam crest from El 202 m (2005 design) to 230 m (based on 2007 reserves) with a downstream slope of 3:1 will result in an increase of the dam base by about 85 m in comparison with the 70m increase for the 2.5:1 slope.

The stability analysis results for the scenarios with a toe berm of 35 m wide and 10 m high are summarized in Table 5 and the potential slip surfaces for the dams were analyzed as illustrated on Figures 8 to 12.

Table 5: Factor of Safety - Ultimate Dam Stability Analyses (2.5:1 Slope with Toe Berm)

Case No. and Name	Downstream Slope	
		Seismic Loading
	Static	0.17g
Tailings Beach Saturated, effective stress analysis	1.88 (Fig. 9)	1.20 (Fig. 10)
Tailings Beach Saturated, Sensitivity Analysis, effective stress analysis	1.81 (Fig. 11)	1.07 (Fig. 12)

Notes: 1) The figure number showing the critical slip surface is in brackets below the factor of safety.

The analysis results presented in Table 5 demonstrates that the FOS values for the dam with a downstream 2.5:1 can be increased with the presence of a toe.

4 Conclusions and Recommendations

In the 2005 Tailings Management Facility (TMF) design report, it was estimated that to accommodate tailings resulting from the 2005 ore reverses of 333 Mt, an ultimate dam elevation of 202 m would be required for a basin of approximately 3,780,900 m^2. Due to the recent increase in ore reserves to 464 Mt, the TMF needs to be updated to store the resulting tailings.

If the 2005 TMF basin is maintained, it is estimated that an ultimate dam crest elevation of 230 m would be required to accommodate tailings resulting from 2007 ore reserve estimate of 464 Mt. This estimate was based on an average tailings density of 1.36 t/m^3. A more accurate crest elevation should be calculated at the next level of design using densities based on the different ore types identified in the mine development plan and a simulation of consolidation process.

The slope stability analysis showed that ultimate dam with a crest elevation at 230 m and a downstream slope of 2.5H:1V should be stable for both static and seismic loading conditions. However, there is no available case history that a 100 m high dam using saprolite can be constructed and on potentially a collapsible saprolite foundation. Therefore, monitoring of porewater pressure response and performance in the foundation soil during initial and subsequent construction phases will be paramount in order to acquire relevant information that will help to decide and optimize on the approach and precautions to take during the raising of the dam to the new ultimate elevation.

The analysis showed that flattening the downstream slope to 3:1 would significantly enhance the stability of the slope. However, flattening the slope will result in significant increase in material quantities required for the construction of the dam. The analysis results also showed that an addition of a toe berm to the 2.5:1 slope will also enhance the stability but would require less construction material than for a flatter slope of 3:1.

Based on the monitoring results during the construction and mine operation, a toe berm may be added as required to enhance the stability of the downstream slope. It is noted that erosion protection of the dam slope will also be required.

Increasing the dam crest elevation from 202 m (2005 design) to 230 m (based on 2007 reserves) will result in an increase of the dam base by about 70 to 100 m, depending on the final stable slope configurations.

One alternative that needs to be examined is to expand the TMF footprint to increase the storage volume without significantly increasing the ultimate dam crest elevation. The potential size of the expansion estimated based on preliminary sizing iteration as illustrated on Figure 13, will provide storage for tailings resulting from the 2007 ore reserve estimates of 464 Mt without any or significant increase of the ultimate dam crest elevation. The proposed expansion is to the north and to the west of the 2005 TMF footprint.

Note that, should the option to expand the TMF footprint is carried forward; substantial dam alignment optimization and geotechnical field investigation would be required for the detail design.

The stability analysis presented herein is solely based on data/parameters inferred from previous investigations data carried out for a lower height dam. Due to the height increase to about 100 m, additional field investigation and tests are required to confirm the analysis. The additional soil tests will include, but are not necessarily limited to, consolidation tests, collapse potential, triaxial shear tests, in-situ permeability testing, etc.

It is also recommended to carry out seepage and contaminant transport analysis to evaluate the impact of increased tonnage of tailings on the environment and identify required mitigation measures that should be implemented, if any.

Recommendations presented in 2005 design report regarding site preparation, construction and monitoring should be still followed.

5 References

SNC-Lavalin (2005). Tailings Management Facility Design Report.

Canadian Dam Association (1999). Dam Safety Guidelines.

Figure 1: Ultimate Dam (2.5H:1V)– Base Case (Static Condition)

