TECHNICAL REPORT ON THE PRE-FEASIBILITY STUDY FOR THE SANTA ELENA PROJECT, SONORA, MEXICO

PREPARED FOR SILVERCREST MINES INC.

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August 11, 2008

Scott Wilson

RPA

SCOTT WILSON ROSCOE POSTLE ASSOCIATES INC.

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1 SUMMARY

EXECUTIVE SUMMARY

Scott Wilson Roscoe Postle Associates Inc. (Scott Wilson RPA) was retained by SilverCrest Mines Inc. (SVL) to prepare an independent Technical Report on the Santa Elena Silver-Gold Project (the Project), located in Sonora, Mexico. The purpose of this report is to review the Pre-feasibility Study (the Study) prepared by SVL in February 2008. The Project comprises development of a 2,500 tonnes per day open pit mine with processing by heap leach to produce gold-silver doré. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects.

SVL is a junior mining company listed on the TSX-V Exchange, with an emphasis on silver projects. The current property holdings include exploration and advanced stage projects in Mexico and El Salvador.

Currently, the major assets and facilities associated with the Project are:

- A gold-silver deposit amenable to open pit mining and heap leach processing.
- A 138 m shaft and underground workings from historical operations.
- Access and site roads.
- Miscellaneous service buildings related to the historic operation and the current exploration and development program.

All currency units in this report are US$ unless otherwise noted.

ECONOMIC ANALYSIS

A Cash Flow Projection has been generated from the Life of Mine production schedule and capital and operating cost estimates, and is summarized in Table 1-1. A summary of the key criteria is provided below.

REVENUE

- 2,500 tonnes of ore per day mined from the open pit (average of 817,744 tonnes of ore per year).

- Leach recovery by zone, as indicated by testwork, averaging 67%.
- Reduction in ounces for gold entrained in mill circuit.
- Gold at refinery 99.965% payable.
- Exchange rate US$1.00 = 10.58 Mexican pesos.
- Metal price: US$ 800 per ounce gold initially, declining to US$750 per ounce long term, averaging US$765 per ounce. US$14.00 per ounce silver, declining to US$11.50 long term, averaging US$11.95 per ounce.
- Revenue is recognized at the time of production.

COSTS

- Operating mine life: eight years.
- Additional two years of leaching post cessation of mining activity.
- Life of Mine production plan as summarized in Table 1-5.
- Pre-production capital totals $20.3 million.
- Mine life sustaining capital totals $15.0 million.
- Average operating cost over the mine life is $15.34 per tonne processed.
- Salvage value is 10% of original fixed assets.
- Working capital is recovered in Year 8 once mining ceases.
- Depreciation of plant and equipment is applied on a straight-line basis during the mine life and depreciation of vehicles is applied over a four year period.

The Project has an estimated cash operating cost of $333 per ounce of gold equivalent. Including capital, the total cash cost is estimated to be $434 per ounce of gold equivalent.

The Project base case shows an after-tax internal rate of return (IRR) of 70.3% and an after-tax net present value (NPV) of $44.6 million, assuming a discount rate of 8%. The after-tax NPV at discount rates of 10%, 15%, and 20% are $39.8 million, $31.2 million, and $23.1 million, respectively. The pre-tax IRR is 98.9% and the pre-tax NPV at 8% discount is $65.4 million. Simple payback of the Project occurs 15 months from the beginning of production.

TABLE 1-1 CASH FLOW SUMMARY
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Year	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Cumulative
Total Ore (t)		814,850	849,925	849,785	849,606	849,804	849,139	848,684	630,160			6,541,952
Total Waste (t)		1,347,628	2,954,058	5,502,475	5,691,465	10,076,393	4,399,351	1,446,951	308,224			31,726,544
Pushback (t)		-	-	1,381,267	1,571,129	5,955,095	281,279	-	-			9,188,770
Total Tonnes Mined (t)		2,162,478	3,803,983	6,352,260	6,541,071	10,926,196	5,248,489	2,295,635	938,384			38,268,496
Operating Strip Ratio		1.65	3.48	4.85	4.85	4.85	4.85	1.70	0.49			3.45
Overall Strip Ratio												4.85
Head Grade Ag (g/t)		1.74	1.98	1.74	1.59	2.19	1.09	0.91	1.71	Residual Leaching		1.61
Head Grade Au (g/t)		40.36	44.42	55.86	57.68	72.85	50.93	49.48	90.01			56.71
Au Recovery		70%	70%	69%	69%	68%	68%	60%	60%			67%
Ag Recovery		37%	37%	34%	34%	33%	33%	32%	32%			34%
Gold price ($)		800.0	800.0	800.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	765.0
Silver Price ($)		14.0	13.0	12.0	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.95
Total Recovered Au Eq Ounces		38,710	45,195	40,587	38,219	50,741	27,254	21,473	29,704	6,433	2,908	301,223
Gross Revenue ($)		30,968,276	36,155,627	32,469,405	28,664,059	38,055,437	20,440,351	16,104,645	22,278,171	4,824,932	2,180,965	232,141,869
NSR ($/ t ore)		38.00	42.54	38.21	33.74	44.78	24.07	18.98	35.35			35.49
Operating Expenses ($)		9,199,023	11,907,245	13,822,174	13,739,005	14,260,301	14,061,087	10,887,048	7,684,552	2,481,275	2,336,770	100,378,480
Unit Operating Cost ($/ t ore)												15.34
Capital Expenditures ($)	20,345,754	428,529	428,529	2,524,280	2,150,486	6,955,314	1,330,857	428,529	(2,776,054)	204,756	(1,611,739)	30,409,241
CASH FLOW PRE TAX ($)	**(20,345,754)**	**21,340,724**	**23,819,854**	**16,122,951**	**12,774,567**	**16,839,823**	**5,048,407**	**4,789,068**	**17,369,674**	**2,138,902**	**1,455,935**	**101,354,147**
CASH FLOW AFTER TAX ($)	**(20,345,754)**	**16,309,590**	**17,547,896**	**11,507,666**	**9,287,511**	**11,173,215**	**4,332,771**	**4,428,696**	**14,424,011**	**2,138,902**	**1,455,935**	**72,260,438**
Unit Cash Production Cost	$/ oz Au Eq	237.64	263.47	340.56	359.48	281.04	515.93	507.01	258.70	385.70	803.58	333.24
Unit Capital Cost	$/ oz Au Eq											100.95
Total Cash Cost	$/ oz Au Eq											434.19

SENSITIVITY ANALYSIS

Project risks can be identified in both economic and non-economic terms. Key economic risks were examined by running cash flow sensitivities to:

- Gold price
- Exchange rate
- Head grade
- Operating costs (Total Cash Cost)
- Pre-production capital costs
- Mine life

After-tax IRR sensitivity over the base case has been calculated for -20% to +20% variations. The sensitivities are shown in Figures 1-1, 1-2 and Table 1-2.

The sensitivity analysis evaluates the response to a range of gold prices, from $459 to $1,071 per ounce. The sensitivity to changes in capital and operating cost has been shown over a ±20% range. The after-tax Project IRR and NPV at 8% discount rate have been calculated over a ±20% range of gold recoveries.

TABLE 1-2 SENSITIVITY ANALYSIS

SilverCrest Mines Inc. – Santa Elena Mine, Mexico

Variable	Unit	Value	Percent of Base Case	NPV @ 8% ($ Millions)	Internal Rate of Return
Gold price	US$/oz	459.00	60%	-2.78	2.3%
		612.00	80%	19.32	38.7%
		765.00	Base	44.65	70.3%
		918.00	120%	67.51	96.5%
		1,071.00	140%	90.36	121.3%
Capital Cost	$ million	16.28	80%	48.41	91.6%
		18.31	90%	46.53	79.8%
		20.35	Base	44.65	70.3%
		22.38	110%	42.76	62.6%
		24.41	120%	40.88	56.1%

Variable	Unit	Value	Percent of Base Case	NPV @ 8% ($ Millions)	Internal Rate of Return
Operating Cost	$ Million	80.30	80%	54.26	79.7%
		90.34	90%	49.45	75.1%
		100.38	Base	44.65	70.3%
		110.42	110%	39.84	65.5%
		120.45	120%	34.86	60.3%
Recovery	%	64.96%	-2%	40.75	65.9%
		65.96%	-1%	42.70	68.1%
		66.96%	Base	44.65	70.3%
		67.96%	+1%	46.60	72.5%
		68.96%	+2%	48.55	74.7%

The Project is most sensitive to changes in the gold and silver prices. The base case price of $765 per gold ounce and $11.95 per silver ounce represents about 84% of the recent gold spot price of $909.50 and 68% of the recent silver spot price of $17.48 (London Bullion Association, August 01, 2008). The Project is also sensitive to changes in operating costs where an increase of 10% would result in a 5% drop in IRR. The Project is less sensitive to a change in recovery where a drop in recovery to 63% would result in a 4.4% drop in IRR.

FIGURE 1-1 AFTER-TAX NPV SENSITIVITY

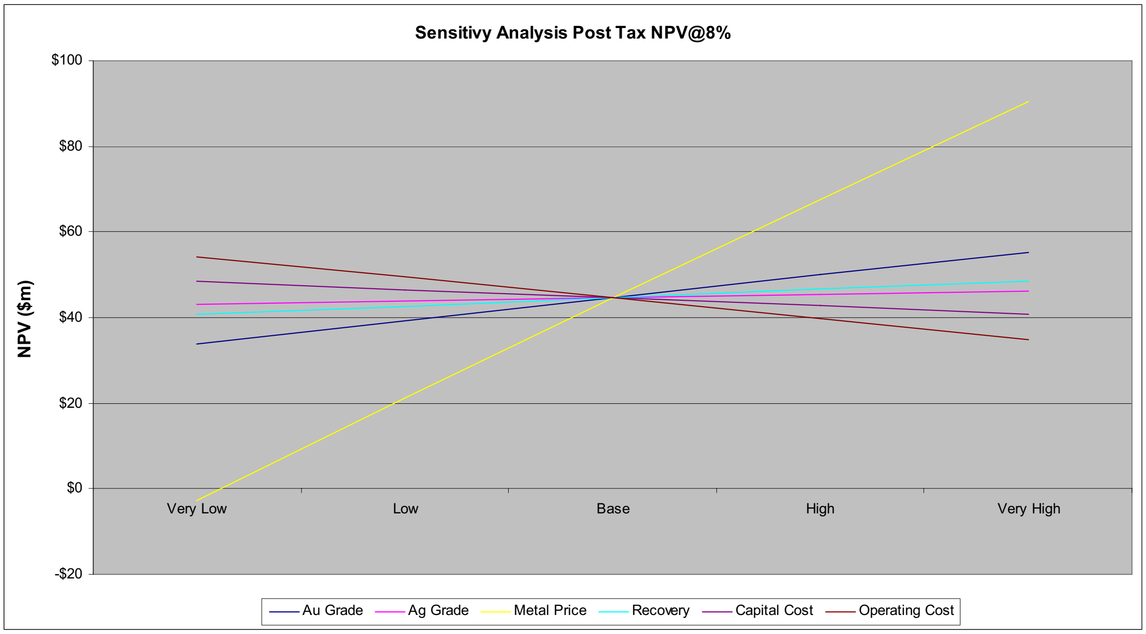
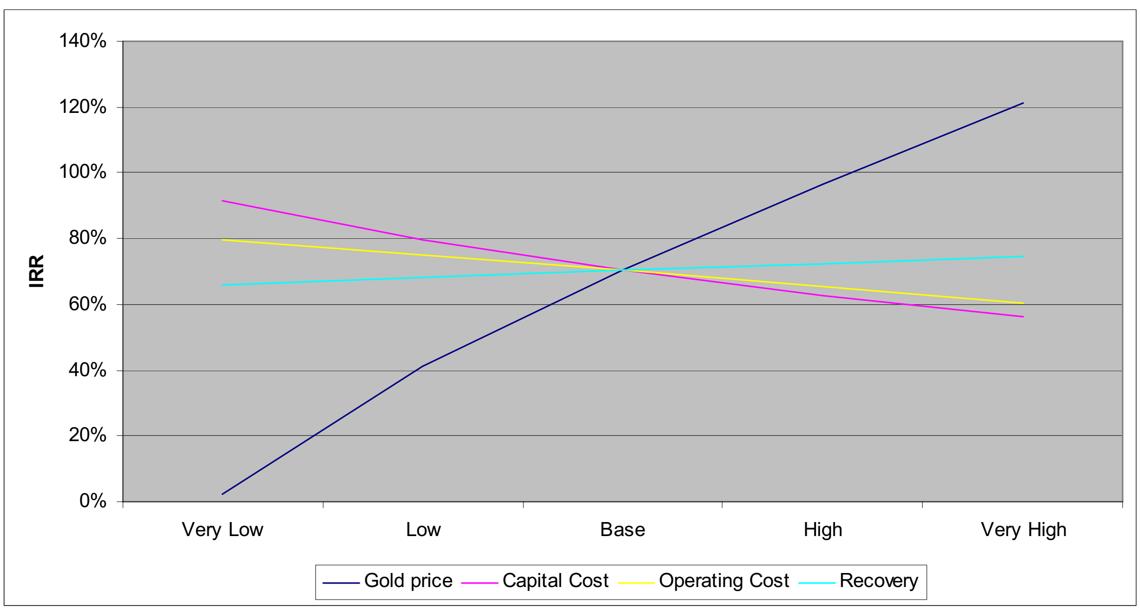


FIGURE 1-2 AFTER-TAX IRR SENSITIVITY



INTERPRETATION AND CONCLUSIONS

The Pre-feasibility Study commissioned by SVL for the Santa Elena Project shows that the identified Mineral Resources are economic using the assumptions described and can be classified as Mineral Reserves. This Technical Report is based on a Pre-feasibility Study that was prepared by SVL following general industry standard practices. Scott Wilson RPA notes that:

- An open pit mine is planned to produce a total of approximately 817,000 tonnes of ore per year, at a rate of 2,500 tonnes per day.
- A total of 6.5 million tonnes of ore at an average grade of 1.614 g/t Au and 56.7 g/t Ag will be mined from the deposit over a period of eight years.
- The ore is amenable to heap leaching with cyanide. The average overall recovery of 67% for gold and 34% for silver (varied for depth) is consistent with available test results and acceptable for a pre-feasibility level study.
- Testwork does not adequately reflect proposed flow sheet and design criteria. Significant additional testwork is required to firm up design criteria for a feasibility level study. The requisite test work is in progress at Metcon, in Tucson, AZ.
- The Project is expected to produce a total volume of approximately 31.7 million tonnes of waste of which approximately 2% is potential acid generating (PAG) material which will be encapsulated within waste material containing a high calcite concentration and with a high acid neutralization potential. The 6.5 million tonnes of leached ore has a low potential for acid generation and a high acid neutralization potential.
- Environmental studies required for permitting are in progress.
- Capital and operating costs have been estimated at an appropriate level of detail for a pre-feasibility study.

RECOMMENDATIONS

Project economics are robust using the economic assumptions stated. Scott Wilson RPA recommends that SVL advance the Santa Elena Project to the Feasibility Stage. In addition to the course of work typical of the requirements of a Feasibility Study, it is recommended that the following specific items be addressed:

- Review of waste dump and heap leach locations with regard to future exploration potential.

- Metallurgical testwork to optimize leaching parameters.
- Review of electrical power supply options.

TECHNICAL SUMMARY

The Santa Elena property is approximately 150 km northeast of the state capital city of Hermosillo, Sonora, Mexico. The community of Banamichi is located seven kilometres west of the property. The property consists of six contiguous concessions with a total nominal area of approximately 3,160 ha.

Under the terms of the December 8, 2005 option agreement, SVL has the right to acquire a 100% interest in the Santa Elena property by making staged option payments of US$4,000,000 over a period of five years as follows: on signing $10,000 (completed), sixty days $60,000 (completed), six months $60,000 (completed), twelve months $60,000 (completed), eighteen months $60,000 (completed), twenty-four months $50,000 (completed), thirty months $500,000 (completed), thirty-six months $500,000, forty-two months $600,000, fifty-four months $600,000, sixty months $500,000, and the final US$1,000,000 payment is conditional upon receipt of a Feasibility Study and all operating and environmental permits. Approximately 40% of the acquisition costs are payable in common shares at SVL's option. There are no applicable work commitments or underlying royalties to the property owners.

The Santa Elena property can be easily accessed year round by paved highways east from Hermosillo to Ures, a distance of approximately 90 km, then north along a paved secondary road to the community of Banamichi, a distance of approximately 50 km, and by a gravelled maintained road seven kilometres east of Banamichi. The mining centre of Cananea is the closest urban area of any size and is about 100 km north by paved road from the property.

The property is a historic high-grade gold-silver producer. Although there are no official records, historic production from both open-cut and underground mining has been estimated from the dumps and old workings at 100,000 tonnes at a grade of 6 g/t Au to 8 g/t Au and 70 g/t Ag to 100 g/t Ag.

GEOLOGY

The state of Sonora is dominated by three physiographic provinces, which trend north-south and parallel the Sierra Madre Occidental. The property is located in the Basin and Range Province, which is part of the Sonora Desert subprovince, while the other two provinces consist of the Transitional Zone and the High Plateau.

The primary rock types observed on the property are the Tertiary andesite and rhyolite flow. These units have been uplifted and strike north-south with a dip of 10º to 45º east.

All the volcanic units in the immediate area of the Santa Elena deposit exhibit propylitic to silicic alteration Within the main mineralized structure, widespread argillic alteration and silicification proximal to quartz veining is present. Within the andesite beds, chloritic alteration increases away from the mineralized zone.

The main mineralized zone is associated with an east-west structure cross-cutting the volcanic units. The structure is approximately 1.2 kilometres long, with a width from one metre to 35 m, averaging approximately 15 m. The structure dips from 40º to 60º to the south and has been tested to a depth of approximately 400 m from surface. Splaying and cross-cutting northwest-trending structures appear to influence mineralization at intersections and along a northwest trend.

The main structure is infilled with quartz veining, quartz veinlets and stockwork, banded quartz, vuggy quartz and black calcite. A breccia is found locally at areas of fault intersections. Adularia has been identified in a few hand specimens. Iron oxides including limonite, jarosite, goethite, and hematite are associated with mineralization.

Mineralization occurs as a series of replacements, stockworks, and hydrothermal breccias typical of other high level low-sulphidation deposits found in the Sierra Madres and elsewhere in the world such as La Colorado deposit in Sonora, Mexico, El Peñón deposit in Chile, and the deposits of the Midas and Oatman districts of Nevada and Arizona in the USA.

In 2006, SVL completed an extensive exploration program, which included surface mapping and channel sampling, underground mapping and verification underground channel sampling and core drilling (19 holes) as presented in the following sections. In 2007, work completed by SVL comprised an environmental baseline study, preliminary economic assessment, and further diamond drilling. An additional 3,273 m were drilled in 21 holes, and this resulted in the expansion of the known mineralization. An updated estimate of Mineral Resources was prepared by SVL, and this estimate forms the basis of this study. Project expenditures, including property acquisition costs, to the end of the first quarter of 2008 were $4.12 million.

MINERAL PROCESSING AND METALLURGICAL TESTING

There has been varied metallurgical testwork done on the Santa Elena property over the last twenty-five years. The testwork was reviewed by Mr. Geoff Allard (Allard), P.E., of Allard Engineering Services of Tucson, Arizona, and is summarized as follows:

- No fatal flaws exist with regard to metallurgy.
- Ore is amenable to heap leaching with cyanide.
- Average overall recovery of 67% for gold and 34% for silver (varied for depth) is consistent with available test results and acceptable for pre-feasibility level.
- Ore is suitable for anticipated design.
- Top size of 3/8 inch for heap feed is appropriate.
- Testwork does not adequately reflect proposed flow sheet and design criteria.
- Significant additional testwork is required to firm up design criteria for a feasibility level study.
- There is inverse dependence of recovery on particle size.

- Short column testing (less than proposed lift height of five metres) cannot address leach cycles and percolation issues.

- Some reagent consumptions cannot be identified from the existing testwork. In these instances, estimates have been used.

MINERAL RESOURCES AND MINERAL RESERVES

In 2006, SVL personnel completed a Mineral Resource estimate. Scott Wilson RPA audited this estimate and prepared a Technical Report on the Santa Elena property (2006). SVL updated this estimate in late 2007, and Scott Wilson RPA has audited that updated estimate for this report.

The Mineral Resource estimate is summarized in Table 1-3.

TABLE 1-3 MINERAL RESOURCES - APRIL 2008
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Classification	Tonnes	g/t Au	g/t Ag	Contained Ounces Au	Contained Ounces Ag
Indicated	6,485,000	2.04	79.0	425,000	16,471,000
Inferred	2,270,000	1.64	103.5	120,000	7,556,000

Notes:
1. CIM definitions were followed for Mineral Resources.
2. Composites capped at 12 g/t Au and 300 g/t Ag.
3. Cut-off grade of 0.5 g/t Au equivalent.
4. Mineral Resources are inclusive of Mineral Reserves.
5. Numbers rounded.

The following table shows the Mineral Reserves estimated for Santa Elena:

TABLE 1-4 MINERAL RESERVES – JUNE 2008
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Classification	Tonnes	g/t Au	g/t Ag	Contained Ounces Au	Contained Ounces Ag
Probable	6,542,000	1.61	56.7	339,600	11,927,000

Notes:

1. CIM definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at a cut-off grade of 0.5 g/t Au.
3. Mineral Reserves are estimated using a long-term gold price of US$765 per ounce, a silver price of US$11.95 per ounce, and a US$/peso exchange rate of 1:10.58.

MINING OPERATIONS

The Santa Elena Mine will operate as a conventional open pit operation, with waste removal being phased into two stages throughout the eight years of mine operation. When the mining operation ceases a further two years of leaching of the ore material will be carried out, resulting in a total mine life of ten years.

The mine will be operated by a contract mining company, with waste mining proposed to be undertaken on five metre benches using 6.3 m^3 front end loaders and 45 tonne trucks. All material will be drilled and blasted. Waste material will be hauled outside the pit boundary and dumped, and the ore material will be delivered to a nearby crusher. The average mining rate will be 2,500 tonnes per day for ore, with the mine operating at an average stripping ratio of 4.85, inclusive of a layback of approximately 10 million tonnes in Year 5.

The mine production schedule is presented below in Table 1-5.

TABLE 1-5 MINE PRODUCTION SCHEDULE
SilverCrest Mines Inc. – Santa Elena Property, Mexico

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Cumulative
Mined Tonnes									
Total Ore	814,850	849,925	849,785	849,606	849,804	849,139	848,684	630,160	6,541,952
Total Waste (excludes pre-strip)	1,347,628	2,954,058	5,502,475	5,691,465	10,076,393	4,399,351	1,446,951	308,224	31,726,544
Total Tonnes Mined	2,162,478	3,803,983	6,352,260	6,541,071	10,926,196	5,248,489	2,295,635	938,384	38,268,496
Strip Ratio Waste/Ore	1.65	3.48	6.48	6.70	11.86	5.18	1.70	0.49	4.85
Head Grade Ag (g/t)	1.74	1.98	1.74	1.59	2.19	1.09	0.91	1.71	1.61
Head Grade Au (g/t)	40.36	44.42	55.86	57.68	72.85	50.93	49.48	90.01	56.71
Contained Au Ounces	45,519	54,138	47,542	43,486	59,807	29,733	24,748	34,594	339,567
Contained Ag Ounces	1,057,447	1,213,825	1,526,079	1,575,435	1,990,416	1,390,400	1,349,983	1,823,587	11,927,173

ENVIRONMENTAL CONSIDERATIONS

The Santa Elena Project environmental baseline and permitting work has been undertaken by Ms. Delia Patricia Aguayo Hurtado, a professional Mexican environmental engineer from Hermosillo, Mexico, and audited to World Bank standards by Tetra Tech, Inc. (Tetra Tech). Tetra Tech has made recommendations for a proper environmental management program during construction and operations.

BASELINE WORK

The environmental baseline work was completed in 2007 on the Santa Elena Project to fulfill local, regional and international standards for permitting and developing an open pit, heap leach operation. Further baseline work was completed and is ongoing in 2008.

ACID GENERATION POTENTIAL

Waste rock for the Santa Elena open pit has been characterized for potential acid generation (PAG) and net neutralizing potential (NNP). Twenty-six samples were collected from core and sent to Laboratorios del Noroeste, S.A. de C.V., in Hermosillo, Mexico, for acid based accounting (ABA) and metal toxicity analysis.

Although overall results show little to no toxic metals for potential leaching in the future, metal toxicity tests completed on the spent ore samples from column-percolation testing show minor toxic metals for potential leaching in the future.

Acid based accounting (ABA) testing shows that PAG waste does exist in small amounts relative to the overall waste volume. Fortunately, there is a considerable amount of waste that is NNP positive, with calcite up to 50% by volume. This NNP waste will be used to buffer the PAG waste.

The design for the waste dump will encapsulate the PAG waste inside the high NNP waste to maximize the neutralization potential. The waste dump facility will be constructed to keep waste rock “high and dry” to minimize exposure of waste to water.

PERMITTING

Under Mexican law, two key documents are required to permit a mine for construction and operation:

- Land Use Change
- Environmental Impact Study (MIA)

In December of 2007, Nusantara submitted the Land Use Change document to the Mexican government (SEMARNAT) for review and approval. This approval was granted in April 2008.

The MIA was submitted to SEMARNAT in February 2008. Approval is pending as of the release date of this report.

Other important operating permits/approvals required include a permit for blasting use of municipal garbage dump, a permit use of public access, and municipal approval of operations.

As water rights will be purchased from an already existing, permitted well, no permitting is required.

CAPITAL AND OPERATING COST ESTIMATES

The estimated total capital cost to construct the mine is shown in Table 1-6, totalling \$20.3 million. The estimate includes working capital for four months of operation and contingency of 15%.

Sustaining capital has been estimated to be 2.5% of initial capital, invested on an annual basis. Additional sustaining capital investment is included in years 3 to 6 for additional heap construction and a major pit layback. The total mine life sustaining capital is \$15.0 million.

TABLE 1-6 PRE-PRODUCTION CAPITAL COSTS
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Area	US$'000
Buildings	1,545
Crushing and Conveying	4,674
Heaps	893
Plant	1,623
Mobile Equipment	344
Services	2,050
Administration	732
Subtotal	11,861
EPCM	3,044
Total	14,905
Contingency	2,236
Total	17,141
Working Capital	3,205
Total	**20,346**

Life of Mine unit operating costs are shown in Table 1-7.

TABLE 1-7 OPERATING COSTS
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Ore ($/t moved)	1.78
Waste ($/t moved)	1.24
Total Mining($/t ore)	6.04
Crushing ($/t ore)	2.47
Leaching and Process ($/t ore)	2.54
Administration ($/t ore)	1.90
Reclamation & Closure ($/t ore)	0.39
Contingency	2.00
Total ($/t ore)	**15.34**

Costs are based on quotations and designs for key items and some factors for overheads and general expenses. The costs are considered by Scott Wilson RPA to be appropriate at the pre-feasibility level of the Study.

2 INTRODUCTION AND TERMS OF REFERENCE

Scott Wilson Roscoe Postle Associates Inc. (Scott Wilson RPA) was retained by SilverCrest Mines Inc. (SVL) to prepare an independent Technical Report on the Santa Elena Silver-Gold Project (the Project), located in Sonora, Mexico. The purpose of this report is to review the Pre-feasibility Study (the Study) prepared by SVL in February 2008. The Project comprises development of a 2,500 tonnes per day open pit mine with processing by heap leach to produce gold-silver doré. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects.

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Currently, the major assets and facilities associated with the Project are:

- A gold-silver deposit amenable to open pit mining and heap leach processing.
- A 138 m shaft and underground workings from historical operations.
- Access and site roads.
- Miscellaneous service buildings related to the historic operation and the current exploration and development program.

Scott Wilson RPA has previously prepared a NI 43-101 compliant Technical Report on the Santa Elena Project (Fier and Wallis, 2006). That report was in support of an initial estimate of Mineral Resources on the property.

SOURCES OF INFORMATION

The Study was prepared by SVL and its wholly-owned Mexican subsidiary Nusantara de México S.A. de C.V. (Nusantara), with input from a consortium of consultants and SVL management including: Sol y Adobe, Ingenieros Asociados, S.A. de C.V. (primary consultant, Sol & Adobe), SGS Mineral Services (metallurgical test work), Scott Wilson

Roscoe Postle Associates Inc. (resource audit, reserve audit, Scott Wilson RPA), Lyman Henn Inc. (geotechnical pit stability audit, LHI) Allard Engineering Services (metallurgical and process audit, Allard), Tetra Tech, Inc. (environmental audit, Tetra Tech) and Patricia Aguayo (Consultant for Environmental Studies and Permitting).

In the course of preparing this report, Scott Wilson RPA held discussions with the companies listed above. The main contact with SVL was N. Eric Fier, CPG, P.Eng. and Chief Operating Officer.

This Technical Report was prepared under overall supervision of Graham G. Clow, P.Eng., Principal Mining Engineer with Scott Wilson RPA. David W. Rennie, P.Eng., Principal Geologist, carried out a review of geology and mineral resources. Mark Mounde, C. Eng., Senior Mining Engineer, carried out a review of mining operations and cost estimates. Geoff Allard, P.E., and Holger Krutzelmann, P.Eng., reviewed metallurgical and processing data. Edward J. McDonald, P.E., reviewed geotechnical considerations, Larry Breckenridge, P.E., audited environmental plans and issues. C. Stewart Wallis, P.Geo., visited the property on November 16, 2007.

The documentation reviewed, and other sources of information, are listed at the end of this report in Section 22 References.

LIST OF ABBREVIATIONS

Units of measurement used in this report conform to the SI (metric) system. All currency in this report is US dollars (US$) unless otherwise noted.

μ	micron
°C	degree Celsius
°F	degree Fahrenheit
μg	microgram
A	ampere
a	annum
bbl	barrels
Btu	British thermal units
C$	Canadian dollars
cal	calorie
cfm	cubic feet per minute
cm	centimetre
cm^2	square centimetre
d	day
dia.	diameter
dmt	dry metric tonne
dwt	dead-weight ton
ft	foot
ft/s	foot per second
ft^2	square foot
ft^3	cubic foot
g	gram
G	giga (billion)
Gal	Imperial gallon
g/L	gram per litre
g/t	gram per tonne
gpm	Imperial gallons per minute
gr/ft^3	grain per cubic foot
gr/m^3	grain per cubic metre
hr	hour
ha	hectare
hp	horsepower
in	inch
in^2	square inch
J	joule
k	kilo (thousand)
kcal	kilocalorie
kg	kilogram
km	kilometre
km/h	kilometre per hour
km^2	square kilometre
kPa	kilopascal
kVA	kilovolt-amperes
kW	kilowatt
kWh	kilowatt-hour
L	litre
L/s	litres per second
m	metre
M	mega (million)
m^2	square metre
m^3	cubic metre
min	minute
MASL	metres above sea level
mm	millimetre
mph	miles per hour
MVA	megavolt-amperes
MW	megawatt
MWh	megawatt-hour
m^3/h	cubic metres per hour
opt, oz/st	ounce per short ton
oz	Troy ounce (31.1035g)
oz/dmt	ounce per dry metric tonne
ppm	part per million
psia	pound per square inch absolute
psig	pound per square inch gauge
RL	relative elevation
s	second
st	short ton
stpa	short ton per year
stpd	short ton per day
t	metric tonne
tpa	metric tonne per year
tpd	metric tonne per day
US$	United States dollar
USg	United States gallon
USgpm	US gallon per minute
V	volt
W	watt
wmt	wet metric tonne
yd^3	cubic yard
yr	year

3 RELIANCE ON OTHER EXPERTS

This report has been prepared by Scott Wilson Roscoe Postle Associates Inc. (Scott Wilson RPA) for SilverCrest Mines Inc. (SVL). The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to Scott Wilson RPA at the time of preparation of this report,
- Assumptions, conditions, and qualifications as set forth in this report, and
- Data, reports, and other information supplied by SVL and other third party sources.

For the purpose of this report, Scott Wilson RPA has relied on ownership information provided by SVL. Scott Wilson RPA has not researched property title or mineral rights for the Santa Elena Project and expresses no opinion as to the ownership status of the property.

Scott Wilson RPA has relied on SVL for guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from the Project.

Except for the purposes legislated under provincial securities laws, any use of this report by any third party is at that party's sole risk.

4 PROPERTY DESCRIPTION AND LOCATION

The Santa Elena property is approximately 150 km northeast of the state capital city of Hermosillo, Sonora, Mexico, near the intersection of 30º01' north latitude and 110º09' west longitude (Figure 4-1). The community of Banamichi is located seven kilometres west of the property. The area is covered by the INEGI "Banamichi" topographic map at a scale of 1:50,000, sheet H12-B83.

The property consists of six contiguous concessions with a total nominal area of approximately 3,160 ha (Table 4-1 and Figure 4-2). The concessions are registered with Mexico Mines Registry in Hermosillo and Mexico City – four in the name of Tungsteno de Baviacora, S.A de C.V. (Tungsteno), and two in the name of Nusantara de México, S.A. de C.V. (Nusantara), a wholly owned subsidiary of SVL. Under an option agreement dated December 8, 2005, Nusantara has the right to acquire a 100% interest in the Project. In 2006, Nusantara filed the Santa Elena 7 concession, which surrounds the five other concessions. All concessions are surveyed on the ground by a registered land surveyor at the time of location.

TABLE 4-1 CONCESSIONS
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Concession number	Date	Concession name	Owner	Size (ha)
192174	1983	Santa Elena	Tungsteno	24.19
178094	1983	Santa Elena No 4 Fraccion Se	Tungsteno	0.06
176544	1983	California	Tungsteno	18.00
221460	1995	Elena 5	Tungsteno	399.87
223533	2003	Santa Elena 6	Nusantara	858.19
227239	2006	Santa Elena 7	Nusantara	1,859.63
			TOTAL	**3,159.94**

Under the terms of the December 8, 2005 option agreement, SVL has the right to acquire a 100% interest in the Santa Elena property by making staged option payments of US$4,000,000 over a period of five years as follows (all amounts in US dollars): on signing $10,000 (completed), sixty days $60,000 (completed), six months $60,000 (completed), twelve months $60,000 (completed), eighteen months $60,000 (completed), twenty-four months $50,000 (completed), thirty months $500,000 (completed), thirty-six months $500,000 (completed), forty-two months $600,000, fifty-four months $600,000, sixty months $500,000, and the final US$1,000,000 payment is conditional upon receipt of a Feasibility Study and all operating and environmental permits. Approximately 40% of the acquisition costs are payable in common shares at SVL's option. There are no applicable work commitments or underlying royalties to the property owners.

The new mining regulations, signed in February 2005 and put into effect in January 2006, provide for all concessions in Mexico to be valid for a period of 50 years. Taxes, based on the surface area of the concession, are due in January and June of each year at an annual cost of approximately US$10,000. All tax payments have been paid to date.

A concession in Mexico does not confer any ownership of surface rights; however, use of surface rights for exploration and production can be obtained under the terms of various acts and regulations if the concession is on government land. The Santa Elena concessions are located on Ejido (community, or co-op) land, and, as of November 2007, SVL has negotiated a 20 year lease with the Ejido on 841 hectares of surface rights which is adequate for the proposed operations and potential future expansion. The cost of the lease is approximately US$200 per hectare per year.

Permits required for the exploration work have been obtained. The Mexican government issues an environmental permit (Environmental Assessment) for all proposed exploration work and a follow-up inspection of required reclamation.

Figure 4-1

SilverCrest Mines Inc.

Santa Elena Project
Mexico

Location Map

August 2008

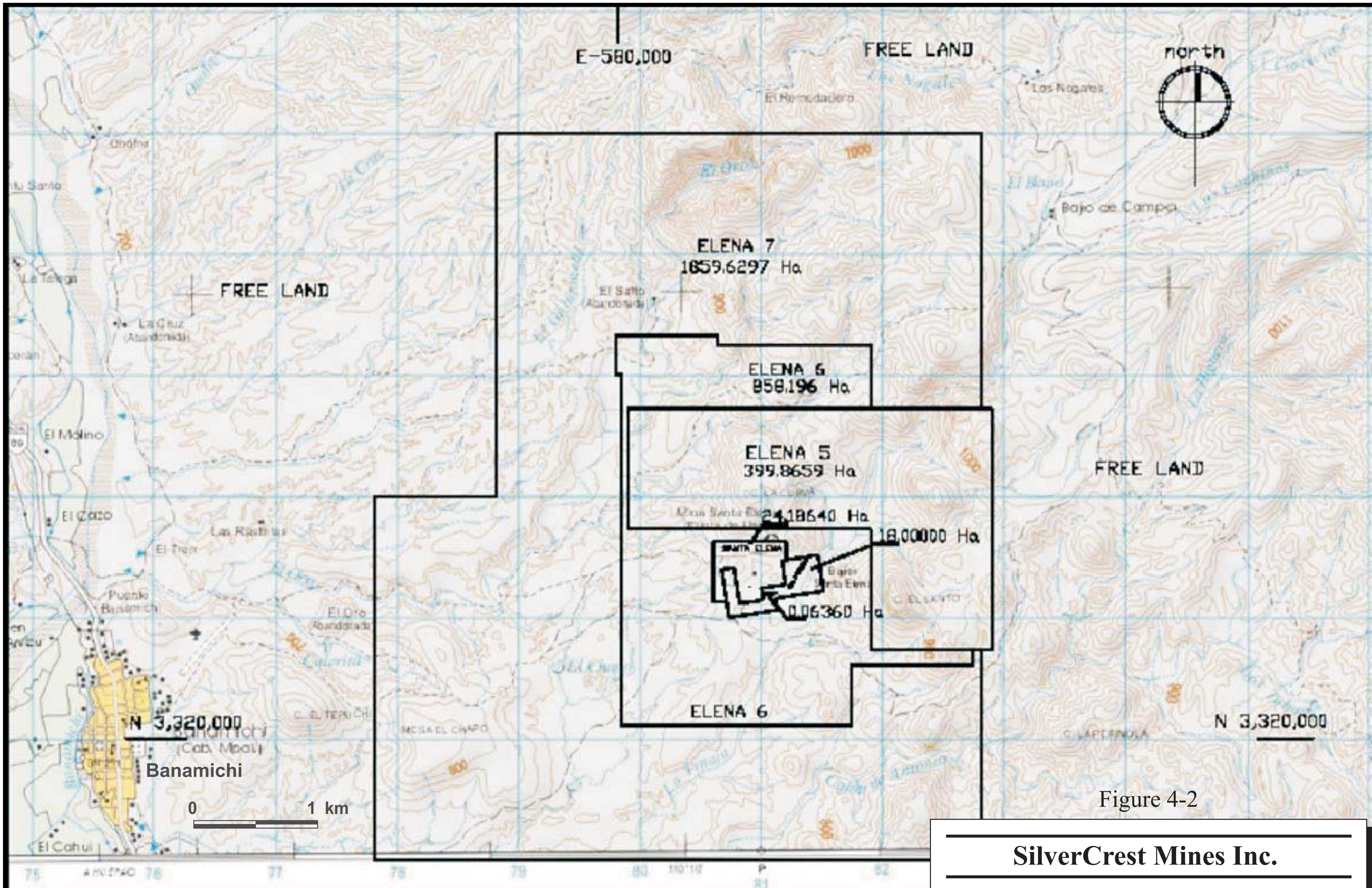

Figure 4-2

SilverCrest Mines Inc.

Santa Elena Project

Mexico

Property Map

August 2008

Source: SilverCrest Mines Inc., 2008.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

ACCESSIBILITY

The Santa Elena property can be easily accessed year round by paved highways east from Hermosillo to Ures, a distance of approximately 90 km, then north along a paved secondary road to the community of Banamichi, a distance of approximately 50 km, and by a gravelled maintained road seven kilometres east of Banamichi.

CLIMATE

The climate is typically Sonoran desert, with the dry season from October to May. Average rainfall is estimated at 300 mm per year. Seasonal temperatures vary from +10ºC to +40ºC. Summer afternoon thunderstorms are common and can temporarily impact on the local electrical service. Flash flooding is common in the area.

LOCAL RESOURCES

Water for drilling is readily available on the property from the accessible underground workings. Water for a production facility could come from a local groundwater source, a preconstructed reservoir or the nearby Sonora River approximately seven kilometres west of Santa Elena.

Electrical power is readily available from nearby sources that currently supply municipalities, agriculture, and mines.

Sufficient area is available for a processing plant, waste dumps and leach pad or tailings disposal on the property with the current lease for the surface rights obtained from the owners (Ejido).

The mining centre of Cananea is the closest urban area of any size (pop. est. 30,000), and is about 100 km north by paved road from the property. Most services and supplies are available in Cananea, but it may be necessary to go to Hermosillo, 150 km southwest of the property, for heavier machine shop, fabrication, and engineering services. Both communities are considered exploration and mining centres. Alternatively, Tucson, Arizona, is approximately a four-hour drive from the property.

Northern Mexico has significant precious and base metal mines and there are numbers of people with experience in mining and processing of those commodities. Many of the trades and skills learned there would be transferable to a new operation. The nearby Cananea and La Caridad mines are considered one of the largest mines in North America.

INFRASTRUCTURE

The owner of the Santa Elena property maintains several buildings on site with a genset for power, a one stage jaw crusher with associated conveyor belts, and a single compartment inclined shaft to a vertical depth of approximately 100 m. The water table is located near the bottom of the shaft and is principally pumped for minor operational purposes and drilling.

A double-compartment vertical shaft was excavated during the early twentieth century. This shaft was reported to have been sunk to a depth of 450 m, however, there is speculation that the actual depth is 450 ft. The shaft is either bulkheaded or caved near the surface. The depth of 450 ft. correlates with the intersection of the shaft with the south-dipping mineralized structure.

All core from drilling is stored on site within a company constructed building.

PHYSIOGRAPHY

The property is located on the western edge of the north-trending Sierra Madre Occidental geographically adjacent to the Sonora River valley. Elevations range from 800 m ASL to 1,000 m ASL, with the project located on the range front at a low elevation respective to the mountains immediately east.

Vegetation is scarce during the dry season. During the wet season, various blooming cactuses, trees, and grasses are abundant in drainage areas.

6 HISTORY

The Santa Elena property is a historic high-grade gold-silver producer. Although there are no official records, historic production from both open-cut and underground mining has been estimated from the dumps and old workings at 100,000 tonnes at a grade of 6 g/t Au to 8 g/t Au and 70 g/t Ag to 100 g/t Ag.

During the late nineteenth century to early twentieth century, an English company by the name of Consolidated Fields operated the Santa Elena Mine, until it was abandoned at the onset of the Mexican Revolution of 1910. During this period, extensive underground development work was completed including a 450 ft. two compartment shaft, a 100 m single compartment inclined shaft, and eight to nine working levels at a spacing of approximately 15 m to 20 m with numerous crosscuts and raises. The two compartment shaft is caved near the surface and depth cannot be confirmed. Only four of the levels (surface to 75 m in depth) are currently accessible with a total of approximately 1.5 km of development. Stoping in the upper accessible levels has removed an estimated 57,000 t. No production records are available for this work.

After World War II, intermittent small scale mining was carried out by local companies. During the 1940s to the 1980s, old tailings from the historic operation were shipped to the Asarco Smelter in Douglas, Arizona, for flux and subsequent further recovery of gold and silver. There are no records available for this production. Locals suggest that approximately 40,000 tonnes shipped were at a grade of 3 g/t Au to 4 g/t Au. Approximately 5,000 t of old tailings remain on-site.

During the 1960s, Industrias Peñoles, S.A de C.V., drilled two or three holes on the property. No records are available for this drilling.

During the early 1980s, Tungsteno, current owner of the mine, mined 45,000 t grading 3.5 g/t Au and 60 g/t Ag from an open cut at Santa Elena. This material was shipped for processing to the company’s flotation mill near Baviacora, approximately 30 km southwest of Santa Elena. The 50 ton per day mill was specifically built for processing tungsten ores from a nearby deposit from 1977 to 1983. The tonnage from Santa Elena was supplemental to the tungsten production. Very limited records from the production are available, but the owner has stated that recovery was adequate for the Santa Elena tonnage, although some value still remains in the tailings onsite.

Since 2003, Tungsteno has periodically surface-mined high silica/low fluorine material from Santa Elena and shipped it to the Grupo México smelter in El Tajo near Nacozari, approximately 60 km to the northeast. Tungsteno currently has a 500 tonne per month contract with the Nacozari Smelter and is periodically producing product for shipment. Production records were requested but were not made available to the authors of this report

During 2003, Sergio A. Trelles Monge, Certified Professional Geologist (CPG) and Qualified Person (QP), conducted an exploration program for Tungsteno at Santa Elena. Sr. Trelles was not considered an "independent" QP for the purposes of this work. The program consisted of the collection of 117 surface and underground samples. A sample summary report is available for review, but sample lengths and locations are not clear and therefore were not used for the current resource estimation.

In late 2003, Nevada Pacific Gold Inc. of Vancouver, B.C. (Nevada Pacific), completed a brief surface and underground sampling program with the collection of 119 samples. A report was completed and provided to the owner, but was subsequently misplaced. Only the ALS Chemex assay sheets and a rough location map were available for review. Sample lengths are unclear and were not used for the current resource estimation.

In early 2004, Fronteer Development Group of Vancouver, B.C. (Fronteer), completed an extensive surface and underground mapping and sampling program. A total of 145 channel samples (89 underground and 56 surface) were collected and analyzed by ALS Chemex of Hermosillo, Mexico.

SVL, via Nusantara, acquired an option on the Santa Elena property on December 8, 2005, and embarked on exploration work the following year. This work included the drilling of 19 core holes totalling 2,579 m, underground and surface channel sampling, and completion of an independent Mineral Resource estimate and NI43-101 Technical Report. Mineral Resources as of November 29, 2006 were estimated to be 2.46 Mt in the Indicated category grading 2.16 g/t Au and 55.7 g/t Ag, with an additional Inferred Resource of 3.51 Mt grading 1.42 g/t Au and 78.3 g/t Ag (Fier and Wallis, 2006). The estimate was audited by Scott Wilson RPA and the Technical Report was co-authored by Stewart Wallis, P. Geo., Associate Geologist with Scott Wilson RPA and a Qualified Person for the present report.

7 GEOLOGICAL SETTING

REGIONAL GEOLOGY

The state of Sonora is dominated by three physiographic provinces, which trend north-south and parallel the Sierra Madre Occidental. The property is located in the Basin and Range Province, which is part of the Sonora Desert subprovince, while the other two provinces consist of the Transitional Zone and the High Plateau (Figure 7-1).

The Late Proterozoic rifted continental margin of the North American Plate lies approximately 120 km west of the property area. The passive continental margin was the depositional site of a thick sequence of shallow marine shelf carbonate and siliclastic rocks, which is unconformably overlain by volcanic and volcanoclastic formations. The rocks resulted from east directed subduction of the Farallon Plate beneath the North American Plate during the Early and Middle Jurassic and concurrent continental arc volcanism. A large crustal-scale shear zone termed the Mojave-Sonora Megashear is thought to be the result of reactivation of the North American Plate margin. Left lateral movement along this northwest-trending shear likely placed the North American craton against the Caborca Terrane, which is located to the west.