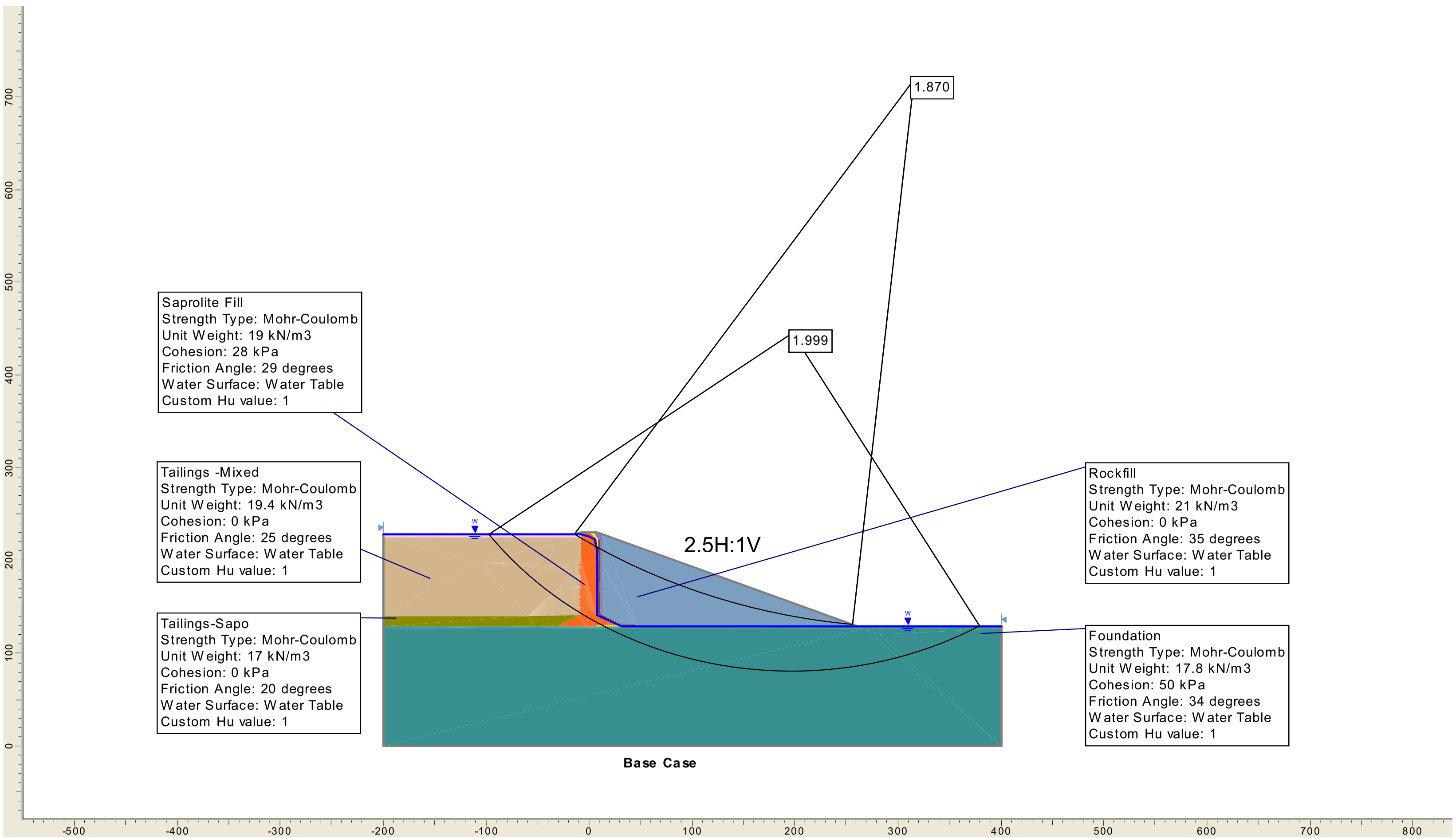


Figure 2: Ultimate Dam (2.5H:1V) – Base Case (Seismic Loading Condition)

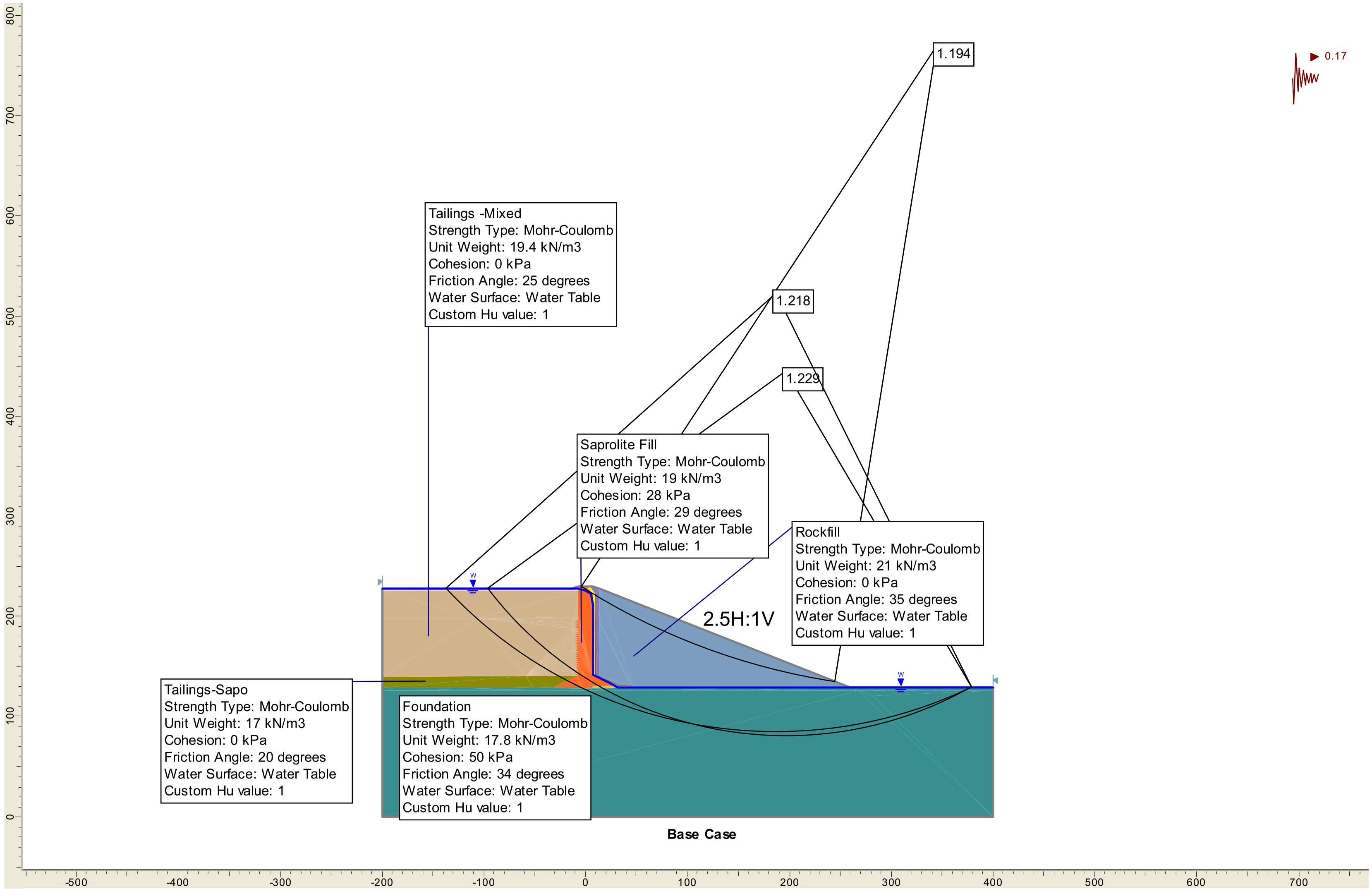


Figure 3: Ultimate Dam (2.5H:1V)– Sensitivity Analysis (Static Condition)

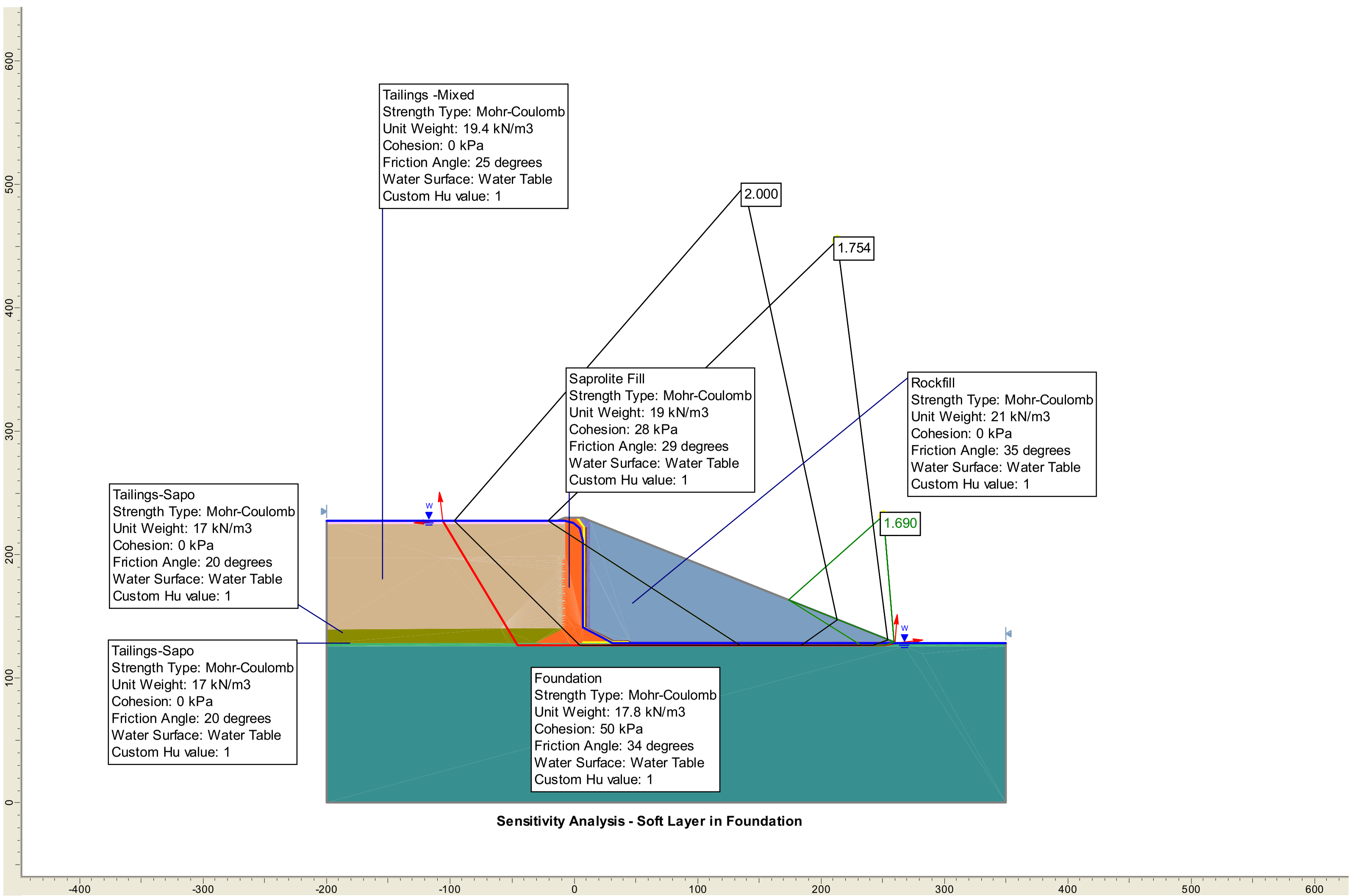


Figure 4: Ultimate Dam (2.5H:1V)– Sensitivity Analysis (Seismic Loading Condition)

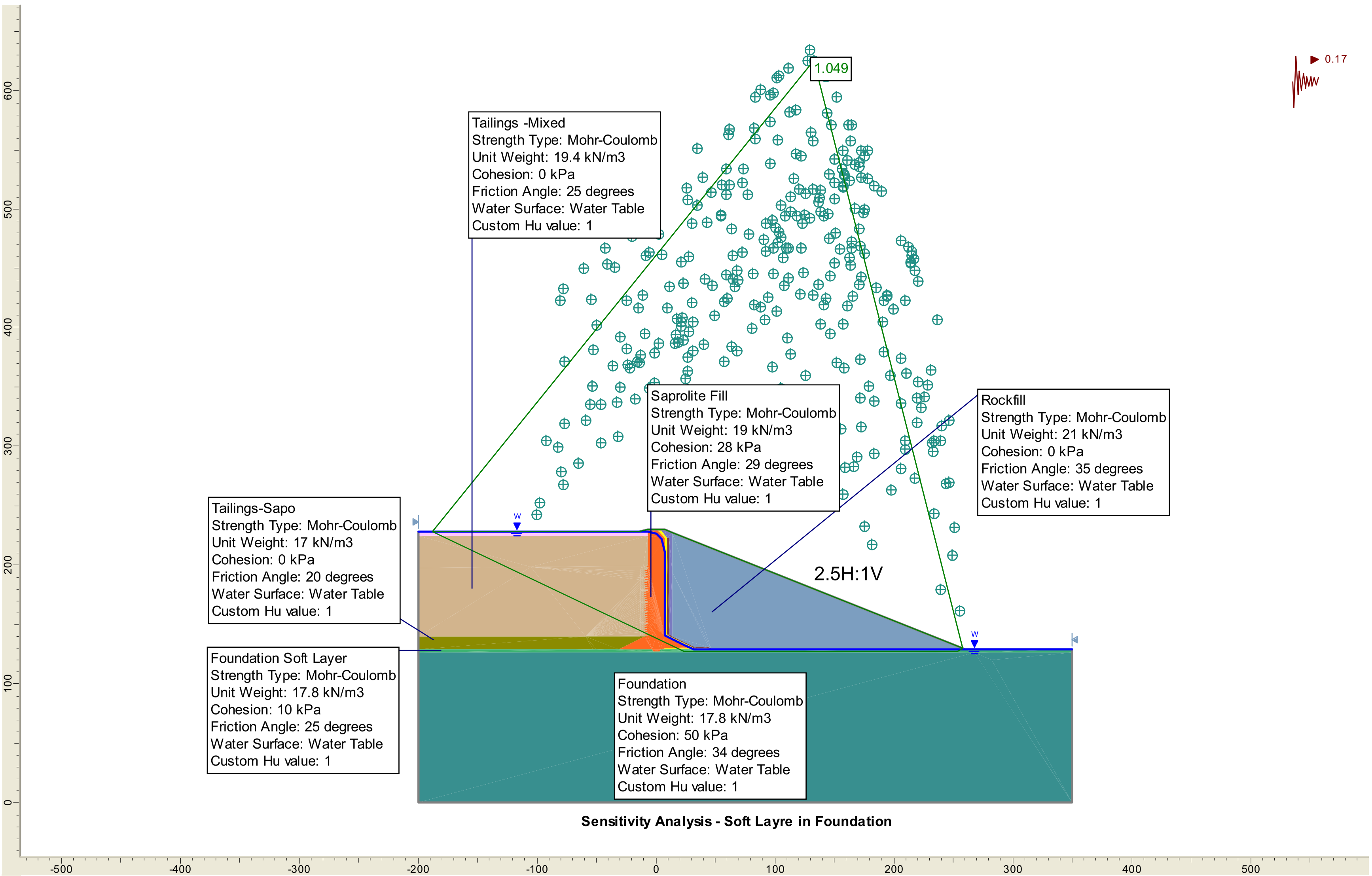


Figure 5: Ultimate Dam (3H:1V)– Base Case (Static Condition)