A thick succession of shallow marine siliclastic and carbonate sediments (the Bisbee Group) was deposited in the northwest-trending rift-basin which is believed to have resulted from the back-arc extension during Late Jurassic time. These sediments filling the rift basin (Chihuahua trough) were overlain by intermediate to felsic rocks during the late Cretaceous to middle Tertiary time.

The northwest-trending shear and associated faults appear to be an important control on mineralization in the region. The structural preparation along the faults localized the conduits for mineral bearing solutions. The heat source for the mineralizing solutions was likely from the plutonic rocks which are common in Sonora. These intrusives are considered batholithic and calc-alkaline, volcanic-arc plutons which are Middle Jurassic to Tertiary in age. There are several major copper porphyries hosted by these intrusions, located at Cananea, Nacozari and La Caridad.

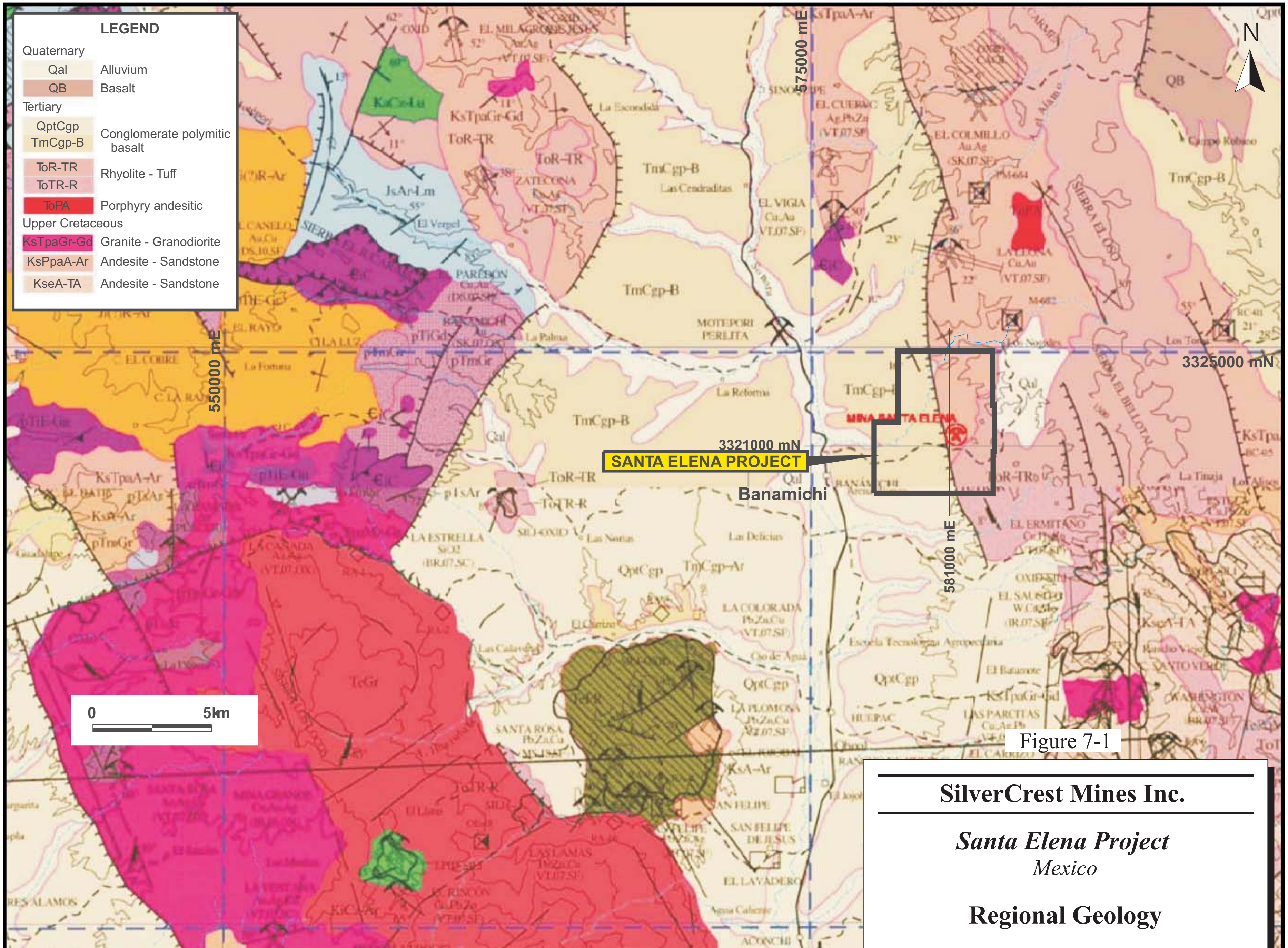

Figure 7-1

SilverCrest Mines Inc.

Santa Elena Project

Mexico

Regional Geology

August 2008

Source: SilverCrest Mines Inc., 2008

LOCAL AND PROPERTY GEOLOGY

The primary rock types observed on the property are the Tertiary andesite and rhyolite flows (Figure 7-2). These units have been uplifted and strike north-south with a dip of 10º to 45º east.

All the volcanic units in the immediate area of the Santa Elena deposit exhibit propylitic to silicic alteration Within the main mineralized structure, widespread argillic alteration and silicification proximal to quartz veining is present. Within the andesite beds, chloritic alteration increases away from the mineralized zone.

The main mineralized zone is associated with an east-west structure cross-cutting the volcanic units. The structure is approximately 1.2 kilometres long, with a width from one metre to 35 m, averaging approximately 15 m. The structure dips from 40º to 60º to the south and has been tested to a depth of approximately 400 m from surface. Splaying and cross-cutting northwest-trending structures appear to influence mineralization at intersections and along a northwest trend.

Minor intrusives (andesite and granodiorite dikes) have been identified at the Santa Elena deposit. The heat source for mineralization is unknown, but an intrusive at depth is postulated.

The main structure is infilled with quartz veining, quartz veinlets and stockwork, banded quartz, vuggy quartz and black calcite. A breccia is found locally at areas of fault intersections. Adularia has been identified in a few hand specimens. Iron oxides including limonite, jarosite, goethite, and hematite are associated with mineralization.

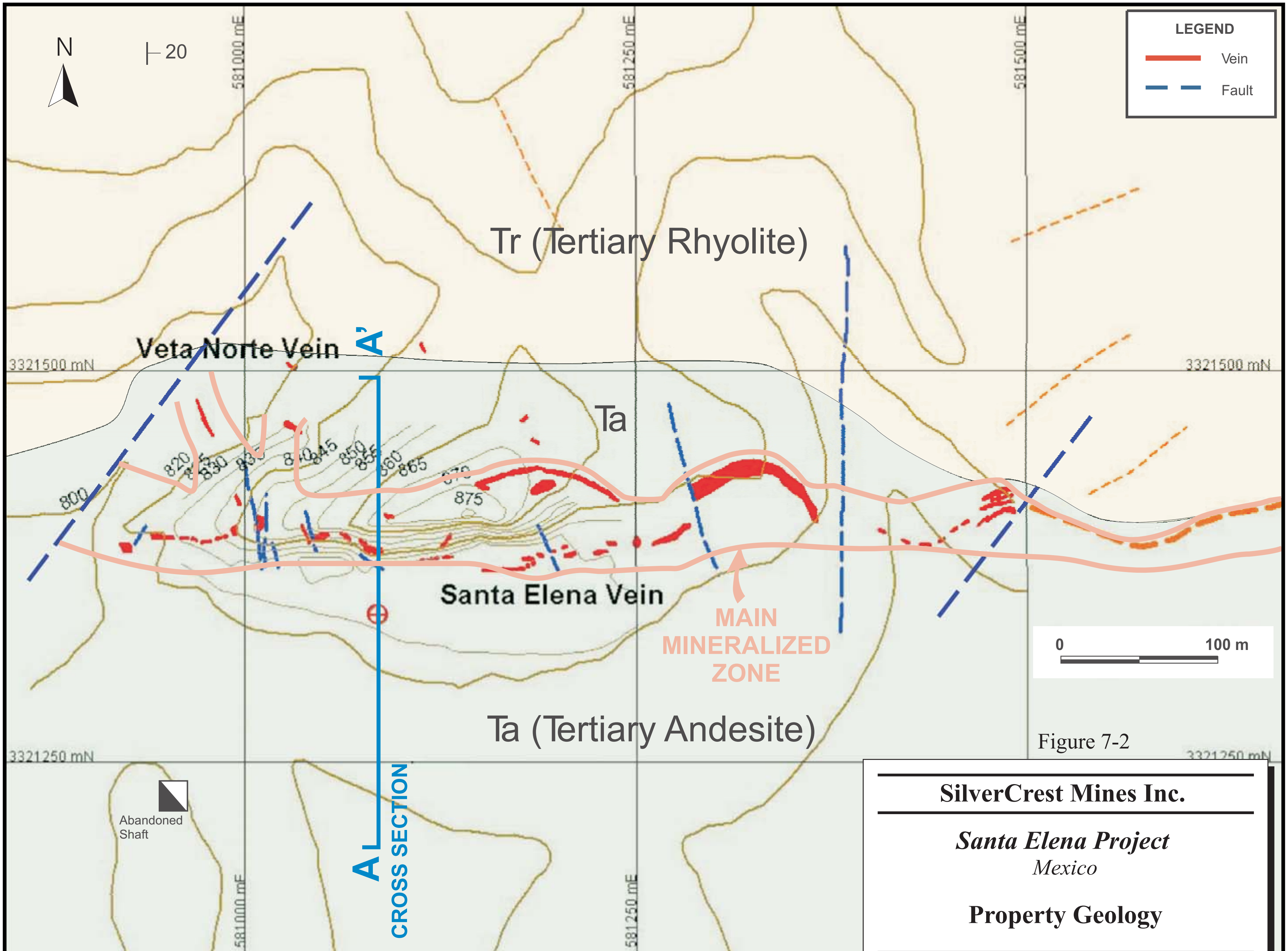

Figure 7-2

SilverCrest Mines Inc.

Santa Elena Project

Mexico

Property Geology

August 2008

Source: SilverCrest Mines Inc., 2008

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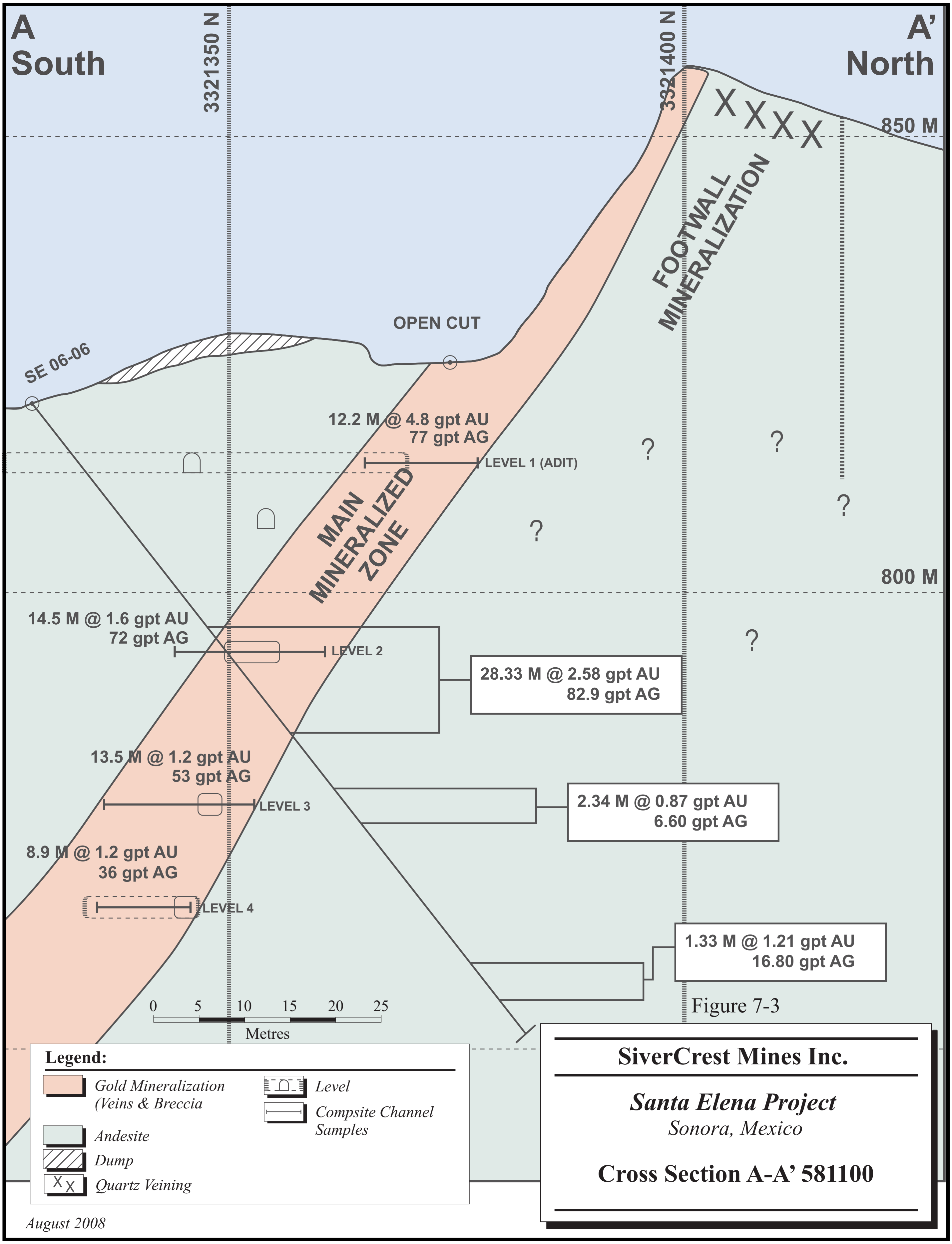


Figure 7-3

SiverCrest Mines Inc.

Santa Elena Project

Sonora, Mexico

Cross Section A-A' 581100

8 DEPOSIT TYPES

Mineralization at Santa Elena occurs as a series of replacements, stockworks, and hydrothermal breccias typical of other high level low-sulphidation deposits found in the Sierra Madres and elsewhere in the world such as La Colorado deposit in Sonora, Mexico, El Peñón deposit in Chile, and the deposits of the Midas and Oatman districts of Nevada and Arizona in the USA. These deposits form in predominantly felsic subaerial volcanic complexes in extensional and strike-slip structural regimes. Samples previously collected by various parties, including SVL, show a geochemical signature of Au+Ag+Sb+Pb+Zn+Ba+Ca+Mn which is consistent with a high level low-sulphidation system.

The mineralization is the result of ascending structurally controlled low-sulphidation silica-rich fluids into a near-surface environment. Mineral deposition takes place as the fluids undergo cooling by fluid mixing, boiling, and decompression. Brecciation of the mineralized zone appears to be due to explosive venting from an assumed intrusive at depth, followed by deposition of the mineralization by ascending fluids.

A large intrusive that exists approximately 10 km east and north of Santa Elena may be associated with the mineralization.

9 MINERALIZATION

The mineralization in the main zone is associated with a structure in Tertiary felsic volcanics, which is exposed on the surface for approximately 1.2 km with a true width of one metre to 30 m, averaging 15 m. Underground workings have confirmed mineralization along 400 m of this strike length over an average width of 20 m. The structure consists of multiple banded quartz veins and stockwork with associated adularia, fluorite, calcite, and minor sulphides. Bonanza mineralized shoots (greater than 500 g/t Ag and 30 g/t Au) appear to be present but require more definition to determine their full extent.

The permeable nature of the fractured zones has allowed significant oxidation to occur at least 150 m below the surface. The deepest core hole intersected the mineralized zone at approximately 200 vertical metres and shows disseminated sulphides and rhodonite suggesting primary mineralization with little or no oxidation.

Metal zonation appears to correspond to northwest-trending cross-cutting structures that intersect the main zone and form high grade shoots. Vertical zonation shows gold content decreasing with depth, while silver content increases. The ratio of gold to silver of the Santa Elena deposit is estimated to be an average of 1:50, with minor lead, zinc and copper.

Minor sulphides have been observed only in a few locations within the mineralized zone. The andesite in the hanging wall shows disseminated pyrite up to 25%.

Alteration within the deposit is widespread and pervasive, with the most significant being silicification, kaolinization, and chloritization. Kaolin and alunite have formed primarily along structures and the fractured andesite contact, which are deeply weathered and oxidized. Limonite within the oxide zone consists of a brick red colour after pyrite, brown goethite, and local yellow jarosite. Manganese occurs locally as pyrolusite and minor psilomelane.

Gangue minerals consist of quartz, calcite, chlorite, and fluorite. Black calcite can be a significant gangue mineral found within the main mineralized zone. Analysis shows calcium up to approximately 15%.

10 EXPLORATION

Exploration carried out previous to SVL's acquisition has been discussed in Section 6, History.

2006 EXPLORATION

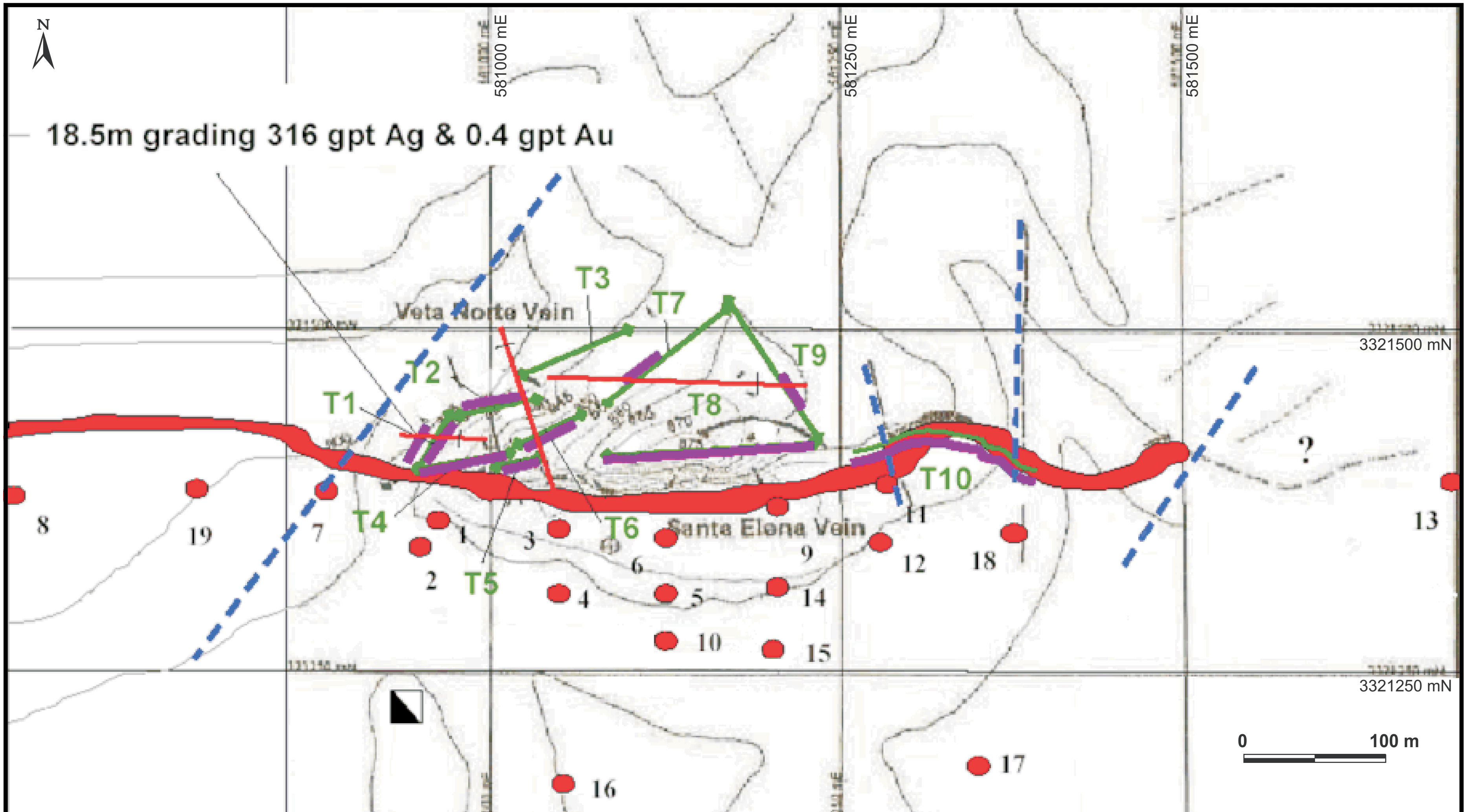
In 2006, SVL completed an extensive exploration program at Santa Elena, which included surface mapping and channel sampling, underground mapping and verification underground channel sampling and core drilling as presented in the following sections. SVL drilled 19 holes totalling 2,579.2 m. Underground and surface sampling comprised 341 samples in 1,502.6 m of channels.

The SVL surface program was conducted in May 2006 under the direction of N. Eric Fier, CPG, P.Eng. A total of 289 samples were collected and analyzed by ALS Chemex in Hermosillo, Mexico, and North Vancouver, BC. This program focused on the identification of mineralization in the footwall (north) of the main mineralized zone. Several areas of additional mineralization were identified for follow-up exploration work.

As a result of the 2006 exploration program, a Mineral Resource estimate was prepared as reported under Section 6, History.

2007 EXPLORATION

Work completed by SVL in 2007 comprised an environmental baseline study, preliminary economic assessment, and further diamond drilling. An additional 3,273 m were drilled in 21 holes, and this resulted in the expansion of the known mineralization. An updated estimate of Mineral Resources was prepared by SVL, and this estimate forms the basis of this study. Project expenditures, including property acquisition costs, to the end of the first quarter of 2008 were $4.12 million.



LEGEND

- Main Mineralized Zone
- Quartz Vein (vertical)
- Fault
- Shaft (abandoned)
- Completed Drill Hole
- T4 Surface Sampling
- Mineralized Surface Intercept

Figure 10-1

SilverCrest Mines Inc.

Santa Elena Project
Sonora, Mexico

SilverCrest Surface Sampling 2006

August 2008

Source: SilverCrest Mines Inc., 2008

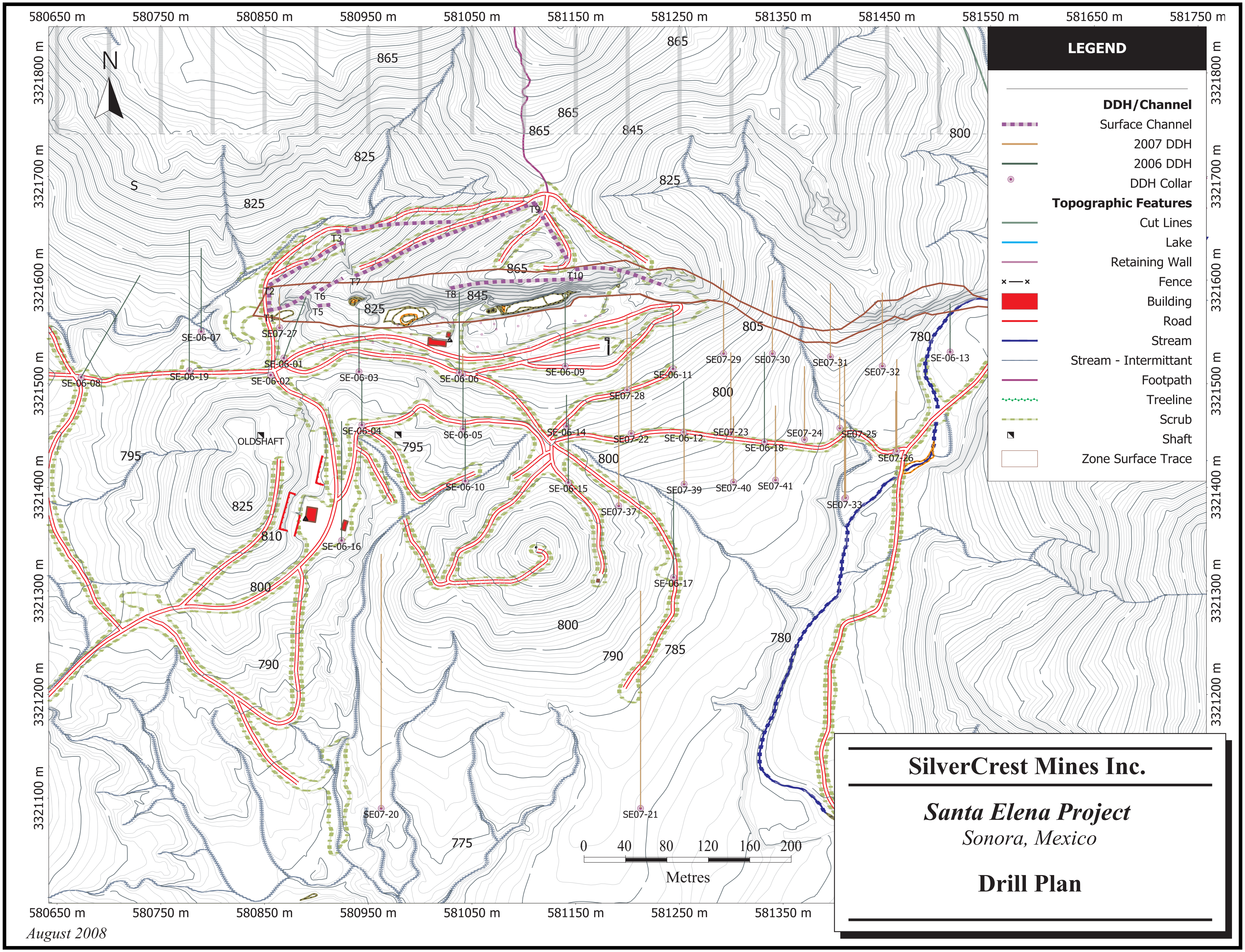
11 DRILLING

As of the end of 2007, which was the cut-off for the Mineral Resource database, SVL had completed 40 holes totalling 5,852.6 m (Figure 11-1). Drilling was completed by Major Drilling de Mexico, S.A. de C.V., a subsidiary of Major Drilling Group International, Inc., Ontario, Canada, using a Longyear 38 drill and associated support equipment.

Core holes were NQ size (4.76 cm dia.) drilled on nominal 50 m and 100 m sections along the east-west trending strike of the mineralized zone. The eastern half of the known strike of the zone has been drilled on 50 m sections, while the west half is drilled on 100 m sections. All holes but two were drilled north at angles from -45º to -70º. Periodic downhole surveys were completed to test hole deviation. Most of the holes were short and showed little to no change in orientation.

Of the 40 core holes, 39 were drilled perpendicular to the mineralized structure at 45º to 70º. At this drill angle, most of the intercepts are considered to be at or near the true thickness of mineralization.

The location of the drill holes is shown on Figure 11-1.



580650 m
580750 m
580850 m
580950 m
581050 m
581150 m
581250 m
581350 m
581450 m
581550 m
581650 m
581750 m
3321800 m
3321700 m
3321600 m
3321500 m
3321400 m
3321300 m
3321200 m
3321100 m
N
LEGEND
DDH/Channel
Surface Channel
2007 DDH
2006 DDH
DDH Collar
Topographic Features
Cut Lines
Lake
Retaining Wall
Fence
Building
Road
Stream
Stream - Intermittant
Footpath
Treeline
Scrub
Shaft
Zone Surface Trace
OLDSHAFT
SE-06-01
SE-06-02
SE-06-03
SE-06-04
SE-06-05
SE-06-06
SE-06-07
SE-06-08
SE-06-09
SE-06-10
SE-06-11
SE-06-12
SE-06-13
SE-06-14
SE-06-15
SE-06-16
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SE-06-19
SE07-20
SE07-21
SE07-22
SE07-23
SE07-24
SE07-25
SE07-26
SE07-27
SE07-28
SE07-29
SE07-30
SE07-31
SE07-32
SE07-33
SE07-37
SE07-39
SE07-40
SE07-41
T1
T2
T3
T5
T6
T7
T8
T9
T10
0 40 80 120 160 200
Metres
SilverCrest Mines Inc.
Santa Elena Project
Sonora, Mexico
Drill Plan
August 2008

12 SAMPLING METHOD AND APPROACH

PRE-SVL SAMPLING

Knowledge of the sampling methodology for work completed prior to 2004 is limited. All sampling completed by Tungsteno and Nevada Pacific is inadequately documented to determine the approach.

Sydney Resources Corp. completed underground sampling at Santa Elena. No further written information is available on sampling methodology, but identification of underground sampling locations suggests non-continuous channel sampling methodology.

In 2004, Fronteer completed surface and underground sampling at Santa Elena. Written documentation on sampling methodology is very limited. Discussions with the Mexican geologist who conducted the field program suggested that the sampling was completed with proper protocols. Field investigation by SVL of underground channel sampling areas confirmed the sample locations and channelling methodology of Fronteer. The approach was found to be “discontinuous” channels along the length of the stated sample. This approach is considered adequate at this stage of exploration, although “continuous” channel sampling is recommended.

SVL SAMPLING

The 2006 surface sampling by SVL consisted of continuous channel sampling along exposed road cuts and outcrops. Sample locations were marked in the field with flagging and paint, with subsequent survey of selective control points for sampling coordinates.

The 2006 underground verification channel sampling program consisted of semi-continuous horizontal sampling of identified Fronteer sample locations. The sampling approach was similar to the Fronteer methodology as outlined above.

For the 2006-07 drilling programs, core was placed in plastic core boxes and labelled for hole identification and location. Each day, the core boxes were collected and delivered to the core laydown area located on the property. The core was measured for further identification and recovery and then geologically logged. After identifying the mineralized zone, core was selected for sampling, and split using a hydraulic hand splitter. Sampling intervals are determined geologically. Once split, the core is placed in a plastic bag with a label and marked with the sample number. The remaining core is stored on the property beside the watchman's house.

All surveying, including drill hole collars, was completed by Mario Alberto Quijada Galindo, a registered surveyor. The drill collars are marked with a concrete cap.

Scott Wilson RPA is of the opinion that the 2006-07 sampling was conducted in an appropriate manner, to common industry standards.

The collection and compilation of all information with respect to resource estimation for Santa Elena was carried out by SVL and its subsidiary Nusantara. All the available data on underground sampling and core drilling were compiled and entered into Excel data spreadsheets and then imported into a Gemcom database. The current database used for the resource estimation is shown in Table 12-1.

TABLE 12-1 SANTA ELENA DATABASE
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Data	Number	Number of samples	Metres
UG LINE 1 to 23	23	71	201.6
T 1 to 10	10	270	828
SE06 1 to 19	19	551	2,579.20
SE07 20 to 41	21	246	659.64
TOTAL	73	1138	4,268.44

13 SAMPLE PREPARATION, ANALYSES AND SECURITY

The methodology of the sample preparation and analysis of the historical programs is not well documented.

SVL surface, underground, and drill samples were collected over selected intervals, placed in plastic bags, and periodically shipped to ALS Chemex in Hermosillo, Mexico, for preparation, with subsequent shipping of sample pulps by ALS Chemex to their North Vancouver lab for geochemical analysis. All analysis was completed using standard 30 g fire assay with AA finish for gold and ICP for multiple geochemical elements, including silver. Gravimetric analyses were completed for over-limit assays on gold and silver.

Internal standards and checks on the labs were completed by both ALS Chemex and ACME Analytical Laboratories in Vancouver, B.C. (Acme), during analysis of Santa Elena samples. SVL did not insert standards or blanks in the field. Duplicate samples were analyzed as discussed in Section 14, Data Verification.

Security of samples before 2006 is unknown. SVL samples were in the custody of SVL personnel or authorized contractors from the time the core or channels were collected until they were delivered to the lab.

Scott Wilson RPA is of the opinion that the sample preparation, analysis and security of samples meet generally accepted industry standards.

14 DATA VERIFICATION

It should be noted that check sampling and verification assaying is described in more detail in the 2006 Scott Wilson RPA Technical Report (Fier and Wallis, 2006). Only a summary is provided here.

In April 2006, Scott Wilson RPA collected select samples for verification, including an underground continuous channel sample and quarter splits of drill core. The samples were put into sealed tamper-proof plastic bags and sent to ALS Chemex in Hermosillo with a regular shipment of core samples.

Samples were dried, crushed, split, and pulverized to 90% passing -150 mesh. Gold was determined by a 30 g fire assay with an AA finish and rerun with a gravimetric finish if the value was greater than 0.1 g/t. All silver assays were 30 g fire assay with an aqua regia finish. The sample results compared favourably with the original Fronteer and SVL assays.

In November 2007, Scott Wilson RPA collected four samples from core holes SE07-28 and SE07-33. The samples were submitted to ALS Chemex in Hermosillo and assayed as described above. The results confirm the general tenor of the deposit.

TABLE 14-1 SCOTT WILSON RPA 2007 CHECK SAMPLING
SilverCrest Mines Inc. - Santa Elena Property, Mexico

							Original Assay	
Sample #	DDH	From m	To m	Width m	Ag ppm	Au ppm	Ag ppm	Au ppm
306661	SE07-28	61.35	64.10	2.75	33.6	0.5	31.60	0.59
306664	SE07-28	67.99	68.45	0.46	290	0.18	244.00	0.13
306831	SE07-33	128.25	129.45	1.00	13.4	0.23	23.60	0.41
306836	SE07-33	138.50	139.40	0.90	227	2.33	296.00	2.72

In May 2006, SVL collected 15 underground channel samples to validate the Fronteer samples used in the resource estimation. The number of samples was not statistically significant, however, there was a measurable difference between the two sets of results. SVL assayed each sample by fire assay with gravimetric finish for Au and AA finish for

Ag. Silver samples were also run using gravimetric finish. The SVL AA silver assays were up to 60% lower than the corresponding Fronteer assays at values below 100 g/t Ag, while the gold assays show a broad scatter and are 50% to 100% lower at values below 3 g/t Au. Gravimetric silver grades are consistently higher compared to both Fronteer and SVL fire assay/AA results. The fire assays with AA results were used in the resource estimate as they were more similar to the Fronteer results, and viewed as more conservative.

In addition to the underground sampling, SVL collected 289 surface samples and had them assayed by fire assay with both AA and gravimetric finish. Results of this study show an overall 20.3% bias in the gravimetric silver assays over the AA finish. Again, the AA results for silver were used in the resource estimation because they are considered to be the more conservative set of data.

In Scott Wilson RPA's opinion, there is both significant close-range sample variability and possibly an assay bias in the data for Santa Elena. There is a possibility that the grade estimates could be understated in the Mineral Resource estimate. Scott Wilson RPA recommends that a check sampling program be carried out to resolve this issue.

For quality assurance and quality control (QA/QC), duplicate analyses on sixteen ALS Chemex pulps from core sampling and preparation were completed at Acme. Both ALS Chemex and Acme analyses were based on fire assay with AA finish. The two sets of assays agreed reasonably well.

Scott Wilson RPA validated the database by checking all of the assay entries against the original lab reports. No significant errors were found.

Scott Wilson RPA is of the opinion that the data meet a minimum standard for use in estimating resources.

15 ADJACENT PROPERTIES

Scott Wilson RPA is not aware of any significant exploration or development work on properties adjacent to Santa Elena.

16 MINERAL PROCESSING AND METALLURGICAL TESTING

INTRODUCTION

There has been varied metallurgical testwork done on the Santa Elena property over the last twenty-five years. The testwork was reviewed by Mr. Geoff Allard (Allard), P.E., of Allard Engineering Services of Tucson, Arizona. His complete audit is included in Appendix 1.

SUMMARY

The Allard audit overall findings are summarized below:

- No fatal flaws exist with regard to metallurgy.
- Ore is amenable to heap leaching with cyanide.
- Average overall recovery of 67% for gold and 34% for silver (varied for depth) is consistent with available test results and acceptable for pre-feasibility level.
- Ore is suitable for anticipated design.
- Top size of 3/8 inch for heap feed is appropriate.
- Testwork does not adequately reflect proposed flow sheet and design criteria.
- Significant additional testwork is required to firm up design criteria for a feasibility level study.
- There is inverse dependence of recovery on particle size.
- Short column testing (less than proposed lift height of five metres) cannot address leach cycles and percolation issues.
- Some reagent consumptions cannot be identified from the existing testwork. In these instances, estimates have been used.

Scott Wilson RPA concurs with Allard's findings.

METALLURGICAL TESTWORK

Various metallurgical tests have been carried out on the Santa Elena property. Relevancy of testwork carried out during the period 1983 to 2003 was very difficult to ascertain, as either the work was not applicable or sample locations/references were not readily discernable. Table 16-1 below lists these reports and comments by Allard.

TABLE 16-1 METALLURGICAL REPORTS – 1983-2003
SilverCrest Mines Inc. – Santa Elena Project

Metallurgical Report	Comment
Western Testing Laboratories - October 1983	Column tests conducted on Santa Elena tailings, not applicable
Comision de Fomento Minero of Hermosillo (CFM) – September 1984	Column test, sampling location unknown, supporting information only
Western Testing Laboratories – June 1985	Sample reference unclear, rejected for inclusion
Comision de Fomento Minero of Hermosillo (CFM) – June 1985	Well documented column test but sample reference unclear, supporting information only
Comision de Fomento Minero of Hermosillo (CFM) – September 1986	Well documented bottle roll tests, column test and flotation test, but sample reference unclear, supporting information only
Universidad de Sonora – February 2003	Bottle roll and column tests, minimal information on test procedures and sample location, supporting information only.

Further testwork started in 2006 and continued through February 2008. Summaries of the testwork and Allard's audit comments follow below.

In July 2006, Nusantara completed six bottle roll tests on representative samples collected from the Santa Elena Mine. This work was completed by Sol y Adobe Ingenieros Asociados S.A. de C.V. (Sol & Adobe) in Hermosillo, Mexico, in association with the University of Sonora. Results of a three-day leach at minus 10 mesh are shown in Table 16-2.

TABLE 16-2 SVL BOTTLE ROLL RESULTS
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Sample no.	Calculated head Au (g/t)	Calculated head Ag (g/t)	% Au Recovery	% Ag Recovery	NaCN Consumption kg/t	NaOH Consumption kg/t
1	0.73	39.37	75	58	0.80	4.3
2	0.39	19.42	67	43	0.50	3.3
3	4.29	139.51	73	53	1.74	5.9
4	2.49	79.50	77	20	1.10	4.8
5	0.81	68.58	73	48	0.70	2.9
6	2.96	45.03	69	31	1.30	11.9

The conclusions made by Sol & Adobe indicated an average 73% recovery for gold and 42% recovery for silver. Reagent consumption was modest at 1.0 kg/t of cyanide consumption. Lime consumption appeared to be high at 5.52 kg/t. Sol & Adobe recommended further bottle roll tests to optimize cyanide and lime consumptions on average grade composites (Sol & Adobe, 2006).

Allard made the following comments on this testwork:

- Poor correlation between assay head and calculated head.
- Overstated lime consumption.
- Some calculation errors.

Société Générale de Surveillance de México S.A. de C. V. (SGS) carried out bottle roll tests starting in 2007 as part of a column test campaign. Three ore composites developed from underground channel sampling from the Santa Elena Mine named S (surface), SL (second level) and FL (fourth level) were prepared, and tests were done on ground (-100 mesh) and coarse (1/4”, 3/8” and 1/2”) samples for 96 hours. The results are presented in Tables 16-3 and 16-4, respectively.

TABLE 16-3 BOTTLE ROLL RESULTS FOR S, SL AND FL GROUND COMPOSITES

SilverCrest Mines Inc. - Santa Elena Property, Mexico

Sample ID	Test No	Au Extraction %	Ag Extraction %	NaCN kg/tonnes	Lime kg/tonnes
S	1	81.5	55.0	0.41	0.57
	2	82.7	56.3	0.48	0.57
SL	1	92.3	58.1	0.45	0.56
	2	92.8	60.0	0.38	0.58
FL	1	94.6	39.6	0.34	0.60
	2	93.9	40.1	0.38	0.55

TABLE 16-4 BOTTLE ROLL RESULTS FOR S, SL AND FL COARSE COMPOSITES

SilverCrest Mines Inc. - Santa Elena Property, Mexico

Sample ID	Test No	Particle Size Inches	Au Extraction %	Ag Extraction %	NaCN kg/t	Lime kg/t
S	1	1/4	47.3	17.6	0.18	0.575
	2	3/8	43.6	15.1	0.19	0.601
	3	1/2	40.7	11.2	0.25	0.585
SL	1	1/4	39.3	11.1	0.22	0.590
	2	3/8	37	9.5	0.22	0.565
	3	1/2	33.7	8.7	0.19	0.565
FL	1	1/4	35.2	10.6	0.13	0.570
	2	3/8	32.9	8.9	0.13	0.560
	3	1/2	25.3	7.3	0.30	0.572

Cyanide and lime consumptions were reported as low. The gold and silver extractions were reported as acceptable. SGS recommended using higher cyanide concentrations, higher reaction time and better control in the production of fine particles while crushing, to improve the metals recoveries.

Allard comments that the bottle roll tests showed the dependence of recovery on particle size. Since the procedure to generate the coarse samples (as reported in the testwork) may not be representative of a normally crushed sample, the tests can be used as an indicator of particle size dependence but should not be used for recovery projections.

Column testing was carried out by SGS on the composites using minus 3/8 in. material, except for one sample which was minus ¼ in. material. The results obtained after 77 days of leaching are summarized in Table 16-5. The column tests were run for 58 days, the ore was allowed to rest for 14 days, and then leaching commenced for another 19 days.

TABLE 16-5 COLUMN TEST FOR DIFFERENT COMPOSITES AT A PARTICLE SIZE OF -3/8 IN.
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Sample ID	Au Extraction %	Ag Extraction %	NaCN kg/t	Lime kg/t
S-A	69.4	38.9	0.775	7.82
S-B	70.8	35.7	0.559	5.68
S (1/4")	72.1	36.9	0.577	6.00
SL-A	67.1	32.3	0.571	7.30
SL-B	69.2	29.4	0.588	6.80
FL-A	61.2	33.7	0.718	5.53
FL-B	57.7	33.3	0.601	7.66
AVERAGE	**66.8**	**34.3**	**0.627**	**6.68**

Gold extraction averaged 66.8% and silver extraction, 34.3%.

Cyanide consumptions are moderate, averaging 0.627 kg/t ore, while lime consumption averaged 6.68 kg/t ore.

Allard comments on the column tests were as follows:

- Circulation of leach liquor through columns without cyanide to “neutralize” ore is poor practice.
- Increase of cyanide concentration after 11 days from 0.3 g/L to1.0 g/L did not improve leaching kinetics as stated in the SGS report.

- Columns operated in closed circuit without recovering gold or silver from column effluent. This affected dissolution and diffusion.
- pH was maintained at abnormally high range.
- Test column height (1.71 m) was inadequate to determine leach cycle for proposed 5 m lifts.
- Tests can be used for recovery indications but questionable test aspects would tend to reduce recovery.

Subsequent testwork, consisting of grinding to 75% minus 75 micron and leaching for 120 hours, was done on the samples of the column test tails from the previous tests. As well, work indices were determined for the composites.

The results after 120 hours of leaching are shown below in Table 16-6.

TABLE 16-6 GRINDING/LEACHING TESTS ON COLUMN TAILS
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Sample ID	Au Extraction %	Ag Extraction %	NaCN kg/t	Lime kg/t
S-A	95.1	67.5	1.05	0.874
S-B	94.8	65.8	1.00	0.839
SL-A	88.1	59.1	1.00	0.839
SL-B	85.7	62.2	0.85	0.864
FL-A	78.0	61.5	1.25	0.920
FL-B	81.7	59.7	1.20	0.890
AVERAGE	**87.2**	**62.6**	**1.06**	**0.871**

Gold and silver recoveries averaged 87.2% and 62.6%, respectively.

Allard commented that cyanide and lime consumptions were high at 1.06 kg/t and 0.87 kg/t, respectively.

The crushing work indices are summarized below in Table 16-7.

TABLE 16-7 CRUSHING WORK INDICES
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Composite	Wi (kwh/T)
S-A	14.65
S-B	14.56
SL-A	14.04
SL-B	13.75
FL-A	14.11
FL-B	14.30

Allard commented on the consistency of the indices between samples.

There was one test done to determine specific gravities and bulk densities that has not been audited by Allard, but is included here.

In September 2007, SGS determined crushing work indices, specific gravities and bulk densities of three composites from bulk sampling: S = Surface, SL = Second Level and FL = Fourth Level (SGS, 2007). There is no record of procedures. The results are shown in Table 16-8.

TABLE 16-8 COMPOSITE WORK INDICES, SPECIFIC GRAVITIES AND BULK DENSITIES
SilverCrest Mines Inc. – Santa Elena Property, Mexico

Composite	Wi (kwh/T)	Specific Gravity	Bulk Density
S	14.77	2.68	2.49
SL	14.77	2.65	2.35
FL	14.70	2.69	2.47

MINERAL PROCESSING

The processing of the Santa Elena ore is described below and shown in the process flow sheet in Figure 16-1.

The ore will be crushed to minus 3/8 in. in a three stage mobile crushing circuit, incorporating a vibrating grizzly feeder, jaw crusher, secondary and tertiary cone crushers, and sizing screens and conveyors as required, at a rate of 2,500 tpd. The crushing circuit product will be stockpiled, then loaded onto a truck, transported to a heap leach pad, and placed in five metre lifts for leaching by a dilute cyanide solution. The precious metal bearing solution will be collected from the heap leach pad and pumped to a pregnant solution pond. From there, the solution will go to a Merrill-Crowe plant where the gold and silver will be removed. The recovered gold and silver will be refined into a doré bar and shipped out for further refining. The barren solution will be sent to a barren pond and used for further leaching.