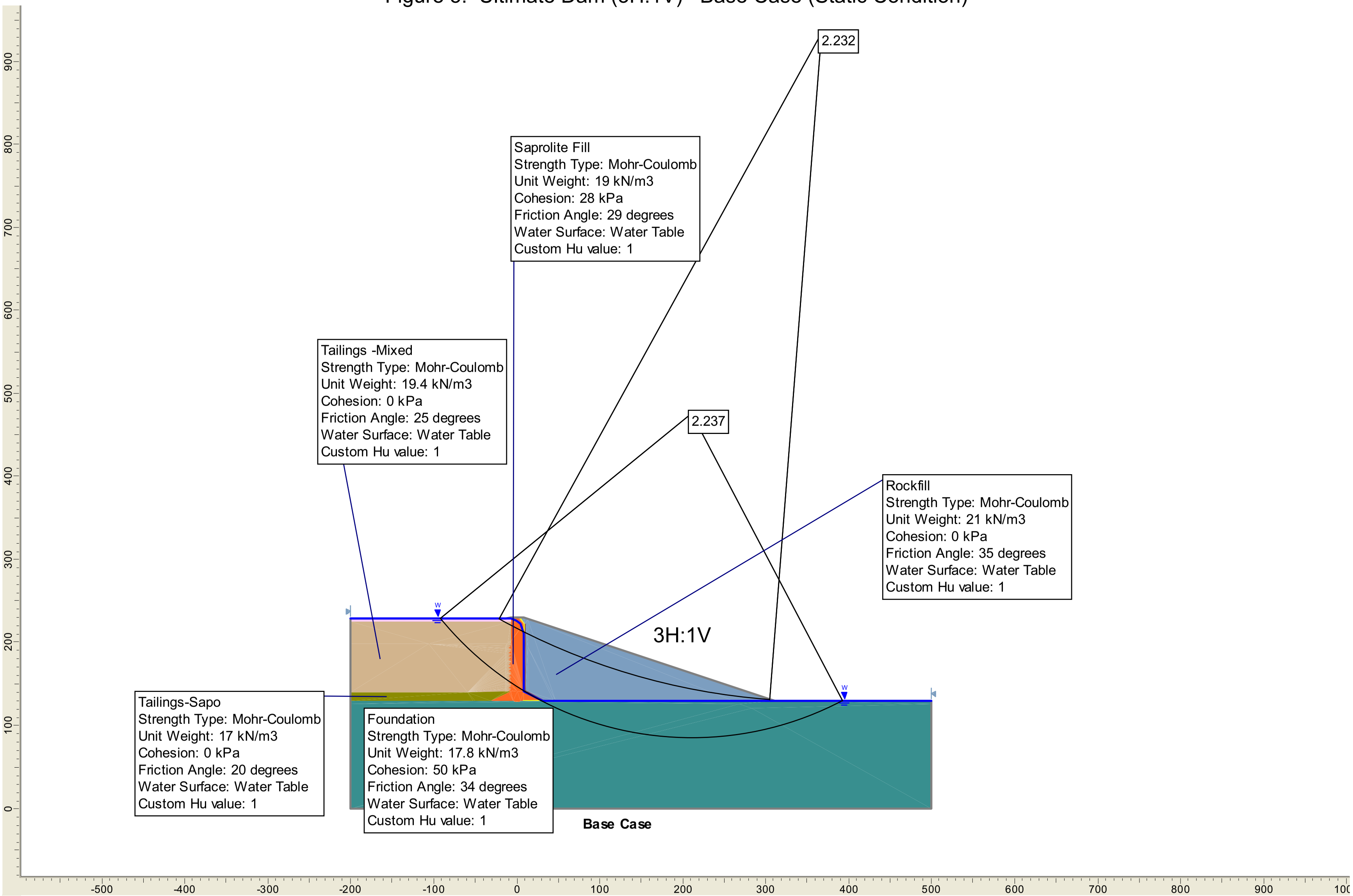


Figure 6: Ultimate Dam (3H:1V)– Base Case (Seismic Loading Condition)

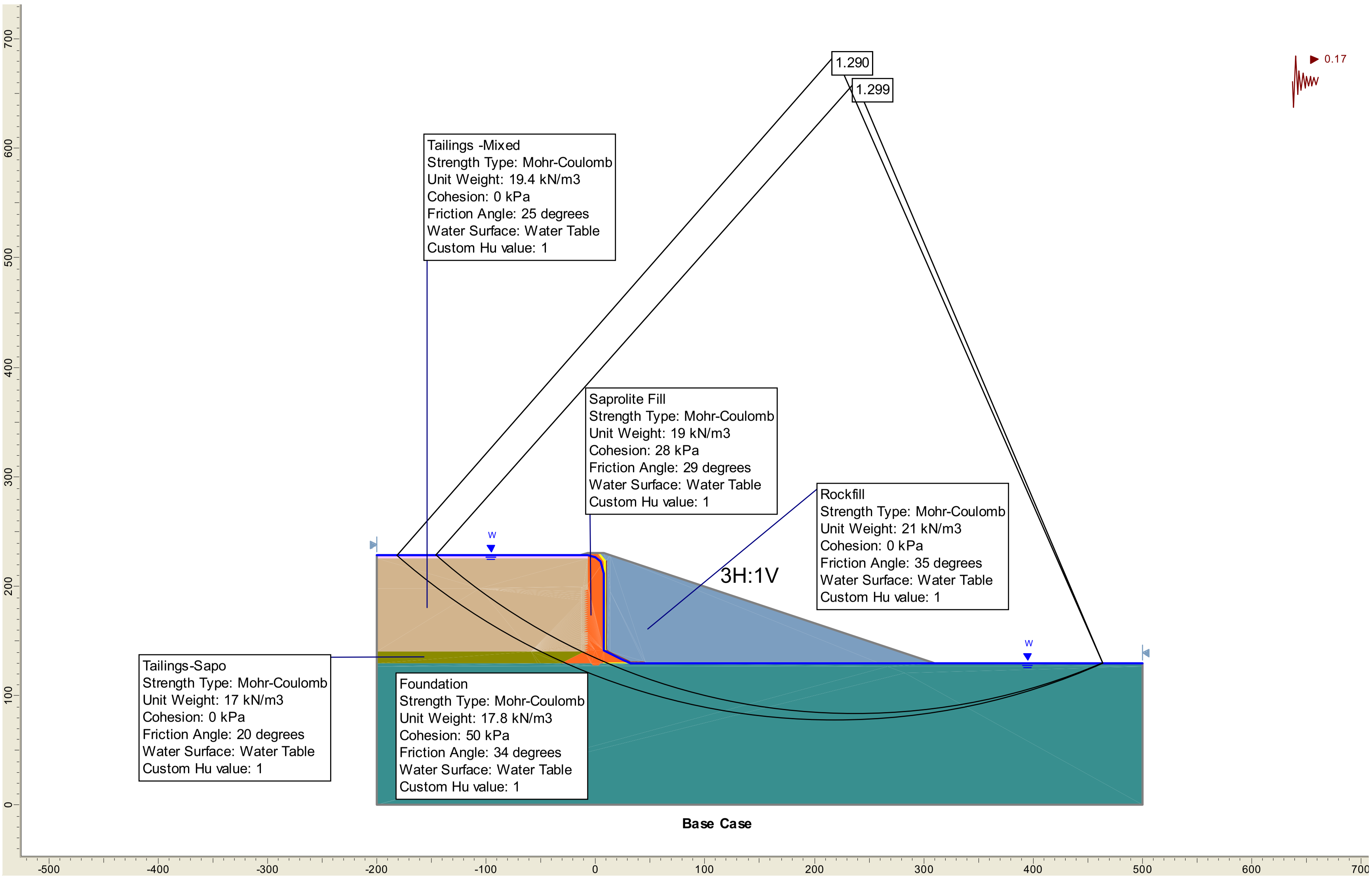
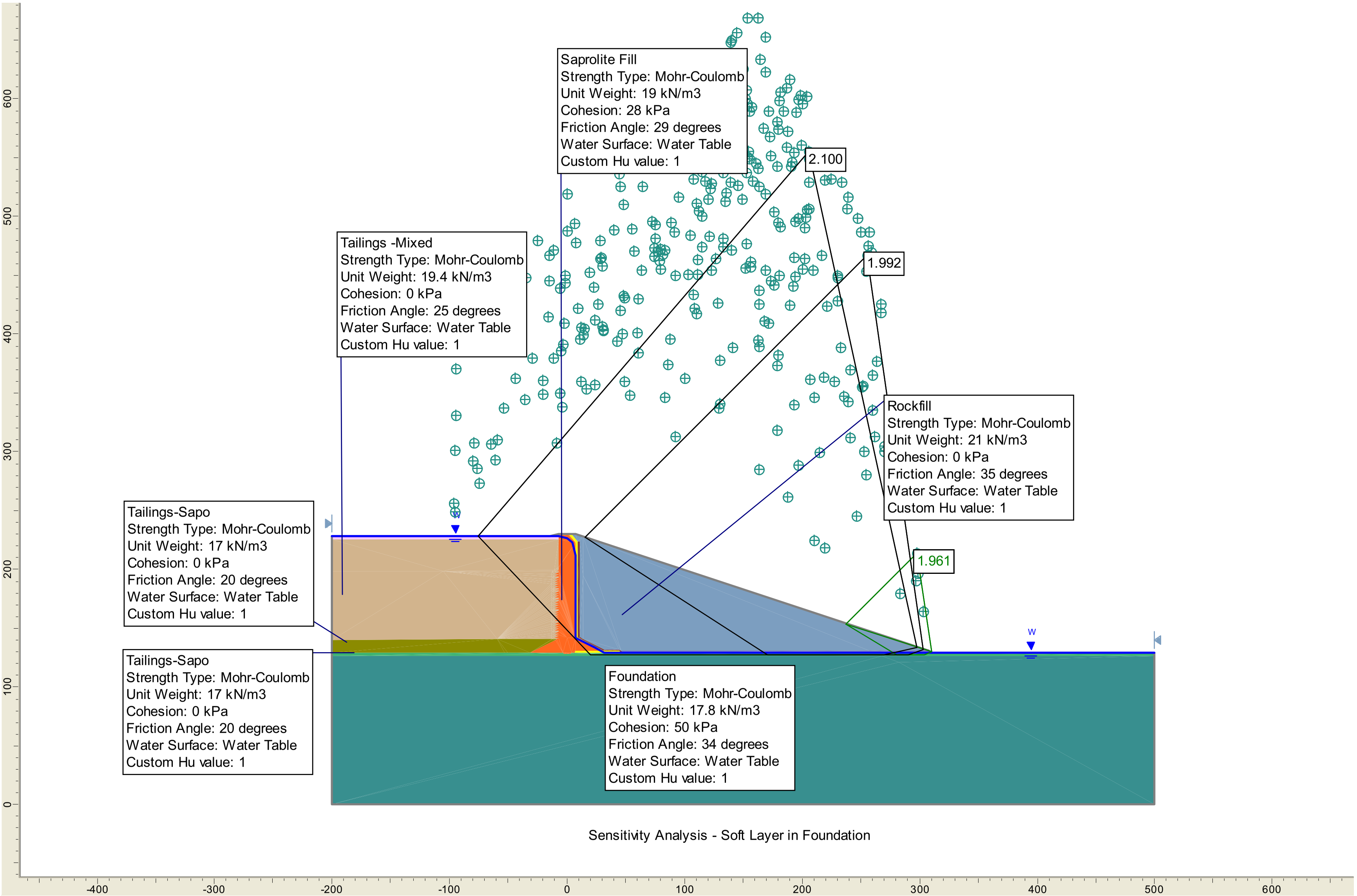


Figure 7: Ultimate Dam (3H:1V)– Sensitivity Analysis (Static Condition)



Sensitivity Analysis - Soft Layer in Foundation

Figure 8: Ultimate Dam (3H:1V)– Sensitivity Analysis (Seismic Loading Condition)