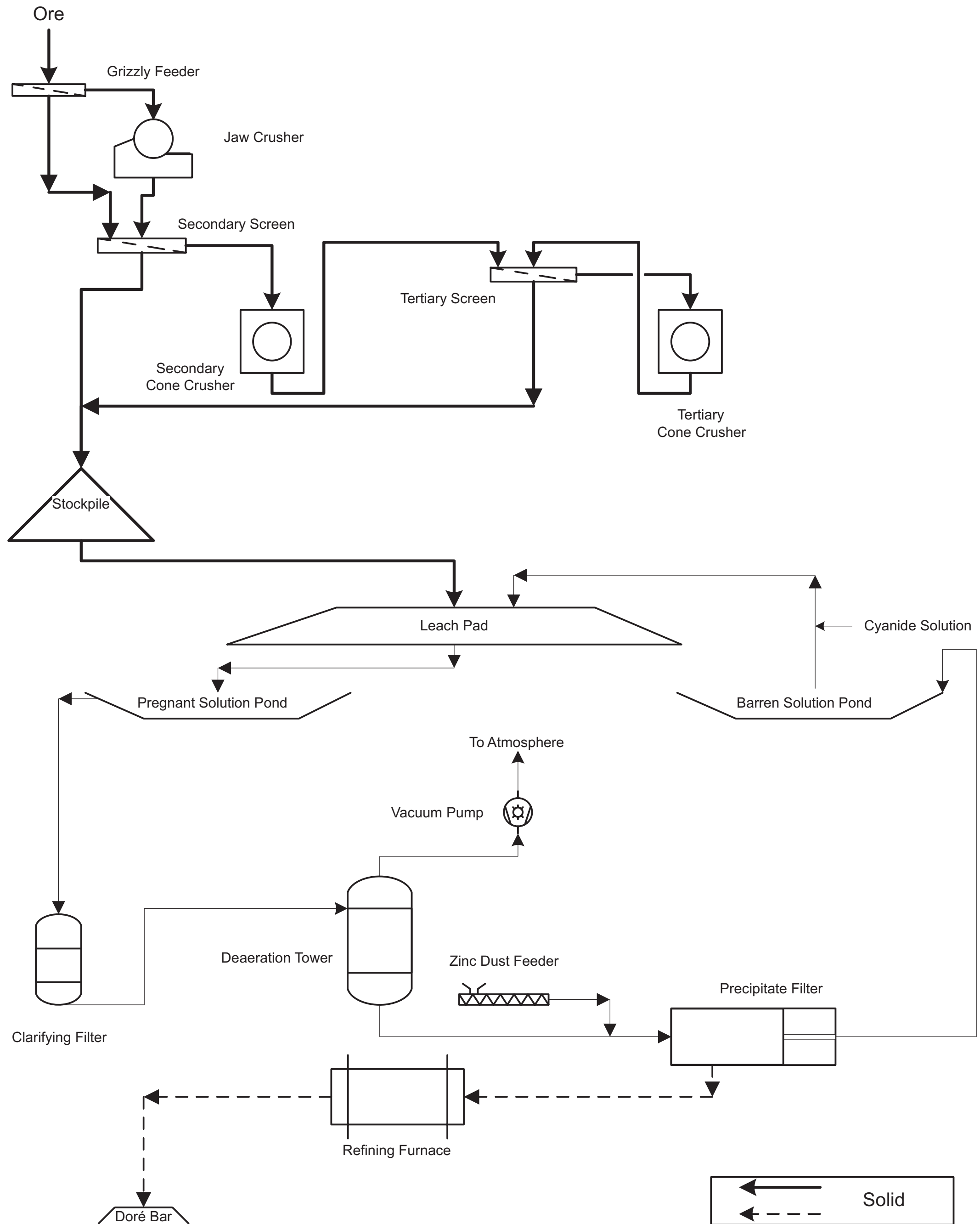


Figure 16-1

SilverCrest Mines Inc.

Santa Elena Project
Sonora, Mexico

Process Flow Sheet

August 2008

17 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

MINERAL RESOURCES

In 2006, SVL personnel completed a Mineral Resource estimate. Scott Wilson RPA audited this estimate and prepared a Technical Report on the Santa Elena property (2006). SVL updated this estimate in late 2007, and Scott Wilson RPA has audited that updated estimate for this report.

The general procedures and parameters used for the present estimate are largely unchanged from the 2006 estimate. The Mineral Resources were estimated by SVL personnel using a block model constrained by a 3D wireframe. Grades for gold and silver were interpolated into the model using Inverse Distance Cubed (ID^3) weighting. The wireframe consisted of a nominal 1 g/t Au equivalent (AuEq) broadly constrained by known structural controls. The zone extends in an east-west direction, dipping at roughly 50° to the south. At an elevation of approximately 700 m (i.e., roughly 150 m below surface), there is an apparent flexure, and the zone is interpreted to steepen, in the order of approximately 70°.

Scott Wilson RPA reviewed the model, made some minor modifications to the wireframe, and re-estimated the grades using Ordinary Kriging (OK). The modifications to the wireframe model resulted in the removal of diluting material. This had the effect of increasing the mean grade slightly while reducing the tonnage, and leaving the overall metal content roughly the same. No material changes were made to the SVL model.

The Mineral Resource estimate is summarized in Table 17-1.

TABLE 17-1 MINERAL RESOURCES – APRIL 2008
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Classification	Tonnes	g/t Au	g/t Ag	Contained Ounces Au	Contained Ounces Ag
Indicated	6,485,000	2.04	79.0	425,000	16,471,000
Inferred	2,270,000	1.64	103.5	120,000	7,556,000

BLOCK MODELLING

The resource estimate was carried out using GEMS (Gemcom) software. The block model consisted of blocks measuring 10 m along strike (east-west), 5 m across strike, and 10 m vertically. No rotation was applied to the model. Grades for gold and silver were interpolated into the blocks using OK. The block model was later resized to 5 m x 5 m x 5 m for pit optimization purposes. The Mineral Resources were not materially affected by this change.

Block model geometry is summarized in Table 17-2.

TABLE 17-2 BLOCK MODEL GEOMETRY
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Origin:	580600	E
	3321200	N
	900	m el
Size (m):	10	X
	5	Y
	10	Z
Rotation:	None	
No. of Blocks	140	X
	140	Y
	65	Z

Wireframe models were constructed of the topographic surface, as well as the principal mineralized zone. This zone consists of an east-west-striking tabular body, which dips steeply to the south, moderating to a shallower dip at depth. The topographic digital terrain model (DTM) was used to clip the mineralized zone model at the ground surface. The clipped mineralized zone was then used to assign a rock code to both the blocks and the sample composites.

STATISTICS

Samples contained within the mineralization wireframe were collected and subject to statistical analysis. It was observed that the samples were taken over varying lengths and so it was necessary to composite to a uniform length. Samples within the mineralized zone were composited to three metre lengths, starting at the point where the sample string entered the wireframe solid and progressing at three metre intervals to the exit point. This resulted in the generation of 52 composites (out of a total of 298) that were less than the prescribed three metre length. Scott Wilson RPA inspected these composites and notes that the average gold grade of these short composites is somewhat higher than the full-length composites. The raw average of the composite gold grades was approximately 10% higher than the length-weighted average, suggesting that the shorter composites could be biasing the mean grade by that amount. However, this apparent discrepancy was found to be due to one very high sample, and when it was moderated by capping, the weighted and raw averages became essentially equal. The shorter composites were left in the database, but it is recommended that they be dropped from further grade interpolations, particularly if and when it becomes time to classify any of the Mineral Resources as Measured.

Composite statistics are provided in Table 17-3.

TABLE 17-3 DECLUSTERED COMPOSITE STATISTICS
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Statistic	Gold	Silver
Number	298	298
Mean	2.20	83.51
Standard Deviation	4.87	99.76
Coefficient Variation	2.21	1.19
Median	0.96	45.70
Maximum	73.69	702.6
Minimum	0.02	2.16

The composite data for both gold and silver are observed to be moderately to strongly positively skewed, and so, in Scott Wilson RPA's opinion, it is appropriate to cap high grades to a predetermined value. The composites were capped at 12 g/t Au and 300 g/t Ag.

GEOSTATISTICS

Scott Wilson RPA carried out a geostatistical analysis to confirm the kriging and search parameters. In general, similar orientations for the variogram models were obtained and no major changes from the 2007 estimate were deemed necessary. However, Scott Wilson RPA notes that the variography was not very coherent and that the relative nugget effects were quite large. This suggests that the local block grade estimates will not be particularly accurate. High nugget effects result in more smoothing of the block grades, which reduces ore/waste discrimination, and generally results in less recovered metal for a particular cut-off grade.

Variogram models used for the estimate are provided in Table 17-4.

TABLE 17-4 VARIOGRAM MODELS
SilverCrest Mines inc. - Santa Elena Property, Mexico

	Nugget	Tot. Sill	% Nug.	Ranges			Orientations		
				Major	Semi	Minor	Major	Semi	Minor
Au	0.45	0.90	50.0%	150	40	15	080/00	170/-60	170/30
Ag	0.25	0.63	39.7%	210	140	15	090/00	180/-60	180/30

SEARCH PARAMETERS

The variogram ranges for gold are less than for silver and so the search was configured to use the shorter gold ranges. Estimates were limited to a minimum of three and a maximum of 12 composites, with no more than three composites allowed from any one drill hole. Grade interpolation was carried out in two passes, the first with a search limited to 2/3 the variogram range and the second at the full variogram range. Scott Wilson RPA notes that not all blocks within the wireframe model were estimated. Several blocks on the extreme east and lower extremities were left unfilled.

BULK DENSITY

A specific gravity of 2.67 was used for the resource estimations based on test work conducted by SVL personnel.

CLASSIFICATION

Blocks estimated in the first pass were assigned an integer code of 2, and blocks estimated in the second pass were assigned code 3. On inspection of the block model, it was found that most of the code 2 blocks (i.e., first pass) clustered in the upper west portion of the zone, with isolated pockets in other portions. A wireframe solid was constructed around the main cluster of code 2 blocks and all blocks within this solid were categorized as Indicated Resources. All other estimated blocks were assigned as Inferred Resources.

BLOCK MODEL VALIDATION

The block model results were subjected to the following validation exercises:

- Inspection on plan and section views and comparison with assays.
- Comparison of block and declustered composite statistics.
- Re-estimation using alternate methodologies.

The block grades were observed to agree well with the composite grades.

The declustered composite means were 2.20 g/t Au and 83.5 g/t Ag (Table 17-3), while the mean block grades of the unclassified model were 1.89 g/t Au and 84.0 g/t Ag. The silver values agree very well, however, the gold block mean is 17% lower than the composite mean. In Scott Wilson RPA's opinion, this suggests there is a modest conservative bias in the gold grades. This bias, should it be real, is not anticipated to have a very large impact on the economics of the Project.

As previously stated, SVL had originally estimated grades using ID^3. Scott Wilson RPA re-estimated the blocks using OK and Inverse Distance to the Fifth Power (ID^5) weighting, and also reran the modified model using ID^3. The results were virtually the same for all three methods. The OK model yielded slightly lower grades than the other two methods.

In Scott Wilson RPA's opinion, the validation exercises performed on the block model suggest that it is a reasonable global estimate of the Mineral Resources at Santa Elena.

PREVIOUSLY MINED AREAS

The previous extracted underground tonnage has been approximated by historic records and volumetric measurements of underground workings completed by SVL in May 2006. The extracted tonnage is estimated at 57,000 tonnes grading 6 g/t Au and 80 g/t Ag above the 4th level. Past practice was to remove this material from the Indicated Resource estimation. In Scott Wilson RPA's opinion, this mined tonnage is small enough relative to the size of the present estimated resources that it can be considered to be immaterial. Consequently, it was not removed from this most recent Mineral Resource estimate.

CUT-OFF GRADE

The Mineral Resources were estimated using a cut-off of 0.50 g/t AuEq. Gold equivalence was estimated using an Ag:Au ratio of 64:1, based on the spot prices of these metals at the time.

Table 17-5 shows the resource estimate for Santa Elena based on a cut-off grade of 0.5 g/t AuEq, a 64:1 silver to gold ratio, and assuming 100% metallurgical recovery for both gold and silver.

TABLE 17-5 MINERAL RESOURCES – APRIL 2008

SilverCrest Mines Inc. - Santa Elena Property, Mexico

Classification	Tonnes	g/t Au	g/t Ag	Contained Ounces Au	Contained Ounces Ag
Indicated	2,460,000	2.16	55.7	171,000	4,400,000
Inferred	3,510,000	1.42	78.3	159,000	8,820,000

Notes:
1. CIM definitions were followed for Mineral Resources.
2. Composites capped at 12 g/t Au and 300 g/t Ag.
3. Cut-off grade of 0.5 g/t Au equivalent.
4. Mineral Resources are inclusive of Mineral Reserves.
5. Numbers rounded.

In Scott Wilson RPA's opinion, the classification of Mineral Resources as stated is appropriate and conforms to the definitions as stated by NI 43-101 and defined by the CIM Definition Standards for Mineral Resources and Mineral Reserves adopted by the CIM Council on December 11, 2005 (CIM definitions).

Typical cross sections of the block model are shown in Figures 17-1 and 17-2.

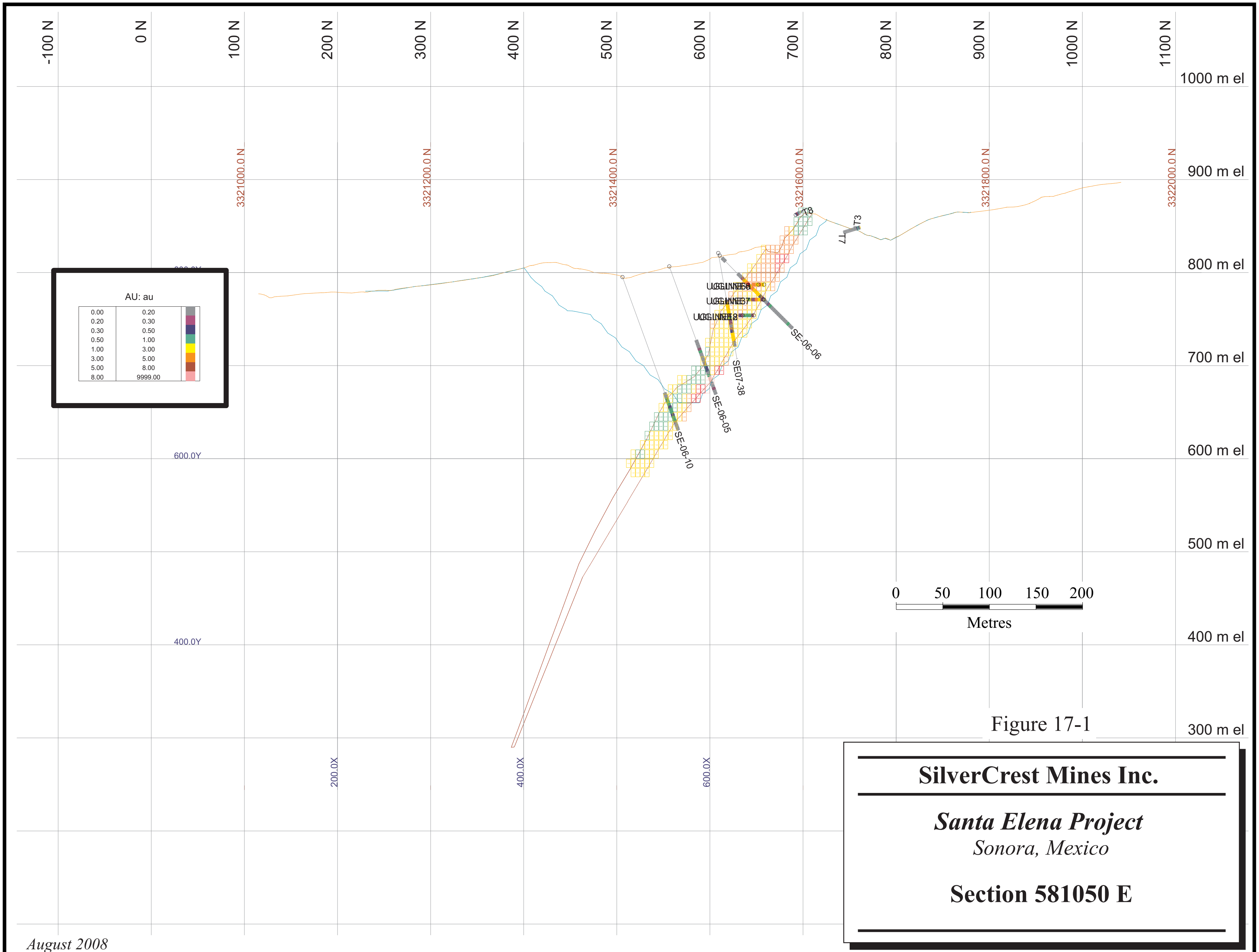


Figure 17-1

SilverCrest Mines Inc.

Santa Elena Project

Sonora, Mexico

Section 581050 E

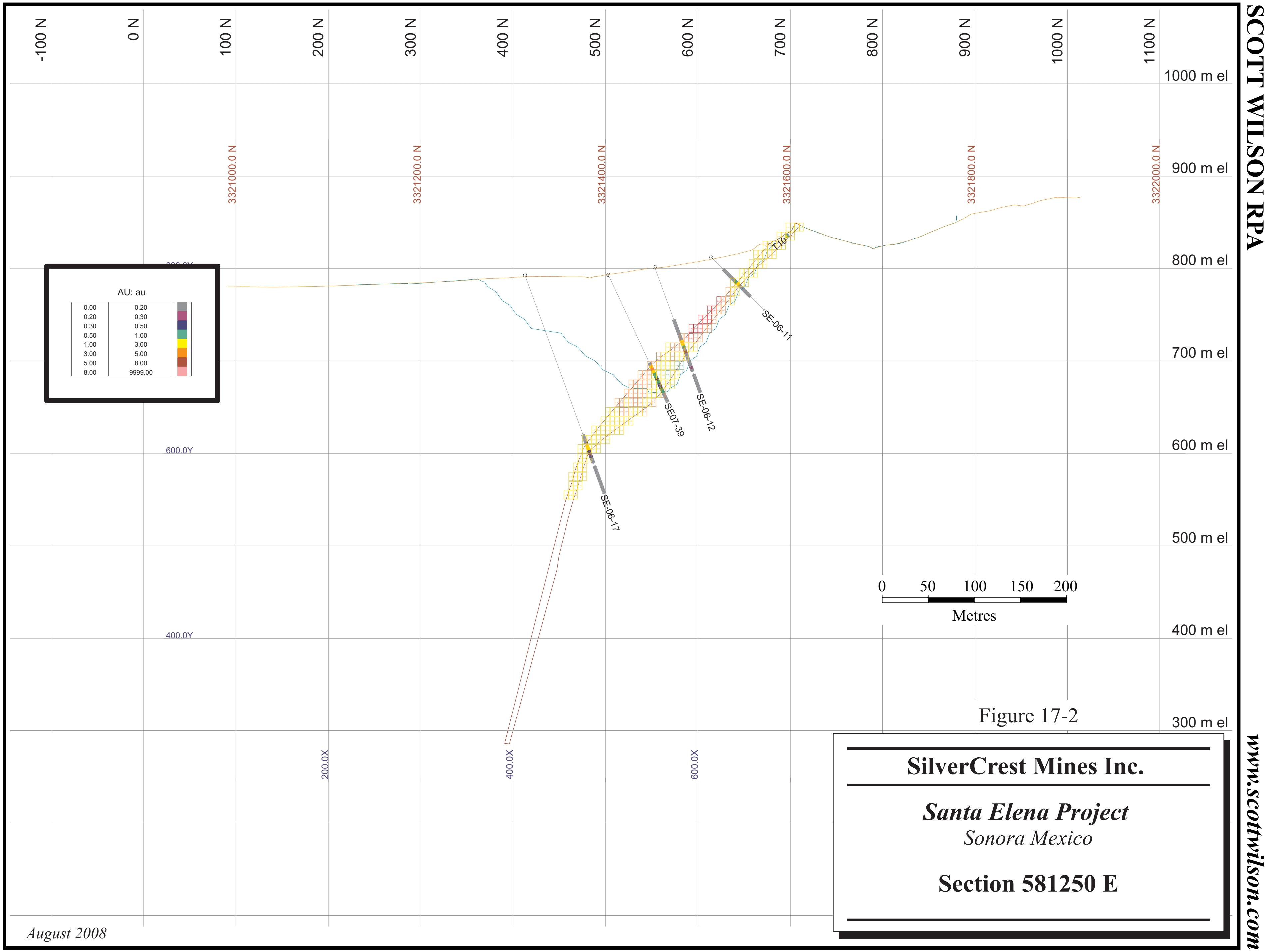


Figure 17-2

SilverCrest Mines Inc.

Santa Elena Project

Sonora Mexico

Section 581250 E

MINERAL RESERVES

The following table shows the Mineral Reserves estimated for Santa Elena:

TABLE 17-6 MINERAL RESERVES – JUNE 2008
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Classification	Tonnes	g/t Au	g/t Ag	Contained Ounces Au	Contained Ounces Ag
Probable	6,542,000	1.61	56.7	339,600	11,927,000

Notes:
1. CIM definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated at a cut-off grade of 0.5 g/t Au.
3. Mineral Reserves are estimated using a long-term gold price of US$765 per ounce, a silver price of US$11.95 per ounce, and a US$/peso exchange rate of 1:10.58.

A dilution factor of 2% was applied. Blocks within the model that are on the edge of the ore zone were diluted by adjacent low grade materials. Mining losses were reviewed and a loss of 2% was applied.

18 OTHER RELEVANT DATA AND INFORMATION

No additional information or explanation is necessary to make this Technical Report understandable and not misleading.

19 ADDITIONAL REQUIREMENTS

MINING OPERATIONS

The Santa Elena Mine will operate as a conventional open pit operation, with waste removal being phased into two stages throughout the eight years of mine operation. When the mining operation ceases, a further two years of leaching of the ore material will be carried out, resulting in a total mine life of 10 years.

The mine will be operated by a contract mining company, with waste mining proposed to be undertaken on five metre benches using 6.3 m^3 front end loaders and 45 tonne trucks. All material will be drilled and blasted. Waste material will be hauled outside the pit boundary and dumped, and the ore material will be delivered to a nearby crusher. The average mining rate will be 2,500 tonnes per day for ore with the mine operating at an average stripping ratio of 4.85, inclusive of a layback of approximately 10 million tonnes in Year 5.

The mine production schedule is presented below in Table 19-1.

TABLE 19-1 MINE PRODUCTION SCHEDULE
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Cumulative
Mined Tonnes									
Total Ore	814,850	849,925	849,785	849,606	849,804	849,139	848,684	630,160	6,541,952
Total Waste (excludes pre-strip)	1,347,628	2,954,058	5,502,475	5,691,465	10,076,393	4,399,351	1,446,951	308,224	31,726,544
Total Tonnes Mined	2,162,478	3,803,983	6,352,260	6,541,071	10,926,196	5,248,489	2,295,635	938,384	38,268,496
Strip Ratio Waste/Ore	1.65	3.48	6.48	6.70	11.86	5.18	1.70	0.49	4.85
Head Grade Ag (g/t)	1.74	1.98	1.74	1.59	2.19	1.09	0.91	1.71	1.61
Head Grade Au (g/t)	40.36	44.42	55.86	57.68	72.85	50.93	49.48	90.01	56.71
Contained Au Ounces	45,519	54,138	47,542	43,486	59,807	29,733	24,748	34,594	339,567
Contained Ag Ounces	1,057,447	1,213,825	1,526,079	1,575,435	1,990,416	1,390,400	1,349,983	1,823,587	11,927,173

Mining will take place on five metre benches advancing top down in the various development phases. Bench operating surface widths are generally quite generous, with the narrowest areas having a width of 10 m.

Ore will be broken using a conventional drill and blast and excavated using a front-end loader. In general, waste will be drilled and blasted and excavated using a wheel loader. Ore and waste will be hauled in 45 tonne capacity off-road end dump trucks. The mine will operate on a three x eight hour shift, seven days per week schedule once production mining begins.

The mine operations sequence will begin by identifying ore and waste zones using a four metre by four metre drilling grid across the bench ahead of mining. Typically this will be limited to areas of mineralization identified in the model, visually identified in the field, or identified on a preceding bench. Blasthole samples will be collected and sent to the onsite laboratory where gold and silver grades will be determined. The assays from the lab will be used to develop an ore control model from which the ore zones can be designed. High-grade ore (>2 g/t gold) will be delivered to leach pad and placed separately. A five day stockpile of ore will be maintained at the crusher.

Waste mining will generally follow ore removal. Blastholes will be drilled six metres deep on a four metres by four metres pattern. Front-end loaders will load the waste into the haul trucks destined for waste stockpile west of the pit.

The slope angle recommendations used for pit design for Santa Elena were estimated by SVL based on analysis and review of 2007 test work. The open pit and waste rock dump designs were reviewed by Lyman Henn, Inc., as an independent geotechnical auditor (Appendix 2). All proposed slope angles are considered adequate or conservative, with overall slopes on the south, east, and west sides of the ultimate at 42 degrees. The north side of the pit will be excavated against the footwall of the deposit which dips at 40 to 55 degrees to the south.

TABLE 19-2 PIT SLOPES
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Structural Domain	Wall Azimuth	Bench Face Angle	Operating Bench, m	Operating Inter Ramp Angle	Overall Slope
South wall	90	55	5	45	42°
West wall	360	55	5	45	42°
East wall	360	55	5	45	42°
North wall	90	variable	5	variable	40 to 55

Additional recommendations for pit slopes are:

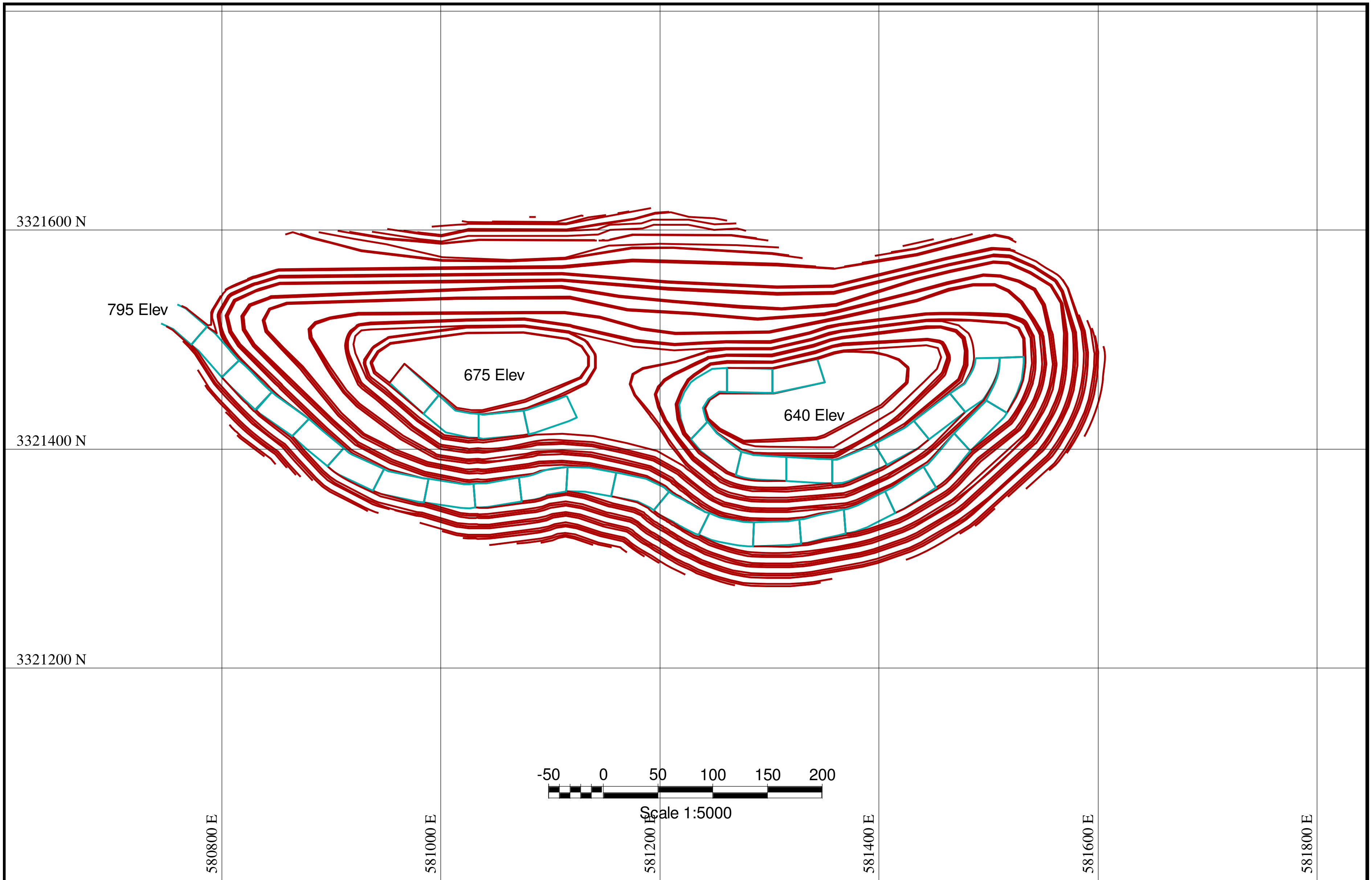
- Use a 45 degree inter-ramp slope angle and a 40 degree overall slope angle.
- Triple bench to 15 m high benches.
- Include a step-out of 10 m for any wall over 100 m in height.
- Use best management practices for blasting with minimizing highwall impact.

The pit is considered to be dry except during seasonal rainfall.

Blasting will be carried out by the contractor using ammonium nitrate and fuel oil as the primary explosive agent during the dry season and emulsion during the wet season.

The mining operation will be supported by one track dozer, one grader, and one water truck. The dozer will clean ramps, benches, and stockpiles. The wheel dozer will carry out bench and road cleanup. The grader will be used for road maintenance and the water trucks will be used for dust control.

The Banamichi Clay Borrow pit has been identified to supply the designed 20,000 tpa of acceptable clay for leach pad construction. The overall strip ratio at the Banamichi Clay Borrow pit will be approximately 0.1:1.0 (waste to clay). The proposed equipment fleet includes the same fleet as mining and use of the mine contractor for load, haul, and placement. No drilling or blasting is anticipated.



SCOTT WILSON RPA

GEOLOGICAL AND MINING CONSULTANTS

55 University Avenue, Suite 501

Toronto, Ontario M5J 2H7

Figure 19-1

SilverCrest Mines

Santa Elena Project

Planview

Phase 3 Pit Design

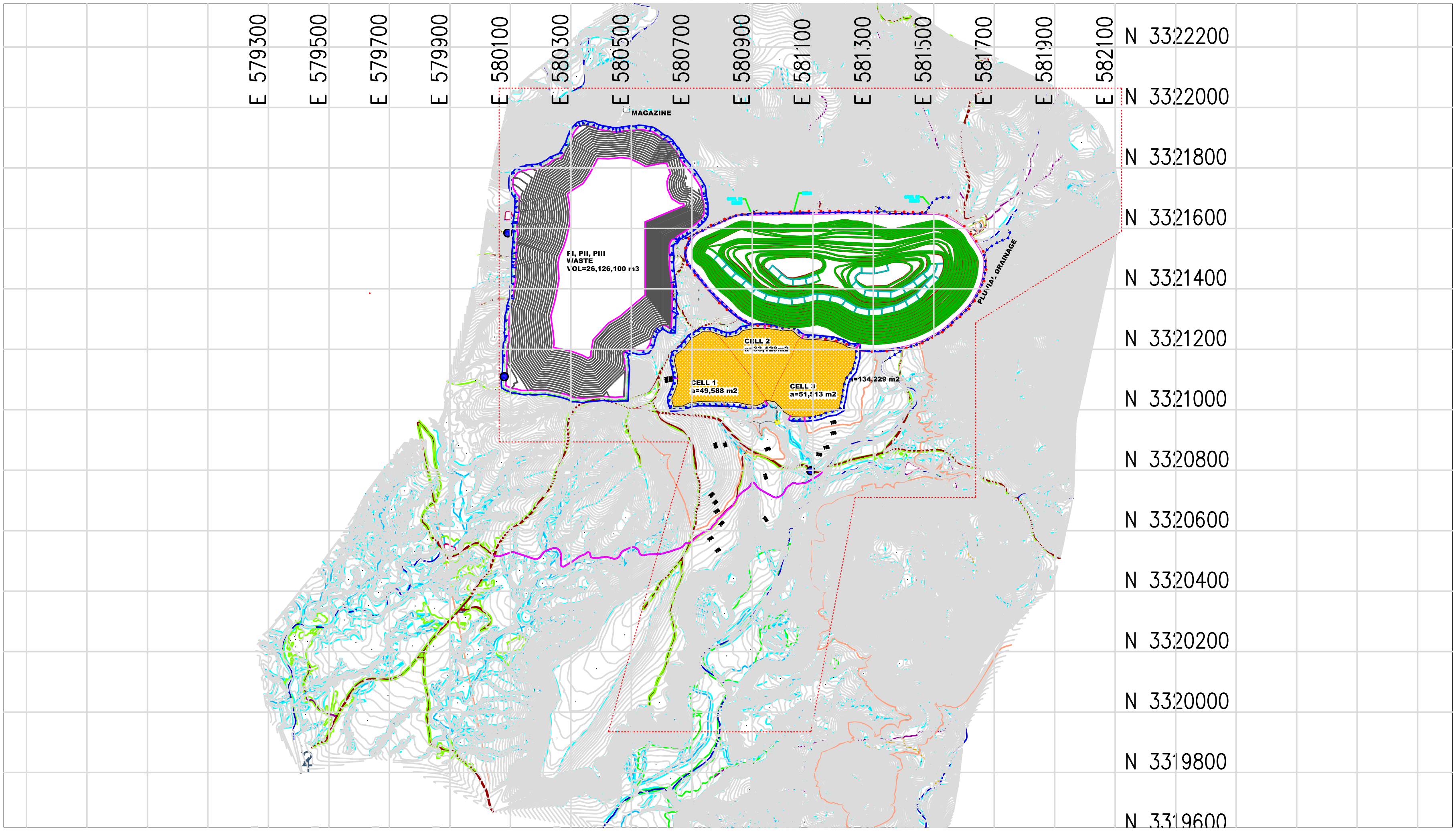


Figure 19-2

Legend:

- *Fence*
- *Proposed Roads*
- *Impacted Area*
- *Open Pit (Phase III)*
- *Waste*
- *Leach Pads*
- *Land Fill / Dam*
- *Ponds*
- *Monitoring Wells and Ponds*
- *Administration / Workshop / Process*

N

0 200 400 600 800 1000

Metres

SilverCrest Mines Inc.

Santa Elena Project

Mexico

Site Layout

AUXILIARY INFRASTRUCTURE

The Santa Elena Mine is located approximately six kilometres from Banamichi, where the administration will be based. Auxiliary infrastructure at the mine will comprise:

- Mine buildings
- Water and fire protection system
- Fencing
- Sewerage
- Fuel
- Access

No camp or living quarters will be constructed on site.

POWER

Due to the lack of a steady power supply to the towns located all along the so-called Sonoran River Route, two options are being reviewed by Santa Elena for supplying power to the Project site.

The first considers installing a new power grid from the locality of Ures, located at about 100 km from the site. A proposal for this alternative was prepared by Comisión Federal de Electricidad (CFE).

The second option looks for power provision with a grid of generator sets for the different plant areas.

The best alternative for power is dependent on cost and reliability. A more detailed review of power installation will be completed and negotiated before construction. The economic analysis assumes that electrical power will be supplied to the mine through four diesel generators including one backup generator.

MINERAL PROCESSING

See Section 16.

MARKETS

The principal commodities of gold and silver are freely traded, at prices that are widely known, so that prospects for sale of any production are virtually assured. Scott Wilson RPA used an average gold price of US$765 per ounce and an average silver price of US$11.95 per ounce for the Base Case.

CONTRACTS

Santa Elena will engage a local mining contractor to undertake the mining operation which includes drilling, blasting, and hauling of waste to the dumps and ore to the crusher.

Gold and silver doré produced at Santa Elena will be transported by Servicio Panamericano de Protección, S.A. de C.V. (SEPSA), and refined to market delivery standards by either Servicios Industriales Peñoles or Johnson Matthey Limited in Salt Lake City, Utah.

ENVIRONMENTAL CONSIDERATIONS

The Santa Elena Project environmental baseline and permitting work has been undertaken by Ms. Delia Patricia Aguayo Hurtado, a professional Mexican environmental engineer from Hermosillo, Mexico, and audited to World Bank standards by Tetra Tech. Tetra Tech has made recommendations for a proper environmental management program during construction and operations. A copy of the Tetra Tech audit is included as Appendix 3.

BASELINE WORK

The environmental baseline work was completed in 2007 on the Santa Elena Project to fulfill local, regional, and international standards for permitting and developing an open pit, heap leach operation. Further baseline work was completed and is ongoing in 2008. Ongoing baseline data collection activities include the installation and monitoring of a groundwater well network, and the continuous measurement of key surface water flows using a permanent v-notch weir.

ACID GENERATION POTENTIAL

Waste rock for the Santa Elena open pit has been characterized for potential acid generation (PAG) and net neutralizing potential (NNP). Twenty-six samples were collected from core and sent to Laboratorios del Noroeste, S.A. de C.V., in Hermosillo, Mexico, for acid based accounting (ABA) and metal toxicity analysis.

Although overall results show little to no toxic metals for potential leaching in the future, metal toxicity tests completed on the spent ore samples from column-percolation testing show minor toxic metals for potential leaching in the future.

Acid based accounting (ABA) testing shows that PAG waste does exist in small amounts relative to the overall waste volume. Fortunately, there is a considerable amount of waste that is NNP positive, with calcite up to 50% by volume. This NNP waste will be used to buffer the PAG waste. It is important to note that the current underground workings have been exposed to oxygen and water for up to 100 years, and show no signs of pyrite oxidation. The mine water in these workings is pH is neutral (7.5 pH), low in sulphate (~100 mg/L), and low in iron (<0.1 mg/L). All toxic heavy metals typically associated with acid rock drainage were below Mexican regulatory standards.

The design for the waste dump will encapsulate the PAG waste inside the high NNP waste to maximize the neutralization potential of the calcite-rich waste. The waste dump facility will be constructed to keep waste rock "high and dry" to minimize exposure of waste to water.

PERMITTING

Under Mexican law, two key documents are required to permit a mine for construction and operation:

- Land Use Change
- Environmental Impact Study (MIA)

In December 2007, Nusantara submitted the Land Use Change document to the Mexican government (SEMARNAT) for review and approval. This approval was granted in April of 2008.

The MIA was submitted to SEMARNAT in February 2008. Approval is pending as of the release date of this report.

Other important operating permits/approvals required include a permit for blasting use of municipal garbage dump, a permit for use of public access, and municipal approval of operations.

As water rights will be purchased from an already existing, permitted well, no permitting is required.

TAXES

Scott Wilson RPA has relied on SVL for guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from Santa Elena. Estimates include IVA (VAT) where applicable and corporate income tax is included at the rate of 28%.

MANPOWER

A total of 61 people will work under the management of Santa Elena Mine. This total excludes the personnel working for the mining contractor. All operating labour will work on a contract basis for Santa Elena.

TABLE 19-3 OWNER MANPOWER
SilverCrest Mines Inc. – Santa Elena Property, Mexico

General Manager	1
Geology / Mining / Engineering	11
Processing and Laboratory	32
Safety / Environment	2
General Administrative	15
Total	**61**

CAPITAL AND OPERATING COST ESTIMATES

The estimated capital cost to construct the mine is shown in Table 19-4, totalling $20.3 million. The estimate includes working capital for four months of operation and contingency of 15%.

Sustaining capital has been estimated to be 2.5% of initial capital, invested on an annual basis. Additional sustaining capital investment is included in years three to six for additional heap construction and a major pit layback. The total mine life sustaining capital is $15.0 million.

TABLE 19-4 PRE-PRODUCTION CAPITAL COSTS
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Area	US$'000
Buildings	1,545
Crushing and Conveying	4,674
Heaps	893
Plant	1,623
Mobile Equipment	344
Services	2,050
Administration	732
Subtotal	11,861
EPCM	3,044
Total	14,905
Contingency	2,236
Total	17,141
Working Capital	3,205
Total	**20,346**

Life of Mine unit operating costs are shown in Table 19-5.

TABLE 19-5 OPERATING COSTS
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Ore ($/t moved)	1.78
Waste ($/t moved)	1.24
Total Mining($/t ore)	6.04
Crushing ($/t ore)	2.47
Leaching and Process ($/t ore)	2.54
Administration ($/t ore)	1.90
Reclamation & Closure ($/t ore)	0.39
Contingency	2.00
Total ($/t ore)	**15.34**

Costs are based on quotations and designs for key items and some factors for overheads and general expenses. The costs are considered by Scott Wilson RPA to be appropriate at the pre-feasibility level of the Study.

ECONOMIC ANALYSIS

A Cash Flow Projection has been generated from the Life of Mine production schedule and capital and operating cost estimates, and is summarized in Table 19-6. A summary of the key criteria is provided below.

ECONOMIC CRITERIA

REVENUE

- 2,500 tonnes of ore per day mined from the open pit (average of 817,744 tonnes of ore per year).
- Leach recovery by zone, as indicated by testwork, averaging 67%.
- Reduction in ounces for gold entrained in mill circuit.
- Gold at refinery 99.965% payable.
- Exchange rate US$1.00 = 10.58 Mexican pesos.
- Metal price: US$ 800 per ounce gold initially, declining to US$750 per ounce long term, averaging US$765 per ounce. US$14.00 per ounce silver, declining to US$11.50 long term, averaging US$11.95 per ounce.

- US$765 per ounce gold and US$11.95 per ounce silver.
- Revenue is recognized at the time of production.

COSTS

- Operating mine life: eight years.
- Additional two years of leaching post cessation of mining activity.
- Life of Mine production plan as summarized in Table 19-1.
- Pre-production capital totals $20.3 million.
- Mine life sustaining capital totals $15.0 million.
- Average operating cost over the mine life is $15.34 per tonne processed.
- Salvage value is 10% of original fixed assets.
- Working capital is recovered in Year 8 once mining ceases
- Depreciation of plant and equipment is applied on a straight-line basis during the mine life and depreciation of vehicles is applied over a four year period.

The Project has an estimated cash operating cost of $333 per ounce of gold equivalent. Including capital, the total cash cost is estimated to be $434 per ounce of gold equivalent.

The Project base case shows an after-tax internal rate of return (IRR) of 70.3% and an after-tax net present value (NPV) of $44.6 million, assuming a discount rate of 8%. The after-tax NPV at discount rates of 10%, 15%, and 20% are $39.8 million, $31.2 million, and $23.1 million, respectively. The pre-tax IRR is 98.9% and the pre-tax NPV at 8% discount is $65.4 million. Simple payback of the Project occurs 15 months from the beginning of production.

TABLE 19-6 CASH FLOW SUMMARY
SilverCrest Mines Inc. - Santa Elena Property, Mexico

Year	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Cumulative
Total Ore (t)		814,850	849,925	849,785	849,606	849,804	849,139	848,684	630,160			6,541,952
Total Waste (t)		1,347,628	2,954,058	5,502,475	5,691,465	10,076,393	4,399,351	1,446,951	308,224			31,726,544
Pushback (t)		-	-	1,381,267	1,571,129	5,955,095	281,279	-	-			9,188,770
Total Tonnes Mined (t)		2,162,478	3,803,983	6,352,260	6,541,071	10,926,196	5,248,489	2,295,635	938,384			38,268,496
Operating Strip Ratio		1.65	3.48	4.85	4.85	4.85	4.85	1.70	0.49			3.45
Overall Strip Ratio												4.85
Head Grade Ag (g/t)		1.74	1.98	1.74	1.59	2.19	1.09	0.91	1.71	Residual Leaching		1.61
Head Grade Au (g/t)		40.36	44.42	55.86	57.68	72.85	50.93	49.48	90.01			56.71
Au Recovery		70%	70%	69%	69%	68%	68%	60%	60%			67%
Ag Recovery		37%	37%	34%	34%	33%	33%	32%	32%			34%
Gold price ($)		800.0	800.0	800.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	765.0
Silver Price ($)		14.0	13.0	12.0	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.95
Total Recovered Au Eq Ounces		38,710	45,195	40,587	38,219	50,741	27,254	21,473	29,704	6,433	2,908	301,223
Gross Revenue ($)		30,968,276	36,155,627	32,469,405	28,664,059	38,055,437	20,440,351	16,104,645	22,278,171	4,824,932	2,180,965	232,141,869
NSR ($/ t ore)		38.00	42.54	38.21	33.74	44.78	24.07	18.98	35.35			35.49
Operating Expenses ($)		9,199,023	11,907,245	13,822,174	13,739,005	14,260,301	14,061,087	10,887,048	7,684,552	2,481,275	2,336,770	100,378,480
Unit Operating Cost ($/ t ore)												15.34
Capital Expenditures ($)	20,345,754	428,529	428,529	2,524,280	2,150,486	6,955,314	1,330,857	428,529	(2,776,054)	204,756	(1,611,739)	30,409,241
CASH FLOW PRE TAX ($)	**(20,345,754)**	**21,340,724**	**23,819,854**	**16,122,951**	**12,774,567**	**16,839,823**	**5,048,407**	**4,789,068**	**17,369,674**	**2,138,902**	**1,455,935**	**101,354,147**
CASH FLOW AFTER TAX ($)	**(20,345,754)**	**16,309,590**	**17,547,896**	**11,507,666**	**9,287,511**	**11,173,215**	**4,332,771**	**4,428,696**	**14,424,011**	**2,138,902**	**1,455,935**	**72,260,438**
Unit Cash Production Cost	$/ oz Au Eq	237.64	263.47	340.56	359.48	281.04	515.93	507.01	258.70	385.70	803.58	333.24
Unit Capital Cost	$/ oz Au Eq											100.95
Total Cash Cost	$/ oz Au Eq											434.19

SENSITIVITY ANALYSIS

Project risks can be identified in both economic and non-economic terms. Key economic risks were examined by running cash flow sensitivities:

- Gold price
- Exchange rate
- Head grade
- Operating costs (Total Cash Cost)
- Pre-production capital costs
- Mine life

After-tax IRR sensitivity over the base case has been calculated for -20% to +20% variations. The sensitivities are shown in Figures 19-3, 19-4 and Table 19-7.

The sensitivity analysis evaluates the response to a range of gold prices, from $459 to $1,071 per ounce. The sensitivity to changes in capital and operating cost has been shown over a ±20% range. The after-tax Project IRR and NPV at 8% discount rate have been calculated over a ±20% range of gold recoveries.

TABLE 19-7 SENSITIVITY ANALYSIS
SilverCrest Mines Inc. – Santa Elena Mine, Mexico

Variable	Unit	Value	Percent of Base Case	NPV @ 8% ($ Millions)	Internal Rate of Return
Gold price	US$/oz	459.00	60%	-2.78	2.3%
		612.00	80%	19.32	38.7%
		765.00	Base	44.65	70.3%
		918.00	120%	67.51	96.5%
		1,071.00	140%	90.36	121.3%
Capital Cost	$ million	16.28	80%	48.41	91.6%
		18.31	90%	46.53	79.8%
		20.35	Base	44.65	70.3%
		22.38	110%	42.76	62.6%
		24.41	120%	40.88	56.1%

Variable	Unit	Value	Percent of Base Case	NPV @ 8% ($ Millions)	Internal Rate of Return
Operating Cost	$ Million	80.30	80%	54.26	79.7%
		90.34	90%	49.45	75.1%
		100.38	Base	44.65	70.3%
		110.42	110%	39.84	65.5%
		120.45	120%	34.86	60.3%
Recovery	%	64.96%	-2%	40.75	65.9%
		65.96%	-1%	42.70	68.1%
		66.96%	Base	44.65	70.3%
		67.96%	+1%	46.60	72.5%
		68.96%	+2%	48.55	74.7%

The Project is most sensitive to changes in the gold and silver prices. The base case price of $765 per gold ounce and $11.95 per silver ounce represents about 84% of the recent gold spot price of $909.50 and 68% of the recent silver spot price of $17.48 (London Bullion Association, August 01, 2008). The Project is also sensitive to changes in operating costs where an increase of 10% would result in a 5% drop in IRR. The Project is less sensitive to a change in recovery where a drop in recovery to 63% would result in a 4.4% drop in IRR.