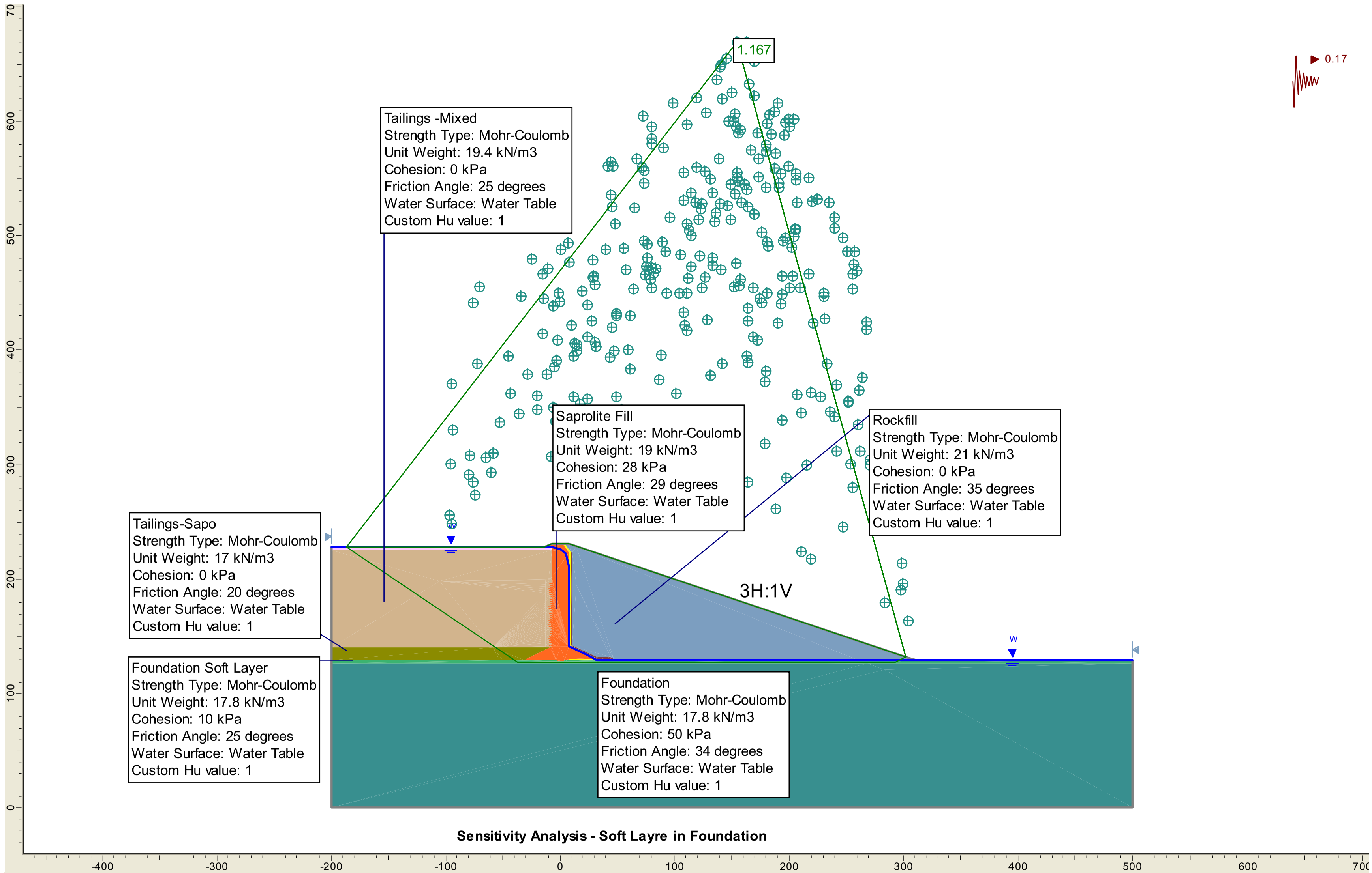


Figure 9: Ultimate Dam (2.5H:1V, 10m high, 35m wide toe berm)– Base Case (Static Condition)

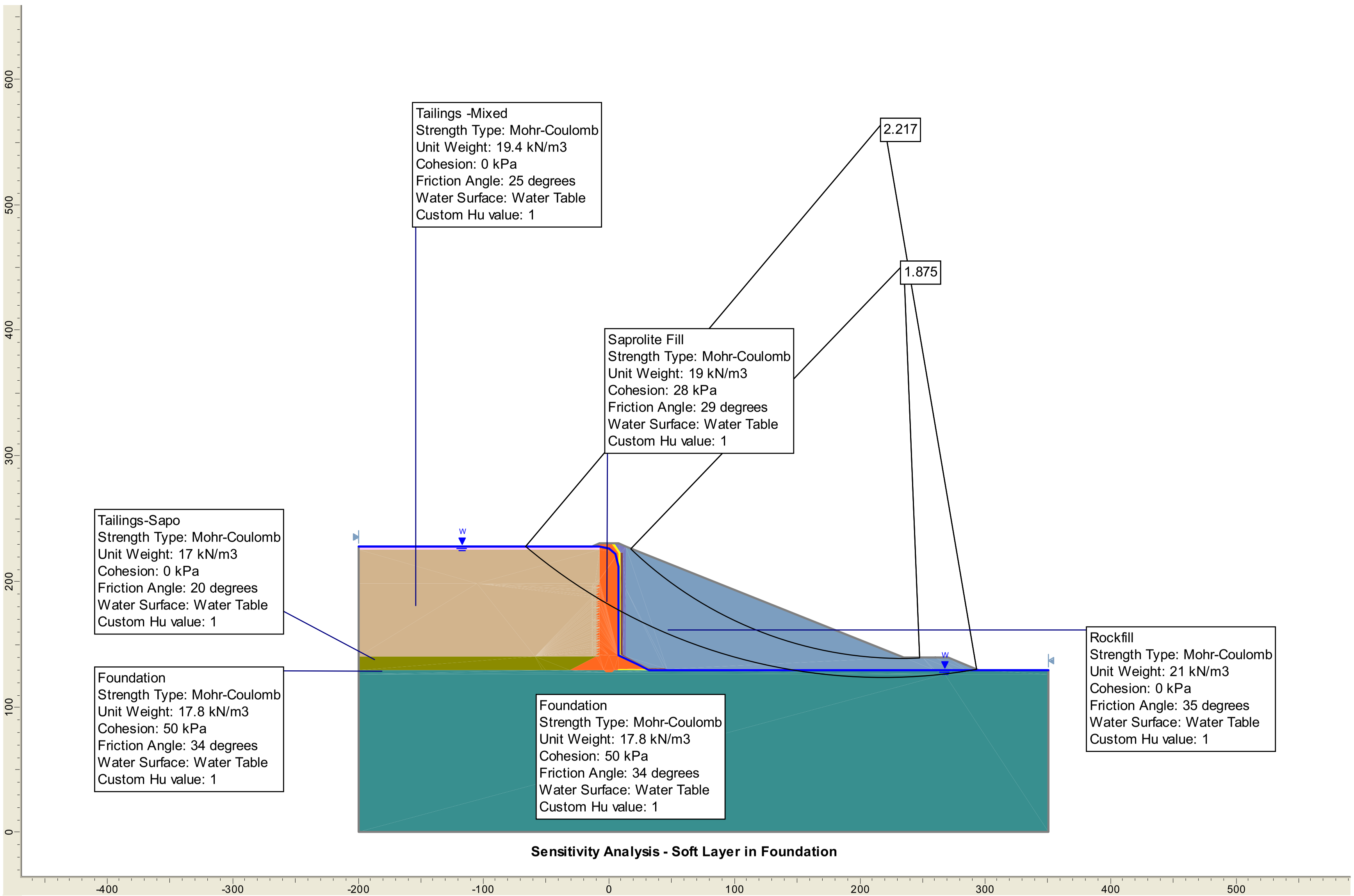


Figure 10: Ultimate Dam (2.5H:1V, 10m high, 35m wide D/S berm)– Base Case (Seismic Loading Condition)