FIGURE 19-3 AFTER-TAX NPV SENSITIVITY

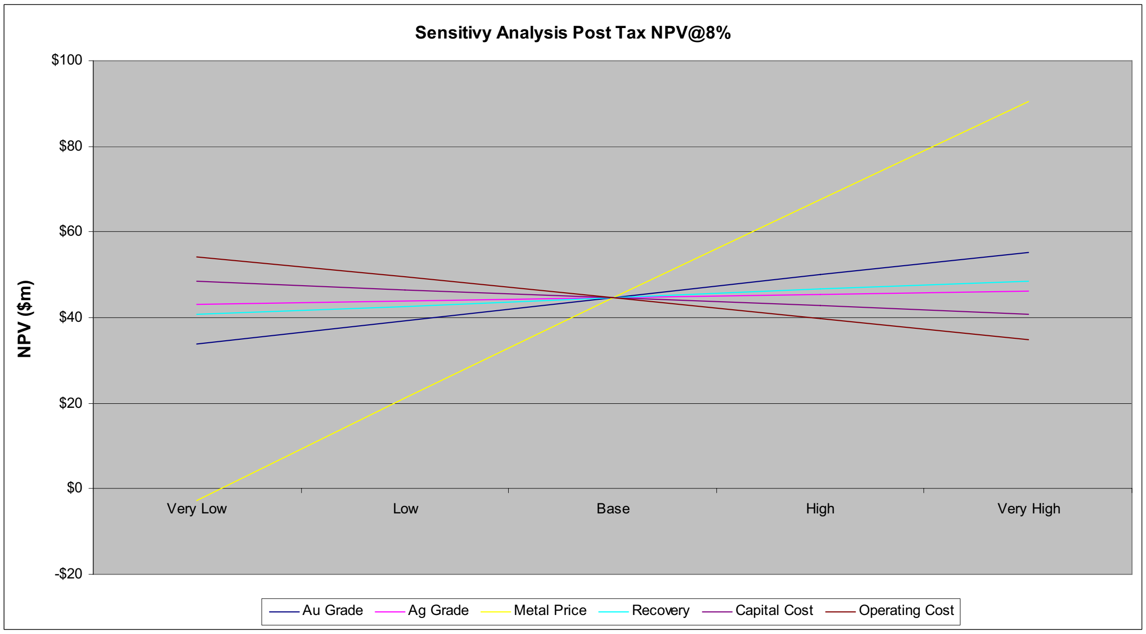
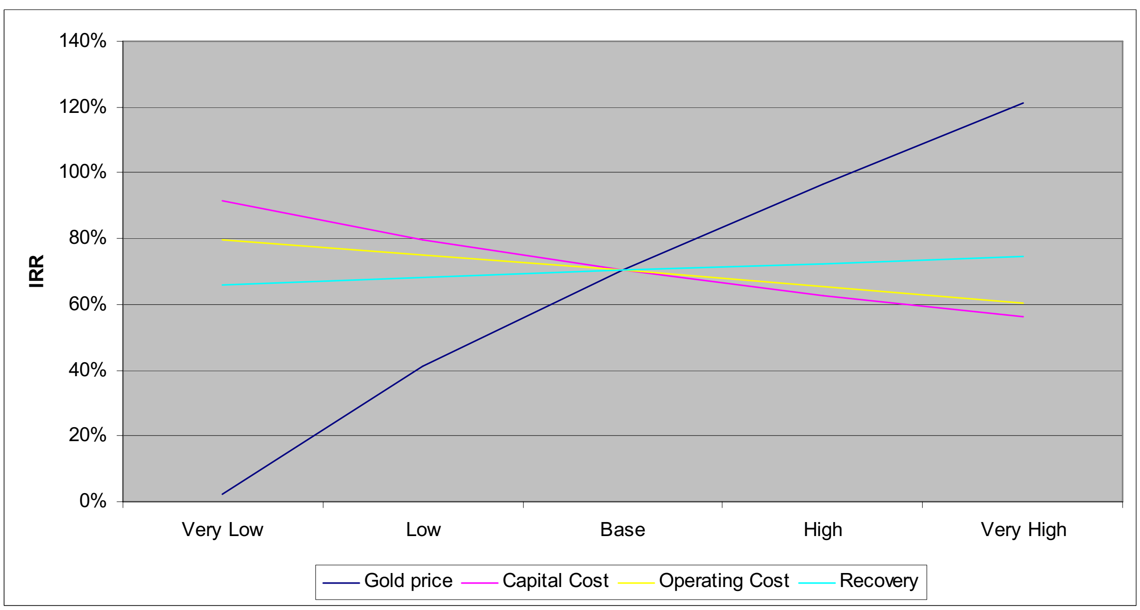


FIGURE 19-4 AFTER-TAX IRR SENSITIVITY



20 INTERPRETATION AND CONCLUSIONS

The Pre-Feasibility Study commissioned by SVL for the Santa Elena Project shows that the identified Mineral Resources are economic using the assumptions described and can be classified as Mineral Reserves. This technical report is based on a Pre-feasibility Study that was prepared by SVL following general industry standard practices. Scott Wilson RPA notes that:

- An open pit mine is planned to produce a total of approximately 817,000 tonnes of ore per year, at a rate of 2,500 tpd.
- A total of 6.5 million tonnes of ore at an average grade of 1.614 g/t Au and 56.7 g/t Ag will be mined from the deposit over a period of eight years.
- The ore is amenable to heap leaching with cyanide. The average overall recovery of 67% for gold and 34% for silver (varied for depth) is consistent with available test results and acceptable for a pre-feasibility level study.
- Testwork does not adequately reflect proposed flow sheet and design criteria. Significant additional testwork is required to firm up design criteria for a feasibility level study. The requisite test work is in progress at Metcon, in Tucson, AZ.
- The Project is expected to produce a total volume of approximately 31.7 million tonnes of waste of which approximately 2% is potential acid generating material which will be encapsulated by the neutral waste material. The 6.5 million tonnes of ore will be neutralised in situ in the heap leach dumps.
- Environmental studies required for permitting are in progress.
- Capital and operating costs have been estimated at an appropriate level of detail for a pre-feasibility study.

21 RECOMMENDATIONS

Project economics are robust using the economic assumptions stated. Scott Wilson RPA recommends that SVL advance the Santa Elena Project to the Feasibility Stage. In addition to the course of work typical of the requirements of a Feasibility Study, it is recommended that the following specific items be addressed:

- Review of waste dump and heap leach locations with regard to future exploration potential.
- Metallurgical testwork to optimize leaching parameters.
- Review of electrical power supply options.

22 REFERENCES

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23 SIGNATURE PAGE

This report titled "Technical Report on the Pre-feasibility Study for the Santa Elena Project, Sonora, Mexico", prepared for SilverCrest Mines Inc. and dated August 11, 2008, was prepared and signed by the following authors:

(Signed & Sealed)

Dated at Toronto, Ontario
August 11, 2008

Graham G. Clow, .Eng
Principal Mining Engineer
Scott Wilson Roscoe Postle Associates Inc.

(Signed & Sealed)

Dated at Toronto, Ontario
August 11, 2008

David W. Rennie, P.Eng.
Principal Geologist
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Dated at Tuscon, Arizona
August 11, 2008

Geoff Allard, P.E.
Professional Chemical Engineer
Allard Engineering Services

(Signed & Sealed)

Dated at Denver, Colorado
August 11, 2008

Edward J. McDonald IV, P.E.
Senior Engineer

24 CERTIFICATE OF QUALIFICATIONS

GRAHAM G. CLOW

I, Graham G. Clow, P.Eng., as an author of this report entitled "Technical Report on the Pre-feasibility Study for the Santa Elena Project, Sonora, Mexico", prepared for SilverCrest Mines Inc. and dated August 11, 2008, do hereby certify that:

1. I am Principal Mining Engineer with Scott Wilson Roscoe Postle Associates Inc. of Suite 501, 55 University Ave., Toronto, ON, M5J 2H7.

2. I am a graduate of Queen's University, Kingston, Ontario, Canada in 1972 with a Bachelor of Science degree in Geological Engineering and in 1974 with a Bachelor of Science degree in Mining Engineering.

3. I am registered as a Professional Engineer in the Province of Ontario (Reg.# 8750507). I have worked as a mining engineer for a total of 32 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Review and report as a consultant on numerous mining operations and projects around the world for due diligence and regulatory requirements
   - Senior Engineer to Mine Manager at seven Canadian mines and projects
   - Senior person in charge of the construction of two mines in Canada
   - Senior VP Operations in charge of five mining operations, including two in Latin America
   - President of a gold mining company with one mine in Canada
   - President of a gold mining company with one mine in Mexico

4. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI43-101.

5. I have not visited the Santa Elena property.

6. I am responsible for overall preparation of the Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.4 of National Instrument 43-101.

8. I have had no prior involvement with the property that is the subject of the Technical Report.

9. I have read National Instrument 43-101, and the Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.

10. To the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated this 11th day of August, 2008

(Signed & Sealed)

Graham G. Clow, P. Eng.

DAVID W. RENNIE

I, David W. Rennie, P.Eng., as an author of this report entitled "Technical Report on the Pre-feasibility Study for the Santa Elena Project, Sonora, Mexico", prepared for SilverCrest Mines Inc. and dated August 11, 2008, do hereby certify that:

1. I am a Principal Geologist with Scott Wilson Roscoe Postle Associates Inc. My office address is Suite 388, 1130 West Pender Street, Vancouver, British Columbia, Canada V6E 4A4.

2. I am a graduate of the University of British Columbia in 1979 with a Bachelor of Applied Science degree in Geological Engineering.

3. I am registered as a Professional Engineer in the Province of British Columbia (Reg.# 13572). I have worked as a geological engineer for a total of 29 years since my graduation. My relevant experience for the purpose of the Technical Report is:
    - Review and report as a consultant on numerous exploration and mining projects around the world for due diligence and regulatory requirements
    - Consultant Geologist to a number of major international mining companies providing expertise in conventional and geostatistical resource estimation for properties in North and South Americas, and Africa.
    - Chief Geologist and Chief Engineer at a gold-silver mine in southern B.C.
    - Exploration geologist in charge of exploration work and claim staking with two mining companies in British Columbia.

4. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI43-101.

5. I have not visited the Santa Elena property.

6. I am responsible for preparation of Sections 7 to 15 and 17 of the Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.4 of National Instrument 43-101.

8. I have had no prior involvement with the property that is the subject of the Technical Report.

9. I have read National Instrument 43-101, and the Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.

10. To the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated this 11th day of August, 2008

(Signed & Sealed)

David W. Rennie, P. Eng.

C. STEWART WALLIS

I, C. Stewart Wallis, P.Geo., as an author of this report entitled "Technical Report for the Pre-Feasibility Study of the Santa Elena Project," prepared for SilverCrest Mines Inc. and dated August 11, 2008, do hereby certify that:

1. I am an Associate Consulting Geologist with Scott Wilson Roscoe Postle Associates Inc. My office address is Suite 388, 1130 W. Pender Street, Vancouver, B.C. V6E 4A4.

2. I am a graduate of McMaster University, Hamilton, Canada, in 1967 with a Bachelor of Science degree in Geology.

3. I am registered I am registered as a Professional Geologist in the Province of British Columbia (Reg.# 372) and Saskatchewan (Reg.# 10829), a Professional Geologist in the State of Wyoming (Reg.# PG-2616) and a Certified Professional Geologist registered with the American Institute of Professional Geologists. I have worked as a geologist for a total of 41 years since my graduation. My relevant experience for the purpose of the Technical Report is:
    - Review and report as a consultant on numerous exploration and mining projects around the world for due diligence and regulatory requirements, including:
        i. The previously filed Technical Report on the Santa Elena Property, Sonora, Mexico, November, 2006
        ii. Technical Report on the Dolores Property, Mexico

4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI43-101.

5. I visited the Santa Elena Property on April 18, 2006 and again on November 16, 2007.

6. I am responsible for the site visits and the collection of independent samples referred to in the Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.4 of National Instrument 43-101.

8. I have had no prior involvement with the property that is the subject of the Technical Report other than what is stated above.

9. I have read National Instrument 43-101, and the Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.

10. To the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated this 11th day of August, 2008

(Signed and Sealed)

C. Stewart Wallis, P.Geo.

GEOFF ALLARD

I, Geoff Allard, P.E., as an author of this report entitled "Technical Report on the Pre-feasibility Study of the Santa Elena Project, Appendix 1 Pre-feasibility Audit – Metallurgy and Process" prepared for SilverCrest Mines Inc. and dated August 11, 2008, do hereby certify that:

1. I am owner of: Allard Engineering Services
   4526 N. Camino de la Codorniz
   Tucson, AZ 85745

2. I am a graduate of the University of Nevada, Reno, in 1977 with a B.S. degree in Chemical Engineering. In addition I have obtained an M.S. degree in Metallurgical Engineering in 1982 also from the University of Nevada, Reno.

3. I am registered as a Registered Professional Chemical Engineer in the State of Nevada (#8476). I am a Registered Member of the Society of Mining, Metallurgy and Exploration, Inc. (#36750). I have worked as an engineer for a total of 30 since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Participated in the initial development of commercial heap leach technology.
   - Developed and interpreted heap leach metallurgical test programs for numerous projects and operations.
   - Designed, constructed or managed over 15 heap leach operations.

4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI43-101.

5. I visited the Santa Elena Property on April 14, 2008, and July 28, 2008.

6. I am responsible for preparation of Appendix 1 "Pre-feasibility Audit – Metallurgy and Process" of the Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.4 of National Instrument 43-101.

8. I have had no prior involvement with the property that is the subject of the Technical Report.

9. I have read National Instrument 43-101, and the Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.

10. To the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated this 11th day of August, 2008

(Signed & Sealed)

Geoff Allard, P.E.

EDWARD J. MCDONALD IV

I, Edward J. McDonald, P.E., as an author of this report entitled "Technical Report on the Pre-feasibility Study of the Santa Elena Project", prepared for SilverCrest Mines Inc. and dated August 11, 2008, do hereby certify that:

1. I am a Senior Engineer with Vector Engineering, Inc., 1120 Washington Avenue, Golden, Colorado, 80401. At the time I carried out the work for the Santa Elena property I was a Senior Engineer with Lyman Henn, Inc. located at 110 16th Street, Suite 700, Denver, Colorado, 80202-5202, USA.

2. I am a graduate of Colorado School of Mines, Golden, Colorado in 1999 with a Bachelor of Science degree.

3. I am registered as a Professional Engineer in the State of Colorado (Reg. # 38486), in good standing. I am also a member of the American Society of Civil Engineers (Mem. # 431623) and the Society for Mining, Metallurgy, & Exploration (Mem. # 4117136). I have worked as a geological/geotechnical engineer for a total of 9 years since my graduation. My relevant experience for the purpose of this Technical Report review is:
    - I have conducted numerous geologic, seismotectonic and geotechnical investigations of precious metal mine sites, including:
    - Designed, implemented and reported on numerous geotechnical investigation programs for precious metal mining projects in Central America
    - Author of the Geotechnical Sections of pre-feasibility level tailings and waste rock design report for the Molejon Gold project in Panama.
    - Author of the Geotechnical Study for site characterization and risk assessment for the Falconbridge Dominicana mine in the Dominican Republic.
    - Author of the Geology and Seismicity sections of the feasibility study for the Brisas del Cuyuni project in Venezuela.

4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI43-101.

5. I visited the Santa Elena property on March 26 through March 29, 2008, and observed site conditions, observed exploration drill core and toured the historic underground mine workings.

6. I am responsible for a review of geotechnical open pit design recommendations as presented in Section 19 of the Technical Report.

7. I am independent of the Issuer applying the test set out in Section 1.4 of National Instrument 43-101.

8. I have had no prior involvement with the property that is the subject of the Technical Report.

9. I have read National Instrument 43-101, and the Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.

10. To the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated this 11th day of August, 2008

(Signed & Sealed)

Edward J. McDonald IV, P.E.

25 APPENDIX 1 PRE-FEASIBILITY STUDY AUDIT - METALLURGY AND PROCESS, BY ALLARD ENGINEERING SERVICES

SILVERCREST MINES INC.
SANTA ELENA PROJECT

PRE-FEASIBILITY STUDY AUDIT
~
METALLURGY AND PROCESS

~

31 May 2008

Allard Engineering Services
4526 N. Camino de la Codorniz
Tucson, AZ 85745
(520) 743-5185

0.0 SUMMARY:

The Santa Elena Pre-Feasibility Study, Sonora Mexico dated 5 February 2008 was reviewed with respect to metallurgy and processing. It is the opinion of this author that no fatal flaws exist with regard to metallurgy and processing in the Pre-feasibility Study. The body of testwork does not adequately reflect the proposed process flowsheet and design criteria; however, based on the authors experience this ore should be suitable for the anticipated process design. It should be noted, significant additional testwork specifically designed to represent the design criteria, will be required to support a Feasibility level study.

The Santa Elena ore is amenable to cyanide leaching in heaps. The body of metallurgical data shows a consistent inverse dependence of recovery on particle size. The Pre-feasibility study indicated an average recovery of 67% Au and 34% Ag and for the purposes of cash flow varied this with depth of the ore which is consistent with available test results. The top size of the heap feed of minus 3/8" is appropriate to the ore and the selection of the recovery parameters is, in the opinion of this author, acceptable for a Pre-feasibility level document.

Testing has not been conducted using columns of a height similar to the proposed lift height (5 m). Leach cycles and percolation issues cannot be addressed with short columns. In addition reagent consumptions cannot be determined from the existing testwork. The proposed testwork program will address these issues. There is a risk an adverse condition will become apparent with the tall column testing.

The process flowsheets for the Santa Elena Project that were available for review are conventional and appropriate to the ore. Development of design information from the recommended metallurgical tests will be required to bring the flowsheets to a Feasibility level.

An updated water balance spreadsheet was briefly reviewed. It is apparent the heap will need pond capacity greater than that indicated in the Pre-feasibility study. In addition duplicate pumping systems with sprays and emitters will be required to manage rainfall accumulation in the system. Water usage appears to be greater than indicated in the Pre-feasibility study.

Capital costs were reviewed briefly and were found to be within reason for a small tonnage operation with contract mining. However, several required items such as piping were not readily apparent to this author and some items such as ponds and pumping systems were under estimated. The cost estimating sheets were of insufficient detail to obtain a more complete review. Consequently, a comment as to the suitability or accuracy level of the capital estimate cannot be definitively made.

Operating costs were briefly reviewed. In general the operating costs are suitable for a Pre-feasibility level document; however, some reagent consumptions cannot be identified from the existing testwork and some items are under estimated. Critical operating cost data will be obtained from the testing required for the Feasibility level document.

1.0 METALLURGY:

The supporting metallurgical testwork for the Santa Elena Project Pre-feasibility was reviewed with respect to recoveries, reagent consumptions; liberation size; leach application rate; heap height and physical properties. Various test programs, in chronological order, were reviewed.

1.1 Western Testing Laboratories – Oct. 1983:

This test program was conducted on tailings from the Santa Elena mill. No facility was included in the current process flowsheets for leaching the mill tailings; in addition the quantity and grade of the tailings were not indicated. These test results are not applicable to the Pre-feasibility study.

1.2 Comision de Fomento Minero of Hermosillo (CFM) - Sept. 1984:

This test program considered a small (56 kg) simple of minus 2" material from Santa Elena. The sampling location and its relevance were not noted. One column test was performed. The test was well documented and the procedures appropriate. The conclusions are as presented in the pre-feasibility study. Unfortunately without the sampling location this test can only be considered as supporting information in the overall body of test results.

1.3 Western Testing Laboratories – June. 1985:

This test program was conducted on a sample labeled "Mine Run"; however no indication anywhere in the report states where the sample came from or mentions the Santa Elena property. Since it is unclear that the sample tested refers to the Santa Elena property these tests were rejected for inclusion in the pre-feasibility study.

1.4 Comision de Fomento Minero of Hermosillo (CFM) - June 1985:

This test program considered a small (13.2kg) simple of minus 1/4" material from Santa Elena. A sample designation was given for the material; however, the significance of the sample number is not clear. One column test was performed. The test was well documented and the procedures appropriate. The conclusions are as presented in the pre-feasibility study. The small size of the test limits the usefulness; however, if a reference can be made to the sample numbers with respect to the reserves, this test can be included in the prefeasibility study as an indicator of recovery. Without the sample reference this test can only be considered as supporting information in the overall body of test results.

1.5 <u>Comision de Fomento Minero of Hermosillo (CFM) - Sept 1986:</u>

This program tested a composite of several samples for Tungsteno, however Santa Elena is not mentioned. A sample designation was given for the material; however, the significance of the sample number is not clear. Bottle roll tests, column tests and flotation tests were performed. The tests were well documented and the procedures appropriate. A notable exception with this report is that silver recovery was not always reported. The conclusions are as presented in the pre-feasibility study with the exception that a test was run using a flotation cell to agitate and aerate the pulp. This test was conducted on minus 65 mesh solids and obtained gold recoveries of 86.9% and 91.0% after 1 and 2 hours respectively. This test indicates aeration of the pulp improves recovery. Further tests were not pursued. If a reference can be made to the sample numbers with respect to the reserves, this test can be included in the prefeasibility study as an indicator of recovery for gold. Without the sample reference this test can only be considered as supporting information in the overall body of test results.

1.5 <u>Universidad de Sonora - Feb 2003:</u>

Two samples from Santa Elena were tested by bottle roll and column testing. Sample designations of Frente N and Laguna were given for the material; however, the significance of the names are not clear. Minimal information on the test procedures are presented in the report. Gold recovery for the Frente N bottle roll at -100 mesh was suspect due to 132% recovery. The column test results are as reported in the pre-feasibility study. The tests were run on a small scale with 3 inch diameter columns 3 feet high. With or without sample reference these tests can only be considered as supporting information in the overall body of test results.

1.6 <u>Sol y Adobe/Universidad de Sonora – July 2006:</u>

Six Santa Elena samples, designated 1 through 6, were submitted for bottle roll testing. The significance of the sample designations is not clear. These samples ranged from a low grade of 0.32 g/t Au and 29.5 g/t Ag to a high of 3.57 gm/t Au and 160gm/t Ag. Bottle roll tests at 1.0 gpl NaCN, 33% solids and pH 10.5 to 11 were run for 72 hours on minus 10 mesh material. Samples were taken routinely and analyzed for Au, Ag; pH and NaCN concentration.

The pulp was conditioned with lime prior to adding NaCN, which is an unusual practice. Check of the calculations on the reporting sheets identified several errors as follows:

> Summation of cumulative metal recovered inadvertently leaves out the metal in first sample aliquot from the calculations, under estimating the recovery.
>
> Calculated head is presented as the summation of metals in the final pregnant liquor at full volume, wash liquor assays and tails assay which overestimates the recovered metal.
>
> Daily NaCN consumption is calculated incorrectly for hour 12.
>
> Test recoveries were reported based on assay head rather than calculated head which is not common practice.
>
> Lime consumption does not account for residual pH in the final pregnant solution, which over reports the consumption.

Recalculating the recoveries based on corrected calculated head gives the following:

Sample No.	Au Recovery	Ag Recovery
1	75.0%	57.5%
2	67.3%	43.1%
3	73.2%	52.8%
4	77.2%	19.7%
5	73.2%	48.3%
6	69.3%	31.2%

Correlation between assay head and calculated head (after correction) was poor. Variation for Au ranged from -19% to +5% where the biggest differences were where the calculated head was greater than the assay head. The variation for silver was from -5% to +35% with the calculated head being predominantly lower than the assay head.

Lime consumption is overstated in the test due to not calculating a credit for the effective pH left in the pregnant solution and high lime additions at the end of the test. NaCN consumption appears to be correctly calculated and demonstrates an interesting linear relationship with the Au concentration in solution.

The calculation sheets for these tests should be corrected and the recovery values adjusted in the Pre-feasibility study. The variation between the calculated and assay head reduces confidence in this series of tests. The recoveries are less than would be predicted from other tests that demonstrate a strong dependence of recovery with size. These tests can only be considered as supporting evidence to the body of testwork.

1.7 SGS de Mexico, S.A. de C.V. - Dec 2007:

Five core samples from Santa Elena were submitted for bottle roll testing. Sample designations of #3; #6; #23; #28 and #34 were given for the material; however, the significance of the designations is not clear. These samples ranged from a low grade of 0.46 g/t Au and 66 g/t Ag to a high of 6.14 gm/t Au and 212 gm/t Ag. Bottle roll tests at 1.0 gpl NaCN, 40% solids and pH 11 were run for 7 days on a nominally minus 3/8" material. Samples were taken every day an analyzed for Au and Ag; few additional procedural details were included. The variation between assay head and calculated head for Au was sufficiently high to suspect procedural error. Ag calculated head closely matched the assay head. Recoveries based on calculated head ranged from 40.3% to 65.8% for Au and 12.8% to 27.5% for Ag. These tests were not included in the pre-feasibility study. The large variation between calculated and assay head for Au (std dev = 0.17; base =1.0) makes these tests suspect and not including them in the body of test results is justified.

1.8 <u>SGS de Mexico, S.A. de C.V. - Jan 2008:</u>

1.8.1 Samples:
Channel samples were taken on the surface (S), second level (SL) and fourth level (FL) of the Santa Elena Mine. Samples were taken by hammer and chisel along the exposed width of the orebody. Bias was given to coarse particles (nominal 4"); fines generated in extracting the sample were not included.

Six channel samples were taken on the surface (S-1 through 6); four channel samples were taken on the second level (SL-1 through 4) and three channel samples were taken on the fourth level (FL1 through 3).

1.8.2 Bottle Roll Tests, Coarse - Second Series:
Bottle roll tests were conducted on the individual channel samples crushed to minus 3/8" to obtain recovery kinetics. 3 kg of material was tested for 7 days at 40% solids at pH 10.5 – 11 and 1.0 gpl NaCN. The calculated heads closely matched the assay heads. Graphs representing the kinetics of the leaching for the bottle rolls are presented in the report, however the data used to generate the graphs are missing. The graphs are not plotted with a linear time scale which appears fatuous for kinetic data.

The graphs are a concern since the behavior shown by the data, even after replotting selected data with a linear time scale, is erratic and atypical for leach kinetics. Many of the curves for gold and silver recovery show an increased leach rate after day 4. NaCN consumption was low at an average 0.28 kg/t. Lime consumption was identical for all tests at 0.45 kg/t, which would appear to be an artifact of the procedure rather than an indication of a leach property. Without the test procedures and raw data to replot the curves appropriately it is difficult to find value in these data. These data were not included the pre-feasibility study discussion.

1.8.3 Composites:
The individual channel samples at each level were blended together to form three composites (S; SL & FL). The method of compositing and the weight of each channel sample were not identified. The pre-feasibility study mentions core was included in the compositing; however, details were not included.

1.8.4 Bottle Roll Tests, Pulverized:
Two duplicate bottle roll tests were conducted on each composite. The tests were run with material pulverized to nominally minus 100 mesh. 0.5 kg of each material was tested for 96 hours at 40% solids at pH 10.5 – 11 and 1.0 gpl NaCN. The calculated heads were uniformly less than the assay heads with a small standard deviation. The calculated head was approximately 93% of the assay head for both Au and Ag for all tests. Additionally, there was a small discrepancy when recalculating the Au and Ag recoveries from the report data, likely due to solution sampling procedure. Au recoveries were between 81.5% and 93.9% while Ag was between 39.6% and 60%. Correlation between duplicates was good. It should be noted the Au tails assays were roughly similar for all tests, this results in the highest recovery for the highest head grade. In addition the kinetics curves show leaching was not complete at the end of the test. It is apparent 100 mesh is below the liberation size for Au. The recovery curves for Ag also show a significant leach rate at the end of the test. NaCN and lime consumptions were relatively uniform for all samples averaging 0.41 kg/t and 0.57 kg/t respectively. Other than the discrepancy between calculated head and assay head, these tests appear to be well done and can be included in the body of test results. These data are as reported in the pre-feasibility discussion.

1.8.5 Bottle Roll Tests, Coarse - First Series:
Three bottle roll tests were conducted on each composite. The tests were run with varying crushed size. Each composite was leached with minus ½"; minus 3/8" and minus ¼" top size. 3 kg of each size material was tested for 96 hours at 40% solids at pH 10.5 – 11 and 1.0 gpl NaCN. The calculated heads closely matched the assay heads; however there was a small discrepancy when recalculating the Au recovery, likely due to solution sampling procedure. Graphs representing kinetics of leaching for the bottle rolls are presented in the report, however the data used to generate the graphs are missing. The tests showed a strong dependence between top crush size and recovery. Au recovery increase ranged from 5.6 to 9.9% between the coarsest and finest crush sizes for each sample. Increase in Ag recovery with the finer crush ranges from 2.4% to 6.4%. NaCN consumption was low at an average 0.20 kg/t. Lime consumption was similar for all tests at 0.58 kg/t.

The bottle roll tests show the strong dependence of recovery with respect to particle size. Unfortunately the report goes on to state:

> "The extractions in this stage were lower than using ground samples. This was likely provoked when the samples were prepared because we tried to reduce the production of fine particles."

This statement is not supported with screen analysis or definition of the procedure that would minimize the generation of fines and leads to the conclusion the tests may not be representative of a normally crushed sample. This test can be used as an indicator of particle size dependence but should not be included in recovery projections. These tests are as presented in the prefeasibility discussions.

1.8.6 Column Tests:
Column tests were run on each of the composites in duplicate with an additional column conducted on -1/4" crushed size of the S composite. The Tests were run in 150 mm (6") diameter columns with a bed depth of 171 cm. Solution was applied to the top of the column at a rate of 9.9 l/hr•m^2 (0.004 gpm/ft^2) to 11.5 l/hr•m^2 (0.0048 gpm/ft^2) depending on if the 6" is the inside or outside diameter. Several concerns are evident with the operation of the columns:

> The leach liquor was circulated through the column for several days without cyanide to "neutralize" the ore prior to adding cyanide. This is exceptionally poor practice, particularly with a competent ore that is being leached at a size above the liberation point. The first liquor that is applied to the ore must contain cyanide so the reactants will be transported into the pores of the rock. Pores are time dependant and will deteriorate with time by scaling with carbonates. It is likely this practice has reduced the overall recovery of the tests.
>
> The leach tests were started with 0.3 gpl NaCN and after 11 days of leaching the concentration was increased to 1.0 gpl. It was reported the "leaching kinetics improved" after this addition. This assertion is not supported by the data.
>
> The columns were operated in closed circuit without recovering the gold and silver from the column effluent. The rapid accumulation of gold and silver in the circulating solution will adversely influence the dissolution and diffusion from the rock.

The solution reservoir contained 20 liters. This is sufficient solution to feed the column for 4.6 days. The column spreadsheet infers the column effluent entered the reservoir at the same time the feed to the column was extracted. The large reservoir should tend to dampen the data so it is very smooth. Since the data is erratic it is apparent this container was not stirred and the concentration of gold and silver in the feed to the column varied over the course of the test. This is a poor configuration for column testing.

pH was maintained at an abnormally high range, the average pH for all the tests was 11.7 with a standard deviation of 0.6; pH's as high as 13.5 were observed in the tests. High pH is detrimental to leaching rate with cyanide. A normal operating range for a column would be between 9.5 and 10.5. There are segments of the test where pH was measured with an accuracy ±1 unit, these are days 30 to 50 and 60 to 65. Lime was continually added during this time even though the pH was indicated as unchanging.

There is an abrupt change in leach kinetics around day 45 for most of the columns that does not have any correlating change in conditions. A change of this nature late in a test is unusual without some corresponding operational change.

The 1.71 meter column height is inadequate to determine the leach cycle for the proposed 5-6 meter high lifts.

The analysis of recovery by size indicates the duplicate columns and the minus ¼" column are consistent between composites. Most tests showed a consistent inverse logarithmic trend between particle size and recovery. An exception is the SL data for silver. Curiously the SL silver tails by fraction is the most consistent between the duplicate tests and the most erratic by size. Some variability also existed in the coarsest fraction which surprisingly showed greater recovery (although one showed negative recovery) than the finer sizes. The FL composite showed the least recovery of the composites in the coarsest sizes. Extrapolating the appropriate curves to 100% recovery indicates the liberation size is between 200 and 400 microns (nominally 70 to 40 mesh), which is consistent with existing data.

Although the execution of the column tests generates significant questions, the columns can be included with the body of tests for indication of recovery; keeping in mind the questionable aspects of the tests would tend to reduce the recovery. The tests are not suitable for accurate determination of cyanide and lime consumption due to the inappropriate pH range. In addition the short columns should not be used to determine the leach cycles for the heap. The data in the pre-feasibility reflects the tests while in progress, this should be updated.

1.9 SGS de Mexico, S.A. de C.V. - Feb 2008:

1.9.1 Bottle Roll Tests on Column Tails:
After leaching the column tails (excluding S -1/4") were ground to 70% minus 75 micron and submitted for bottle roll testing. 0.5 kg of each size material was tested for 120 hours at 33% solids at pH 11 – 12 and 1500 gpl NaCN. Samples were taken every day an analyzed for Au and Ag; few procedural details were included. The 1500 gpl seems in error since that exceeds the solubility of NaCN in water at normal temperatures. The bottle roll tests resulted in a consistent overall recovery for all tests averaging 95.9% and 75.3% for gold and silver respectively. NaCN and lime consumption were high at about 1.0 kg/t and 0.87 kg/t respectively. The results are consistent with recovery at finer grinds.

1.9.2 Work Indexes:
Crushing work indexes were determined for each composite in duplicate. The work index is very consistent between samples and averages 14.24 kWhr/tonne with a standard deviation of 0.34.

1.10 Determination de Indice de Trabajo Unknown - Oct 2007:

This appears to be an appendix from a larger report. Santa Elena is not mentioned in the document. Work index was calculated for several samples using a laboratory crusher of unknown configuration. Work indices for “primary” crushing was reported between 38.36 kW/t and 47.08 kW/t. and “secondary” crushing were reported to range between 10.45 kW/t and 14.70 kW/t. The secondary crushing index agrees with published values for quartzite. A homogenous material would have the same crushing work index for all typical primary and secondary crushing size ranges. In addition, the reported “primary” work index exceeds all reported values for crushing work index by a large margin and commercially available crushers could not process this ore.

2.0 PROCESS DESIGN:

A brief review of the available flowsheets was conducted. The design is conventional in most respects. Some clean up of the flowsheets is required. Equipment numbers should be included on the flowsheets. Mass balances were not reviewed.

2.1 Drawing 050-FS-001 – General Crushing Flowsheet:

The crushing plant flowsheet does not include all the components necessary for operation. The following equipment are not included on the flowsheet.

- Tramp metal magnet
- Dribble conveyor
- Dust suppression/collection
- Conveyors to close the tertiary crusher
- Crusher lube units
- Rock breaker
- Lime silo, bin vent and feeder
- Solution pH adjustment
- Water management systems.

If the operation is to use contract mining it is good practice to have a static grizzly above the dump hopper to keep massive oversize from entering the hopper. The mining contractor would be paid for whatever passed the grizzly avoiding conflicts arising from under blasting and additional
cost for treatment of massive oversize.

Since the ore seems very abrasive, it is recommended a vibrating grizzly be placed in front of the jaw crusher bypassing minus 4” to reduce the wear on the crusher.

It is unlikely the screen receiving the jaw product will be a double deck scalping fines at 3/8”. To minimize the wear on the 3/8” deck the upper deck would be about ¾”. Consequently the jaw product which should be around 6” would tear up the ¾” deck. With the abrasiveness of the rock the screen decks should be 3” and 1-1/2”. The oversize of the two upper decks would feed the secondary crusher and the undersize would join the secondary crusher product feeding the second screen.

The tertiary crusher should be choke fed from a bin to obtain as much rock on rock crushing as possible to reduce the wear on the crusher liner.

2.2 Drawing 060-FS-001 – General Heap Leach Flowsheet:

The Heap Leach flowsheet was reviewed with the following comments and recommendations:
The following items are not shown on the flowsheet:

- Clarifier settling pond
- Flowmeters
- Overflow sequence

Cyanide addition (Str 605) should be by line injection by a metering pump into the line feeding the emitters rather than fed to the Barren Pond. This will allow better control if coupled with a 4-20 mv signal from a flowmeter. In addition the inventory of cyanide in the pond is reduced and the losses due to evaporation and UV degradation are reduced. Stratification of the added cyanide in the pond is also reduced.

2.3 Drawing 200-FS-001 – Heap Leach Recovery Flowsheet:

The Merrill Crowe plant appears conventional. The following seem to be missing from the flowsheet:

- Source of filter sluice water
- Precipitation press feed pump water seal

I question the use of barren solution for seal water on a liquid ring vacuum pump. Also the use of barren for zinc cone level control may be better served from precipitation press pump discharge.

No other flowsheets were reviewed.

3.0 WATER BALANCE:

A revised water balance was reviewed. It is apparent the accumulation of rainfall in the system requires significant infrastructure to maintain a zero discharge facility. The active area should be plumbed so as to allow either emitters or sprinklers. In addition, the side slopes should be plumbed to use sprinklers. In the later years of operation, particularly after mining ceases, large areas of heap should be covered with sprinklers that generate fine droplets to maximize the evaporation.

The pond requirement is substantially greater than indicated in the Pre-feasibility study.

The fresh water requirement is substantially greater than reported in the Pre-feasibility study.

These installations are not included in the Pre-feasibility study capital and operating costs.

4.0 CAPITAL COSTS:

Capital costs were briefly reviewed. In general the capital costs are in line with a small tonnage operation with contract mining. Review of the capital costs disclosed several contradictions between the flowsheets, text descriptions, design criteria and capital estimates. Some observations are as follows.

- The crushing flowsheet shows two screens, where the capital estimate includes only one screen.
- Costs are included for crushing foundations (544 m^3) and structural steel (62.9 t) however, it was indicated the crushing plant would be a portable plant.
- Platework estimating shows 3 reclaim feeder discharge chutes; however, reclaim from the stockpile was indicated to be by front end loader.
- A cyanide mix tank should have been included on the platework estimating sheet.
- The text of Section 25.3.9 indicates a water tank is included, this is not indicated in the estimate.
- Takeoffs of electrical, instrumentation and plant piping were not found.
- The study states a conveyor stacking system will be installed sometime after year 2. Data in the estimate shows this is at least a $3.8 MM expenditure. This is not captured in the financials as a sustaining capital expense.
- Spot check of the structural steel unit costs were in line with current costs. Costs for grating and handrail appeared to be under-estimated; however, a recheck confirmed the pricing.
- Spot check of the concrete unit pricing was acceptable.
- The revised water balance indicated dual leaching systems and greater pond volume required, these were not reflected in the estimate.
- Review was limited to summary level information only and was of insufficient scope to validate the 15% contingency. The accuracy level of the estimate is not identified in the report, however, based on the level of engineering reviewed, it is anticipated an accuracy range of ±30% to ±40% should be applied to the estimate. This is in line with a pre-feasibility study document.

These observations would indicate the project capital is greater than reported in the Pre-feasibility study.

5.0 <u>OPERATING COSTS</u>:

Operating costs were briefly reviewed. In general the operating costs appear acceptable with the following specific comments:

- Crushing maintenance is identified as 4% of the Installed Plant capital at $330,797 per year. Santa Elena ore is a very abrasive quartzite with a handbook abrasion index of 0.775. Using standard abrasion formulas for crusher wear indicates 30 liner changes per year for an estimated $360,000 per year for crusher wear alone. All screen panels, chutes, liners and transfer points will experience accelerated wear that will increase the crushing operating cost above that included in the Pre-feasibility study. Clearances in a portable plant will exacerbate the wear costs.
- Cyanide consumption was set at 0.3 kg/t and lime consumption was set at 0.6 kg/t, consumption varied with each test and the tests best representing the proposed flowsheet were flawed. The actual consumption will vary from these values.
- Electrical power consumption was based on installed hp for major equipment. Ancillary equipment hp was estimated.
- Review was limited to summary level information only and was of insufficient scope to validate an accuracy level of the estimate which is not referred to in the report.

These comments indicate the operating cost will be greater than reported in the Pre-feasibility study.

6.0 <u>RECOMMENDED METALLURGICAL TESTING</u>:

Additional metallurgical testing is required to support a feasibility study. In the absence of unforeseen issues arising from the proposed tests, the resulting data in conjunction with the existing body of evidence will be adequate to support a feasibility study. As with all metallurgical testing, nothing is certain and the direction of the tests may vary from the proposed program as data becomes available. The recommended minimum testing is as follows:

6.1 <u>Bulk Sampling:</u>

Channel sampling of the surface (S); Second Level (SL) and Fourth Level (FL) should be broadened to obtain larger sample quantities for the proposed tests. The samples should be taken at the same location and along the same length as the previous samples. The channel samples should be conducted to capture predominantly coarse (100 mm) material along with the associated fines generated during the sampling. These samples should be given identifying marks distinct from the previous set of samples at these locations (i.e. SL-1A, however this distinction is not carried through the discussions for simplicity). The individual samples should be shipped to an appropriate metallurgical testing laboratory. The minimum weight of each sample is as follows:

Area	Designation	No. Samples	Weight per Sx	Total Wt.
Surface	S	6	414 kg	2,485 kg
Second Level	SL	4	916 kg	3,664 kg
Fourth Level	FL	3	759 kg	2,485 kg

The total weight is summarized on the material flow chart appended to this report. The sample size is sufficient for all the recommended tests and allows for 5 meter columns with two additional column test charges. Since significant effort is involved in obtaining bulk samples from underground the quantity can be reduced to the extent of the excess material, however, a substantial risk is involved with reducing the sample quantity. In the event an unexpected condition arises or a test failure occurs, the entire program will have to be restarted with substantial delay and cost to support a Feasibility level study.

6.2 <u>Compositing:</u>

The bags containing individual channel samples (i.e. SL-1A) should be weighed, dried at low temperature, crushed to minus ¾" combined and a split taken for head assay. The combined channel sample at each level (i.e. SL-1A; SL-2A; SL-3A and SL-4A) should be combined on an equal weight basis to develop the test composites. A split from each composite will be sent for multi-element ICP analysis.

6.3 <u>Bottle Rolls:</u>

Bottle roll cyanidation tests should be conducted on each of the composites using 1 kg of sample and 2 liters of liquid. These bottle roll tests should be sampled at 1 hr; 2 hr; 4 hr; 8 hr; 24 hr; 48; hr and concluded at 72 hours. Any solids extracted with the sample will be returned to the test as well as a volume of water equivalent to the sample extracted for assay. The samples will be tested for Au; Ag; pH and CN concentration. pH will be adjusted to between 9.5 and 10.5 using reagent grade lime. The pH should not be adjusted unless it is apparent the pH will drop below the test range. pH and cyanide concentration of the leach liquor should be established prior to adding the liquor to the ore, then pH checked regularly during the initial contact to maintain protective alkalinity. The bottle should be left uncapped for the duration of the test and vigorously shaken after sampling to maintain dissolve oxygen. Cyanide will be adjusted individually per test as indicated. Each composite should be tested as follows:

Test	Composite	Particle Size	NaCN Conc. gpl	pH Range
1	S	-3/8"	0.25	9.5 – 10.5
2	SL	-3/8"	0.25	9.5 – 10.5
3	FL	-3/8"	0.25	9.5 – 10.5
4	S	-3/8"	1.0	9.5 – 10.5
5	SL	-3/8"	1.0	9.5 – 10.5
6	FL	-3/8"	1.0	9.5 – 10.5
7	S	-3/8"	5.0	10.5 – 11.5
8	SL	-3/8"	5.0	10.5 – 11.5
9	FL	-3/8"	5.0	10.5 – 11.5
10	S	- 100 mesh	0.25	9.5 – 10.5
11	SL	- 100 mesh	0.25	9.5 – 10.5
12	FL	- 100 mesh	0.25	9.5 – 10.5
13	S	- 100 mesh	1.0	9.5 – 10.5
14	SL	- 100 mesh	1.0	9.5 – 10.5
15	FL	- 100 mesh	1.0	9.5 – 10.5

At the end of the test the pulp should be filtered, the volume of filtrate recorded and sampled. The filter cake should be washed with fresh water equivalent to at least 2 times the entrained liquor volume. The wash liquor volume noted and sampled. The filtercake should then be weighed, dried and reweighed and submitted for tails analysis. Filtrate samples should be assayed for Au; Ag; pH and CN concentration.

The bottle roll tests will determine the lime consumption, the efficacy of high cyanide leaching and the relative influence of particle size on recovery. These tests will only give an approximation of leach kinetics due to the accumulation of metals in the leach liquor. Kinetic determinations with bottle roll tests are not recommended for the Santa Elena ore.

6.4 Column Testing:

The composites will be stage crushed to the appropriate passing size and split for head screen analysis. Lime will be blended into the column charge as determined from the bottle roll tests.

All column testing should be done on full height columns, 5 meters ore depth and nominally 200 mm inside diameter.

Leach solution pH and cyanide concentration will be adjusted prior to wetting the column. All effluent from the column will be run through a container of elutriated activated 6 X 16 mesh activated coconut shell carbon. The effluent entering the carbon bottle will be sampled daily for Au; Ag; pH and CN concentration. pH and NaCN concentration will be adjusted as necessary to avoid excursion from the test parameters. The sample time, leach volume and effluent volume will be recorded. For the first several days of leaching the effluent from the carbon bottles will be sampled and assayed for Ag, to avoid break through. The quantity of carbon in the bottles will be sufficient for a maximum of about 200 opt of combined metals loading. Based on the daily effluent assays, the carbon bottles will be replaced with unloaded carbon. The carbon will be dried, weighed and submitted for fire assay for Au and Ag. Recovery as calculated form the carbon assays will be plotted alongside the solution assay determined recovery. The quantity of carbon in the bottles should be selected to obtain 5 to 7 data points from the carbon assays. Near the end of the test a 7 day rest period will be included followed by reapplication of the leach solution until the recovery levels off. This rest period may be repeated.

At the end of the tests the columns should be washed with fresh water, discharged, weighed, dried and sampled for tails analysis and tails screen analysis. Recommended column tests are as follows:

Test	Composite	Particle Size	NaCN Conc. Gpl[4]	Leach Rate, gpm/ft^2	pH Range
1	S	-3/8"	0.5	.0025	9.5 – 10.5
2	SL	-3/8"	0.5	.0025	9.5 – 10.5
3	FL	-3/8"	0.5	.0025	9.5 – 10.5
4	SL	-3/8"	0.5	.005	9.5 – 10.5
5	SL	-3/8"	1.0	.0025	9.5 – 10.5
6[1]	SL	-3/8"	1.0	.005	9.5 – 10.5
7[1]	SL	-3/8"	5.0[2]	.0025	9.5 – 10.5[3]
8[5]	S (dupl.)	-3/8"	0.5	.0025	9.5 – 10.5
9[5]	SL (dupl.)	-3/8"	0.5	.0025	9.5 – 10.5
10[5]	FL (dupl.)	-3/8"	0.5	.0025	9.5 – 10.5

Notes:
1. Conditional test depending on bottle roll results;
2. Initial cure of high cyanide followed by leach at 0.50 gpl, dependant on bottle roll test.
3. Initial cure pH will be higher, pH of 0.0025 gpm/ft^2 leach.
4. Test NaCN Conc. will be determined from the bottle roll tests. NaCN concentration can be allowed to decline towards the end of the test.
5. Due to the minimal time available for testing, it is recommended at least Tests 1 through 3 are run in duplicate to avoid complications arising from a failed test.

It is anticipated the column leach tests will run at least 60 days. If it is determined the columns should continue leaching beyond the 60 days, which is likely due to the anticipated low solution application rate, test parameters may be altered to reflect a second stage leach.

6.5 Spent Ore Tests:

When the column tests are concluded samples will be taken from each column. Three separate samples will be taken from each column representing the top 1/3rd; middle 1/3rd and bottom 1/3rd of the column length. Each sample will be dried and split and tested to determine the benefit of future heap reclamation for mill feed. A split will be taken from each sample and recombined for each column and prepared for Bond grindability testing.

The bottle rolls will be run on the column residues pulverized to a nominal minus 100 mesh. A split of the pulverized material for each sample will be submitted for Au and Ag analysis.

The bottle rolls will be run in a manner identical to that outlined in section 6.3. NaCN and lime consumption will be monitored.

Tests are as follows. It should be noted some of the tests are conditional based on the results of the initial bottle roll testing and column testing.

Test	Column Test	Composite	Particle Size	NaCN Conc. gpl	pH Range
1	1 top	S	- 100 mesh	0.25	9.5 – 10.5
2	1 middle	S	- 100 mesh	0.25	9.5 – 10.5
3	1 bottom	S	- 100 mesh	0.25	9.5 – 10.5
4	2 top	SL	- 100 mesh	0.25	9.5 – 10.5
5	2 middle	SL	- 100 mesh	0.25	9.5 – 10.5
6	2 bottom	SL	- 100 mesh	0.25	9.5 – 10.5
7	3 top	FL	- 100 mesh	0.25	9.5 – 10.5
8	3 middle	FL	- 100 mesh	0.25	9.5 – 10.5
9	3 bottom	FL	- 100 mesh	0.25	9.5 – 10.5
10	4 top	SL	- 100 mesh	0.25	9.5 – 10.5
11	4 middle	SL	- 100 mesh	0.25	9.5 – 10.5
12	4 bottom	SL	- 100 mesh	0.25	9.5 – 10.5
13	5 top	SL	- 100 mesh	0.25	9.5 – 10.5
14	5 middle	SL	- 100 mesh	0.25	9.5 – 10.5
15	5 bottom	SL	- 100 mesh	0.25	9.5 – 10.5
16[1]	6 top	SL	- 100 mesh	0.25	9.5 – 10.5
17[1]	6 middle	SL	- 100 mesh	0.25	9.5 – 10.5
18[1]	6 bottom	SL	- 100 mesh	0.25	9.5 – 10.5
19[1]	7 top	SL	- 100 mesh	0.25	9.5 – 10.5
20[1]	7 middle	SL	- 100 mesh	0.25	9.5 – 10.5
21[1]	7 bottom	SL	- 100 mesh	0.25	9.5 – 10.5
22[2]	8 top	S	- 100 mesh	0.25	9.5 – 10.5
23[2]	8 middle	S	- 100 mesh	0.25	9.5 – 10.5
24[2]	8 bottom	S	- 100 mesh	0.25	9.5 – 10.5
25[2]	9 top	SL	- 100 mesh	0.25	9.5 – 10.5
26[2]	9 middle	SL	- 100 mesh	0.25	9.5 – 10.5
27[2]	9 bottom	SL	- 100 mesh	0.25	9.5 – 10.5
28[2]	10 top	FL	- 100 mesh	0.25	9.5 – 10.5
29[2]	10 middle	FL	- 100 mesh	0.25	9.5 – 10.5
30[2]	10 bottom	FL	- 100 mesh	0.25	9.5 – 10.5

Notes:
1. Conditional test completed only if column test is run.
2. Conditional test completed only if disparity exists between duplicate columns.

6.6 Ancillary Tests:

Appropriate splits from each of the composites should be submitted for determination of abrasion index, constrained compression and high impact crushing index with breakage function.

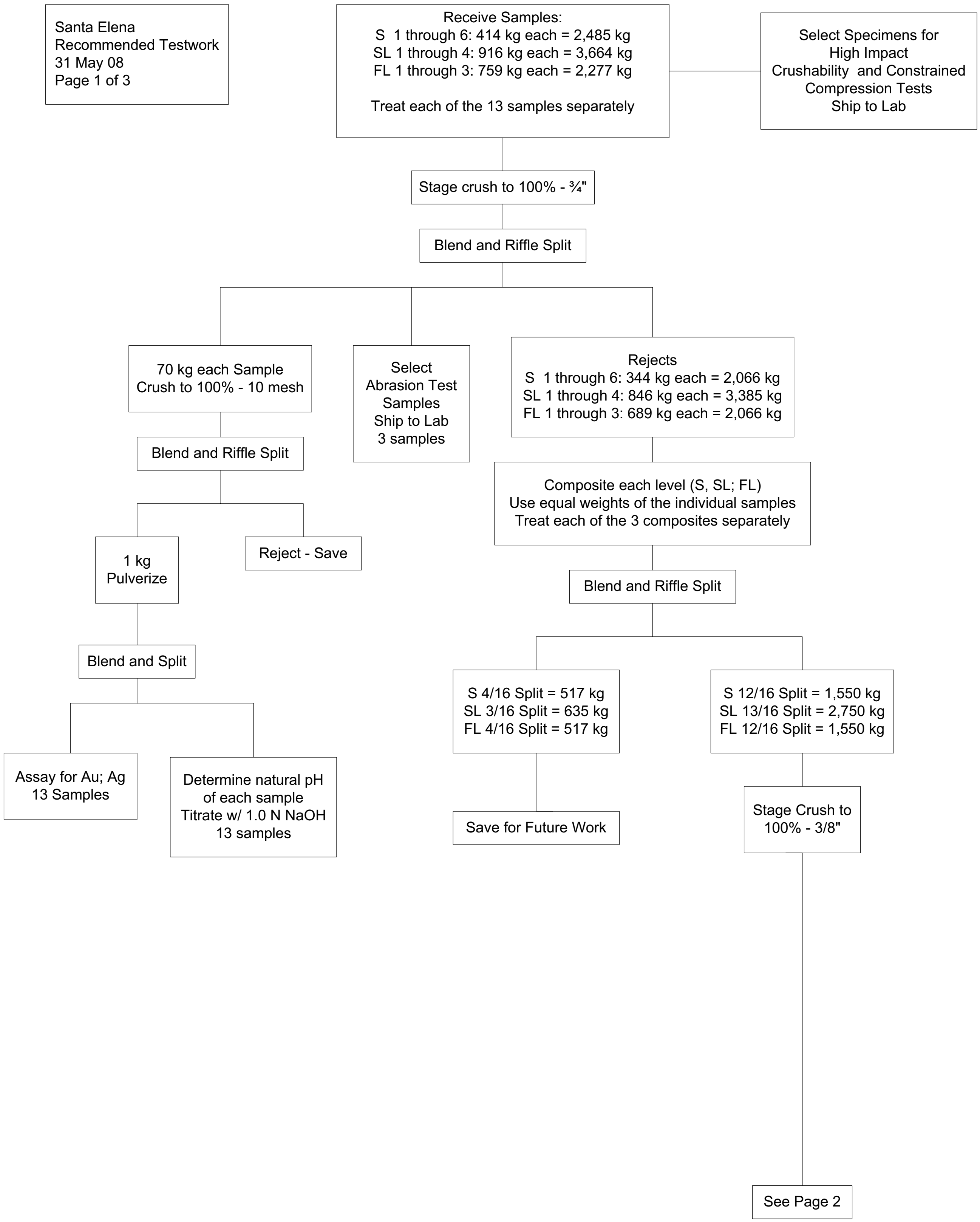
No information was available on the natural pH of the ore. A sample of the pulverized material from each of the individual samples should be agitated with distilled water and the pH measured over time. After the pH stabilizes for each sample the pulp should be titrated with 1 N NaOH to determine the buffering capacity of the ore.

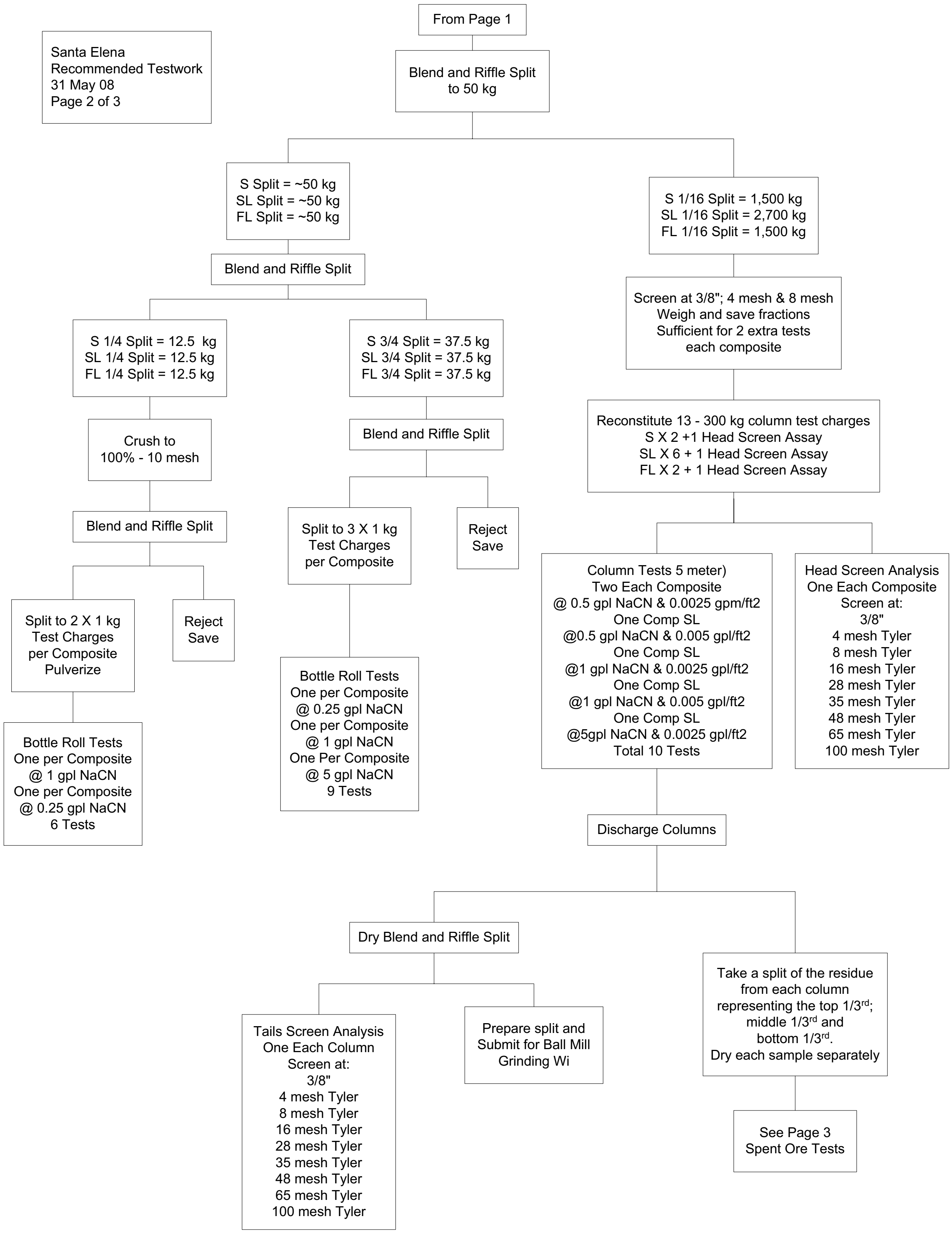
6.7 Metallurgical Testing Cost:

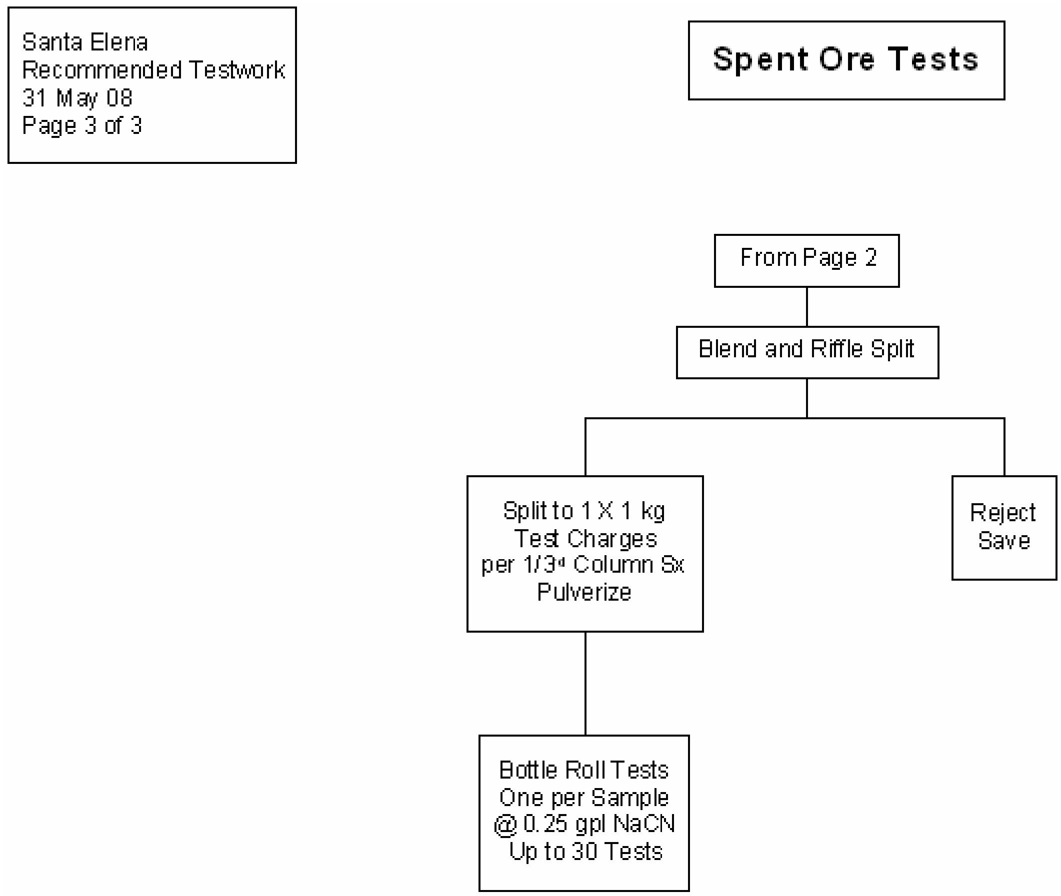
Quotes were requested from two labs in the Tucson area for the proposed test program. Each lab decided to postpone quoting the HPGR work until it is approved by Nusantara. Both proposals reflect the recommended work and are acceptable choices. Crushing tests are not included in these estimates. The crushing tests are estimated at $4,000 per composite for a total of $12,000. These tests can be obtained through Sandvik. Budget costs for the recommended metallurgy are summarized as follows.

Laboratory Testing:		$200,000
Crusher Testing, Sandvik:		$12,000
Contingency, 10%		$21,000
	Total:	**$233,000**

These costs do not include sampling supervision and validation; shipping, customs or laboratory oversight.


Santa Elena
Recommended Testwork
31 May 08
Page 1 of 3
Receive Samples:
S 1 through 6: 414 kg each = 2,485 kg
SL 1 through 4: 916 kg each = 3,664 kg
FL 1 through 3: 759 kg each = 2,277 kg
Treat each of the 13 samples separately
Select Specimens for
High Impact
Crushability and Constrained
Compression Tests
Ship to Lab
Stage crush to 100% - ¾"
Blend and Riffle Split
70 kg each Sample
Crush to 100% - 10 mesh
Select
Abrasion Test
Samples
Ship to Lab
3 samples
Rejects
S 1 through 6: 344 kg each = 2,066 kg
SL 1 through 4: 846 kg each = 3,385 kg
FL 1 through 3: 689 kg each = 2,066 kg
Blend and Riffle Split
Composite each level (S, SL; FL)
Use equal weights of the individual samples
Treat each of the 3 composites separately
1 kg
Pulverize
Reject - Save
Blend and Riffle Split
Blend and Split
S 4/16 Split = 517 kg
SL 3/16 Split = 635 kg
FL 4/16 Split = 517 kg
S 12/16 Split = 1,550 kg
SL 13/16 Split = 2,750 kg
FL 12/16 Split = 1,550 kg
Assay for Au; Ag
13 Samples
Determine natural pH
of each sample
Titrate w/ 1.0 N NaOH
13 samples
Save for Future Work
Stage Crush to
100% - 3/8"
See Page 2


Santa Elena
Recommended Testwork
31 May 08
Page 2 of 3
From Page 1
Blend and Riffle Split to 50 kg
S Split = ~50 kg
SL Split = ~50 kg
FL Split = ~50 kg
Blend and Riffle Split
S 1/4 Split = 12.5 kg
SL 1/4 Split = 12.5 kg
FL 1/4 Split = 12.5 kg
Crush to 100% - 10 mesh
Blend and Riffle Split
Split to 2 X 1 kg Test Charges per Composite Pulverize
Reject Save
Bottle Roll Tests
One per Composite
@ 1 gpl NaCN
One per Composite
@ 0.25 gpl NaCN
6 Tests
S 3/4 Split = 37.5 kg
SL 3/4 Split = 37.5 kg
FL 3/4 Split = 37.5 kg
Blend and Riffle Split
Split to 3 X 1 kg Test Charges per Composite
Reject Save
Bottle Roll Tests
One per Composite
@ 0.25 gpl NaCN
One per Composite
@ 1 gpl NaCN
One Per Composite
@ 5 gpl NaCN
9 Tests
S 1/16 Split = 1,500 kg
SL 1/16 Split = 2,700 kg
FL 1/16 Split = 1,500 kg
Screen at 3/8"; 4 mesh & 8 mesh
Weigh and save fractions
Sufficient for 2 extra tests each composite
Reconstitute 13 - 300 kg column test charges
S X 2 +1 Head Screen Assay
SL X 6 + 1 Head Screen Assay
FL X 2 + 1 Head Screen Assay
Column Tests 5 meter)
Two Each Composite
@ 0.5 gpl NaCN & 0.0025 gpm/ft2
One Comp SL
@0.5 gpl NaCN & 0.005 gpl/ft2
One Comp SL
@1 gpl NaCN & 0.0025 gpl/ft2
One Comp SL
@1 gpl NaCN & 0.005 gpl/ft2
One Comp SL
@5gpl NaCN & 0.0025 gpl/ft2
Total 10 Tests
Head Screen Analysis
One Each Composite
Screen at:
3/8"
4 mesh Tyler
8 mesh Tyler
16 mesh Tyler
28 mesh Tyler
35 mesh Tyler
48 mesh Tyler
65 mesh Tyler
100 mesh Tyler
Discharge Columns
Dry Blend and Riffle Split
Tails Screen Analysis
One Each Column
Screen at:
3/8"
4 mesh Tyler
8 mesh Tyler
16 mesh Tyler
28 mesh Tyler
35 mesh Tyler
48 mesh Tyler
65 mesh Tyler
100 mesh Tyler
Prepare split and Submit for Ball Mill Grinding Wi
Take a split of the residue from each column representing the top 1/3rd; middle 1/3rd and bottom 1/3rd.
Dry each sample separately
See Page 3 Spent Ore Tests


Santa Elena
Recommended Testwork
31 May 08
Page 3 of 3
Spent Ore Tests
From Page 2
Blend and Riffle Split
Split to 1 X 1 kg
Test Charges
per 1/3rd Column Sx
Pulverize
Reject
Save
Bottle Roll Tests
One per Sample
@ 0.25 gpl NaCN
Up to 30 Tests

26 APPENDIX 2 GEOTECHNICAL AUDIT, BY LYMAN HENN, INC.

ENGINEERING SOLUTIONS FROM THE GROUND DOWN

7 May 2008
File No. 108020-000

GeoTrans, Inc.
One Monarch Drive, Suite 101
Littleton, Massachusetts 01460

Attention: Mr. Larry Breckenridge, P.E.

Subject: Final Geotechnical Audit Report
Santa Elena Gold and Silver Mine Project
Near Banamichi, Sonora, Mexico

Dear Larry:

The enclosed document presents a Final Geotechnical Audit for the Santa Elena Gold and Silver Mine, located near Banamichi, Sonora, Mexico. We understand that project development is presently in scoping level design and targeted for pre-feasibility level design within short time. We have found no fatal flaws with the geotechnical designs and design concepts presented in the geotechnical studies completed to date. Recommendations for geotechnical studies and analyses to advance the project to the feasibility level are included in the enclosed report. Estimated costs for Lyman Henn to perform these additional geotechnical studies are provided as an attachment.

We have enjoyed working with GeoTrans, Inc., SilverCrest Mines, Inc. and Nusantara de Mexico, S.A. de C.V. on this exciting project. We appreciate the opportunity to assist with your geotechnical needs and look forward to a continued relationship.

Sincerely yours,
LYMAN HENN, INC.

Edward J. McDonald, P.E.
Senior Engineer

Enclosures

c: SilverCrest Mines, Inc.: Attn.: Mr. N. Eric Fier, CPG, P.Eng.

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DRAFT GEOTECHNICAL AUDIT FOR THE SANTA ELENA GOLD AND SILVER PROJECT BANAMICHI, SONORA, MEXICO

by

Lyman Henn, Inc.
Denver, CO

for

Tetra Tech
Littleton, MA, USA

and

SilverCrest Mines, Inc.
Vancouver, British Columbia, Canada

File No. 108002-000
May 2008

LYMAN HENN INC

EXECUTIVE SUMMARY

SilverCrest Minerals Inc. retained Tetra Tech to perform environmental and geotechnical audits of the Santa Elena Silver and Gold Mine Project, a proposed open pit mine in the state of Sonora, Mexico. Tetra Tech retained Lyman Henn, Inc. to perform the geotechnical audit as a subconsultant. The geotechnical audit was commissioned to evaluate the condition of the geotechnical designs for the proposed open pit; heap leach facility; mine waste rock dump; and, the physical plant and ancillary facilities. The goal of the audit is to: 1) evaluate the general geotechnical conditions of the project; 2) determine if the geotechnical studies completed to date are sufficient for a pre-feasibility level of project development; and, 3) recommend additional work, if necessary to advance the studies to the feasibility level.

The Project will be an open-pit heap leach mine operation with a total production of approximately 2,500 tonnes per day for eight years. An additional two years will be added to ensure complete leaching and rinse of the ore heap, for a 10 year mine life. There are tentative plans to extend the mine life with an underground operation, but underground development is not included within the current scope of this audit.

Based on a three dimensional block model, geotechnical logging of six exploration core holes located in the southern pit wall and calculated rock mass ratings, Nusantara developed preliminary structural domains and pit slope design angles. As presently envisioned, the final open pit will be approximately 165 meters deep, 200 meters wide, and 900 meters long. Slope angles designs are proposed at 42 to 45 degrees for the hanging wall, and 55 to 65 degrees for the footwall. Based on Lyman Henn's review, the pit slopes as proposed by Nusantara should provide a reasonable factor of safety given the available information and provided that dewatering, if necessary of the lower pit limits, and careful blasting practices are employed during pit development. The analyses completed by Nusantara are in general agreement with international accepted engineering practice and commensurate with pre-feasibility level engineering design for the project. However, in order to advance the project to the feasibility level, additional geotechnical work should be completed expanding the geotechnical database through: 1) geotechnical logging of all exploration core within the proposed pit walls; 2) additional strength testing on core from the various pit domains; 3) strength testing on discontinuities; 4) oriented core drilling; 5) detailed mapping of structural discontinuities expressed in the existing pit excavation; and, 6) coordination of the three dimensional block model with structural geotechnics.

A lined heap leach pad will be constructed on site. The ore heap will have a primary 80-mil HDPE liner and clay secondary liner with a minimum hydraulic conductivity of $1x10^{-6}$ centimeters per second. A borrow source for the clay underliner has been identified and tested with hydraulic conductivities ranging from $1.8x10^{-5}$ to $4.4x10^{-6}$. Old mine tailings will be placed on the liner to serve as a drain layer beneath the ore and protect the liner from punctures that may be caused by placing ore directly on the liner. Approximately 30,000 to 40,000 tonnes of old mine tailings have been identified on site. The leachate collection system will be placed within the old mine tailings and the ore will be crushed to -9.5 millimeters and placed on top of the tailings in six, five meter lifts at an overall slope angle of 31 degrees. The final heap leach pad will be a maximum of 30 meters high.

This heap leach pad design concept is appropriate for a heap leach facility circulating sodium cyanide solution and is in general agreement with internationally accepted standards. However, Lyman Henn recommends that source of clean sandy material for use as overdrain/bedding material be identified as there seems to be insufficient quantities of old tailings to cover the liner. Furthermore, Lyman Henn recommends that slope stability analysis be completed on the proposed heap leach facility design and that foundation settlement analysis be completed on the heap leach facility to evaluate bearing capacity and differential settlement effects with respect to HDPE liner tensile strength.

According to the draft pre-feasibility report, the mine will produce 68.8 million tonnes of waste rock that will be placed in the waste rock dump which will be constructed on natural soil (after the topsoil is removed). No geotechnical designs or geotechnical design criteria are presented in any of the documents reviewed. Review of the draft pre-feasibility report also indicates there may be a need to create different zones within the waste rock dump to encapsulate potentially acid generating rock within zones of non-acid generating rock. Based on our review, the proposed waste rock storage facility footprint should be capable of containing the waste rock material generated through Phase III of the proposed Santa Elena mine plan at an overall slope of 34 degrees. Determination of waste rock strength characteristics, including time dependant degeneration, and detailed waste rock storage facility designs with respect to global slope stability and water management are considerations for feasibility level studies and detailed engineering.

In addition to the open pit, heap leach facility and waste rock dump, the Santa Elena mine site will see construction of: roads; general administrative offices; primary, secondary and tertiary crushers; a laboratory; process ponds; and, a Merrill-Crowe processing plant, among others. Foundation designs are often not completed for these facilities before the pre-feasibility level. Review of the geotechnical investigations completed by Oestec indicates that the geotechnical aspects of constructing the mine plant and ancillary facilities are not fatally flawed. Dense to very-dense silty sand and silty gravel alluvium should be capable of supporting the loads transferred by these structures with typical shallow foundations. Once specific foundation loads are known, the geotechnical recommendations provided by Oestec should be re-evaluated.

During Phase II if the proposed Santa Elena mine development, a seven meter high detention dam is proposed on the northeast side of the open pit. The downstream toe of this detention dam is only 100m from the crest of the proposed Phase III open pit. The geotechnical aspects of this detention dam are far reaching. Although, preventing storm water entering the open pit will improve working conditions and reduce the need for sumps and pumps in the pit bottom, detaining water at the open pit crest may increase seepage into the eastern pit wall. To date, no designs have been completed for this dam and no considerations have been presented as to the potential affects on the eastern pit wall stability. In order to advance the project to the feasibility level, the detention dam should be fully designed.

The currently assumed value of peak ground acceleration will affect design ground motions for all high risk structures, such as the open pit slope stability and, depending on the risk classification, the Phase II detention dam. In our opinion a 0.27g PGA is too conservative an estimate given the seismotectonics of the region and could be reduced by as much as 50- to 60 percent. Lyman Henn recommends completing a site-specific seismic hazards analysis to determine peak ground accelerations accordant with maximum credible earthquakes.

Lyman Henn, Inc. recognizes no fatal flaws with the geotechnical site conditions or the level of geotechnical design observed on-site or presented in the draft pre-feasibility report (Sol y Adobe, 2008), the open pit geotechnical design report (Nusantara, 2008) and the soils geotechnical studies report (Oestec, 2008). All three documents are well reasoned, supported with technical data and commensurate with the level of advancement at the Santa Elena project.

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1. INTRODUCTION

SilverCrest Minerals Inc. (SilverCrest) retained Tetra Tech to perform environmental and geotechnical audits of the Santa Elena Silver and Gold Mine Project (The Project), a proposed open pit mine in the state of Sonora, Mexico. Tetra Tech is presently completing its environmental audit. Tetra Tech retained Lyman Henn, Inc. to perform the geotechnical audit (the Audit) as a subconsultant. The Audit was commissioned to evaluate the condition of the geotechnical designs for the proposed open pit, heap leach facility, mine waste rock dump and the physical plant and ancillary facilities. The goal of the audit is to do the following:

- Evaluate the general geotechnical conditions of The Project;
- Determine if the geotechnical studies completed to date are sufficient for pre-feasibility level of project development, and recommend additional work, if necessary to advance the studies to the feasibility level;
- Review the geotechnical open pit mine design;
- Review the draft Pre-Feasibility Study for completeness, and provide suggestions on what is required to achieve a Feasibility Study level assessment of the geotechnical issues; and
- Provide an assessment and sign-off as a Qualified Person (QP) as required under Canadian 43-101 regulations.

In support of the goals listed above, Mr. Edward McDonald, P.E. from Lyman Henn traveled to The Project on 26 March 2008 to observe the site, view exploration core, review the geotechnical logging of the exploration core and to enter the underground workings. Mr. McDonald also reviewed the following documents:

- Estudio de Mecanico de Suelos Para: Construccion de Primera Etapa de patios de Lixiviacion del Proyecto Minero Santa Elena (Oestec, 2008);
- Santa Elena Preliminary Geotechnical Open Pit Study, (Nusantara, 2008)
- Pre-Feasibility Study (PFS) (Sol y Adobe, 2007).

In addition, Lyman Henn reviewed supporting documentation, laboratory reports, and reviewed maps provided by SilverCrest.

1.1 Site Location and Ownership

The Santa Elena property is approximately 150 kilometers (km) northeast of the state capital city of Hermosillo, Sonora, Mexico near the intersection of 30º 01' north latitude, and 110 º 09' west longitude. The community of Banamichi is located 7 km west of The Project.

The Project consists of six contiguous concessions with a total nominal area of 3,159 hectares (ha). The Santa Elena concessions are contiguous within the area. Under the terms of an agreement dated 6 December 2006, SilverCrest has the right to acquire a 100 percent interest in the Santa Elena property.

A concession in Mexico does not confer any ownership of surface rights. However, use of surface rights for exploration and production can be obtained under the terms of various acts and regulations. The Santa Elena concessions are located on Ejido (community or co-op) land.

On 12 November 2007, SilverCrest signed an agreement with the Community of Banamichi (Ejido) for a 20 year lease on surface rights for a maximum of 841 ha with respect to access, exploration and exploitation.

1.2 Project Background and History

The Project history and background are described in detail in Section 6.0 of the draft Pre-feasibility study (Sol y Adobe, 2008). Key elements have been summarized below.

The Project has had small-scale mining since the late 19th century. The mining focused on extracting high-grade deposits that were processed on site. Using a combination of open pit extraction of exposed veins and underground development, prior operations extracted approximately 157,000 tonnes of material (Sol y Adobe, 2008). Approximately 30,000 to 40,000 tonnes of mine tailings remain on-site. There are several open stopes, an open mineshaft with headframe, and an open mine portal. There is also a sealed mineshaft and the foundation of the old mill.

1.3 Audit Report Organization

Because many different documents were reviewed during the audit, this report will be organized by subject area and will address issues from several different documents, often simultaneously. The following will be covered:

- Surface Mine (Open Pit) Design;
- Heap Leach Facility Design;
- Waste Rock Dump Design; and
- Mine Plant and General Facilities Foundation Designs.

2. PROJECT DESCRIPTION

The Project will be an open-pit heap leach mine operation with a total production of approximately 2,500 tonnes per day for eight years. An additional two years will be added to ensure complete leaching and rinse of the ore heap, for a 10 year mine life. There are tentative plans to extend the mine life with an underground operation, but underground development is not included within the current scope of the Audit. The Audit covers Phases I, II, and III of the planned open-pit mining development. The aerial extent of Phase I, II and III open pit mining are illustrated in Figure 2.1.

The final open pit will be approximately 165 meters deep, 200 meters wide, and 900 meters long. Typical slope angles are 42 to 45 degrees for the hanging wall, and 55 to 65 degrees for the footwall. Based on observations of the deepest existing underground mine levels (which were not visited during the site visit), The Project may have water at an elevation of approximately 700 meters above sea level. This water level, if it indeed is the regional water table, would result in approximately 65 meters of potential saturation of the final Phase III pit. Geotechnical considerations for the open pit mine design are discussed in Section 3.0.

A lined heap leach pad will be constructed on site. The approximate location of the heap is shown in Figure 2.1. The ore heap will have a clay secondary liner (foundation) that will be compacted to achieve a minimum liner hydraulic conductivity of 1×10^{-6} centimeters per second (cm/s). The heap will also have a 80-mil high density polyethylene (HDPE) primary liner. This liner will be placed on the clay foundation and the joints will be welded and inspected according to the Best Management Practice (BMP) for heap leach pad design and construction.

Old mine tailings containing up to a gram per tonne of gold, will be placed on the liner to serve as a drain layer beneath the ore and protect the liner from punctures that may be caused by placing ore directly on the liner. The leachate collection system will be placed within the old mine tailings and the ore will be placed on top of the tailings. The final heap leach pad will be a maximum of 30 meters high. Geotechnical considerations for the proposed heap leach facility are detailed in Section 4.0.

The mine will produce 68.8 million tonnes of waste rock that will be placed in the Waste Rock Dump (WRD). The WRD will be constructed on natural soil (after the topsoil is removed). No geotechnical designs or geotechnical design criteria are presented in any of the documents reviewed. Geotechnical concerns with respect to the waste rock storage area are discussed in Section 5.0.

The Project has ancillary structures typical for any mine or production operation. The Project will require the following additional structures that warrant geotechnical design considerations: crushers; possessing plant; fueling station and truck shop; power generation facilities; reagent storage area; and, access roads. Geotechnical concerns with respect to mine ancillary facilities are discussed in Section 6.0.

3. SURFACE MINING GEOTECHNICAL AUDIT

The proposed mining method for the Santa Elena mine is surface mining with an open pit. The open pit, at present, is planned with wall heights ranging from 120m to 205m. Additionally, the open pit is planned in three phases (Phases I, II and III) through an approximate mining life of eight years. Phases I and II are centered on the ore body at the base of the existing high wall. Phase III involves significant expansion to the south and east in order to extend the open pit to greater depths.

In order to develop a working open pit design Nusantara de Mexico, S.A. de C.V. (Nusantara) created a geotechnical database from six exploration boreholes. These six exploration boreholes were logged for geotechnical properties, including: rock quality designation (RQD); spacing of joints; and, condition of joints. Additionally, seven intact rock samples were submitted for laboratory testing of uniaxial compression strength. Data provided through laboratory testing and geomechanical logging, as such, provides a means of determining the Rock Mass Rating (RMR) in accordance with widely accepted North American standards.

Determination of RMR for excavations in rock is an empirical method, useful in determining preliminary rock slope design criteria. One scheme for determining RMR, developed by Bieniawski (1984) assigns a point score for each of five characteristic rock conditions, namely; 1) intact rock strength; 2) RQD; 3) joint spacing; 4) joint condition; and 5) groundwater. The scores for each of the five categories are summed to determine the overall RMR. RMR analysis results in a generalized classification of the rock mass from: Class I, or “very good rock” with relatively long stand-up times and high cohesion and internal friction angles, to; Class V, or “very poor rock” with stand-up times measured in minutes and low cohesion and internal friction angles. Generally, RMR analyses provide wide ranges of design input and feed more sophisticated numerical analysis upon collection of greater quantities of geotechnical data.

Based on RMR, surficial mapping of geologic structure, determination of weathering profiles observed in exploration drill core, and subsurface mapping of ore body structure, Nusantara (2008) determined four structural domains within the pit.

The following presents a geotechnical audit of the proposed open pit designs for the Santa Elena project. The audit is based on a site visit completed by Edward McDonald, P.E. of Lyman Henn, Inc., observations of exploration core and geotechnical field logs prepared by others, and review of a report entitled, “Santa Elena Preliminary Goetechnical Open Pit Study,” prepared by Nusantara de Mexico, S.A. de C.V. (January 2008).

3.1 Existing Geotechnical Data

Nusantara completed geotechnical engineering logging of six exploration borehole cores for the development of its geotechnical database. These exploration boreholes are labeled as follows: SE06-02, SE06-07, SE06-10, SE06-15, SE06-16 and SE06-17. Mr. McDonald observed the rock core from these borings, as well as five others, during his 26 March to 29 March 2008 site visit. SiverCrest staff removed all core boxes for these boreholes from the covered core shed and displayed them for Mr. McDonald’s observations. Table 3.1 presents a summary of the observed core.

Table 3.1 – Summary of Geotechnical Core

Exploration Borehole	Location relative to Proposed Open Pit	Borehole Dip	Total Depth (m)	Geotechnical Logging Range (m)	Average RQD (range)
SE06-02	West	90	98.45	0 – 62.79	32% (0-74%)
SE06-07	West	45	114	0 – 114	33% (0-68%)
SE06-10	Southwest (Phase II)	70	175.26	0 – 132.59	39% (0-72%)
SE06-15	South (Phase I,II)	70	181.36	0 – 147.83	37% (0-73%)
SE06-16	Southwest (Phase III)	60	230.12	0 – 193.55	39% (4-63%)
SE06-17	South (Phase III)	60	250.85	0 – 171.01	43% (0-74)

The ranges and average RQD values presented in Table 3.1 are from geotechnical logs prepared by Nusantara. Lyman Henn did not conduct independent geotechnical measurements of the reviewed core. However, Mr. McDonald did randomly check the geotechnical logs against the reviewed core during the site visit and agreed with the measurements and interpretations presented on the geomechanical logs prepared by Nusantara.

Table 3.1 indicates that six exploration borings logged geotechnically provide data on the southern and western perimeters of the proposed open pit. Individual core run RQD values cover a large range and average between 32 and 43 percent.

Nusantara provides results of uniaxial compressive strength tests in its report (Nusantara, 2008). According to the report, seven core samples from four different exploration borings were submitted for laboratory testing. The depths of these core samples ranged from about 25m to about 88m below the ground surface. The average strength value according to the uniaxial compressive strength testing is about 764 kg/cm2 (approximately 75MPa). Of the seven samples submitted for strength testing, four are from exploration boreholes with completed geotechnical logging. The remaining three strength test results are samples from exploration boreholes located along the south of the proposed open pit but were not logged geotechnically. Lyman Henn recommends completion of geotechnical logging for all exploration boreholes within the ultimate Phase III pit limits. Furthermore, Lyman Henn recommends that additional uniaxial strength testing and a point load testing program be developed to increase the available strength data in the geotechnical database.

Based on the exploration core observed by Mr. McDonald, there seemed to be three to four primary joint sets spaced very close to moderately close (0.02m – 0.6m) evident in the core. Observed joints ranged from smooth, planar joints to rough undulating joints that were clean or contained minor alteration and/or thin coatings. These observations are in agreement with the geotechnical logs prepared by Nusantara. The principal uncertainty with respect to the affects of the joints on overall open pit wall stability is the orientation of the discontinuities. Although three or four specific joint sets can be observed in the exploration core angled between about 20 to 80 degrees with respect to the core axis, the stability of the designed open pit walls can only be determined by placing these joint sets in true space. Lyman Henn recommends completion of a line survey on the existing highwall on the north side of the proposed pit, at a minimum, to assist in orientation of the dominant joint sets. Additionally oriented core holes, ideally, located within the perimeter of the proposed open pit are recommended for assessing the effects of the dominant joint sets on global slope stability for the pit. Furthermore, shear strength data on representative joints, will greatly benefit the conclusions reached from slope stability studies for the Santa Elena open pit.

Based on review of the Nusantara (2008) report, groundwater may occur at an elevation of approximately 700m. The ultimate depth of the Phase III pit will place the pit bottom at an elevation of 640m according to the current design, meaning that only the lower 60m of the pit will be subject to stability concerns from pore water pressures. Although these values cannot be verified at this time, RMR calculations completed by Nusantara assumed, conservatively, a "damp" condition for the entire open pit design. This level of study is appropriate for scoping level geotechnical designs. Lyman Henn recommends installation of groundwater monitoring equipment, such as borehole piezometers, to validate the depth of the local phreatic surface.

3.2 Santa Elena Rock Mass Rating and Open Pit Design

Based on the rock mass parameters summarized above, Lyman Henn determined a generalized RMR value of 60, *with no reduction* for the strike and dip orientation of the joints. Using the entire data set of 221 samples from the six exploratory borings, Nusantara determined the mean RMR value to be 40.1, with a variance of 79.5, coefficient of variance of 0.31 and standard deviation of 8.91. The mean RMR value determined by Nusantara is in general agreement with the summary calculation developed by Lyman Henn and, considering the generally dry condition of the upper portions of the proposed open pit, is conservative. An RMR of 40 places the rock mass containing the proposed Santa Elena open pit into the poor to fair rock class (Class IV to Class III). According to Bieniawski's original classification scheme, rocks in these categories are likely to have cohesion values from 100 to 300 kPa and internal friction values from 15 to 35 degrees. However, it should be noted that these are average values indicating empirical relationships of entire rock masses and not site specific design recommendations.

Based on a three dimensional block model, geotechnical logs and calculated RMR, Nusantara developed preliminary structural domains and pit slope design angles. Generally, Nusantara divided the proposed pit into four domains based on discontinuity structure, rock type and alteration type. Domain 1 includes the north wall, which at present includes a surface exposure (highwall) that has been standing to a height of about 30m at a slope of about 55 degrees since the 1980's (Nusantara, 2008). Structural Domains 2,3 and 4 include the hanging wall andesite which is subdivided into three categories by alteration type and predominance of joints observed both in the existing underground workings and in the exploration core. For Domain 1, Nusantara has assigned an overall pit slope of 55 to 60 degrees. For Domains 2,3 and 4, Nusantara has assigned an overall pit slope angle of 42 to 45 degrees. Based on Lyman Henn's review of the existing open pit excavation (including the highwall), existing underground workings, RMR calculations and assumptions in the RMR model and an independent summary check of the RMR, pit slopes as proposed by Nusantara should be practical for the Santa Elena open pit. A simplified slope stability analysis performed by Lyman Henn indicates that the slopes as proposed should provide an adequate factor of safety given the available information and provided that dewatering, if necessary of the lower pit limits, and careful blasting practices are employed during pit development. The analyses completed by Nusantara are in general agreement with international accepted engineering practice and commensurate with the present level of engineering design for the project. However, in order to advance the project to the feasibility level, additional geotechnical work should be completed as recommended herein.

The overburden materials at the Santa Elena site consist of alluvial silty and clayey sand and gravel with cobbles. Nusantara assumed a maximum angle of repose of approximately 35 degrees for this material. As this material covers the majority of the proposed open pit excavation and will comprise the upper two to three benches of the open pit excavation, geotechnical characteristics of this alluvium should be determined. Lyman Henn recommends, at a minimum, determining the shear strength of the alluvial overburden for development of detailed engineering designs for the open pit. Additional properties including laboratory grain-size analysis and permeability testing will benefit both open pit slope design as well as indicate whether the alluvial overburden is useful elsewhere on site for engineered fill, heap leach pad drain fill, etc.

4. HEAP LEACH FACILITY GEOTECHNICAL AUDIT

Ore mined from the proposed Santa Elena open pit is presently planned for heap leach extraction methods. Presently a three stage crushing circuit is envisioned with a final output of -9.5mm crushed ore. After final crushing is complete, ore will be conveyed to a stockpile were a front-end loader loads trucks to go to the leach pad. Trucking of crushed ore to the heap leach pad is presently planned for the first two years, after which radial stackers, standard conveyors or grasshopper-type conveyors may be used. Leach pad construction is presently planned in three phases in accordance with open pit mine development. The locations of the Phase I, II, and III heap leach pads are indicated in Figure 2.1.

4.1 Heap Leach Facility Design

Based on review of the draft pre-feasibility report (Sol y Adobe, 2008) the heap leach facility will be constructed accordingly:

1. Ground surface preparation by clearing bushes, removing plant material and organic topsoil (topsoil will be stockpiled for use as cover material during mine closure);
2. Re-contour the pad area with minor cuts and fills to establish a relatively consistent slope along the length of the pad and shallower cross slope toward the ponds and recovery plant. Re-contouring should be achieved primarily by cutting and removing the excess material. No offsite transport of fill is required for construction;
3. Fill and compact where required to eliminate depressions, but minimize the fill as much as possible.
4. Scarify the contoured pad area and inspect, manually removing all remaining roots and rocks.
5. Add necessary water to achieve optimum compaction, then lightly compact the surface.
6. Re-inspect the top surface and remove any exposed rocks.
7. Spray the surface with an insecticide and herbicide to prevent organic degradation of the leach pad foundation and preferential pathways for leakage migration, if any.
8. Smooth roll the prepared surface to drive any remaining small rocks below the surface and to meet the final compaction requirements.
9. Construct and compact perimeter berms and internal berms as required.

Upon completion of site preparation work a 0.30m thick clay underliner will be placed. Oestec de Mexico, S.A. de C.V. (Oestec) in its report, entitled “Estudio de Mecanica de Suelos Para: Construccion de Primera Etapa de patios de Lixiviacion del Proyecto Minero Santa Elena, En El Municipio de Banamichi, Sonora, Mexico,” dated February 2008, indicates there is a source of suitable clay for the underliner. This suitable clay source is referred to as “Bancos de Arcillas” in the Oestec (2008) report. Laboratory testing on two soil samples from the Bancos de Arcillas indicate compacted permeabilities ranging from $1.8x10^{-05}$ to $4.4x10^{-06}$ centimeters per second on materials classified as silty sand and silty clay. Assuming there is sufficient quantity of this material available for excavation and use, it is the opinion of Lyman Henn that a suitable secondary liner can be constructed at the Santa Elena site.

Designs for the heap leach facility to date include an 80-mil HDPE primary liner and the secondary 0.30m thick clay liner. An underdrain, or leak detection system is also proposed for the Santa Elena heap leach facility consisting of 10cm perforated HDPE drain pipe in a gravel bed wrapped in geotextile fabric. This design concept is in general accordance with North American standards of design for hazardous waste landfills and for similar mining projects subject to World Bank standards for containment. The design approach and available data are consistent with pre-feasibility level Santa Elena project development.