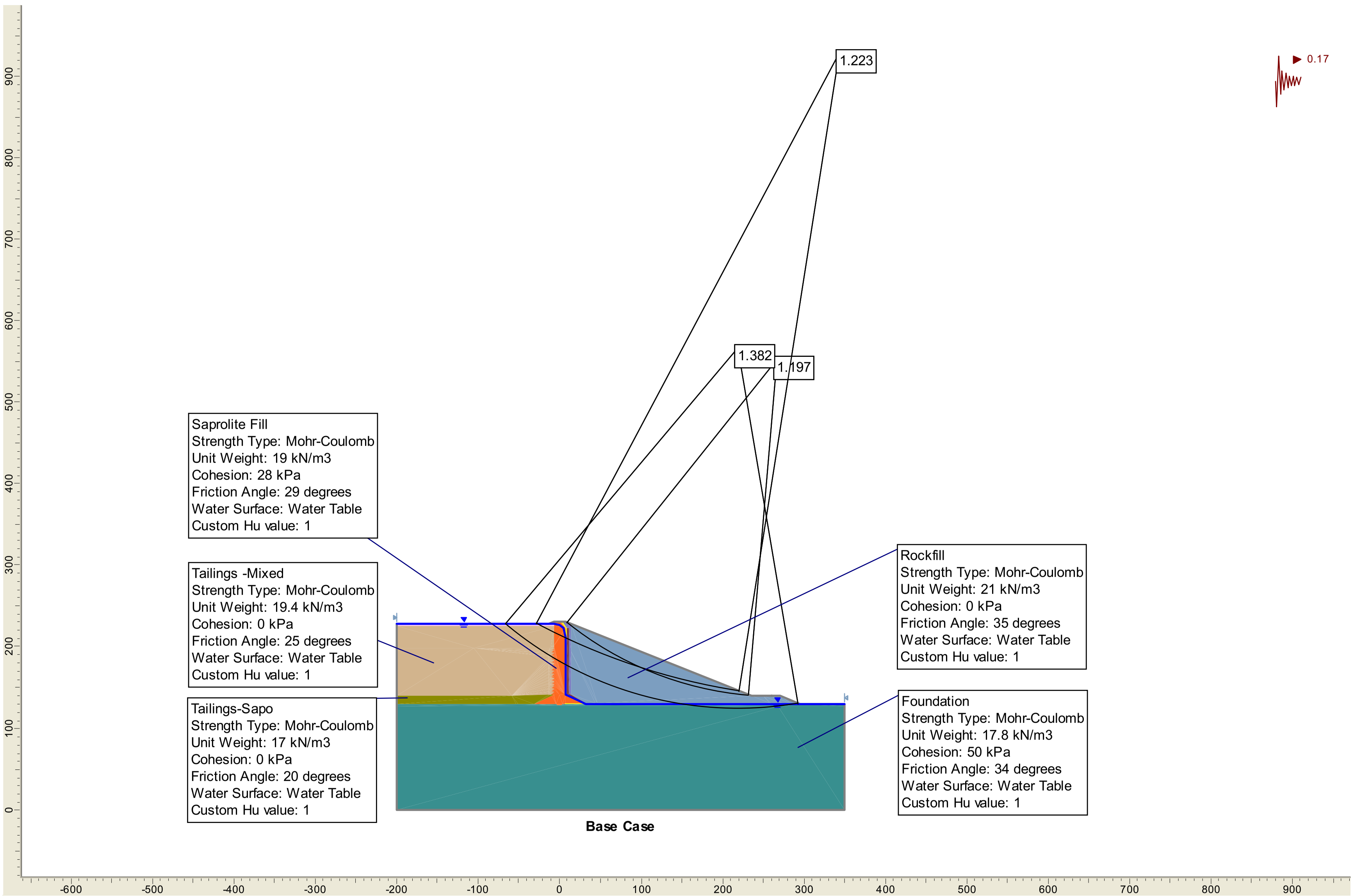
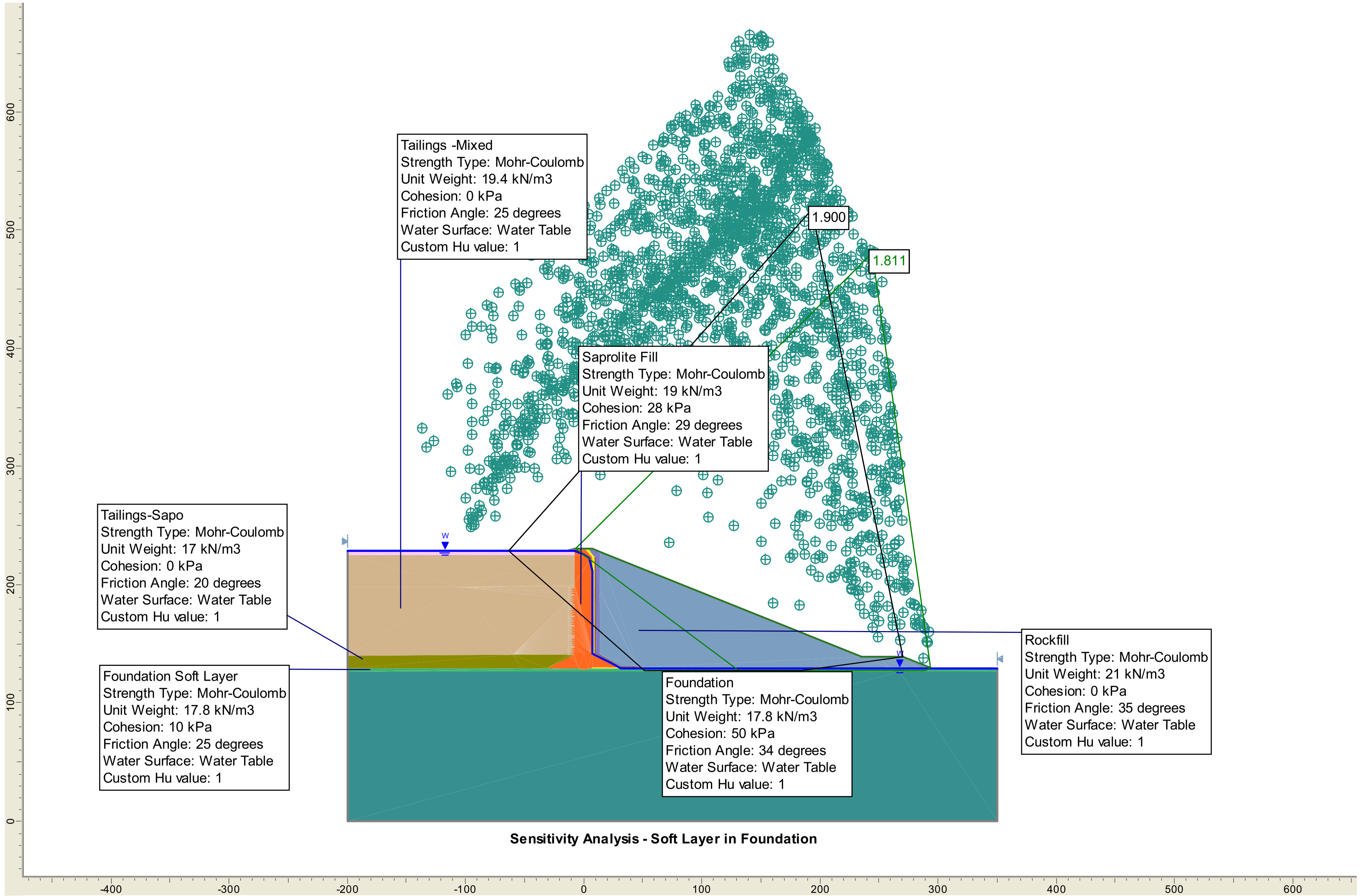
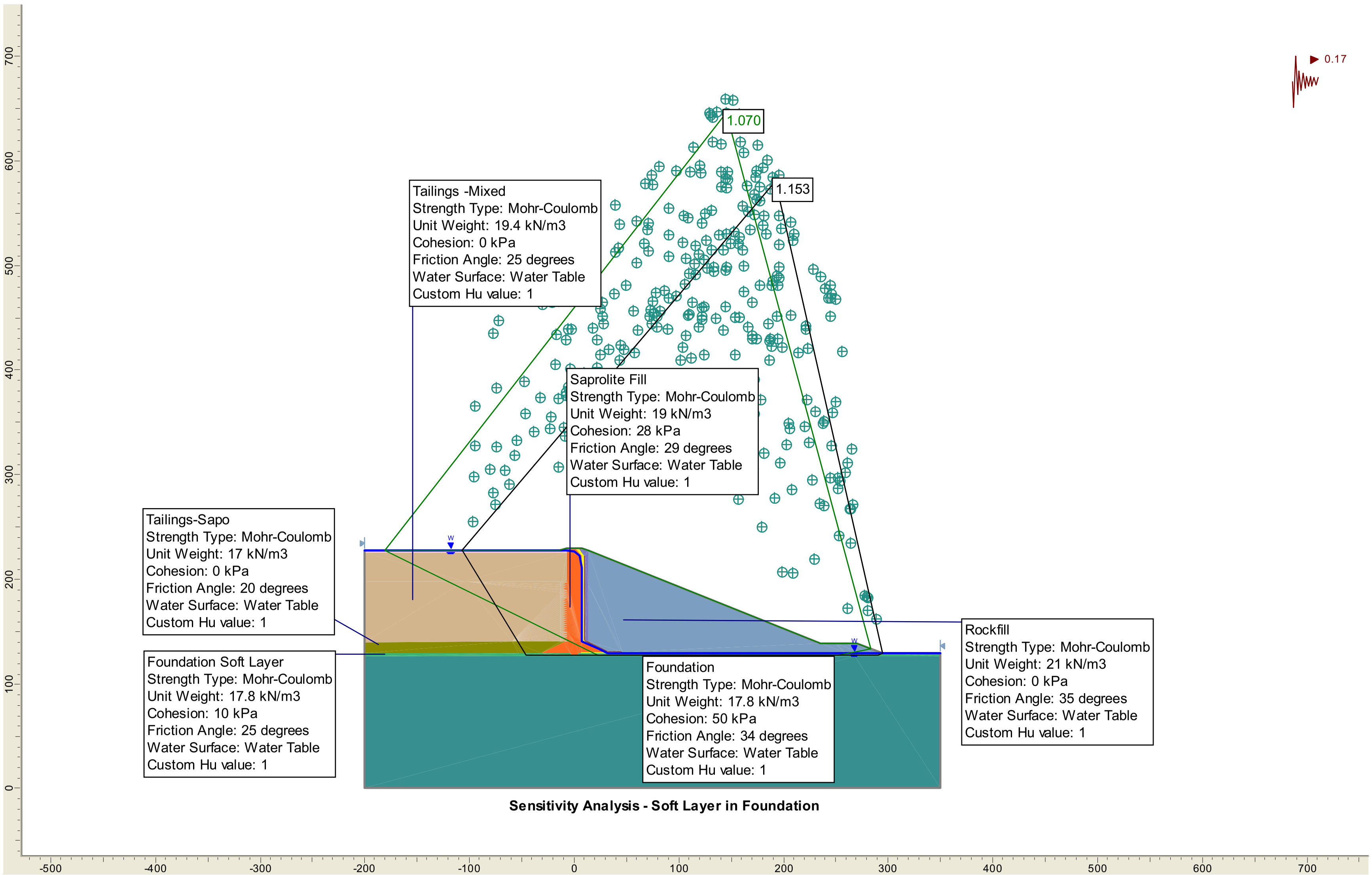