After the 80-mil HDPE liner is placed, a 0.30m thick overdrain layer will be constructed. This 0.30m overdrain is planned using old tailings that were left on-site from the historic mining activities. Slotted drainpipe will be placed in the overdrain material to drain the solution southwest to the pregnant solution pond through the pregnant solution trench. The overdrain material provides drainage for the leaching solution as well as provides a bedding material for ore hauling truck traffic, thus protecting the HDPE liner from damage. According to the draft pre-feasibility report, there is approximately 30,000 to 40,000 tonnes of the old tailings on-site. This design concept is appropriate for a heap leach facility circulating sodium cyanide solution and is in general agreement with internationally accepted standards. Lyman Henn completed a simple mass-balance and determined that the needed quantity of overdrain/bedding material will be approximately 60,000 to 100,000 tonnes (dependant on assumed material density) for the ultimate (Phase III) heap leach facility based on a final heap leach area of 146,380 square meters. Lyman Henn recommends that Nusantara identify another source of clean sandy material for use as overdrain/bedding material as there seems to be insufficient quantities of old tailings to cover the liner.

4.2 Heap Leach Facility Foundation

Oestec (2008) completed a geotechnical field investigation and analyses for the proposed Phase I heap leach facility area. As a part of its study, Oestec completed 20 geotechnical borings and numerous laboratory tests. Eight of these geotechnical borings were completed within the limits of the proposed heap leach facility. The generalized stratigraphic profile reported by Oestec included 0.4m to 1.5m of dense sandy, gravelly clay topsoil overlying 9m to 14m of very-dense silty, clayey sand and silty gravel with scattered andesite cobbles overlying andesite bedrock. One exception to the generalized stratigraphic profile described previously is geotechnical boring SMR-06, where andesite rock was encountered from the ground surface to the end of the boring at 11m. Boring SMR-06 was drilled only 11m east of boring SMR-05 in which 9.45m of silty and clayey gravel was encountered. We note this here due to its structural importance for the heap leach foundation. SMR-06 lies on the topographic high in the north central portion of the Santa Elena property just east of a natural intermittent drainage. The drainage may be fault controlled. The effects of this geologic structure should be investigated as it relates to construction of the heap leach facility. Specifically, differential settlement between areas of relatively shallow bedrock and areas of relatively deeper bedrock should be evaluated.

The Oestec study is sufficiently detailed with respect to foundation considerations, such as maximum allowable bearing capacity and cut and fill design recommendations and performed in accordance with generally accepted geotechnical engineering standards. The level of study and analyses is commensurate with, if not exceeding, the present level of study for the project. These foundation considerations are aimed at building foundations and site grading, however, and are silent with respect to the heap leach facility itself. Foundation settlement is an important consideration for heap leach facilities, as excessive settlement can cause stretching of the HDPE liner beyond allowable tolerances.

Based on an estimated unit weight of the crushed ore of 2.67 t/m^3 and a maximum heap height of 30m (Sol y Adobe, 2008), the ore on the heap leach pad will exert a pressure of about 80 t/m^2 at the maximum section. Based on recommendations in the Oestec (2008) report, the allowable bearing capacity of materials present in the heap leach facility area, at a depth of 0.30m is about 14.5 t/m2. In other words, the applied pressure beneath the maximum ore heap section is 5.5 times the allowable bearing capacity of the in-situ soils. We assume this allowable 14.5t/m^2 is limited by the amount of allowable settlement, although this is not specifically stated in the Oestec report. Accordingly, Lyman Henn recommends completion of a settlement analysis beneath the ore heap. This settlement analysis should consider the effects of differential settlement dependant on the amount of ore stacked over different parts of the heap leach foundation and variations in the foundation materials as discussed previously. Additionally, this analysis should also include a review of the allowable tensile strength of the 80-mil HDPE liner. Based on our review of the geotechnical conditions at the site from reading the Oestec report, and experience with similar projects, Lyman Henn does not anticipate that the 80-mil HDPE liner will be stretched beyond its tensile capacity. However, this statement should be verified by engineering analysis.

There are no slope stability analyses, specific to the heap leach facility, presented in any of the reviewed reports. Based on review of the Sol y Adobe (2008) draft pre-feasibility report, present design concepts include stacking the -9.5mm crushed ore in a maximum of six, five meter lifts. The overall slope of the stacked ore is proposed at 31 degrees. Leaching solution will be applied using drip emitters at a rate of 12.22 liters/hour/square meter. Lyman Henn sees no fatal flaws with this design approach. An overall slope of 31 degrees constructed from the relatively hard, crushed ore material should provide reasonable factors of safety against slope instabilities; however, slope stability analyses considering varying rates of ore saturation should be completed during feasibility or detailed engineering.

5. WASTE ROCK STORAGE FACILITY GEOTECHNICAL AUDIT

No geotechnical reports, geotechnical investigations or geotechnical analyses have been completed for the waste rock storage facility. According to Table 25.4 of the draft pre-feasibility study, approximately 68,800,000 tonnes of waste will be developed through the end of Phase III mining. Based on a simplified mass balance completed by Lyman Henn the proposed waste rock storage facility footprint should be capable of containing the waste rock material generated through Phase III of the proposed Santa Elena mine plan at an overall slope of 34 degrees. Based on review of the Environmental Audit, completed by Tetra Tech, Lyman Henn understands that there may be a need to create different zones within the waste rock storage areas. These zones, if necessary, will allow encapsulation of potentially acid generating rock within zones of non-acid generating rock. Determination of waste rock strength characteristics, including time dependant degeneration, and detailed waste rock storage facility designs with respect to global slope stability and water management are considerations for feasibility level studies and detailed engineering.

6. MINE PLANT AND ANCILLARY FACILITIES GEOTECHNICAL AUDIT

In addition to the open pit, heap leach facility and waste rock dump, the Santa Elena mine site will see construction of: general administrative offices; primary, secondary and tertiary crushers; a laboratory; process ponds; and, a Merrill-Crowe processing plant, among others. Foundation designs are typically not completed for these facilities before the feasibility level. Once siting and anticipated loadings are known with greater certainty, foundation designs follow accordingly. Based on review of the geotechnical investigations completed by Oestec, Lyman Henn believes that the geotechnical aspects of constructing the mine plant and ancillary facilities are not fatally flawed. Dense to very-dense silty sand and silty gravel alluvium should be capable of supporting the loads transferred by these structures with typical shallow foundations. Differential settlement may be a concern due to the variable depths to competent bedrock. Differential settlement analysis and control can be accomplished during more advanced engineering phases of project development.

Oestec's (2008) report includes specific recommendations for bearing capacities beneath proposed crusher and support buildings. The Oestec recommendations are provided as specific bearing capacities for specific foundation depths. Oestec used standard engineering practice commensurate with pre-feasibility level studies. The primary geotechnical concern is that the location of the crushers may be different now than they were when the Oestec study was commissioned. Additionally, crusher facility and process facility bearing pressures (often as high as 400kPa (40 t/m^2), may exceed the stresses anticipated by Oestec. Once specific foundation loads are known, the geotechnical recommendations provided by Oestec should be re-evaluated.

In addition to the geotechnical investigations for the heap leach facility and crusher foundations, Oestec provided recommendations for Santa Elena roadways. Oestec followed North American ASTM standards in the analyses and recommendations. Lyman Henn would only add that safety berms, generally constructed to mid-axle height of the largest equipment passing the roadway, be included on all roads within the mine site.

7. ADDITIONAL GEOTECHNICAL CONSIDERATIONS

7.1 Seismic Hazard Analyses

Seismic hazards and associated peak ground accelerations are summarized, briefly, in both the Nusantara (2008) and Oestec (2008) reports. The Oestec (2008) report cites a seismic hazard map generated by the Comision Federal de Electricidad (CFE), the dominant utility provider in Mexico. Review of this map indicates consistency with seismic hazard maps developed by the Global Seismic Hazard Assessment Program (GSHAP), an international consortium of engineers and scientists. Both CFE and GSHAP maps indicate a peak ground acceleration for the Santa Elena site ranging from 0.04g to 0.08g with a 10 percent probability of exceedance in 50 years (or a 475 year return period). This range of peak ground acceleration is appropriate for development of design accelerations used in structural analysis of mine site buildings and other low risk structures in accordance with International Building Code, or local building code, standards. Peak ground acceleration values reported in the Oestec (2008) are appropriate for design of mine buildings and other low risk structures at the Santa Elena mine site.

The Nusantara (2008) report states “based on available assessments, a Peak Horizontal Ground Acceleration (PGA) of 0.27g exists.” There is no citation for this information. It can only be assumed that the 0.27g ground acceleration is associated with a maximum credible earthquake. In our opinion, a PGA = 0.27g is a conservative estimate of the likely PGA developed from maximum credible earthquakes in the region and appropriate for pre-feasibility level designs. However, the value of peak ground acceleration will affect design ground motions for all high risk structures, such as the open slope stability evaluations and, depending on the risk classification, the Phase II detention dam. In our opinion a 0.27g PGA is too conservative an estimate given the seismotectonics of the region and could be reduced by as much as 50- to 60 percent. Lyman Henn recommends completion of a site-specific seismic hazards analysis to determine peak ground accelerations accordant with maximum credible earthquakes during feasibility level studies.

7.2 Phase II – Detention Dam (Storm Water Control Structure)

During Phase II if the proposed Santa Elena mine development, a seven-meter high detention dam is proposed on the northeast side of the open pit. The downstream toe of this detention dam is only 100m from the crest of the proposed Phase III open pit. The predominant intermittent stream crossing the Santa Elena site flows from northeast to south along the eastern property boundary. The Phase II and Phase III open pit crests undermine the drainage pathway of this stream channel. Lyman Henn understands the intent of the dam is to detain storm water flow during the rainy season and prevent that storm water flow entering the Phase II and Phase III pits. We further understand that a diversion channel is proposed along the southern abutment of this dam to maintain stream flow downstream of the active mining area.

The geotechnical aspects of this detention dam are far reaching. Although, preventing storm water entering the open pit will improve working conditions and reduce the need for sumps and pumps in the pit bottom, detaining water at the open pit crest may increase seepage into the eastern pit wall. To date, no designs have been completed for this dam and no considerations have been presented as to the potential affects on the eastern pit wall stability. In order to advance the project to the feasibility level, the detention dam should be fully designed. Lyman Henn recommends the design of this dam include, at a minimum, the following:

1) completion of one shallow test pit (or trench) on each abutment to explore the depth and geotechnical properties of overburden materials;
2) development of a detailed cross-section for the dam considering fluctuations in the detained water level;
3) cooperative analysis with the site groundwater model to evaluate the seepage potential in the dam and reservoir foundation;
4) a seepage model to predict infiltration from the reservoir and possibly the dam into the eastern open pit; and,
5) slope stability model of a cross-section through the dam and eastern open pit at Phase III.

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

Lyman Henn, Inc. recognizes no fatal flaws with the geotechnical site conditions or the level of geotechnical design observed on-site or presented in the draft pre-feasibility report (Sol y Adobe, 2008), the open pit geotechnical design report (Nusantara, 2008) and the soils geotechnical studies report (Oestec, 2008). All three documents are well reasoned, supported with technical data and commensurate with the level of advancement at the Santa Elena project.

8.2 Recommendations for Further Work

In order to advance the Santa Elena project to the feasibility level, Lyman Henn recommends the following geotechnical studies:

8.2.1 Open Pit Geotechnical Recommendations

- Completion of geotechnical logging for all exploration boreholes within the ultimate Phase III pit limits.
- Additional uniaxial compressive strength testing and a point load testing program should be developed to increase the available strength data in the geotechnical database.
- Completion of a line survey on the existing highwall on the north side of the proposed pit.
- Two or three oriented core holes within the proposed open pit walls.
- Shear strength determination the of the alluvium overburden for development of detailed engineering designs for the open pit.

8.2.2 Heap Leach Facility Geotechnical Recommendations

- Borrow source investigation for clean sandy material for use as overdrain/bedding material for the heap leach facility.
- Evaluate differential settlement beneath proposed heap leach pad and affects on HDPE liner.
- Slope stability analysis considering varying rates of ore saturation.

8.2.3 Waste Rock Storage Facility Geotechnical Recommendations

- Determination of waste rock strength characteristics, including time dependant degeneration, and detailed waste rock storage facility designs with respect to global slope stability and water management.

8.2.4 Mine plant and Ancillary Facilities Geotechnical Recommendations

- Re-evaluate the geotechnical foundation recommendations provided by Oestec with specific foundation loads from plant and mill designers.

8.2.5 Additional Geotechnical Recommendations

8.2.5.1 Seismic Hazard Analysis

The currently assumed value of peak ground acceleration (Nusantara, 2008) will affect design ground motions for all high risk structures, such as the open pit slope stability and, depending on the risk classification, the Phase II detention dam. In our opinion a 0.27g PGA is too conservative an estimate given the seismotectonics of the region and could be reduced by as much as 50- to 60 percent. Lyman Henn recommends completing a site-specific seismic hazards analysis to determine peak ground accelerations accordant with maximum credible earthquakes.

8.2.5.2 Phase II Detention Dam

- Geotechnical design of the Phase II detention dam, including:
  - completion of one shallow test pit (or trench) on each abutment to explore the depth of geotechnical properties of overburden materials;
  - development of a detailed cross-section for the dam considering fluctuations in the detained water level;
  - cooperative analysis with the site groundwater model to evaluate the seepage potential in the dam and reservoir foundation;
  - a seepage model to predict infiltration from the reservoir and possibly the dam into the eastern open pit; and,
  - slope stability model of a cross-section through the dam and eastern open pit at Phase III.

9. REFERENCES

1. Bieniawski, Z.T., 1984, Rock Mechanics Design in Mining and Tunneling: A.A. Balkema, Rotterdam.

2. Nusantara de Mexico, S.A. de C.V., March 2008, Santa Elena Preliminary Geotechnical Open Pit Study: prepared by N. Eric Fier, CPG, P.Eng.

3. Oestec de Mexico, S.A. de C.V, January 2008, Estudio de Mecanico de Suelos Para: Construccion de Primera Etapa de patios de Lixiviacion del Proyecto Minero Santa Elena, En El Municipio de Banamichi, Sonora, Mexico.

4. Sol y Adobe, Ingenieros Asociados S.A. de C.V, SilverCrest Mines, Inc., SGS Mineral Services, and Scott Wilson Roscoe Postle, February 2008, Santa Elena Pre-Feasibility Study, Sonora, Mexico.

10. CERTIFICATE OF QUALIFICATIONS

Edward J. McDonald IV, P.E.

I, Edward J. McDonald IV, P.E., as author of this report entitled "Geotechnical Audit of the Santa Elena Gold and Silver Project, Banamichi, Sonora Mexico", prepared for SiverCrest Mines, Inc. through sub-contract with Tetra Tech, and dated 7 May 2008, do hereby certify that:

1. I am a Senior Engineer of Lyman Henn, Inc. My office address is 110 16th Street, Suite 700, Denver, Colorado, USA, 80202-5202.

2. I am a graduate of Colorado School of Mines, Golden, Colorado, in 1999 with a Bachelor of Science degree in Geological Engineering.

3. I am a registered Professional Engineer in the State of Colorado (Reg. # 38486), in good standing. I am also a member of the American Society of Civil Engineers (Mem. # 431623) and the Society for Mining, Metallurgy, & Exploration (Mem. # 4117136). I have worked as a geological/geotechnical engineer for a total of 9 years since my graduation. My relevant experience for the purpose of this Technical Report review is:

   - I have conducted numerous geologic, seismotectonic and geotechnical investigations of precious metal mine sites, including:
   - Designed, implemented and reported on numerous geotechnical investigation programs for precious metal mining projects in Central America
   - Author of the Geotechnical Sections of pre-feasibility level tailings and waste rock design report for the Molejon Gold project in Panama.
   - Author of the Geotechnical Study for site characterization and risk assessment for the Falconbridge Dominicana mine in the Dominican Republic.
   - Author of the Geology and Seismicity sections of the feasibility study for the Brisas del Cuyuni project in Venezuela.

4. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI43-101.

5. I visited the Santa Elena property 26 March through 29 March 2008 and observed site conditions, observed exploration drill core and toured the historic underground mine workings.

6. I am responsible for the preparation of this Geotechnical Audit Report. I am also responsible for the review of the Technical Reports listed above.

7. I am independent of the Issuer applying the test set out in Section 1.4 of National Instrument 43-101.

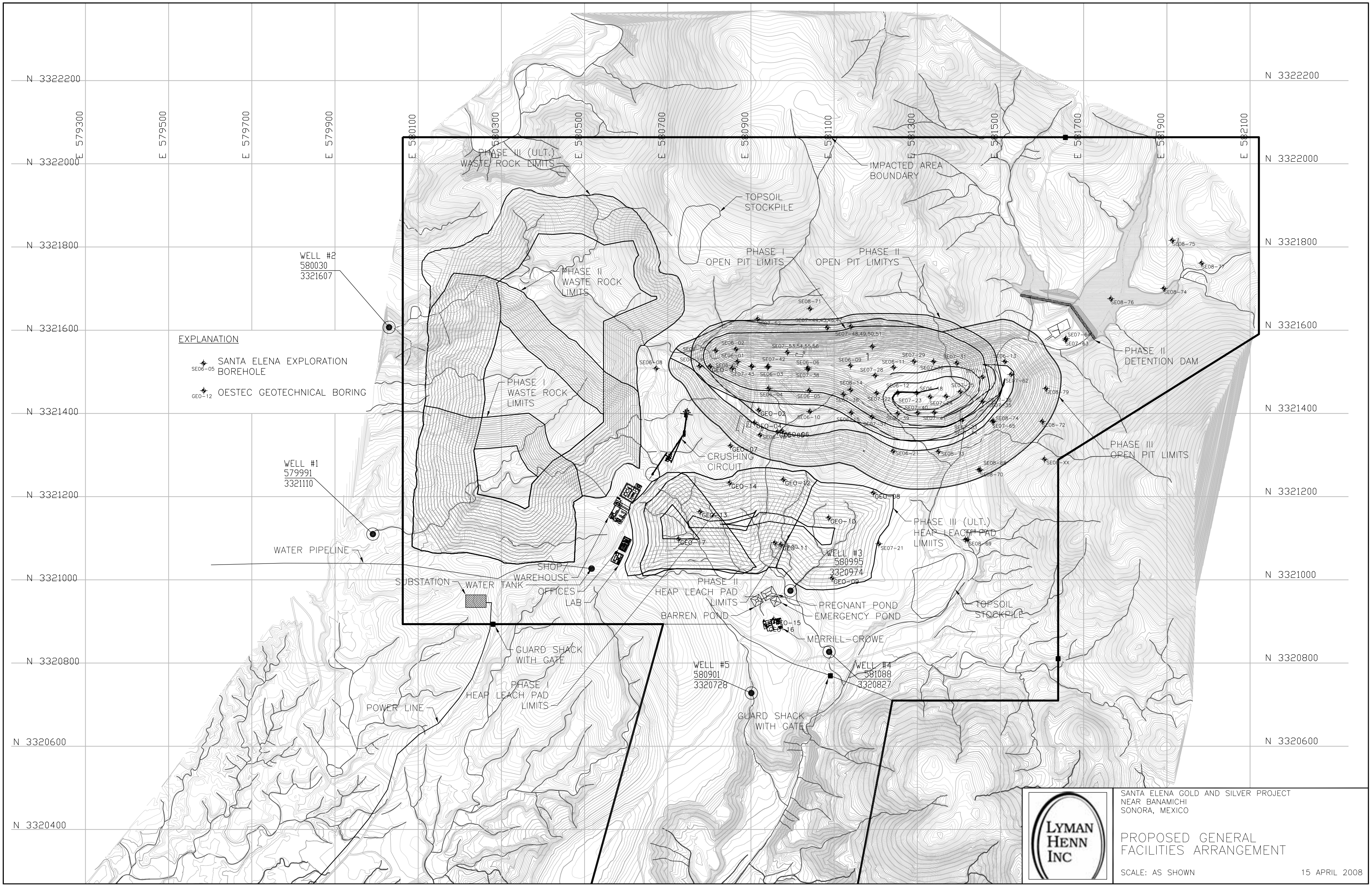
8. I have had no prior involvement before March 2008 with the property that is the subject of the Technical Report.

9. I have read National Instrument 43-101F1, and this report is not considered a Technical Report as defined by National Instrument 43-101 and Form 43-101F1.

10. To the best of my knowledge, information, and belief, as of the date of the report, this Geotechnical Audit Report contains all scientific and technical information that is required to be disclosed to make the report not misleading.

Dated the 7th day of May, 2008

Edward J. McDonald IV. P.E.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E 581100
E 581300
E 581500
E 581700
E 581900
E 582100
EXPLANATION
SANTA ELENA EXPLORATION BOREHOLE
OESTEC GEOTECHNICAL BORING
PHASE III (ULT.) WASTE ROCK LIMITS
IMPACTED AREA BOUNDARY
TOPSOIL STOCKPILE
PHASE I OPEN PIT LIMITS
PHASE II OPEN PIT LIMITYS
PHASE II WASTE ROCK LIMITS
PHASE I WASTE ROCK LIMITS
PHASE II DETENTION DAM
PHASE III OPEN PIT LIMITS
CRUSHING CIRCUIT
PHASE III (ULT.) HEAP LEACH PAD LIMIITS
WELL #2 580030 3321607
WELL #1 579991 3321110
WELL #3 580995 3320974
WELL #4 581088 3320827
WELL #5 580901 3320728
WATER PIPELINE
SUBSTATION
WATER TANK
SHOP/ WAREHOUSE
OFFICES
LAB
PHASE II HEAP LEACH PAD LIMITS
BARREN POND
PREGNANT POND
EMERGENCY POND
MERRILL-CROWE
TOPSOIL STOCKPILE
GUARD SHACK WITH GATE
PHASE I HEAP LEACH PAD LIMITS
POWER LINE
GUARD SHACK WITH GATE
LYMAN HENN INC
SANTA ELENA GOLD AND SILVER PROJECT
NEAR BANAMICHI
SONORA, MEXICO
PROPOSED GENERAL FACILITIES ARRANGEMENT
SCALE: AS SHOWN
15 APRIL 2008

FIGURE 2.1

ATTACHMENT TO GEOTECHNICAL AUDIT REPORT FOR THE SANTA ELENA GOLD AND SILVER PROJECT

LYMAN HENN INC. **FEE ESTIMATE**

3/18/2008

08-35 Standard Fee Schedule

Santa Elena Geotechnical Audit Recommended Additional Work
108020-000

SUMMARY

G:\PROJECTS\108020-000 Santa Elena Mine\R\R11\[Santa Elena ADD ON.xls]Summary

Task	Task Description	LHI Labor Costs	Subcontractor Costs w/markup	Other Direct Costs w/markup	Total
8.2.1a	Geotechnical Logging and RMR determination for additional in-pit exploration borings (58 total?)	$ 29,520	$ -	$ 4,245	$ 33,765
8.2.1b	Develop laboratory strength testing program, obtain samples and perform point load testing program	$ 14,024	$ -	$ 2,106	$ 16,130
8.2.1c	Line survey existing mine excavations	$ 2,312	$ -	$ 1,836	$ 4,148
8.2.1d	Geotechnical logging of oriented core drilling (3 holes)	$ 13,776	$ -	$ 317	$ 14,093
8.2.1e	Shear strength determination of overburden (local geotechnical firm)	$ -	$ -	$ -	$ -
8.2.2a	Borrow source investigation for heap leach overdrain (test pit investigation)	$ 1,968	$ -	$ 45	$ 2,013
8.2.2b	Foundation analysis for heap leach liner	$ 3,244	$ -	$ 75	$ 3,319
8.2.2c	Slope stability analyses (Heap Leach Pad)	$ 3,244	$ -	$ 75	$ 3,319
8.2.3	Waste Rock Dump geotechnical investigation, analysis, design (feasibility level)	$ 8,400	$ -	$ 3,759	$ 12,159
8.2.4	Re-Evaluate Foundation Recommendations with actual building loads (Oestec?)	$ -	$ -	$ -	$ -
8.2.5.1	Seismic Hazard Analysis	$ 10,992	$ -	$ 253	$ 11,245
8.2.5.2	Phase II Detention Dam, Foundation Investigation, Analysis and Design (feasibility)	$ 39,796	$ -	$ 915	$ 40,711
	TOTAL	$ 127,276	$ -	$ 13,626	$ 140,902

Notes:

1) The overlying tasks are keyed to specific recommendations in the Geotechnical Audit Report, by report section.

2) Costs include round trip airfare where appropriate, but specifically exclude lodging, meals and local transportation which are assumed to be covered by the owner.

3) Costs presented above include only Lyman Henn staff hours. We have assumed contracting and payment of subcontract drillers, equipment operators or geotechnical laboratories will be bourn by the owner.

4) Costs presented here are estimates developed for the convenience and planning or the owner. Lyman Henn would be pleased to provide a detailed scope of services for any requested additional work.

27 APPENDIX 3 ENVIRONMENTAL AUDIT, BY TETRA TECH, INC.

Santa Elena Gold and Silver Project
Banamichi, Estado Sonora, Mexico

Audit of the Environmental Conditions and the Environmental Database and Recommendations for Feasibility-Study Level Activities

Prepared for:

SilverCrest Mines Inc.

1311 Howe Street
Suite 405
Vancouver, BC
V6Z 2P3

Prepared by:

TETRA TECH

One Monarch Drive, Suite 101
Littleton, MA 01460
(978) 952-0120
Fax (978) 952-0122

Tetra Tech Project No. 2576.001.01

April 2008

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EXECUTIVE SUMMARY AND RECOMMENDATIONS

Tetra Tech (through the GeoTrans Division) was retained by SilverCrest Mines, Inc. (SilverCrest) to perform an environmental audit (the Audit) of the Santa Elena Silver and Gold Mine Project (The Project), a proposed open pit mine in the state of Sonora, Mexico. The Audit was commissioned to evaluate the condition of the environmental database and the status of the Manifestación de Impacto Ambiental (MIA) prepared by Patricia Aguyo, an environmental consultant in Hermosillo, Mexico. The Pre-Feasibility Study (PFS) prepared by Sol y Adobe (2008) was also reviewed.

The Tetra Tech review of The Project revealed no fatal flaws in the MIA or the PFS. Both documents are well reasoned and well supported technical reports. However, Tetra Tech recommends the following items prior to turning in the MIA or the PFS:

- Remove the visual percent calcite and sulfur values from the MIA because they are not accurate and are misleading;
- Conduct SPLP tests and sulphur speciation on the material tested for ABA (if this is not possible, test samples that are of the same rock type and near the prior ABA samples);
- Change the design of the Waste Rock Dump (WRD) to reflect the correct proportion between PAG and Non-PAG waste; and
- Review and revise the revegetation plan.

All other recommendations contained in the Audit are intended to prepare The Project for the Feasibility Study and to lay the groundwork for proper environmental management during construction and operations.

Key recommendations to bring the project up to the Feasibility Study Level include:

- Monitor surface water using permanent structures that are instrumented to automatically measure flow;
- Characterize groundwater conditions within The Project concession with on-site monitoring wells and single well aquifer tests;
- Characterize the groundwater supply resource using multiple-well aquifer tests of the production wells;
- Predict the leachate production rate from the WRD after closure;
- Predict local and regional groundwater impacts through the use of computer simulations;
- Expand the existing geochemical characterization up to Feasibility Study Level;
- Predict the water quality in the leachate from the WRD and in the post mining pit lake;
- Improve the revegetation section of the Closure and Reclamation Plan (Closure Plan) and prove that the chosen topsoil cover accomplishes the closure goals;
- Build a climate and air quality monitoring system; and
- Build an environmental database to store, manage, and present site-wide environmental data.

1.0 ENVIRONMENTAL AUDIT INTRODUCTION

Tetra Tech was retained by SilverCrest Mines Inc. (SilverCrest) to perform an environmental audit (the Audit) of the Santa Elena Silver and Gold Mine Project (The Project), a proposed open pit mine in the state of Sonora, Mexico. The Audit was commissioned to evaluate the condition of the environmental database and the status of the Manifestación de Impacto Ambiental (MIA) prepared by Patricia Aguyo, an environmental consultant in Hermosillo, Mexico. The goal of the Audit is to do the following:

- Evaluate the baseline environmental condition of The Project;
- Determine if the baseline environmental database is sufficient and recommend collecting additional information, if necessary;
- Review the MIA and provide comments for its improvement;
- Review the Pre-Feasibility Study for completeness, and provide suggestions on what is required to achieve a Feasibility Study level assessment of the environmental issues; and
- Provide an assessment and sign-off of as a Qualified Person (QP) as required under Canadian 43-101 regulations.

In support of the goals listed above, Mr. Larry Breckenridge, P.E. from Tetra Tech traveled to The Project on the 14th of March to inspect the site, examine the core, and to enter the underground workings. Mr. Breckenridge also reviewed the following documents:

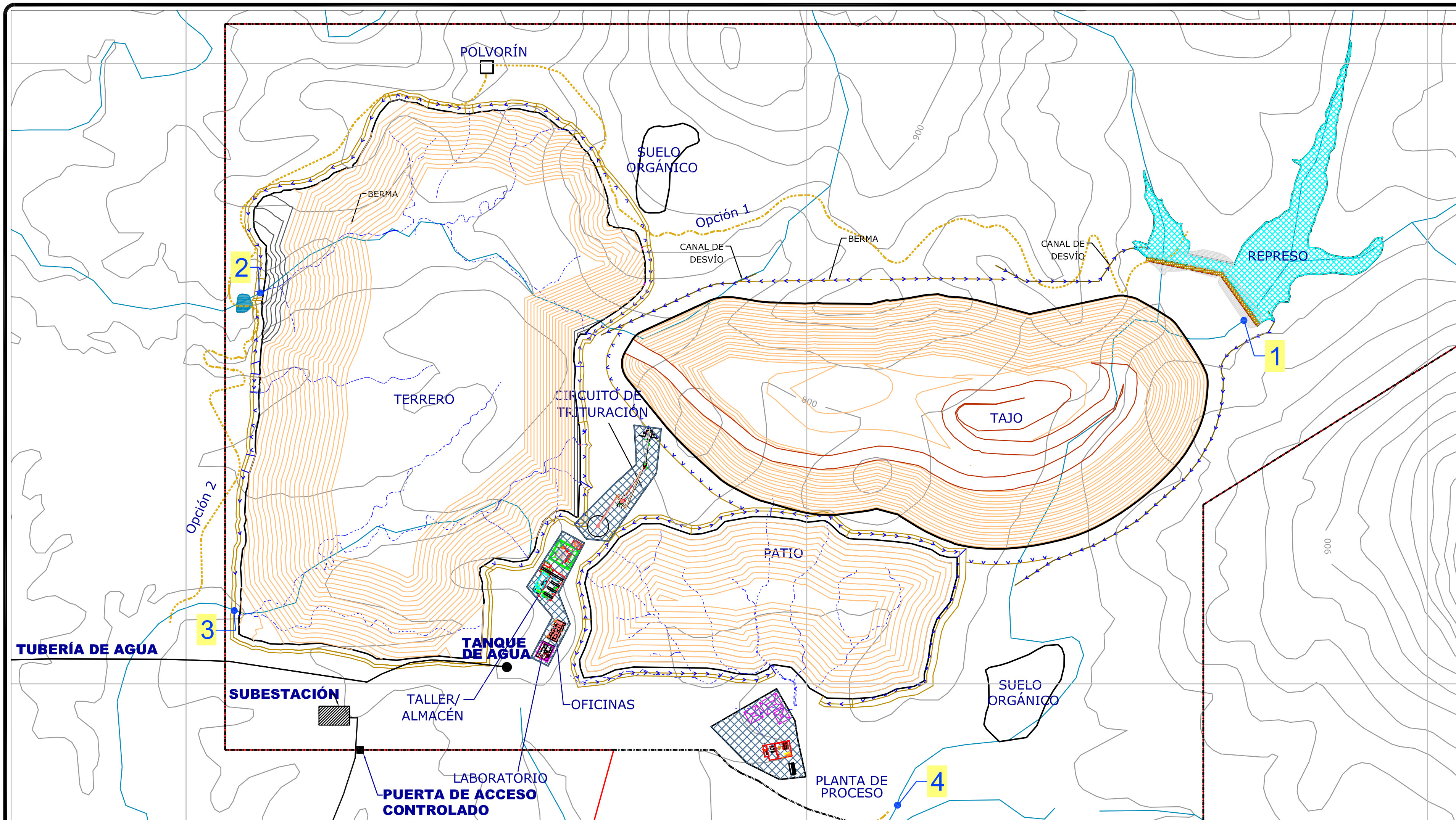
- Manifestación de Impacto Ambiental (MIA) (Aguayo, 2008);
- Estudio Técnico Justificantito, Nusantra de Mexico, S.A. de C.V. (Nusantra, 2007);
- Mine Closure and Reclamation Plan (Nusantra, 2008);
- Technical Report on the Santa Elena Property Sonora, Mexico NI 43-101 Report (Roscoe Postle, 2006); and
- Draft Pre-Feasibility Study (PFS) (Sol y Adobe, 2007).

In addition, Tetra Tech reviewed supporting documentation, laboratory reports, and examined maps provided by SilverCrest.

1.1 Site Location and Ownership

The Santa Elena property is approximately 150 kilometers (km) northeast of the state capital city of Hermosillo, Sonora, Mexico near the intersection of 30º 01' north latitude, and 110 º 09' west longitude. The community of Banamichi is located 7 km west of The Project.

The Project consists of six concessions with a total nominal area of 3,159 hectares (ha). The Santa Elena concessions are contiguous within the area (Figure 1.1). Under the terms of an agreement dated December 6, 2006, SilverCrest has the right to acquire a 100% interest in the Santa Elena property.



EXPLICACIÓN

- Canal de desvío
- Berma
- Drenaje
- < < < Dirección del flujo de escurrimiento
- 1 Surface water monitoring station
- Arroyo
- Área del proyecto minero Santa Elena
- Curvas de nivel (cada 20 metros)
- Contorno de obra minera
- Camino nuevo

Escala 1:6,000

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TITLE:	Site Map and Surface Water Monitoring Stations
LOCATION:	Santa Elena Mine Project

GeoTrans, Inc. A TETRA TECH COMPANY

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A concession in Mexico does not confer any ownership of surface rights. However, use of surface rights for exploration and production can be obtained under the terms of various acts and regulations. The Santa Elena concessions are located on Ejido (community or co-op) land. On November 12, 2007, SilverCrest signed an agreement with the Community of Banamichi (Ejido) for a 20 year lease on surface rights for a maximum of 841 ha with respect to access, exploration, and exploitation.

1.2 Project Background and History

The Project history and background are described in detail in Chapter II of the MIA. Key elements have been summarized below.

The Project has had small-scale mining since the late 19th century. The mining focused on extracting high grade deposits that were processed on-site. Using a combination of open pit extraction of exposed veins and underground development, prior operations extracted approximately 142,000 tonnes of material (Sol y Adobe, 2007). Approximately 15,000 tonnes of mine tailings remain on-site. There are several open stopes, an open mine shaft with headframe, and an open mine portal. There is also a sealed mine shaft and the foundation of the old mill. Photos 1-4 in Appendix A show structures from the prior mining operations.

Based on visual inspection during the site visit, the prior mining operations appear to have negligible impacts to the environment. There is no visual evidence of acid rock drainage (ARD), which can often be identified by iron oxide staining and discoloration, and there was no impacted vegetation or other indication of degraded soil or water quality. However, no environmental samples were collected during the site visit.

1.3 Audit Report Organization

Because many different documents were reviewed during the audit, this report is organized by subject area and addresses the issues in several different documents, often simultaneously. The following are covered:

- Surface Water;
- Groundwater;
- Geochemistry:
  - Heap Leach Pad;
  - Mine Waste Rock;
  - Pit Walls and Potential Post-Mining Pit Lake;
- Air Quality;
- Biological Resources; and
- Mine Closure and Reclamation.

2.0 PROJECT DESCRIPTION

The Project will be an open-pit heap leach mine operation with a total production of approximately 2,500 tonnes per day for a 10 year mine life. There are tentative plans to extend the mine life with an underground operation, but underground development is not under the current scope of the Audit. The Audit covers Phases I, II, and III of the planned open-pit mining development.

A lined heap leach pad will be constructed on-site. The approximate location of the heap is shown in Figure 1.1. The heap will have a clay secondary liner (foundation) that will be compacted to at least 10^{-6} centimeters per second (cm/s). The heap will also have an 80 millimeter (mm) high density polyethylene (HDPE) liner. This liner will be placed on the clay foundation and the joints will be welded and inspected according to the Best Management Practice (BMP) for heap leach pad design and construction.

Old mine tailings, which often contain up to a gram per tonne of gold, will be placed on the liner to protect it from punctures that may be caused by placing ore directly on the liner. The leachate collection system will be placed above the old mine tailings and the ore will be placed on top of the piping and the old tailings. The final heap leach pad will be a maximum of 30 meters high. Section 5.3.2 describes the environmental issues surrounding the heap leach pad.

The final open pit will be approximately 165 meters deep, 200 meters wide, and 900 meters long. Typical slope angles are 42 degrees for the hanging (south) wall, and 42-55 degrees for the footwall (north wall). Based on observations of the deepest mine levels (which were not visited during the site visit), The Project may have water at an elevation of approximately 700 meters above sea level. This water level, if it indeed is the regional water table, would result in approximately 65 meters of potential saturation of the final Phase III pit. As a result, a post-mining pit lake (pit lake) may form at the end of the mine life. Section 5.3.3 describes the environmental issues surrounding the pit and the potential pit lake.

The mine will produce 33.4 million tonnes of waste rock that will be place in the Waste Rock Dump (WRD). The WRD will be placed on natural soil (after the topsoil is removed). The geochemical behavior of the WRD is a key issue of concern for this Audit. Section 5.3.1 covers the geochemistry of the WRD, and Section 10.3 covers issues related to the WRD closure.

The Project has mine structures that are typical for this type of deposit, and the process flow chart is relatively straightforward for a heap leach with Merril-Crowe processing. The Project will require the following additional structures that may be of environmental concern:

- Ore stockpiles;
- Crusher;
- Processing plant;
- Fueling station and Truck Shop;
- Explosives storage and management area;
- Power generation facilities;
- Reagent storage area;
- Water supply wells;
- Access roads; and
- Water control infrastructure.

3.0 SURFACE WATER ENVIRONMENTAL AUDIT

There is only ephemeral surface water at The Project. Streams typically run only in the summer, and usually have water only for a few hours after a rain event. Pools may remain for most of the wet season, but most infiltrate into the ground surface or evaporate. As a result of this sporadic flow, there are no surface water quality samples or flow measurements available on-site. There are also no permanent gauging stations to monitor stream flow. Despite the significant challenges of monitoring ephemeral drainage basins, it is recommended that SilverCrest build a surface water monitoring infrastructure and collect samples twice a year (See Section 12.1).

3.1 Condition of the Existing Data

There is very little surface water data available. The surface water flow rates reported in the MIA (pg. 29) are estimates based on the catchment area and a runoff coefficient. No surface water quality samples have been collected.

3.2 Building a Flow Monitoring System

In order to properly assess the relationship between precipitation and river flow volumes, the two principal drainages, La Tinaja and El Oro, will require flow monitoring during the wet season. The recommended technique is to construct check dams and V-notch weirs (where a water containment structure is not currently planned). Figure 1.1 shows the recommended locations for four surface water gauging stations. Due to the temporary nature of the flow events, the water levels in the weirs should be equipped with pressure transducers to read the water levels at regular intervals during a storm event. This monitoring will not only give an assessment of the total flow, it will also define the storm-event flow hydrograph and will provide useful information to civil engineers, water management engineers, and geotechnical engineers (due to erosion concerns). Tetra Tech has installed these structures at several mines and has generalized design drawings and specifications that could be provided to SilverCrest. Tetra Tech recommends that the pressure transducers be removed from the field during the dry season to lengthen their operational life. Section 12.1 describes the SOW to install these structures.

3.3 Surface Water Quality Samples

Surface water quality samples must be collected to establish the baseline environmental conditions. These samples should be collected during the next wet season (July and August). Site staff should be trained in sample handling techniques prior to the wet season, and sample bottles, coolers, preservatives, and other sampling equipment should be prepared and stored on-site. When a significant storm event comes, site geologists should take the prepared equipment and collect a surface water sample for quality analysis. The sample should be properly stored, and should be shipped to the laboratory within the required holding-time of sensitive parameters. Nitrogen species require analysis within 48 hours, and will likely force immediate transportation of the samples to Hermosillo for testing. The samples should be analyzed for all parameters regulated under Mexican Law. The “Parameters” column shown in Table IV.12 (MIA, pg 36), has the recommended sample suite for surface water samples.

Once the flow monitoring system is in place, surface water samples can be collected from the pond above the weir. Two samples should be collected per year: one from early in the wet season, and one from late in the wet season.

4.0 GROUNDWATER ENVIRONMENTAL AUDIT

The following section describes the environmental audit of all groundwater resources, both local (within The Project mineral concession) and regional (including the aquifer of the Sonora River).

4.1 Local Groundwater Resources

No groundwater wells currently exist on-site, and a groundwater study is planned for the spring of 2008. Groundwater can be observed in the deepest levels of the prior mine workings at 700 meters above mean sea level (amsl). However, this groundwater level may not correspond with the regional water table. Mr. Eric Fier CPG, P. Eng, and the Chief Operating Officer of SilverCrest believes that precipitation percolating in for nearly a century has transported a significant layer of silt into the bottom of the workings. This silt has decreased the conductivity of the mine floor, and has allowed for a perched aquifer to form in the mine workings. This theory is supported by the water quality from the lower workings which is chemically distinct from the groundwater on-site. The water from the mine has low conductivity and high coliformes and fecal coliformes in contrast with groundwater that typically has higher conductivity and no microorganisms (MIA, pg 36). The mine water is currently being pumped to supply the needs of exploration drilling. Photo 6 shows the discharge and the pond located at the mine portal. The upcoming groundwater study will clarify if The Project has a perched or a permanent water table at an elevation of 700 m amsl. As a conservative estimate, Tetra Tech assumes that the water table elevation is permanent.

Tetra Tech has not seen the scope of work for the upcoming groundwater study, but recommends the following sampling, testing, and analysis:

- Monitoring wells should be slug tested to determine bulk hydraulic conductivity of the formation;
- Groundwater samples should be analyzed for at least the same suite of parameters as those listed in the “Parameters” column of Table IV.12 (MIA, pg 36);
- The wells should be airlift tested during drilling and groundwater (if present) should be measured for production rate; and
- Wells should be constructed in a manner that protects them from potential damage and/or surface water contamination.

Groundwater monitoring should be done quarterly for water level and groundwater quality. The sample suite should be the same as the first groundwater samples collected (see above).

4.2 Regional Groundwater Resources

Despite the presence of groundwater in the lower workings, there are not sufficient water resources within the concession to support mining operations. As a result, SilverCrest has made arrangements with the local irrigation district, and with local governments to purchase water. Both wells are located in the alluvial floodplain of the Sonora River and are approximately 5 km away from The Project, to the northwest. Both wells are shallow, large-diameter wells that extract water from the alluvial aquifer. Photos 8 and 9 show the first-priority well (Supply Well No. 1), and Photo 7 shows the backup well (Supply Well No. 2).

The alluvial aquifer is in direct communication with the Sonora River. The economy of the state of Sonora is heavily dependent on irrigated agriculture. The Sonora River is one of the most important water sources in the region, and water rights are extremely valuable. Tetra Tech believes that the use of regional groundwater resources may be the single largest environmental impact of The Project. As a result, the mine must take the greatest of care to do the following:

- Minimize mine groundwater use;
- Ensure the long-term viability of the water supply wells;
- Prove that the water supply wells do not significantly impact downstream water rights;
- Ensure that if the wells fail (or must be turned off) that The Project has a viable backup water supply source; and
- Ensure that the quality of water produced by the wells does not degrade over time.

Minimizing groundwater use is the responsibility of the process engineers, and ensuring that the resources are legally secure is the responsibly of SilverCrest. The Feasibility Study Level groundwater investigation will determine the viability of the water resource and will provide data so that the impacts can be predicted (See Section 12.2 and 12.3).

4.2.1 *Aquifer Testing*

Aquifer testing is planned for Supply Well No. 1. According to Mr. Fier, the planned testing is a 24-hour single well test. Tetra Tech recommends changing this testing to a long-duration multiple well aquifer test. This test will require the following:

- Two temporary observation wells, spaced appropriately 1/3 and 2/3 of the distance between the well, and the end of the anticipated cone of drawdown.
- 36 to 72 hours of pumping;
- A discharge manifold with a flow meter, and with a discharge significantly far enough away that re-infiltration will not impact the cone of drawdown.

The aquifer test will produce an optimum pumping rate (optimum well yield), hydraulic conductivity value, and an aquifer storage value. In addition, long term pumping can often determine if boundary effects are present in an aquifer. Boundary conditions can be either recharge boundaries (in this case, the river) or no-flow boundary conditions like a pinched out sand lens, or a bedrock contact. Only long-duration aquifer tests can "see" boundaries, thus justifying the expense of longer pumping periods. After the aquifer test, the observation wells should be abandoned according to Mexican environmental standards. Tetra Tech recommends that both the primary and backup well be pump-tested; however, only the primary well will require a multiple well aquifer test. Section 12.3.2 describes the SOW for conducting this aquifer test.

4.2.2 *Mine Water Use and Water Supply Impacts*

The Project is currently estimated to consume approximately 200 cubic meters per day (m^3/day) of groundwater. This is equivalent to 37 gallons per minute (gpm) or 2.3 liters per second (L/sec). The calculations used to determine this water balance were reviewed for this draft report. After analyzing the spreadsheet and speaking with the author of the report, it is apparent that this number is accurate and conservative.

Once The Project water needs are identified, and after aquifer testing, a rudimentary groundwater model is recommended to determine the longevity of the water supply resource and its impact to adjacent water resources. This groundwater model should be a simplified model that takes into account the following factors:

- Aquifer recharge;

- Aquifer boundary conditions;
- Aquifer storage; and
- Anticipated well production.

The groundwater model will help prove to local and regional water users that the mine has a fixed and quantifiable impact on regional water resources. This is critical because mine sites often get blamed for water resource impacts that are much greater than what is justified by science. Section 12.3.2 describes the method recommended for the groundwater modeling.

4.2.3 *Groundwater Quality*

Groundwater quality impacts due to inorganic geochemical reactions are covered in Section 6.0. The section below discusses the baseline groundwater database and groundwater quality issues not specifically related to geochemistry.

Three samples were collected from groundwater wells in the Sonora River alluvial deposits. These groundwater samples show the quality of the water that The Project will use for mine operations because no local surface or groundwater source exists. The water is generally of good quality water with low electrical conductivity and a neutral pH. Selenium and arsenic, which are often problematic in arid environments, do not appear to be a concern in the alluvial groundwater. In all three wells, the microorganism count is higher than Mexican standards. This is likely the result of contamination from surface water. Tetra Tech recommends quarterly sampling of the primary and backup water supply wells with the sample suite listed in the "Parameters" column of Table VI.12 (MIA, pg. 36).