Figure 11: Ultimate Dam (2.5H:1V, 10m high, 35m wide toe berm)– Sensitivity Analysis (Static Condition)



Sensitivity Analysis - Soft Layer in Foundation

Figure 12: Ultimate Dam (2.5H:1V, 10m high, 35m wide toe berm)– Sensitivity Analysis (Seismic Loading Condition)



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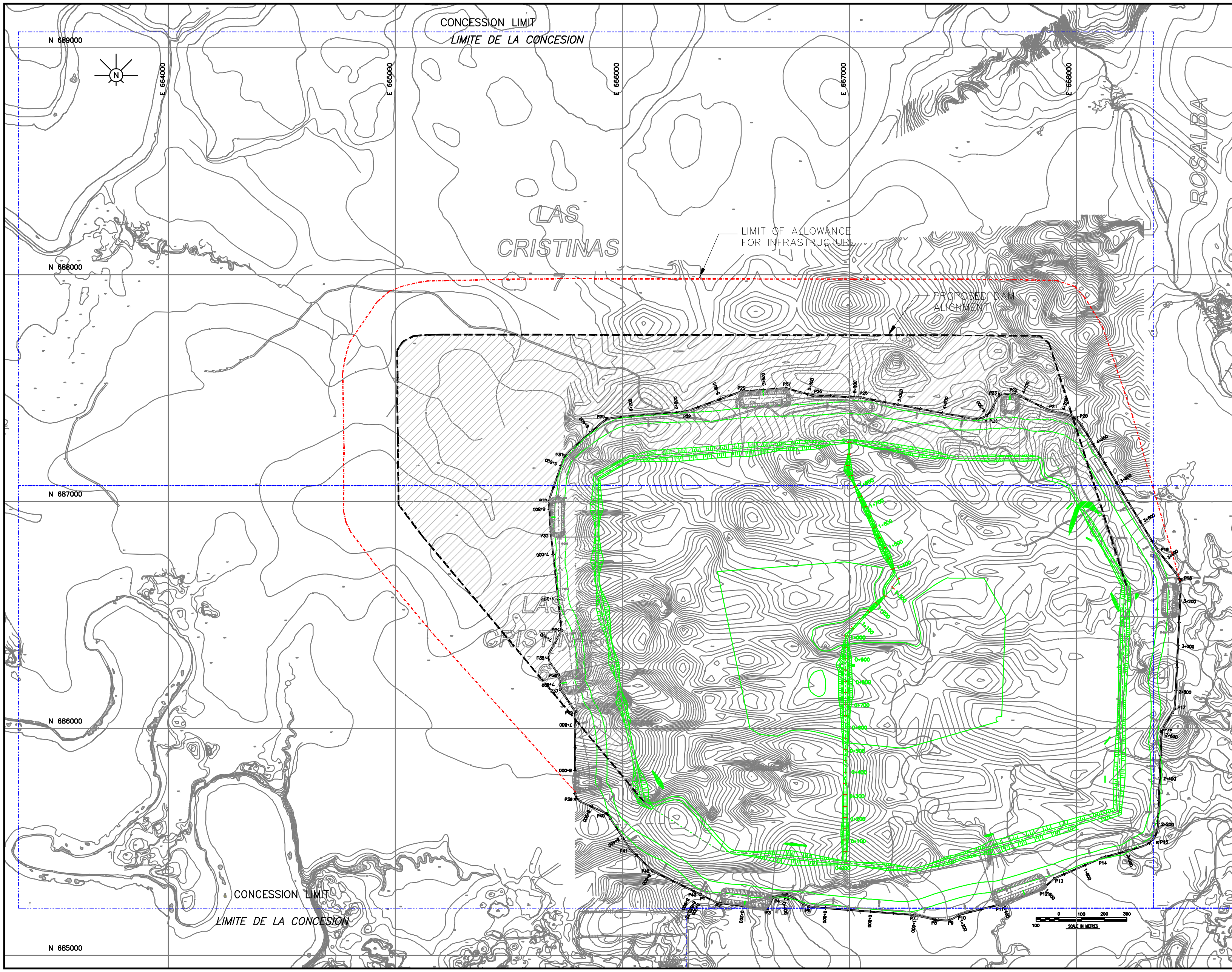

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TITLE

LAS CRISTINAS PROJECT
TMF AREA

POTENTIAL TMF EXPANSION

FIGURE 13