Tetra Tech recommends that SilverCrest protect their groundwater source. The current well construction is not secure and is vulnerable to surface contamination and vandalism. The following work is recommended:

- The holes around the well casing should be backfilled with clean soil so that it is level with the surrounding ground;
- The well casing should be inspected during the aquifer test, and any cracks or failures in the concrete should be repaired;
- The well should be cleaned and rehabilitated; and
- The wellhead should be constructed in such a manner that the water is secured from the atmosphere and secured from vandalism.

Protecting the well will require a large metal cover and a control shed to protect the pump and the pump controls.

5.0 GEOCHEMICAL ENVIRONMENTAL AUDIT

Proper understanding of the geochemical nature of The Project will be critical in the environmental management of the mine. The following sections discuss the environmental audit of the geochemical information that has been collected to-date.

5.1 Site Geology

The Project is located in the Basin and Range Province of the Sonora Desert subprovince. Other areas of the State of Sonora are part of the Transitional Zone or the High Plateau. A series of northwest trending shear and associated faults appear to control the mineralization of the region. The faults act as a conduit of the mineral baring solutions, localizing the mineralization. Intrusive formations are not uncommon in the Sonora region and are generally Middle Jurassic to Tertiary in age. The intrusives are considered batholithic and calc-alkaline, volcanic arc plutons.

The primary rock types at The Project are andesite and rhyolite flows that have been uplifted and strike north-south with a dip to the east. No intrusive has been identified at The Project, but it is hypothesized that one is present at depth; this would be the source of The Project mineralization. The mains structure has quartz veining, quartz veinlets, banded quartz, vuggy quart, and black calcite. Breccia is present at fault intersections. The mineralization is associated with limonite, jarosite, goethite, and hematite.

5.2 Condition of Existing Data

The baseline geochemical evaluation of The Project included the collection of 7 creek sediment samples, 26 waste rock samples, 3 leach solution, and 3 post rinsing heap leach solutions samples were collected and analyzed for a variety of metals and inorganic parameters. The following sections discuss the specific samples and results for the geochemical baseline study.

5.2.1 *Creek Sediment Samples*

Seven sediment samples were collected from creeks in the area of The Project. The samples were analyzed for metals, though no Mexican standards exist for stream sediment quality. The baseline samples will provide an understanding of the conditions prior to mining, which can then be used as a comparison once mining activities have commenced. As mentioned in Section 3.3, water quality samples should also be collected from the creeks in the area of The Project to ensure a complete understanding of the system prior to mining activities.

The data for these samples are provided in Table 3.2 of the Draft Mine Closure and Reclamation Plan. Sampling locations near historic tailings piles and ore body zones were higher in metals than other samples collected. This suggests that previous mining activities have had an impact on the creeks and their sediments. The data collected provides a good baseline level of evaluation. It is recommended that samples be collected after mine construction activities have started to monitor any impact that the activities are having on the sediments of the local creeks.

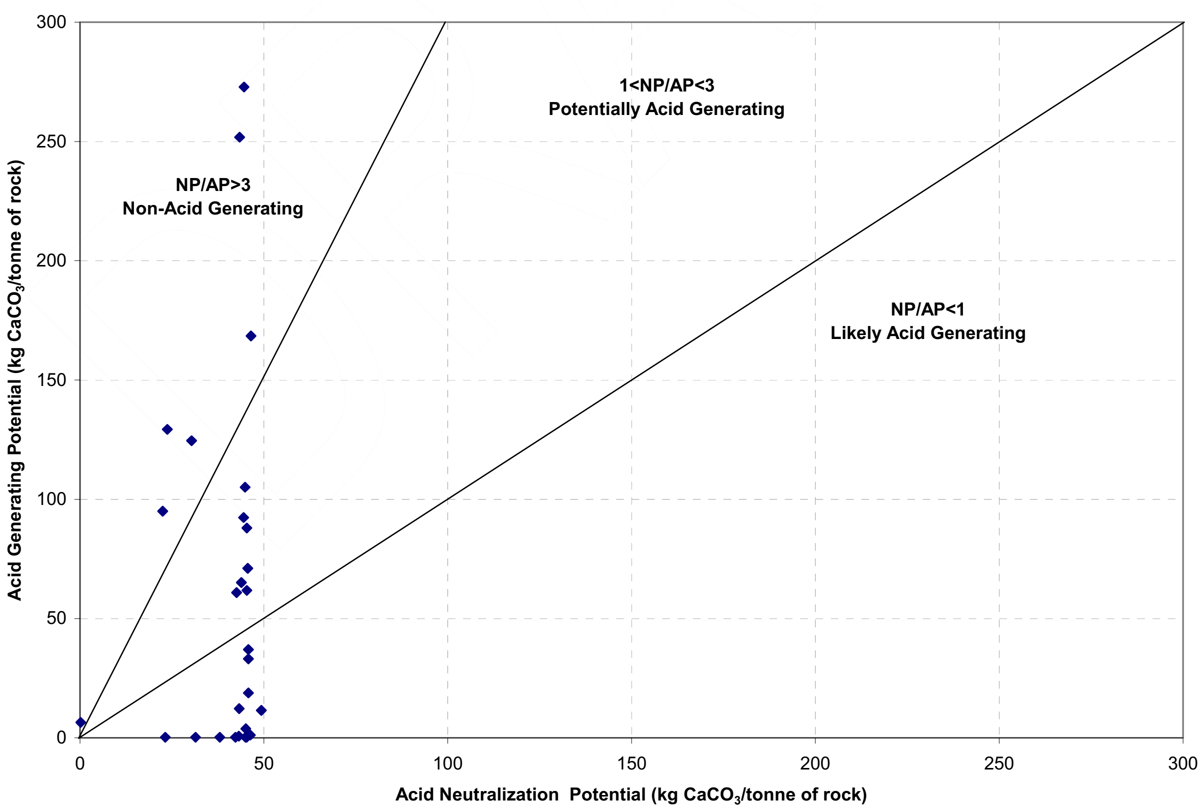
5.2.2 *Waste Rock Samples*

Twenty-six waste rock samples were collected from core and sent to Laboratorios del Noroeste in Hermosillo, Mexico for Acid Base Accounting (ABA) and metal toxicity analysis. The results of these analyses are presented in Table II.15 of the MIA. These 26 samples represent nine boreholes. The samples were collected from two to four different depths at the nine boreholes. The samples analyzed for geochemical parameters are isolated to the drilling program conducted in 2006 and are also isolated to limited area of The Project. The number of samples collected to-date is appropriate for a Pre-Feasibility level study. They answer the general question, “Is there a potential geochemical risk associated with the rock material at the site?”.

The data collected as part of the ABA testing were the paste pH, the Neutralization Potential (PN), and the Acid Generation Potential (PA). The PN and PA are expressed in units of kilograms of calcium carbonate ($CaCO_3$) per tonne of rock (kg $CaCO_3$/t rock). In theory, a sample would be acid-generating if its net neutralization potential (NNP = PN-PA) was less than 0; however, the risk of ARD has been found to be highest for samples with NNP values less than -20 kg $CaCO_3$/t rock and is low when the NNP is greater than +20 kg $CaCO_3$/t rock (Price, 1997). The ratio of PN to PA, the neutralization potential ratio (PN/PA), can also be used to assess ARD risk. A PN/PA greater than 3 is thought to have a low ARD risk while samples with a PN/PA less than 1 have a high ARD risk (Price, 1997).

Figure 5.1 presents the PN versus PA of all samples analyzed using the ABA method. Some material falls into each of the categories for potential acid generation. Thirteen of the samples are in the range of likely acid generating, seven of the samples are in the range of moderately/uncertain acid generation, and six are in the range of non-acid generating. The likely and uncertain/moderate acid generation categories are commonly known as Potential Acid Generating (PAG) material. Approximately 77% of the material tested to-date is classified as PAG. It should be noted that the percent calcite and percent sulfur values are not being considered at this time because they are based on a visual method. These are important parameters, but should be analyzed at a laboratory. In fact, the visual reporting of percent sulphide is not consistent with laboratory results and is also an over-exaggeration. Tetra Tech recommends removing all reference to visual percent sulfur from the MIA and PFS.

Figure 5.1: Acid Generation Classification



As can be seen from the results, PAG waste does exist and will require proper handling and management to protect the environment. Fortunately, there is some material that is net neutralizing and can be used to encapsulate the PAG waste, and prevent ARD generation. This management strategy was recommended in the Closure and Reclamation Plan and should be employed during the construction of the WRDs. Based on information presented in the Pre-Feasibility Study report, the volumetric distribution of the waste is weighted more toward the net neutralizing material than the PAG material. Table 5.1 presents the PN/PA ratios for the estimated tonnage of waste

Table 5.1: PAG Waste by Acid Generating Potential

PAG Waste Volumes for Santa Elena		
PN/PA	**Estimated Tonnes**	**Criteria**
0 to 1.2	500,000	Likely Acid Generating
1.2 to 3.0	4,000,000	Potentially Acid Generating
> 3.0	28,982,000	Non-Acid Generating
Total	33,482,000	

The design for the WRD will minimize the waste's exposure to oxidation and water. The WRD will be constructed to keep waste rock "high and dry" to minimize exposure of waste to water. From the ABA results a block model was created using the down hole data and an ID cubed interpolation method with a circular search radius of 150 meters. This model should continue to be updated as new data is collected. This will be a useful tool for aiding placement of the materials in the WRD and for determining the quality of the wall rock that remains after mining is complete.

The ABA testing provides a good indication of the geochemical risk associated with the waste material; however, there are other testing methods that are recommended. In addition to the ABA testing, the samples should be analyzed for sulfur speciation, net acid generation pH (NAG pH), whole rock analysis, and metals leaching potential using either synthetic precipitation leaching procedure (SPLP) or meteoric water mobility procedure (MWMP). The TCLP testing performed in the MIA is not useful for geochemical applications because they rely on an acidic leaching solution. TCLP analysis was designed to determine the effects of leaching with a weak acid inside a sanitary landfill, and cannot be applied to characterize ARD or alkaline rock drainage. The NAG-pH, SPLP, and MWMP tests will better define the availability of the PAG material, the potential for metals to leach from the material, and the expected concentrations of leached metals.

In addition to these static testing methods, two sets of kinetic tests should be setup to analyze the reaction rates of the material. The static testing methods define the potential for a material to neutralize or generate acid; kinetic testing analyzes the rates of neutralization consumption or acid generation. One set of tests should be laboratory run humidity cell tests. These tests look at the reaction rates under ideal ARD generation conditions. On-site leach columns should be constructed to monitor the rate of reactions under site climatic conditions. Tetra Tech would like more information on site geochemistry prior to suggesting how many kinetic tests will be required, and what material ought to be tested.

5.2.3 *Heap Leach Ore Samples*

Metal toxicity tests were completed on the spent ore samples from column-percolation testing to evaluate the potential for water quality impacts resulting from metal leaching from the closed heap leach pad. One sample representing each column percolation test of representative material was tested. A total of three of these columns samples were analyzed after the leached material was rinsed. The analysis of this material represents the expected conditions after closure of the facility.

The samples were analyzed using the ABA method, and each of the samples can be classified as non-acid generating. The samples had high levels of neutralization potential and low acid generation potential. Overall, the results of the testing for metals show minor toxic metals for potential leaching in the future. The metals with the highest concentrations during the testing are chromium, nickel, lead, and zinc. These metals tend to be most mobile under acidic conditions; however, zinc is highly soluble at neutral pH levels. Based on these results, the material will not generate ARD and has a low potential to impact the environment.

The number of samples collected to-date is sufficient for a Pre-Feasibility level study. If additional metallurgical testing is planned, it is recommended that the resulting spent ore be analyzed in more detail. The testing should be similar in nature to the waste rock analysis and should focus on the acid generation and potential metals leaching of the material.

5.2.4 *Heap Leach Lixiviant Samples*

A total of six heap leach lixiviant samples were collected and analyzed as part of the baseline geochemical analyses. Three of the samples were collected before the rinsing tests, and three samples were collected after the completion of the rinsing tests. The group of three samples for each of the tests represents the three ore types present at The Project.

Generally, the rinsing of the material removed chemicals that would present a concern environmentally. The cyanide concentrations decreased below regulatory limits, and pH values decreased. The pH levels are still in the alkaline range and could leach metals that are mobile under these conditions. Though not as great of a concern as ARD, alkaline rock drainage can adversely affect the environment. The other metals included in the lixiviant analysis suite were generally low, decreased or remained stable after rinsing.

5.2.5 *2006 Assay Samples*

The 2006 assay samples collected for The Project included a full suite of metals analyzed by ICP/MS. Though these samples are located in the area of the mineralization, they provide a useful understanding of the ore deposit. The following observations were made by Eric Fier in a memo summarizing this data collection effort:

- The geochemistry of the mineralized zone is typical of a low-sulfidation epithermal system;
- The mineralized zone shows little to no sulfur/sulfides and is generally oxidized to a depth of 200 meters below ground surface;
- Sulfides are present in the hanging wall and footwall mineralization and are an alteration (pyrite) halo around mineralization (little to no gold and silver is associated with the finely disseminated pyrite);
- Significant calcium/calcite is noted throughout the mineralized and non-mineralized zones, with some areas showing calcium contents of 10 to 15%;
- No anomalous copper occurs in the system;
- Minor lead, zinc, magnesium, and barium are associated with the mineralization; and
- Arsenic, antimony, bismuth, and mercury are considered minor to non-anomalous.

5.3 Additional Considerations

5.3.1 *Waste Rock Dump*

The data collected to-date is sufficient for the PFS and MIA, but is insufficient for a Feasibility level study. It is recommended that additional samples be collected and analyzed for geochemical parameters. These samples should focus on characterizing the material over the broad spatial extent of the mine. Samples should focus on the material that has been defined as PAG. As described above, the samples should be analyzed using ABA, NAG pH, whole rock, SPLP, and MWMP testing methods. The goal of the additional sampling and testing should be to answer the question, "What is the geochemical behavior of each rock type?".

As part of the Feasibility Study, a more detailed evaluation of the geochemical nature of the waste rock material should be included. This evaluation should focus on the material based on a weighted average of the actual amounts of each rock type in the WRD. The study will also focus on the closure conditions of the WRD. This will likely require a basic geochemical model considering the flow rates through the WRD and the reaction rates of the waste material. Section 12.5 describes the WRD modeling effort proposed for the Feasibility Study.

5.3.2 *Heap Leach Pad*

The level of sample collection to-date is sufficient for a Pre-Feasibility level study. If additional metallurgical testing is planned, it is recommended that the resulting spent ore be analyzed in more detail. The addition testing should include ABA, NAG pH, whole rock, SPLP, and MWMP testing methods. Additionally, it is recommended that a composite sample of the spent leached ore material be testing using a laboratory humidity cell to test the long term behavior and potential for metals leaching of the material.

As part of the Feasibility Study, a more detailed evaluation of the geochemical nature of the heap material should be included. This evaluation should focus on the material after it has been leached and rinsed to focus on the closure conditions of the facility. This will likely require a kinetic testing column and testing of a larger number of potential metals and inorganic parameters. Section 12.5.4 describes the testing required for the Feasibility Study.

5.3.3 *Open Pit/Post Closure Pit Lake*

Currently no samples have been collected to focus on the rock that will be exposed in the pit wall at the completion of mining. For the Feasibility Study, samples should be collected that represent the wall rock of the pit. The samples should be analyzed using ABA, Nag pH, whole rock, SPLP, and MWMP testing methods. This will be necessary to determine the impacts that the wall rock will have in water that contacts the material during storm events. The water will collect in the base of the pit and impact the quality of the pit lake. In addition, it is assumed that the Phase III pit will intersect the water table which will contribute approximately 65 meters of water depth at the base of the pit.

The Feasibility Study will likely require a pit lake study to determine the potential impacts of the lake on the post closure environment (see Section 12.5.4). The pit will likely act as a terminal sink after closure, limiting impacts to the surrounding groundwater system, but producing poor water quality within the lake. Testing of the wall rock and a geochemical mixing model will help to determine the water quality that will exist within the pit lake.

6.0 HEAP LEACH PAD ENVIRONMENTAL AUDIT

6.1 Heap Leach Pad Construction and Containment

The project will use a heap leach pad to extract gold and silver from the ore. This heap will use a cyanide solution as a lixiviant, and therefore, will require containment to prevent environmental impacts. The heap will have a clay secondary liner (foundation) that will be compacted to at least 10^{-6} cm/s. A cursory review of the geotechnical samples collected on the clay borrow source show that conductivities of 10^{-7} to 10^{-5} can be achieved using 95% of standard proctor under optimal moisture conditions. Selective management to ensure the best quality will be required to achieve the 10^{-6} criteria, but it appears that the design requirements can be met with the chosen clay.

Once the foundation has been prepared, SilverCrest will install a 80 mm thick HDPE liner with ultraviolet light resistance. The seams will be welded according to the required technical specifications. The clay liner and the HDPE liner should be adequate to protect the environment from the cyanide solution and is the industry-standard management technique.

Tetra Tech believes that using the prior tailings materials as a subgrade within the heap leach pad (between the distribution pipes and the liner) is an excellent technique to protect the liner from damage, to mitigate an existing environmental issue (the tailings piles are barren from vegetation), and to recover silver and gold resources. As long as the heap is managed properly during operations, Tetra Tech sees no flaws in the current heap design or operating plan.

6.2 Heap Leach Pad Operation

The main environmental issue related to heap leach pad operation is the prevention and management of an accidental release of lixiviants. In general, the management of lixiviant solution appears to be in line with industry standard. Tetra Tech recommends that the overflow pond sizing be re-evaluated once more accurate climate data is collected. The current design uses the database collected from the Banamichi climate monitoring station. Section 8.1 describes the problems and limitations of the climate data collected at this site.

6.3 Heap Leach Pad Closure

The current plan to close the heap leach pad is to re-grade the surface, to puncture the liner, and to place topsoil on the surface for successful revegetation. Based on the geochemistry evaluation shown in Section 5.2.4, it appears that the leachate coming from the closed heap will meet regulatory standards. One key omission in the closure plan is that it does not state the total depth of topsoil that will be placed on mine structures. Current design drawings for the WRD show 10 centimeters (cm) of topsoil cover, and Tetra Tech assumes that this depth of topsoil is also planned for the closed heap. Section 10.4 states Tetra Tech's recommendation for the revegetation of the closed heap leach pad.

7.0 WASTE ROCK DUMP ENVIRONMENTAL AUDIT

The largest issue relating to the WRDs is the geochemistry. Section 5.3.1 covers the geochemistry of the WRDs and the potential impact geochemical reactions have on local and regional water quality. This section covers other issues related to the WRDs.

7.1 WRD Design

Tetra Tech recommends several changes to the current conceptual WRD design. Tetra Tech believes the water control structures to divert surface water and the construction of underdrains to manage water in the base of the arroyos is appropriate. However, it is critical that the material placed in the arroyo bottoms is non-reactive. SilverCrest plans to use aggregate screened out of the pediment formations for this purpose. Prior to use, the material should be inspected by a geologist to ensure it is not reactive. If it is calcite-rich, it will not be suitable for the WRD underdrain because it may change the geochemistry of the natural water and may result in the formation of precipitates or the degradation of the underdrain rock. Therefore, this material must be carefully selected from materials on-site or rocks extracted from the pit.

The current design drawings for the WRD are conceptual; however, they are misleading. Based on the MIA, 2% of the total WRD volume is PAG rock. This value must be confirmed by better mine waste characterization (see Section 5.3.1), but in any case, the conceptual drawing shows nearly equal volumes of PAG and Non-PAG waste. This depiction is not accurate and shows a greater ARD risk than what exists on-site.

7.2 WRD Closure and Reclamation

Tetra Tech believes that the soil cover for the WRD will not be sufficient to reestablish vegetation. Section 10.4 discusses Tetra Tech's recommendations to ensure proper post-mining reclamation.

8.0 ATMOSPHERIC ENVIROMENTAL AUDIT

The following section describes issues related to the climate and to air quality.

8.1 Climate Monitoring

On the site tour, Tetra Tech personnel visited the Banamichi meteorological station. This station was a primitive affair with a thermometer and a rain gauge. For many years, the station had an evaporation pan, but it was no longer up and running. The woman who is married to the key data recorder stated that: "We used to have a pan, but it kept going dry." Despite the primitive condition of the station, the historic database appears to be consistent with the climate and it should be used when necessary. The long period of record will help mitigate the primitive measurement methods. SilverCrest currently plans to install a modern meteorological station at The Project.

8.2 Air Quality

Air quality will be an important issue for The Project because it is one of the few impacts that will travel outside the area of the concession. Currently, no baseline air quality data has been collected or presented for The Project. Despite its remote location, The Project has a baseline level of dust and particulates. These baseline levels need to be identified prior to mine construction in order to define the mine-related impacts to air quality. Tetra Tech recommends the installation of at least two air monitoring stations, one upwind and one downwind (based on an assumption of prevailing winds). These stations should be portable and may require relocation once the meteorological station better defines the behavior of the wind at The Project.

Ambient air quality monitoring should be conducted at each control point using portable low-volume PM10 (particulate matter with a particle size less than 10 microns in diameter) samplers to observe ambient 24-hour concentrations. The monitoring should be conducted as a continuation of the existing baseline monitoring program and the parameters that will be evaluated are PM10, lead, and arsenic. Sampling will be conducted on a monthly basis during the dry period and every three months during the wet period. The monitoring will be conducted during the construction and operation phases of The Project. After the baseline conditions have been defined, the sampling frequency should be reduced in a manner that adequately characterizes the seasonal changes in air quality, and in a manner that is acceptable to Mexican regulators.

9.0 ADDITIONAL ENVIRONMENTAL ISSUES

9.1 Biological Resource Evaluation

The biological resource evaluation presented in the MIA appears to be complete and well done. However, the survey was conducted only once. Typically, these surveys are performed at several times per year, to account for seasonal changes in the biological community. The one survey that was conducted was done at the end of the dry season in June 2007. Tetra Tech recommends conducting another survey in September or August to provide a biological resource evaluation after the wet season. In arid environments, the biological conditions often change greatly between the wet season and dry season. In addition, migratory animal surveys require multiple surveys to help determine when animals might use The Project area as a habitat.

9.2 Environmental Data Management

The Project will soon be accumulating a large body of environmental data resulting from the environmental monitoring recommendations described above. Tetra Tech recommends that SilverCrest create a relational database to manage the environmental data. Building a robust system at this point in The Project will save money and time over The Project life, and will ensure that no data is lost.

9.3 Quantification of Environmental Impacts

Chapter 5 in the MIA contains a quantification of the mine environmental impacts. Tetra Tech's review of the Quantification of Environmental Impacts discovered no critical flaws to the approach or to the calculations. It appears that the impacts are properly scaled, and the criteria described in the text have been correctly applied.

10.0 RECLAMATION PLAN

The mine reclamation plan was reviewed and the following comments and suggestions have been offered.

10.1 Open Pit Closure

The open pit closure assessment mentions the existence of a possible water table intersecting the pit at the 700 meter level, but it does not describe any pit lake water quality management plans. It can be safely assumed than the pit will act as a terminal sink for groundwater due to its high evaporation rate and low elevation. A terminal sink for groundwater is defined as a location where groundwater is removed from the aquifer, and groundwater flows to this point from all directions in the area. The pit therefore will not be a risk to off-site groundwater quality, but the pit lake itself may have poor water quality. Section 5.3.3 describes the potential geochemical issues related to the open pit, and based on the results of further geochemical testing and analysis; the open pit may require a more advanced closure plan to ensure geochemical stability and compliance with relevant environmental regulations.

10.2 Leach Pad

The Leach pad closure plan is very simplified. It does not discuss the potential leachate quality or quantity. Section 5.2.3 describes the geochemistry of the leach pad. Based on rinse testing, it appears that the leachate will meet regulatory discharge guidelines.

10.3 Waste Rock Dumps

Based on the current data set, one cannot determine the final leachate water quality that will leave the WRDs. Section 5.3.1 describes the geochemistry of the WRDs. Based on the findings of future testing, the closure plan for the WRD could require revision. Although it is not expected that the WRDs will produce acidic leachate, there is the potential for alkaline rock drainage, and this possibility must be mentioned and mitigated in the reclamation plan. Tetra Tech recommends that SilverCrest examine the use of an evapotranspiration cover (ET cover) for the WRDs. Tetra Tech believes that a properly designed ET cover could virtually eliminate the existence of WRD leachate upon closure. This would substantially reduce the risk of acid-forming reactions and alkaline rock drainage water quality issues.

10.4 Revegetation

The design drawing for the WRD shows 10 cm of topsoil cover. Because the reclamation plan does not specifically state the depth of topsoil that will be placed on impacted areas, Tetra Tech assumes that 10 cm will be the standard for the site. This very thin topsoil cover may be insufficient to establish the required vegetative cover. It is common that closed heaps or closed WRDs may produce benign leachate, but due to the lack of soil nutrients and the change in soil structure, these materials are not suitable for vegetation without a thick topsoil cover and significant soil amendments and/or irrigation. Tetra Tech recommends that SilverCrest conduct revegetation studies to determine the amount of topsoil required to achieve revegetation success. This is best tested by constructing on-site revegetation test cells using 1 meter by 1 meter square boxes containing different mine waste (spent heap material, waste rock, etc.) and different depths of topsoil. If these tests are started early, they can provide site-specific information on how to achieve the revegetation goals in time for the commencement of concurrent reclamation of the WRD. Section 12.7 describes the construction of these cells.

In addition Tetra Tech recommends that irrigation be used to establish site vegetation. This is because the wet season also corresponds to the season with the highest risk of soil erosion. If heavy rains fall on newly placed topsoil, the soils will erode. If vegetation is established in the dry season without irrigation, it will not survive. Therefore, in order to protect the soil, SilverCrest should establish vegetation during the dry season using irrigation. In this case, once the strong summer thunderstorms start, the vegetation will be in place to prevent erosion. An alternative approach is to make heavy use of erosion control techniques and mulch to diminish the erosion of summer storms and to capture runoff for newly-establish vegetation. Regardless of the technique, Tetra Tech believes the revegetation costs are underestimated in Table 8-1 of the Mine Closure and Reclamation Plan.

11.0 AUDIT CONCLUSIONS

Tetra Tech sees no fatal flaws in the MIA or the PFS. Both documents are well reasoned and well supported technical reports. Tetra Tech recommends the following items prior to turning in the MIA or the PFS:

- Remove the visual percent calcite and sulfur values from the MIA;
- Conduct SPLP tests and sulphur speciation on the material tested for ABA (if this is not possible, test samples that are of the same rock type and near the prior ABA samples);
- Change the design of the WRD to reflect the correct proportion between PAG and Non-PAG waste; and
- Review and revise the revegetation plan.

All other recommendations are intended to prepare The Project for the Feasibility Study and to lay the groundwork for proper environmental management during construction and operations. Appendix C contains an NI 43-101 compliant sign-off sheet from Larry Breckenridge, P.E. for use on the MIA and the environmental sections of the PFS stating that the documents have been reviewed and are acceptable and technically valid to the extent that can be determined by the existing data.

12.0 RECOMMENDATIONS FOR FEASIBLITY-LEVEL STUDIES

Tetra Tech (through the GeoTrans Division) has prepared the following preliminary Scope of Work (SOW) and proposal for technical support to bring The Project up to Feasibility Study level on several key environmental issues. The Proposal was requested on the 30th of March by Erik Fier, Chief Operating Officer of SilverCrest Mines Inc. (SilverCrest) in response to comments made in the Audit performed by Tetra Tech. The SOW covers the following requested items:

- Build a surface water monitoring system;
- Characterize and predict groundwater impacts locally (within the concession boundaries);
- Characterize and predict groundwater impacts regionally (impacts to the Sonora River Valley);
- Bring the geochemical characterization up to Feasibility Study level; and
- Set up an environmental data management system.

The Project will require a field program in May. Based on starting The Project in May, the Geochemical Feasibility Study could be finished by the end of 2008. This delay is due to the 20-week run time for kinetic tests. The hydrogeology portion of the FS could be finished by the end of July.

12.1 Construct the Surface Water Monitoring System

Tetra Tech has a generalized design for the weirs suggested in the Audit (see Figure 12.1). However, this design must be modified to fit the specific stream bed and anticipated flow requirements. This modification will require the following from SilverCrest:

- The exact location of the weir;
- A detailed survey of the streambed cross section; and
- An assessment of the streambed foundation material.

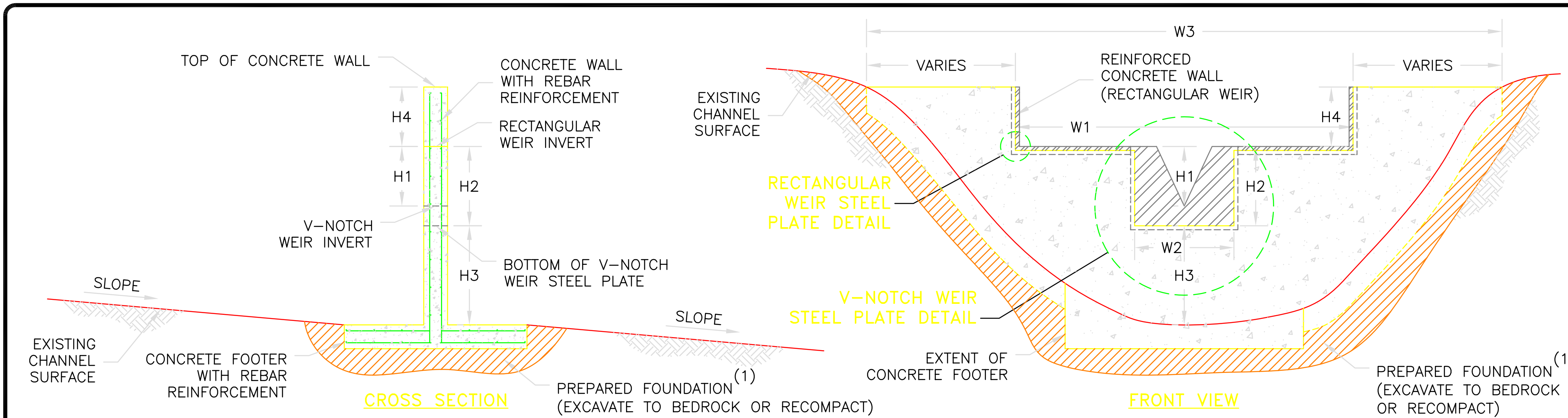
Tetra Tech will customize the design, point out key design issues, work up a materials list, and make recommendations on the construction techniques to be used. Tetra Tech will also design the instrumentation system and help select the pressure transducers and data recorders that will automatically measure the stream flow. Tetra Tech personnel will oversee the construction of the weirs and the installation of the instrumentation system. Tetra Tech personnel will also train site personnel to collect the data, troubleshoot the instruments, and process the data.

12.2 Local Groundwater Characterization and Impact Prediction

Despite the significant depth to groundwater within The Project area (see Section 5.1), SilverCrest must characterize the groundwater system.

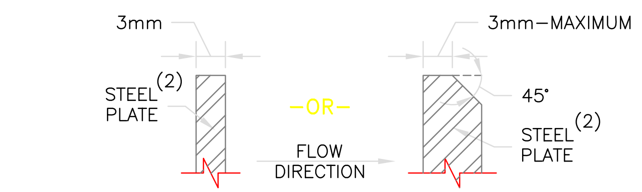
12.2.1 *Aquifer Testing*

SilverCrest plans to install several monitoring wells around The Project. Tetra Tech assumes that the wells will be installed prior to the mobilization for the field program, and that the wells will eventually encounter groundwater. These wells will be slug-tested by Tetra Tech to determine the aquifer properties. Tetra Tech personnel will bring pressure transducers to the field to conduct rising-head slug tests to determine the aquifer conductivity.



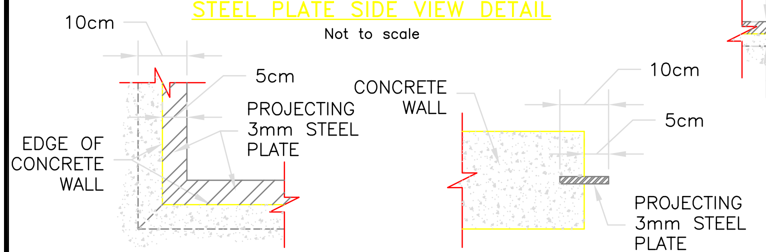
COMPOUND WEIR SCHEMATIC

Not to scale



STEEL PLATE SIDE VIEW DETAIL

Not to scale



RECTANGULAR WEIR STEEL PLATE DETAIL

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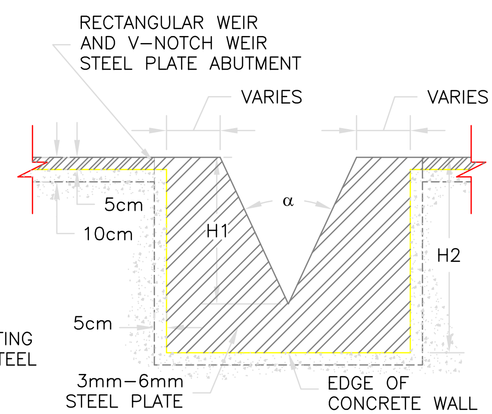


V–NOTCH WEIR STEEL PLATE DETAIL

Not to scale

STATION	LOCATION	H1 (m)	H2 (m)	H3 (m)	H4 (m)	W1 (m)	W2 (m)	W3–min. (m)	α
1	EXAMPLE 1	0.3	0.6	1.2	0.6	12.0	1.2	14.4	90°
2	EXAMPLE 2	0.3	0.6	0.7	0.6	13.5	1.2	15.9	90°
3	EXAMPLE 3	0.4	0.7	0.4	0.5	9.5	1.0	11.5	45°
4	EXAMPLE 4	0.4	0.7	0.4	0.6	11.6	1.0	14.0	45°
5	EXAMPLE 5	0.3	0.5	0.3	0.5	7.5	1.0	9.5	45°
6	EXAMPLE 6	0.3	0.6	0.6	0.5	2.5	0.85	4.5	45°

NOTES:

1. UNCONSOLIDATED SEDIMENT AND LOOSE ROCK SHOULD BE REMOVED TO BEDROCK (IF POSSIBLE) OR FOUNDATION MATERIAL COMPACTED TO MINIMIZE SETTLEMENT OF CONSTRUCTED WALL. IF COMPETENT ROCK IS ENCOUNTERED IN ABUTMENTS OR FOUNDATION, A WATER–TIGHT SEAL SHOULD BE CONSTRUCTED TO MINIMIZE LEAKAGE.

2. STEEL PLATE TO BE USED FOR SHARP–EDGED WEIR CAN BE THICKER THAN 3mm; HOWEVER, DOWNSTREAM EDGE SHOULD BE BEVELED TO PROVIDE MAXIMUM FLAT SURFACE OF 3mm.

TITLE:	Generalized Design for Weir Construction
LOCATION:	SilverCrest Mines Inc.
TETRA TECH, INC	CHECKED: LB; DRAFTED: RMK; FILE: ; DATE: 3 Apr 08
FIGURE:	12.1

12.2.2 *Pit Dewatering and Groundwater Resource Impact Prediction*

The conductivity determined from testing will be used in analytical models to predict the following:

- The potential dewatering requirements of the Phase III pit;
- The potential impacts of mining on groundwater resources resulting from dewatering; and
- The potential for groundwater quality degradation upon mine closure using the results from geochemical models (see Section 12.4.1.4).

The results from the modeling will be included in the Feasibility Study and in the Closure Plan.

12.2.3 *Predict Post-Closure WRD Leachate Rates*

There is the potential that impacted leachate from the WRD will impact local groundwater quality. To quantify the potential impacts, Tetra Tech will predict the quantity and quality of leachate from these structures. The quality of the leachate will come from geochemical models (see Section 12.4.1.4) and the quantity of water will come from variably saturated groundwater models.

Tetra Tech has predicted the post-mining leachate production rates in similar WRDs in the Northern Sonora desert south of Tucson, Arizona. Tetra Tech would like to transfer the existing models from this site to simulate the conditions at The Project. This will provide a quick and inexpensive model of leachate flow volume and travel time through the WRD. These values are a key input to subsequent geochemical models of the WRD leachate water quality.

12.3 Regional Groundwater Characterization and Impact Prediction

As mentioned in Section 5.2, The Project will use exclusively groundwater resources for operations. These water resources must be characterized to ensure that they will last for the mine life, survive climate variations, and adjust to meet potential increased water needs.

12.3.1 *Aquifer Testing*

The first stage is to conduct a multiple-well aquifer test of Supply Well No 2. This test will require long-term pumping of the supply well and observation of the water level in the pumping well and at least two observation wells. Tetra Tech will design the aquifer test to ensure that the observation wells are properly located, the proper sized pump is selected and installed for the test, and the correct pumping rate is selected. Ideally, the aquifer test should have the following characteristics:

- A constant pumping rate that is sustainable for the duration of the test;
- A pumping rate that sufficiently stresses the aquifer to create the largest possible zone of drawdown; and
- Observation wells located within the zone of drawdown that observe the conditions in the middle of the zone and at the edge of the zone, but all with sufficient drawdown to be distinct.

Tetra Tech will use simple computer simulations will help determine the well locations and the pumping rate prior to the mobilization of the drill rig and the installation of observation wells. Tetra Tech will scope out the pump and the observation wells and will assist in the required logistics. Tetra Tech does not expect pumps, generators, or pump controls to be difficult to obtain in Sonora due to the regional experience with irrigation systems. Tetra Tech will assist with water measurement and water discharge piping, as needed.

Tetra Tech will oversee the aquifer test and will make a determination in the field as to the preferred length of the test. The test will be at least 72 hours, but may be run longer based on the performance of the aquifer. Tetra Tech staff will oversee the test and collect the required data. The test will also require 24-hour coverage from a pump technician. Tetra Tech will process the data to get aquifer properties, optimal well production rates, and assessments as to the viability of long-term water resource exploitation.

12.3.2 *Groundwater Modeling*

Groundwater modeling will be performed to predict the regional impacts of extracting groundwater for the Project. Tetra Tech will take the results from the aquifer tests and will create a groundwater model to determine the following:

- The long term viability of groundwater extraction;
- The drawdown caused by long term groundwater extraction; and
- The impacts groundwater extraction may have on local surface and groundwater users.

The model will be constructed using MODFLOW/SURFACT and a simplified grid that will consider only the Sonora River alluvial deposits. The model will simulate mine life and the aquifer recovery post-closure. The model will simulate all significant sources of recharge and discharge, and will be calibrated to match the existing database of water levels, climate data, and river flow measurements. The model will also be adjusted to determine the impacts of drought on water resource availability. In addition, the model will be expandable if a more advanced simulation is required.

12.4 Geochemical Waste Characterization

Understanding the geochemical nature of the water-rock interactions within the waste rock dump, the heap leach, and the pit wall is critical in assessing the potential for adversely affecting the quality of surface water and groundwater. There are two different classes of mine drainage that might impact water quality:

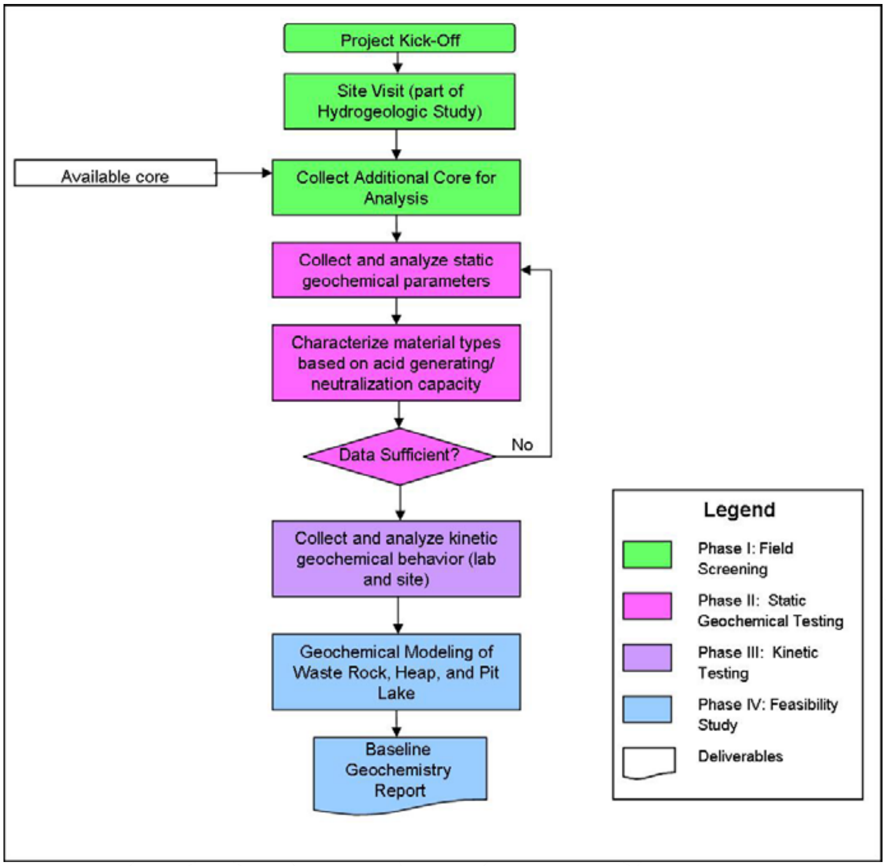
- Alkaline rock drainage (typically contains elevated total dissolved solids (TDS); oxy-anions such as arsenic and selenium; and metals that remain soluble at neutral pH, such as zinc, nickel, and sometimes copper); and
- Acid rock drainage (usually contains elevated aluminum, iron, manganese, copper, and other metals).

This section describes the basic science pertaining to the formation and mitigation of alkaline rock drainage and ARD. Appendix B describes the geochemistry of alkaline rock drainage and ARD in detail.

12.4.1 *Scope of Work*

The following sections present a detailed description of the proposed SOW to complete a Feasibility Study level geochemical study. Figure 12.2 shows a flowchart of the proposed geochemical study. The project phasing is flexible and contains many feedback loops to account for new samples coming from the on-going drilling programs, and to adjust the scope to fill data gaps as they are identified.

Figure 12.2: Geochemical Characterization Project Organization



12.4.1.1 Phase I: Field Screening

The first task associated with this SOW will be to familiarize the Tetra Tech geochemists with the site and to determine what existing information can be used in the study. A portion of this work has been completed and is reported in Section 6.0. Tetra Tech specialists will inspect the core collected as part of the exploration activities. It is anticipated that this site visit will be combined with the time required for the hydrogeologic study. The goals of this phase are as follows:

- Learn about the site and the project;
- Gain familiarity with local geology and alteration;
- Review the core logging techniques; and
- Screen core for static tests.

The main task remaining under this phase of the geochemical study is to select additional samples to submit for static testing. Additionally, during this phase Tetra Tech will build a comprehensive geochemical database to store and manage all the information generated in the study (See Section 12.5).

12.4.1.2 Phase II: Static Testing

Static testing will form the foundation of the Santa Elena geochemical database. The testing program is designed to begin the characterization process of the waste rock materials, the heap leach material, and the pit lake. The earliest stages of geochemical testing are focused on broad spectrum characterization, and a limited number of samples of each rock type. This will provide a sufficient number of samples to identify the risk, but not to completely define the risk. This is the current state of the geochemical characterization of the Santa Elena project. Table 13.1 presents a guide to the approximate numbers of geochemical samples that need to be collected at each phase of the mine development. Based on this, the project would require approximately a total of 100 samples to complete a Feasibility Study level characterization.

Table 12.1: Recommendations for Development of Geochemical Study

Stage of Mine Development	Program Phase	Number Recommended for Project State		Decision Possible
		Drill Holes	Static Tests	
Mineral Target Definition	Exploration	10	0	None
Mineral Target Delineation	Pre-Feasibility Study	~50	~1 - 2 dozen	Is there geochemical risk? Yes or No
Resource Definition	Feasibility Study	>50	~100	Define geochemical behavior by rock type
Permitting	Define Environmental Impact	~100	>100	Link geochemical behavior to spatial mine models
Operations	Operations	100+	100s	Manage geochemistry on day-by-day basis

The static testing program will include Acid Base Accounting (ABA), net acid generation pH (NAG pH), whole rock analysis, synthetic precipitation leaching procedure (SPLP), and meteoric water mobility procedure (MWMP) analyses methods. These methods are described in detail in Appendix B.

12.4.1.3 Phase III: Kinetic Geochemical Testing and Analysis

Static tests will determine which rocks have the potential to produce acid or the potential to leach metals; kinetic tests determine how fast acid will be produced and also how fast the available neutralization potential of a given sample will be consumed. The following factors influence the speed of pyrite oxidation:

- The size of a sample particle and its exposed surface area;
- The dominant form of sulfide;
- The size and crystal form of the sulfide minerals within the sample;
- The level of sample alteration before testing;
- The presence of oxygen and water;
- The pH of the solution; and
- The presence of *T. ferrooxidans* that catalyze ARD reactions.

These factors make predicting the ARD reaction rates potentially challenging. As a result, the best technique to determine geochemical kinetics is through long-term testing and observation. Laboratory humidity cell tests are conducted in a licensed analytical laboratory. This ASTM method (ASTM, 1996) stipulates that about 1 kilogram of prepared rock is placed in a non-reactive column and exposed to alternating cycles of moist and dry air. After 6 days of forced air movement through the column, the sample is flushed with 500 milliliters of dionized water. The resultant leachate is analyzed for selected indicator parameters (e.g. pH, conductivity, acidity/alkalinity, sulfate, calcium, magnesium, and iron) each week and for soluble metals biweekly. Cells are typically run for 20 weeks, but many regulators request longer tests.

The purpose of humidity cell testing is to create optimal conditions for sulfide weathering by exposing the sample to abundant water and oxygen. In samples with neutralization potential, kinetic testing determines the rate of consumption and if the sample will turn acidic. The point at which a sample turns acidic is when the acid-production potential has consumed the available neutralization potential. Long term testing is required to find this point.

As mentioned in Section 6.0, it is also recommended that leach columns be constructed on-site. Larger scale on-site kinetic tests can be performed at the mine site under controlled conditions. Because of the important effect of rock size and surface area, sulfide and carbonate distribution, temperature, hydrology, and bacterial strains on the reaction kinetics, the on-site columns should be considered. This will ensure that the rock fabric, interstitial water and gas content, temperature, and microbiological conditions are nearly identical to those that will be observed in the mine facilities during operation. Because of the lack of precipitation, on-site samples may be leached with meteoric water or distilled water periodically in order to create adequate amounts of leachate. In addition, a set of tests may be set up that are leached only by precipitation to monitor the formation and release of salts under natural conditions. As with laboratory kinetic tests, the leachate from the on-site tests will be analyzed for inorganic components and metals.

12.4.1.4 Phase IV: Feasibility Level Geochemical Study

Using the results of the geochemical testing, geochemical models will be developed to predict the leachate chemistry in the WRD, and the chemistry of the water in the post-closure pit lake. Obviously, if the groundwater study determines that the pit will be dry, no pit lake modeling will be performed.

The geochemical modeling will be conducted using PHREEQC (Parkhurst and Appelo, 1999), a chemical equilibrium model supplied by the USGS. PHREEQC is able to process multiple equilibrium and mixing reactions to produce the final chemical speciation. It is able to do the following:

- Process the ARD and neutralization reactions;
- Account for chemical precipitation or sorption of key constituents of concern and removal from solution;
- Simulate groundwater and surface water chemical mixing;
- Simulate the kinetics of ARD production; and
- Estimate chemical makeup of the leachate discharging from the heap, tailings, waste rock pile, or open pit over time.

In an arid environment, the key factor controlling the rate of pyrite oxidation will be the availably of water. The combined use of hydrologic and geochemical models (See Section 13.2.3) will account for relevant geochemical, climactic, and hydrologic factors in determining the leachate chemistry over time. In addition, the chemical interaction of mine drainage with surface or groundwater receiving waters will also be predicted.

Tetra Tech will report the information collected during the static and kinetic sampling and the approach and results of the modeling in a Feasibility Study geochemical report. The report will describe the following:

- The geochemical characteristics of the major rock types;
- The current geochemical condition of the site;
- An identification of potential geochemical risks;
- A prediction of potential water quality impacts resulting from geochemical reactions in the WRD and the pit lake; and
- Recommendations for future testing.

12.5 Data Management Systems

Tetra Tech will assist Ms. Aguayo in creating a robust environmental data management system to store the Santa Elena Environmental Data. This database will be integrated, relational, and searchable, and will greatly decrease the time required to produce reports, graph trends, and find information. This will also provide a useful tool to manage the environmental and geochemical data for The Project through the entire mine life. Tetra Tech staff will work with SilverCrest, Adobe y Sol, and Ms. Aguyo in Mexico to ensure that the database meets the needs of all parties involved in The Project.

12.6 Revegetation Studies

Tetra Tech will advise SilverCrest on the construction and operation of revegetation test cells. These cells are an effective means to determine the depth of topsoil required to meet the revegetation goals in the Closure and Reclamation Plan. The test cells will be four 1 meter by 1 meter square boxes, 1.5 meters deep. The boxes will be constructed from welded metal with corrosion-resistant paint. The boxes will be water tight, but will have a drainage valve at the bottom so leachate can be measured. The boxes will have holes drilled in them so that runoff can exit the boxes and no precipitation will pool on the surface of the soil. The boxes will be filled with mine waste material with a crush size similar to what will be placed on the WRDs. Topsoil of varying thickness will be placed on the crushed rock. Tetra Tech recommends 10 cm, 30 cm, and 45 cm of topsoil. The material in the boxes will be graded to the same specifications as the top of the closed WRDs, and the runoff drainage holes will be placed at the level of the topsoil. The topsoil will be revegetated according to the Reclamation Plan. These cells will accomplish the following goals:

- They will provide on-site data on the effectiveness of revegetation under varying topsoil depths; and
- They will provide detailed information as to the water balance across the WRD cover and will help calibrate the WRD leachate model (see section 12.4.1.4).

Tetra Tech will oversee the installation of these boxes while on-site.

13.0 COSTING

Table 13.1 shows the costs for this work. The following assumptions were made in the costing:

- Tetra Tech has budgeted $2000 for travel expenses. If expenses are above or below $2000, the total cost of the proposal will be adjusted accordingly.
- SilverCrest will provide transportation to, from, and around the site. If required, Tetra Tech will rent a pickup truck and will add the cost of the truck to the proposal.
- Because of SilverCrest's account with the hotel in Banamichi, Tetra Tech assumes that SilverCrest will cover the lodging and food costs while Tetra Tech is on-site. If desired, Tetra Tech will add these expenses to the contract.
- Travel days will be billed as 8-hour days regardless of the actual travel time. Tetra Tech staff will review The Project documents to the extent possible during the flight.
- The travel costs for collecting the static testing samples is included in the hydrogeology study. Only additional time to complete the geochemical investigation is included under this task.
- Pressure transducer expenses for the weirs are $8289 (see notes below);
- No subcontract costs are assumed in this estimate. SilverCrest will contract directly with the laboratory performing the geochemical testing, with the driller for installing observation wells, and with the pump contractor for supplying a pump and power for the aquifer testing.
- Tetra Tech will bring all required field instruments to the site for conducting the aquifer tests.
- Tetra Tech will purchase transducers and data loggers for the surface water monitoring system and will bring them to the site.
- Tetra Tech will charge a 10% mark-up on expenses.
- The labor rates included in our proposal are valid through September 28, 2008; and
- All costs are in net USD after taxes.

Table 13.1:Costs for Feasibility-Level Groundwater and Geochemistry Work Plan

Item	Tasks	Larry Breckenridge		Amy Hudson		Kylee Augustino		Drafting		Expenses	Total Labor	Total
		hrs	Cost/h $156	hrs	Cost/h $134	hrs	Cost/h $75	hrs	Cost/h $89			
1	**Project Management, Travel**	40	$6,240			16	$1,200			$4,000	$7,440	**$11,440**
2	**Monitor Surface Water**											
	Design Weirs	8	$1,248				$0	16	$1,424		$2,672	$2,672
	Oversee Installation	16	$2,496				$0				$2,496	$2,496
	Instrument Weirs	24	$3,744				$0			$8,289	$3,744	$12,033
	Data Processing, Training	16	$2,496			16	$1,200				$3,696	$3,696
	Task Subtotal											**$20,897**
3	**Groundwater Characterization**											
	Single-Well Aquifer Tests	8	$1,248			40	$3,000			$77	$4,248	$4,325
	Multiple-Well Aquifer Tests	16	$2,496			50	$3,750			$156	$6,246	$6,402
	Data Analysis	4	$624			24	$1,800				$2,424	$2,424
	Impact Prediction	24	$3,744	8	$1,072	60	$4,500	8	$712		$10,028	$10,028
	Mine Waste Leachate Model	8	$1,248	32	$4,288						$5,536	$5,536
	Feasiblity Study Groundwater Report	32	$4,992	4	$536	24	$1,800				$7,328	$7,328
	Task Subtotal											**$36,043**
4	**Geochemical Waste Characterization**											
	Field Screening	4	$624	16	$2,144	40	$3,000				$5,768	$5,768
	Static Testing			40	$5,360	80	$6,000			Lab Not Inc.	$11,360	$11,360
	Kinetic Testing			24	$3,216	40	$3,000				$6,216	$6,216
	Waste Rock Model			40	$5,360						$5,360	$5,360
	Pit Lake Model			80	$10,720						$10,720	$10,720
		4	$624	40	$5,360	24	$1,800				$7,784	$7,784
	Task Subtotal											**$47,208**
5	**Additional Tasks**											
	Enviromental Database Management	4	$624			24	$1,800				$2,424	$2,424
	Revegetation Test Cells	8	$1,248			8	$600				$1,848	$1,848
	Task Subtotal											**$4,272**
	SUB-TOTAL	216	$33,696	284	$38,056	446	$33,450	24	$2,136	$12,522	$107,338	**$119,860**

Based on our experience at other sites, Tetra Tech recommends that SilverCrest purchase LevelTroll pressure transducers for the V-notch weirs. Table 13.2 has the price of the transducers:

Table 13.2: Costs Pressure Transducers

Pressure Transducer Costs			
Item	**Cost/unit**	**Units**	**Total**
Level Troll Pressure Transducer	$1,499	4	$5,696
Vented Cable	$284	4	$1,077
Rugged Reader	$1,595	1	$1,515
Communication Cable	$325	1	$309
Price with Rugged Reader			$8,289
Price with Laptop			$7,082

Two prices are quoted. One uses the Rugged Reader, a portable computer that is designed for field use. It is a specialized piece of equipment that allows for the easy downloading of the transducer data. Only one would be required for The Project. The Rugged Reader is recommended, but the data can also be downloaded using a laptop computer with a communication cable. This method is a bit more difficult, but is an acceptable alternative and saves $1300. Due to the high price of these units, Tetra Tech will waive the 10% markup on this equipment and will pass on the 5% discount we receive from our supplier.

14.0 PROJECT TEAM QUALIFICATIONS

Relevant staff resumes have been included in Appendix D. The work will be performed by Larry Breckenridge, Kylee Augustino, and Amy Hudson. Kylee Augustino is a staff hydrogeologist who is functional in Spanish.

15.0 REFERENCES

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APPENDIX A
PHOTOGRAPHIC LOG

Photo 1: Small Mine Adit

Photo 2: Slot Cut for Vein Extraction

Photo 3: Open Shaft

Photo 4: Underground Workings

Photo 5: View from the mine portal to the rest of the project. Prior Mill Facility (now used for Core Storage)

Photo 6: Discharge from pump placed in lower mine workings.


Photo 7: Supply Well No. 2


Photo 8: Supply Well No. 1

Photo 9: Supply Well No. 1

APPENDIX B
GEOCHEMICAL BACKGROUND

1.0 Geochemical Background

1.1 Alkaline Rock Drainage

Alkaline rock drainage is common throughout the carbonate rich systems, and is particularly prevalent in the Sonoran Desert. Alkaline rock drainage does not have as many potential environmental hazards as ARD, but these waters can contain high levels of TDS, arsenic, selenium, and at times other metals that are mobile under neutral conditions (zinc, nickel, copper, etc.).

Arsenic and selenium are naturally occurring elements that are typically associated with sulfide ore deposits. Arsenic concentrations are naturally elevated in soils and groundwater in many locations with widespread volcanic activity. Arsenic in water is typically in the form of their oxy-anions, with the dominant form being arsenate ($HAsO_4^{2-}$ and $H_2AsO_4^{1-}$) in oxygenated waters and arsenite ($HAsO_3^{2-}$) in reducing waters. Both forms (but especially arsenate) can adsorb onto the surfaces of amorphous ferric hydroxides and clay; however, under alkaline conditions the anions tend to desorb and become mobile. Another consideration is the amount of iron in the system. If the pH of the system is oxidized and has neutral to slightly acidic levels and amorphous ferric hydroxides are present, the arsenic will strongly adsorb.

The dominant form of selenium in oxygenated waters is selenate (SeO_4^{2-}) and hydrogen selenide (HSe^-) in reducing waters. As with arsenic, selenium is mobile at alkaline pH, and a decrease in pH will allow the adsorption of the element to amorphous ferric hydroxides.

1.2 Acid Rock Drainage

ARD commonly occurs in mine waste facilities with sulfide-enriched mine waste through the oxidation of pyrite (or other sulfide minerals) as it is exposed to oxygen and water. ARD-impacted waters tend to have pH levels in the range of 2 to 4, and often contain elevated concentrations of dissolved metals. The following chemical reactions describe the generation of ARD due to the oxidation of pyrite (FeS_2) and the formation of sulfate (SO_4^{2-}), amorphous ferric hydroxide ($Fe(OH)_{3(s)}$), and acidity (H^+).

1. $4FeS_2 + 15O_2 + 14H_2O \leftrightarrow 4Fe(OH)_{3(s)} + 8SO_4^{2-} + 16H^+$ (the primary reaction that occurs above a pH of 5, where oxygen is the oxidant)
2. $FeS_2 + 14Fe^{3+} + 8H_2O \leftrightarrow 15Fe^{2+} + 2SO_4^{2-} + 16H^+$
3. $Fe^{2+} + {}^1/_4O_2 + H^+ \leftrightarrow Fe^{3+} + {}^1/_2H_2O$

From: Bethke, 1996; Deutsch, 1997; Drever, 2002; Mills, 1995; and Office of Surface Mining, 2005

Reactions 2 and 3 occur below a pH of 3.0. Reactions 2 and 3 occur kinetically faster than Reaction 1. This is because ferric iron (Fe^{3+}) tends to be more abundant than ferrous iron (Fe^{2+}), making these reactions self-catalyzing. Even in environments that are oxygen limited, the ARD reaction can continue as shown in Reaction 2, if there is sufficient ferric iron in the system. In addition, the molar ratio between pyrite and acidity is not the same, with Reaction 1 producing four moles of acidity for each mole of pyrite oxidized, and Reaction 2 producing sixteen moles of acidity per mole of pyrite oxidized.

The oxidation of ferrous iron to ferric iron in Reaction 3 requires bacterial activity to promote rapid acid generation, which typically occurs in low pH waters. The critical bacteria are usually site-specific strains of *Acidi-Thiobaccillus ferrooxidans* that utilize the ferrous iron as an electron acceptor in their metabolism instead of oxygen. These bacteria do not require organic carbon as an energy source and obtain their nutritional needs from the atmosphere (nitrogen, oxygen, carbon dioxide, and water) and from minerals (sulfur and phosphorus). While these bacteria are not catalysts by true definition, they do act as accelerating agents in the generation of ARD.

Acidity formed by either Reaction 1 or coupled Reactions 2 and 3, is often neutralized by other minerals contained in mined rock. For example, calcite or dolomite (Reactions 4 and 5) rapidly neutralize acidity and buffer the mine water at a pH of around 6.5 to 8.0. Many other minerals (e.g. anorthite [Reaction 6]) may also neutralize acidity, but these reactions are often kinetically slow and the pH will be buffered at lower levels (e.g. pH of 5.5 or less).

4. $CaCO_3 + 2H^+ \leftrightarrow Ca^{2+} + CO_2 + H_2O$ (below a pH of 6)
5. $CaCO_3 + H^+ \leftrightarrow Ca^{2+} + HCO_3^-$ (above a pH of 6)
6. $CaAl_2Si_2O_8 + 2H^+ + H_2O \leftrightarrow Ca^{2+} + Al_2Si_2O_5(OH)_4$

From: Bethke, 1996; Deutsch, 1997; Drever, 2002; Mills, 1995; and Office of Surface Mining, 2005

ARD can also be mitigated by controlling the oxygen available to the pyrite. As can be seen from Reactions 1 and 3, oxygen is a critical reactant. Removing this component will cause the reactions to slow or come to an end. To accurately predict the geochemical behavior of oxygen-limited ARD reactions, the following kinetic rate equation will be applied to calculate the rate of pyrite oxidation based on oxygen concentrations available:

$$R = 10^{-10.19}\left[O_{2(aq)}\right]^{0.5}\left[H^+\right]^{-0.11}$$

Where:

R = Rate of pyrite oxidation (mol/dm^3/sec)

$[O_{2(aq)}]$ = Concentration of dissolved oxygen available to pyrite (molality)

$[H^+]$ = Concentration of hydrogen ions/acidity (molality)

From: Williamson and Rimstidt, 1994, (Modified for PHREEQC units)

It is evident from the equation above that reducing available oxygen will significantly reduce the rate of pyrite weathering and acid formation in the mine facilities. Mitigating ARD to maintain a slightly higher pH is beneficial because below pH 3, ferric iron will begin to oxidize other sulfide minerals (Reaction 3). Preventing the oxidation of pyrite by ferric iron is a key goal of the planned mitigation measures because it lowers the total acidity of the leachate, and it reduces the concentrations of dissolved heavy metals.

1.3 Geochemical Testing

1.3.1 Acid Base Accounting

ABA testing is a standard procedure used to determine if a rock type has the potential for producing ARD. The modified Sobek method (Sobek et al, 1978) should be used for the testing. ABA testing produces two numbers: Acid-generating Potential (AP) and Acid-neutralization Potential (NP). Acid generation is determined from the abundance of sulfide sulfur and the acid neutralization capacity is measured through an acid consumption method.

The NP and AP are expressed in units of equivalent tonnes of calcium carbonate ($CaCO_3$) per kilotonne of rock (T $CaCO_3$/KT rock). In theory, a sample would be acid-generating if its net neutralization potential (NNP = NP-AP) was less than 0; however, the risk of ARD has been found to be highest for samples with NNP values less than -20 T $CaCO_3$/KT rock and is low when the NNP is greater than 20 T $CaCO_3$/KT rock (Price, 1997). The ratio of NP to AP, the neutralization potential ratio (NPR), can also be used to assess ARD risk. An NPR greater than 3 is thought to have a low ARD risk while samples with an NPR less than 1 have a high ARD risk (Price, 1997). Table 1 presents the generally accepted ranges of ABA testing values and their associated characterization.

Table 1: ARD Potential Based on ABA Testing

Potential for ARD	NPR	NNP	Comments
Likely Acid Generating	Less than 1	Less than -20	Define ARD rate and development of management plan
Moderate/Uncertain Acid Generation	Greater than 1 and Less than 3	Greater than -20 and Less than 20	Additional testing using kinetic test methods
Non-Acid Generating	Greater than 3	Greater than 20	No further testing required

The first two groups (likely acid generating and moderate/uncertain acid generation) are commonly referred to as potentially acid generating (PAG). These characterizations typically require further testing to better define the behavior and development of management techniques to prevent environmental impacts.

However, ABA testing is not the only required screening mechanism for acid generation potential. Total sulfide is critical because at low concentrations of sulfide and calcite, NPRs can be deceiving. For example, a sample with nearly no neutralization potential and a very small sulfide concentration could have an NPR ratio far below 1:1, but would in reality produce an insignificant quantity of ARD. Additionally, the ABA testing includes a measure of the materials paste pH and sulfate concentration as an indication of its current behavior.

1.3.2 NAG pH Testing

Another analysis method included in the static testing program is the NAG pH (Stuart, 2005). This static testing method involves the addition of hydrogen peroxide to a sample and determination of the pH after 24 hours. NAG pH levels below 4.5 are usually characterized as acid generating while values above 6 are characterized as non-acid generating.

1.3.3 Whole Rock Analysis

Whole rock analysis determines the elemental composition of the rock sample. This analysis technique determines which metals are present in the rock, and therefore may be present in the leachate. Special attention is paid to those components that can increase acid generation or neutralization potential. This evaluation coupled with ABA testing provides a powerful characterization tool for ARD conditions.

1.3.4 SPLP Testing

SPLP was developed to determine if materials will leach pollutants under the effects of meteoric water percolating through the material (EPA, 1994). SPLP uses a sulfuric and nitric acid lixiviant with a pH of 5.0 to simulate the effects of actual precipitation. The resulting leachate can be analyzed for inorganics (i.e. primary metals, major cations and anions, radionuclides, etc.), organic compounds (i.e. cyanide species, volatile compounds, and semi-volatile compounds), and indicator/physical parameters (i.e. pH, conductivity, and temperature).

1.3.5 MWMP Testing

The MWMP testing procedure (ASTM, 2002) is similar to the SPLP method. This method uses a nitric acid lixiviant (versus the sulfuric and nitric acid lixiviant used for SPLP tests) with a pH between 5.5 and 6.0 that is maintained in a saturated column. The lixiviant is sampled on a 1:1 basis after running through the saturated column. In contrast, the SPLP protocols use a 20:1 ratio on an unsaturated sample. As with the SPLP tests, the leachate resulting from the MWMP tests should be analyzed for inorganic elements, organic compounds, and indicator parameters.

APPENDIX C
CERTIFICATE OF QUALIFICATIONS AND SIGN-OFF

J. LARRY BRECKENRIDGE, P.E.

I, J. Larry Breckenridge, P.E. as a reviewer of this report entitled "Manifestacion de Impacto Ambiental" (MIA) prepared by Patricia Aguayo and dated March 2008 (Aguayo, 2008), and the Draft Pre-Feasibility Study for the Santa Elena Project Prepared by Sol y Adobe, and dated February 2008 (PFS); do hereby certify that:

1. I am a Senior Engineer with Tetra Tech. My office address is 1 Monarch Drive, Suite 101, Littleton, MA, USA, 01460.
2. I am a graduate of Dartmouth College, in 1995 with a Bachelor of Arts degree in Environmental Science and Engineering, and a Graduate of the Colorado School of Mines in 1997 with a Masters of Science in Environmental Science and Engineering.
3. I am registered as a Certified Professional Engineer registered with the State of Colorado (Reg.# 38048). I have worked as an environmental engineer for a total of 11 years since my graduation. My relevant experience for the purpose of the Technical Report is:
    - I have conducted numerous hydrogeologic, environmental, and geochemical investigations of precious and base metal mine sites including:
        - Author of the hydrogeology and geochemistry sections of the feasibility study and Environmental Impact Statement for the Brisas Del Cuyuni project in Venezuela. The project included:
            1. Hydrogeologic characterization
            2. Geochemical characterization
            3. Hydrogeologic and geochemical modeling to predict mining impacts (for Gold Reserve Inc.)
        - Author of the groundwater and surface water Environmental Impact Statement for the El Dorado Gold mine in El Salvador (for Pacific Rim Mining).
        - Author of the Mine Closure and Reclamation Plan for the Cerro Bayo and Mina Martha Mines in Chile and Argentina (for Coeur d'Alene)
4. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101), and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of National Instrument 43-101.

5. I visited the Santa Elena Property in March 2008 and investigated the site conditions, examined the core, and toured the prior underground workings.
6. I am responsible for the review of the Technical Reports listed above.
7. I am independent of the Issuer applying the test set out in Section 1.4 of National Instrument 43-101.
8. I have had no prior involvement before March 2008 with the property that is the subject of the Technical Report.
9. I have read National Instrument 43-101F1, and the Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.
10. To the best of my knowledge, information, and belief, as of the date of the report, the MIA and PFS contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Dated the 4th day of April 2008

J. Larry Breckenridge

J. Larry Breckenridge, P. E.

COLORADO REGISTERED PROFESSIONAL ENGINEER J. LARRY BRECKENRIDGE 38048

APPENDIX D
RESUMES

LARRY BRECKENRIDGE, PE

Hydrogeologist / Senior Engineer

EDUCATION

MS, Environmental Science and Engineering, Colorado School of Mines, 1997
BA, Environmental Engineering and History, Dartmouth College, 1995

LANGUAGES

English, Spanish (fluent)

REGISTRATIONS/CERTIFICATIONS

Professional Engineer: Colorado (#38048, 2003)

EXPERIENCE SUMMARY

Mr. Breckenridge has 11 years of experience in mining hydrogeology, water resource development, and environmental cleanup. His work includes a diverse array of projects, including discovering a 7,000-gallon per minute (gpm) sustainable groundwater resource for silver mine in the Bolivian desert, modeling contaminant transport at an inactive uranium mill in Texas, evaluating the hydrologic containment of an unlined tailings storage facility at a Guatemalan gold mine, and creating a geochemical model of a mining pit lake. He is also an expert in groundwater modeling using a variety of modeling platforms. Mr. Breckenridge is skilled at written and verbal communication in English and Spanish, and he is experienced in hydrogeological and geotechnical fieldwork at sites in the U.S. and Latin America.

PROJECT EXPERIENCE

Mine Hydrogeology

- ***Brisas del Cuyuni Gold/Copper Project, Gold Reserve, Inc., Bolivar Province, Venezuela***. As a Senior Engineer, designed an optimized pit dewatering system for the 2.2-square kilometer, 400-meter deep Brisas del Cuyuni proposed copper/gold open pit mine. The design had several unique challenges including: very heavy (3.5 meters/per year) precipitation, variable geology, and a dynamic mine plan. The first phase of the project was conducting aquifer tests to determine aquifer properties and potential well yield followed by predictive groundwater modeling. Once the model was calibrated, the dewatering system was optimized to not only mitigate dewatering costs, but also to achieve sufficiently dry pit slopes to minimize geotechnical risks. (2005)

- ***Assarel Medet Copper Mine, Bulgaria***. Senior Engineer responsible for creating a hydrogeologic model of the dewatering system at the Assarel Medet open-pit copper mine. The mine had several pit-slope failures and contracted with Tetra Tech to investigate the slopes and determine if steeper pit slopes were possible. After developing a groundwater model that included the impacts of a drainage gallery, seasonal precipitation changes, and pit development, innovative water-management solutions were proposed and simulated in the model. The end result was a water management program that allowed for steeper pit slopes resulting in a savings of millions of tons of waste rock removal. (2005)

- ***Marlin Mine Tailings Storage Facility Hydrogeologic Containment, Montana South America, Guatemala.*** Project Engineer responsible for conducting a hydrogeologic characterization of the Marlin Gold Mine development in western Guatemala. The project involved an extensive field program with numerous core-drilled wells, packer tests, and single-well aquifer tests. After the data was collected, created a MODFLOW model to simulate the future hydrogeologic containment of the planned unlined tailings storage facility. Additional work was done in the area of the future open pit and underground workings to predict the potential groundwater inflows to the mine workings. Used results to design the containment system for the tailings storage facility, a dewatering system for the pit and underground mine, and as the basis for future environmental monitoring. (2004)

- ***Marlin Mine Water Supply, Montana South America, Guatemala***. As a Project Engineer, discovered and developed a 250-gpm water supply well in a challenging hard-rock, fracture controlled hydrogeologic system. Conducted a multi-phase exploration program including reconnaissance, geophysics, and pilot borings with packer tests before deciding on an optimal location with abundant conductive fractures. Installed well met client requirements for yield and water quality and, because of the well's location near the mill facility, saved the client the difficulty and expense of running a 10-kilometer water supply line from the nearest usable surface water resource. (2004)

- ***San Cristobal Mine Water Supply, Nor Lipez Province, Bolivia***. As a Project Engineer, discovered a sustainable 7,000 gpm water resource for a silver mine development in the high-elevation desert of Bolivia. Developed and installed pilot groundwater supply wells 100 to 200 meters in depth. The wells produced sufficient water to meet mine needs in an arid region where previous water investigations had failed. Managed a Spanish-speaking drill crew of 15 employees working on a 24-hour cycle. Overcame logistical problems, equipment problems, and drilling conditions to complete project within budget. Conducted multiple aquifer tests including step-drawdown, 60-day pumping, and 60-day recovery. Using the results of the test, created a MODFLOW model that predicted the sustainability of groundwater extraction. (2000 to 2001)

Mine Environmental Compliance/Geochemistry

- ***Brisas del Cuyuni Gold/Copper Project, Bolivar Province, Venezuela.*** Senior Engineer responsible for conducting a pit lake geochemical study on the post-closure pit lake for the Brisas del Cuyuni pit lake. The lake will be 450 million cubic meters in volume, 2.2 square kilometer, 400-meter deep lake with the potential to be impacted by acid rock drainage. The project entailed analyzing kinetic geochemical testing, limnological modeling, and geochemical predictive modeling using PHREEQC. (2006)

- ***Mine Environmental Impact Statement (EIS), El Dorado Project, El Salvador.*** Senior Engineer responsible for writing the surface and groundwater sections of a mine EIS. The project included fieldwork to collect data in support of the document. Tasks included drilling observation wells, conducting packer tests, predicting inflow into the future underground mine, and characterizing the hydrogeologic system. The results were integrated into the EIS and will form the basis of the mine's surface and groundwater resource protection plan. (2005)

- ***Mine Closure Planning, Cerro Bayo Mine, Southern Chile***. Senior Engineer responsible for writing a new closure plan for the Cerro Bayo underground silver/gold mine in Southern Chile. After a site visit, a new closure plan with a comprehensive cost estimate was created. The plan included: new Chilean regulatory requirements, reclamation of disturbed areas with significant environmental and aesthetic value, and a revised post-closure worker re-training program. Additionally, an innovative vertical bioreactor was proposed for treating acid rock drainage in a remote satellite pit at the headwaters of a pristine river. (2006)

- ***Brisas del Cuyuni Gold/Copper Project, Bolivar Provence, Venezuela***. As a Senior Engineer, manage the geochemical data for the Brisas del Cuyuni project. The project currently has 24 kinetic tests running to quantify acid rock drainage. Designed a second stage of the geochemical program to determine if potentially acid generating rock will be a long-term environmental liability. Additional studies are ongoing to prove that the tailings and tailings leachate are environmentally benign. (2004 to 2007)

- ***Conquista Former Uranium Mill, Conoco/Philips, Texas***. Project Engineer responsible for creating a groundwater flow and transport model to simulate the impacts of a closed uranium mill and a tailings disposal cell on the local and regional groundwater. The modeling involved the complex evaluation of site geochemistry and the impacts of a significant upgradient groundwater contamination source. (2003)

- ***Uranium Mill Groundwater Remediation, Navajo Nation, New Mexico, Arizona, and Utah***. Project Manager responsible for a technical support contract for the Navajo Department of Abandoned Mines (Navajo). The original scope of work included document review and data analysis to oversee the Department of Energy's (DOE) groundwater remediation of four abandoned uranium mills on Navajo land. However, at the request of the DOE and Navajo, the project has expanded to finalizing a comprehensive groundwater model, evaluating the geotechnical aspects of a tailings disposal cell, reviewing risk assessments, and designing remedial measures. The project requires working closely with Navajo, DOE, and stakeholders to ensure that remediation meets the goals of the Navajo Nation. (2001 to 2004)

Water Resources and Contaminant Hydrogeology

- ***Former Chemical Distribution Facility, UnoCal, Wichita, Kansas***. Staff Engineer responsible for conducting an extensive soil and groundwater chemical investigation to optimize an existing groundwater treatment system. Using GeoProbe™ and hydropunch techniques, multiple soil and groundwater samples were collected to further define the extent of a chlorinated solvent plume and to determine the efficiency and capture of a pump-and-treat system. Conducted additional inorganic chemical analyses to ascertain the subsurface microbial environment to help quantify biodegradation. (1998 to 1999)

- ***Sherman Dam Seepage Collection Wells, Farwell Irrigation District, Loup City, Nebraska***. Senior Engineer responsible for designing two large-capacity water supply wells at the toe of the Sherman Dam to capture groundwater resources seeping from the dam. The wells also helped dewater the dam materials, reducing pore pressures and improving dam safety. (2004)

PROFESSSIONAL AFFILIATONS

International Mine Water Association, Member

CONTINUING EDUCATION

40-hr OSHA HAZWOPER, 1996.
8-hr OSHA HAZWOPER Refresher, current.
8-hr OSHA HAZWOPER Site Supervisor Training, 1996 .
24-hr MSHA Surface and Underground Mining Safety Training, current.

PRESENTATIONS

Brown P, **Breckenridge L**, Hudson A, Henderson M, Garcia A. 2005. Hydrogeologic Investigation of the Gold Reserve Incorporated's Brisas del Cuyuni concession in southeast Venezuela. Ninth International Mine Water Association Congress; proceedings; 2005 Sep 5-7; Oviedo, Spain.

Breckenridge L, Henderson M. 2004. How cycling application rates can increase metal recovery in heap leach operations. Society of Mining Engineers Conference; proceedings; 2005; Salt Lake City, UT.

Breckenridge L. 1997. Hydrogeologic system modeling of the North Antelope and Rochelle surface coal mines in northeast Wyoming. Geologic Society of America Conference; proceedings; 1997.

PROFESSIONAL EMPLOYMENT HISTORY

Professional Engineer/Hydrogeologist, Tetra Tech, 2007 to Present
Professional Engineer/Hydrogeologist, Vector Colorado LLC, 2004 to 2007
Professional Engineer/Hydrogeologist, SRK Consulting, 2002 to 2004
Staff Engineer/Scientist, Knight Piésold & Co., 1999 to 2002
Staff Environmental Scientist, Harding Lawson and Associates, 1996 to 1999
Hydrogeologist, Powder River Coal Company, 1995 to 1996

AMY L. HUDSON, REM

Senior Hydrogeologist /Geochemist

EDUCATION

MS, Environmental Science and Engineering, Colorado School of Mines, 2006
BS, Geology and Environmental Science, Mary Washington College, 1998

REGISTRATIONS/CERTIFICATIONS

Registered Environmental Manager: National Registry of Environmental Professionals (REM 11854, 2004)

EXPERIENCE SUMMARY

Ms. Hudson is a Registered Environmental Manager with over nine years of experience as a hydrogeology and geochemical consultant. She performs groundwater modeling of aquifer systems for mining and environmental remediation projects (MODFLOW-SURFACT, AquiferTest, WinFlow, and Groundwater Vistas), geochemical modeling of pit lakes, waste rock dumps, and heap leach pads (PHREEQCI), saturated/unsaturated zone flow modeling of covers and tailings dams (VADOSE/W, SEEP/W, and SoilCover), and surface water modeling for flood hazard analysis (HEC-HMS, HEC-RAS, adICPR, HEC-FFA, and HY8). She has also been involved in a variety of remediation and environmental management projects involving characterization, mitigation, rehabilitation, and regulatory activities both in the office and the field. Additionally, Ms. Hudson has experience in quality assurance (QA)/quality control (QC) program design and implementation on a variety of projects.

PROJECT EXPERIENCE

Hydrogeology /Groundwater Remediation /Geochemistry

- ***Brisas del Cuyuni Copper and Gold Mine, Bolivar Province, Venezuela.*** As Project Hydrogeologist/Geochemist, designed a pit dewatering system for a proposed 1 kilometer wide by 2.5-kilometer long open pit development in a rainforest in Venezuela. The area receives 3 meters of precipitation per year, and dewatering is critical to keeping the clay and silt rich upper 50 meters of the pit stable. The next phase was design, construction, and evaluation of a post-closure pit lake geochemical model in support of the Environmental Impact Statement for the mine. The final component of this project was development of an unsaturated flow model and geochemical model of the waste dump. Work has also been done on this project as part of the geochemical investigation of the project. The results of this model have been used to update the waste characterization and dump design. Accomplishments of this project were the creation of a groundwater model, optimization of the dewatering well layout and pumping rate, and development of a detailed geochemical model of the post-closure pit lake and waste rock dump. (2004 to present)

- ***Rosemont Copper, Molybdenum, and Silver Mine, Pima County, Arizona.*** As Project Geochemist, designed a geochemical investigation program for a Greenfields copper, molybdenum, and silver mine. The project also includes coordination of the sample collection and analysis of the laboratory data. Additional work on this project will include the site wide geochemical modeling of the tailings impoundment, the waste rock dumps, and the post closure open-pit lake. The results of this study will be used in support of the bankable feasibility study and the environmental impact statement. (2006 to present)

- ***Coricancha Poly-Metallic Underground Mine, San Mateo, Peru.*** As Project Environmental Scientist, assisted in development of Environmental Compliance Action Plan and Environmental Management Plan. Also develop a Sampling and Analysis Plan to support the environmental monitoring activities and training of site personnel. The project includes the development of innovative environmental management techniques to prevent impacts to the surrounding environment. Additionally, components of the project include the development of mitigation measure to lessen/prevent the production of acidic water and the development of a zinc specific treatment system. (2007 to present)

- ***Former Mineral Processing Facility Groundwater Remediation, Louviers, Colorado.*** Project Hydrogeologist responsible for costing, implementing, collecting, and analyzing chemical data to develop a treatment system for remediation of nitrate-impacted groundwater for a mining company mineral processing facility. An in-situ bio-denitrification treatment system was developed and installed at the site. This project successfully removed nitrate using innovative techniques, safe performance of work, and staying within the restraints of the established budget. The success of the treatment system achieved State-approved site closure in just over three years from the start of treatment. (2001 to 2004)

- ***Barrick Pierina Acid Rock Drainage (ARD) Predictive Modeling, Huaraz, Peru.*** Project Geochemist responsible for conducting a study to predict the start of ARD generation and the associated quality and quantity of water that would be discharged from the Pierina mine. This project involved three components: preparation of revised estimates of the water quantity and quality from the mine facilities, evaluation of potential sources of clean water for local communities, and review of the current surface water diversion system. The results of this study were used to support the closure planning and cost estimation for the mine to meet regulatory requirements. (2005 to 2006)

- ***Boroo Gold Mine, Mongolia.*** As a Project Hydrogeologist, responsible for performing thermal modeling of a heap leach system in an extreme climate. The project utilized a coupled thermal and variably saturated model to simulate the flow of solution through the heap. Additionally, the pregnant leach solution pond was modeled using a heat budget to determine system parameters for final design. (2007)

- ***Assarel Medet Copper Mine, Bulgaria***. As a Project Hydrogeologist, responsible for creating a hydrogeologic model of the dewatering system at the Assarel Medet open-pit copper mine. After developing a groundwater model that included the impacts of a drainage gallery, seasonal precipitation changes, and pit development, innovative water-management solutions were proposed and simulated in the model. The end result was a water management program that allowed for steeper pit slopes resulting in a savings of millions of tons of waste rock removal. (2005)

- ***Cerro Verde Copper Mine Heap Leach Pad Model, Arequipa, Peru.*** Project Hydrogeologist responsible for designing a site-specific heap leach pad model to assess the impact of various french and chimney drains on the flow of acidic solution through copper ore. This three-dimensional linked saturated and unsaturated flow model predicted the maximum hydraulic head within the heap, the volume of seepage day lighting on the pad face, and the impact of drains on drying out the heap slopes. (2005)

- ***Aerospace Manufacturing Facility Groundwater Monitoring, Denver, Colorado.*** Senior Hydrogeologist responsible for managing and performing groundwater monitoring programs, oversight of monitoring well installation using hollow stem auger and direct push techniques, American Society for Testing and Materials (ASTM) soil logging, soil sampling, report preparation, data evaluation, subcontracting work and materials, and gathering data for the client and regulatory agency. Responsible for capture modeling of pump-and-treat groundwater barrier system using WinFlow. Member of team responsible for planning, managing, and performing field activities of Resource Conservation and Recovery Act facility investigation and risk assessment. (2001 to 2004)

- ***Farwell Irrigation District Dam Seepage Collection, Loup City, Nebraska.*** Project Hydrogeologist responsible for designing, installing, and testing large-capacity pressure-relief wells at the toe of the Sherman Reservoir Dam to capture water resources seeping from the dam. Accomplishments of this project are the dewatering of the dam materials, reduced pore pressures, and improved dam safety. (2005 to 2006)

- ***Former Chemical Distribution Facility Modeling Services, Denver, Colorado.*** Project Hydrogeologist responsible for flow-and-transport modeling of the alluvial aquifer, modeling natural attenuation parameters, soil characterization sampling using direct push methods, ASTM soil logging, gathering and evaluating data, and preparing reports in support of a voluntary clean-up program application. (2001 to 2004)

Quality Assurance /Quality Control

- ***Yucca Mountain Project QA and Reporting, Denver, Colorado.*** As QA Implementation Specialist II/Analysis/Model Reports (AMR) Coordinator, ensured that the US Geological Survey (USGS) followed QA guidelines dictated by the Department of Energy and assisted field investigation scientists with submittal of data packages into the project database. Responsible for coordinating and processing four AMRs, which included report production, report check and review process, assisting the author with procedural requirements and comment responses, and submittal of records packages. Accomplishments on this project included timely submittal of reports to the Department of Energy in support of the Yucca

Mountain Site Characterization Report, advanced knowledge of project databases and information, and thorough knowledge of procedures and standards governing the project and its products. (2000 to 2001)

Hydrology and Hydraulics

- ***National Flood Insurance Project Letters of Map Change (LOMCs), Fairfax, Virginia.*** LOMA Analyst II/Project Leader responsible for processing LOMCs on behalf of the Federal Emergency Management Agency (FEMA) for areas where, due to the scale, the map could not be physically changed. Processing required detailed communication with municipalities, developers, landowners, surveyors, and lending institutions. Also responsible for surface water modeling of 100- and 500-year flooding events using the US Army Corps of Engineers (USACE) HEC programs and USGS modeling software. This project provided training in basic hydrologic and hydraulic modeling programs and skills. Accomplishments on this project included timely processing of requested LOMCs, creation and implementation of an audit process for checking the quality control of work, as well as the work of another contracting company on the Flood Insurance Project, establishment of map library for use by other analysts, and expansion and reorganization of current FEMA resource library for use by all project personnel. (1998 to 2000)

- ***Wetland Identification and Delineation, USACE, Fredericksburg, Virginia.*** As USACE Intern, learned to identify and delineate jurisdictional wetlands in support of 404 permitting. Learned techniques for mitigating impacted wetlands and determined ways to avoid the impacts of new projects. Accomplishments of this internship were the knowledge gained of wetland characteristics, wetland identification techniques, and the wetland mitigation techniques which were applied to local sites requiring USACE permits. (1996)

PROFESSSIONAL AFFILIATONS

International Association of Hydrogeologists, Member
International Mine Water Association, Member
National Ground Water Association, Member
Geological Society of America, Member

CONTINUING EDUCATION

MSHA Part 46 (Surface Metal /Non-Metal) Mine Safety Training, current
40-hr OSHA HAZWOPER, 2001
8-hr OSHA HAZWOPER Refresher, current
8-hr OSHA HAZWOPER Site Supervisor Training, 2002
8-hr Confined Spaces Entry, 2001

PUBLICATIONS

Garrett KE, **Hudson A.** 2005. Large-scale application of in-situ remediation to remove nitrate from groundwater. Federal Facilities Environmental Journal 16(1):97-108.

PRESENTATIONS

Hudson A. 2007. Environmental system modeling of mine facilities to prevent and mitigate impacts. Mine Design, Operations & Closure Conference; 2007 Apr 22-26; Butte, MT.

Hudson A. 2006. Geochemical modeling of mine facilities to minimize and mitigate environmental impacts. Environmental Protection Agency Hard Rock Conference: Sustainable Modern Mining Applications; 2006 Nov 14-16; Tucson, AZ.

Hudson A. 2005. Pit lake geochemical prediction in a tropical environment. Society of Mining, Metallurgy, and Exploration Arizona Conference; 2005 Dec 4-5; Tucson, AZ.

Brown P, Breckenridge L, **Hudson A**, Henderson M, Garcia A. 2005. Hydrogeologic investigation of the Gold Reserve Incorporated's Brisas del Cuyuni concession in southeast Venezuela. Ninth International Mine Water Association Congress; proceedings; 2005 Sep 5-7; Oviedo, Spain.

Garrett KE, **Hudson A.** 2005. In-situ biodenitrification groundwater treatment system. Eighth International In-Situ and On-Site Bioremediation Symposium; proceedings; 2005 Jun 6-9; Baltimore, MD.

Hudson A, Garrett KE. 2004. Impacts of near mountain geology on an in-situ bio-denitrification system. Geological Society of America 2004 Annual Meeting; Abstracts with Programs 36(5).

Garrett KE, **Hudson A.** 2004. Large-scale application of in-situ biodenitrification. Ninth Annual Joint Services Environmental Management Conference; proceedings; 2004 Aug 16-19; San Antonio, TX.

Garrett KE, **Hudson A.** 2003. In-situ biodenitrification: a case study. National Ground Water Association Remediation Conference: Site Closure and the Cost of Cleanup; proceedings; 2003 Nov 13-14; New Orleans, LA.

PROFESSIONAL EMPLOYMENT HISTORY

Project Hydrogeologist/Geochemist, Tetra Tech, 2007 to Present
Project Hydrogeologist, Vector Colorado, LLC, 2004 to 2007
Project Hydrogeologist, MACTEC Engineering and Consulting, Inc., 2001 to 2004
Quality Assurance Implementation Specialist II/AMR Coordinator, Pacific Western Technologies, 2000 to 2001
LOMA Analyst II/Project Leader, Dewberry & Davis, 1998 to 2000
Summer Intern, US Army Corps of Engineers, 1996

Education

BA. & Sc, Geography and Biology, McGill University, Montreal, Quebec, Canada (2005)

Professional Experience

GeoTrans, Inc., Harvard, Massachusetts, *Staff Scientist* (2005 – Present)

Summary

Ms. Augustino performs field activities for environmental and hydrologic investigations at commercial, industrial, and Superfund sites. She is proficient in groundwater, soil and air sampling operation; well installation and development; soil identification; maintenance of groundwater remediation systems; preparation and evaluation of analytical data; collection and identification of soil, plant, and tree specimens; and topological surveying. Ms. Augustino's field experience includes the following groundwater sampling techniques and/or methods: low flow bladder pumps, bailers, Inertial Waterra® pumps, peristaltic, submersible pumps (Grundfos®), and USGS Diffusion Bag Sampling. Ms. Augustino has experience with the following drilling methods: Hollow Stem Auger, Air Rotary, and Direct Push (GeoProbe®). Ms. Augustino is functional in Spanish.

Ms. Augustino's expertise also includes spatial analysis, mapping, and image interpretation using ArcGIS, MapInfo, and Idrisi32. She has worked with both vector and raster data formats in order to display, analyze, and monitor spatial information.

Relevant Project Experience

- ***High Voltage Engineering Corporation, Burlington, Massachusetts.*** Assisted with long term monitoring, operations, and maintenance at a VOC-contaminated site under-going a regulated remedial remedy. Performed field data collections activities, including groundwater sampling using diffusion bags, groundwater level monitoring and groundwater and air sampling in accordance with regulatory protocols related to the groundwater extraction and treatment system.
- ***W.R. Grace, Woburn, Massachusetts.*** Assisted in subsurface investigation including soil classification and boring log preparation, soil sampling using EnCore® Samplers and split-spoon sampling at five soil boring locations that extended to bedrock. Prepared geologic cross-sections and potentiometric surface maps and analyzed groundwater quality data. Performed groundwater level monitoring and observation of physical site and well conditions for well maintenance at Superfund site.
- ***W.R. Grace, Acton, Massachusetts.*** Active remediation monitoring and plume definition site. Oversite of well installation and development. Assisted in low flow sampling event preparation and sampling of approximately 100 monitoring wells and surface water locations.
- ***Confidential Client, Connecticut.*** Assisted in soil sampling and air analysis
- ***CityGroup Global Markets, East Hartford, Connecticut.*** Assisted in report preparation for the ASTM Phase I environmental site assessment and characterization of nine commercial and industrial sites for due diligence related to real estate refinancing. Evaluated congruence of information in environmental database with report content.
- ***Schlage Lock, Security, Colorado.*** Managed and analyzed data extracted from National Climatic Data Center database, prepared electronic database and graphs; performed trend analysis of data; QA/QC for data used in performance assessments.
- ***Confidential Client, Superfund Sites, Ohio and New York.*** Using ArcView and MapInfo created plan and cross-section map views of contaminant concentration to visualize historical plume movement.
- ***Northern Vietnam.*** Used satellite imagery to perform an extensive evaluation of the effect of land-use policy changes related to deforestation in three provinces in the highland area between the Black River and the Red River. Interpreted satellite images using Idrisi32 to classify land and water surfaces, quantify change in land-use over time. Used Normalized Difference Vegetation Index (NDVI) to calculate crop productivity

- ***Confidential Client, Pennsylvania.*** Evaluated and verified compliance with environmental, health, and safety standards for several hundred annual international EHS audits.

Professional Certifications

OSHA 40-Hour HAZWOPER Training (29 CFR 1910.120)
8-Hour OSHA Refresher Training (2007)
Confined Space Entry (29 CFR 1919.146)
Adult First Aid and CPR Certified (2006)

Professional Development Courses

Optical Remote Sensing of the Terrestrial Biosphere, McGill University, Montreal, Quebec, Canada (2005)
ESRI Introduction to ArcGIS II, ESRI, Danvers, MA (2006)
The Pollution and Hydrology Course, Orlando, FL (2007)